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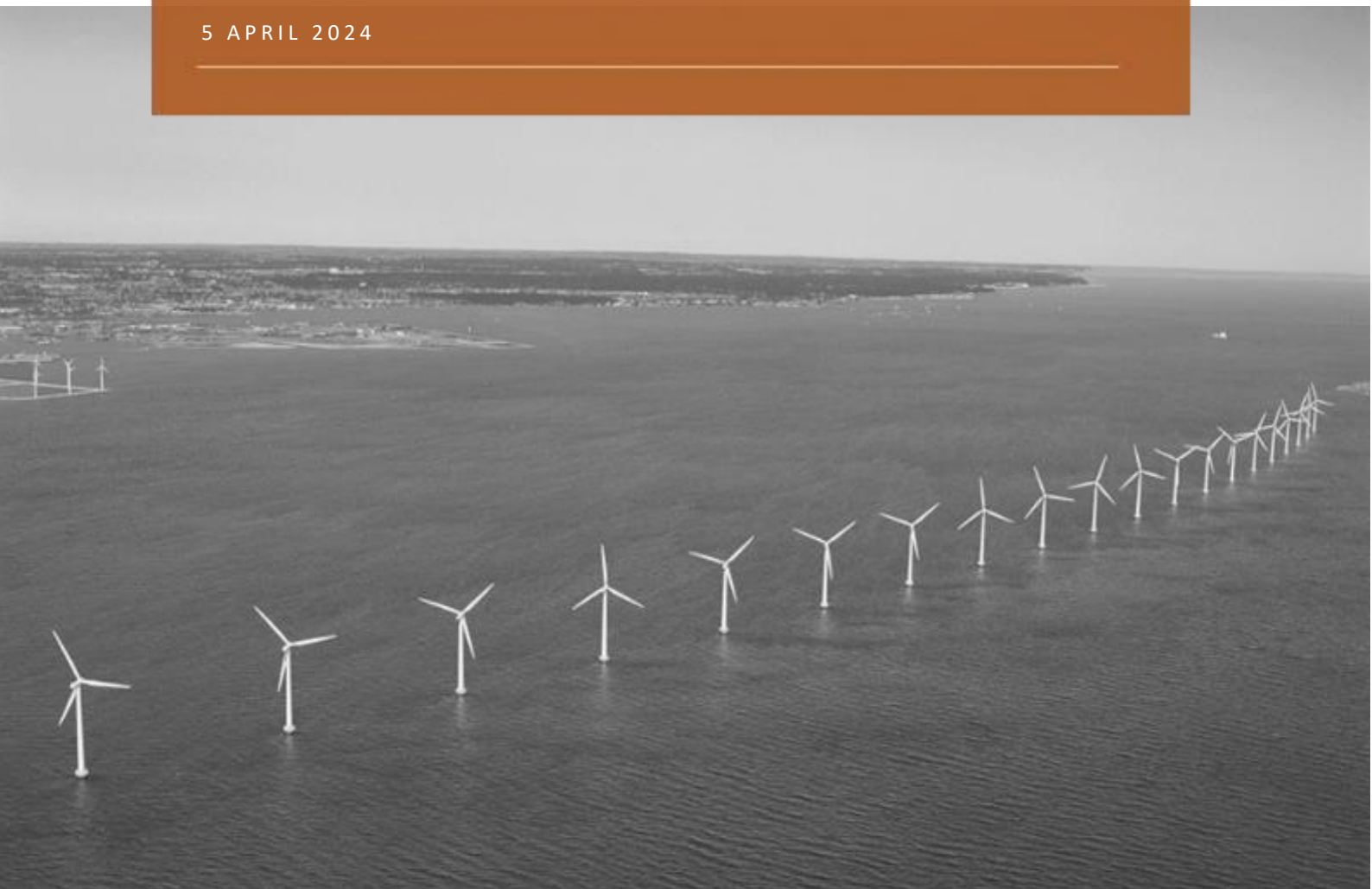
# Energy Island North Sea

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**Revalidation Note on Site Wind Conditions Assessment  
Energy Island North Sea**

5 APRIL 2024

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# Energy Island North Sea, Revalidation Note on Site Wind Conditions Assessment

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# Executive Summary

## Objective

The objective of this technical note is to revalidate the site wind conditions presented in the main report “Site Wind Conditions Assessment, North Sea” issued in 2023 by EMD for Energinet in relation to the Energy Island project in the North Sea [1].

## Background

Energinet has commissioned the construction of an artificial island in the North Sea, which will serve as a hub for offshore wind farms. The Energy Island project is expected to generate significant amounts of renewable energy and reduce carbon emissions. As wind is the primary source of energy for the project, a thorough assessment of the site wind conditions is crucial for its successful implementation.

## Methodology

The revalidation note updates the site wind conditions assessment, based on 2 years of onsite measurements using floating LiDAR systems (FLS) in the North Sea Energy Island Offshore Wind farm Zone (OWF) and delivers the site wind condition parameters according to IEC 61400-1 [2], IEC 61400-3-1 [3] and in addition refers to Eurocode EN1991-1-4 [4] including the Danish annex [5], DS 472 ed.2 [6] and IEC 61400-15-1 CD [7].

The site wind conditions assessment is intended to serve as basis for:

- Preliminary site-suitability analysis of the Wind Turbine Generator (WTG) and Rotor Nacelle Assembly (RNA)
- Front-End Engineering and Design (FEED) of offshore support structures for WTGs and other structures.

The report presents the additional data obtained for the site with a recalculation of the site parameters affected by the extension of the measurement period. Methodologies, calculations and results unchanged from the main report are not presented in this note.

EMD has become aware that the campaign configuration was changed during the measurement period with three different buoys interchanged on the two lots. The operational history is clarified.

Calculations are done in windPRO 4.0, developed by EMD International A/S.



## Results

The site condition parameters are summarized in Table 1.

*Table 1. Summary table of Site Wind Condition parameters at the three selected positions on the North Sea Energy Island OWF zone. All values refer to 150 m height above sea level (ASL) and are based on 2 year of onsite measurements.*

PARAMETER	POSITION 1	POSITION 2	POSITION 3
Mean wind speed	10.94 m/s	10.86 m/s	10.97 m/s
Weibull distribution, A parameter (scale)	12.35 m/s	12.26 m/s	12.38 m/s
Weibull distribution, k parameter (shape)	2.36	2.35	2.36
Normal wind profile power law exponent	0.085	0.085	0.085
Turbulence intensity mean value ( $TI_{\mu}$ ) at a 10-min average wind speed of 15m/s*	5.1%	5.1%	5.1%
Turbulence intensity standard deviation ( $TI_{\sigma}$ ) at a 10-min average wind speed of 15m/s*	2.0%	2.0%	2.0%
Turbulence intensity 90% quantile at a 10-min average wind speed of 15m/s*	7.7%	7.7%	7.7%
Mean air density	1.23 kg/m <sup>3</sup>	1.23 kg/m <sup>3</sup>	1.23 kg/m <sup>3</sup>
Mean air temperature	9.0°C	9.0°C	9.0°C
50-year extreme wind speed	51.8 m/s	51.8 m/s	51.8 m/s
1-year extreme wind speed	29.1 m/s	29.1 m/s	29.1 m/s
Wind shear for extreme wind speed extrapolation	0.11	0.11	0.11
Characteristic turbulence intensity at 50-year extreme wind speed	13.0%	13.0%	13.0%
Air density for extreme wind	1.24 kg/m <sup>3</sup>	1.24 kg/m <sup>3</sup>	1.24 kg/m <sup>3</sup>

\*Turbulence values at other wind speeds can be found in Appendix D.

The datasets produced by this study are available in a data package prepared for Energinet.



## Recommendations

EMD recommends investigating if measurement data logged on WS170 during deployment at Lot 2 April to June 2023 can be recovered. These data, if recovered, would close a 3-month gap in the data series.



# Contents

<b>Executive Summary</b> .....	<b>4</b>
<b>1 Introduction</b> .....	<b>12</b>
<b>2 Additional Data for Revalidation</b> .....	<b>14</b>
<b>3 On-Site Floating LiDAR Measurements</b> .....	<b>15</b>
3.1 Buoy Positions .....	16
3.2 Instrumentation .....	17
3.3 Operation History .....	17
3.4 Post-Processing of Data.....	18
3.5 Data Analysis .....	21
3.6 Measurement Uncertainty .....	26
<b>4 Reference Data</b> .....	<b>29</b>
<b>5 Long-term Correction</b> .....	<b>30</b>
5.1 Review of Reference Data .....	30
5.2 Correlation between Onsite and Reference Data .....	30
5.3 Long-Term Wind Climate .....	34
<b>6 Comparison of Wind Models</b> .....	<b>39</b>
6.1 Uncertainty of Primary Wind Model .....	44
<b>7 Flow Modelling</b> .....	<b>46</b>
7.1 Wind Resource Map .....	46
7.2 Wind Resource Model for Position 3 .....	47
<b>8 Siting Parameters</b> .....	<b>49</b>
8.1 Normal Wind Conditions .....	49
8.2 Summary Table of Siting Parameters .....	59
<b>9 Data Package</b> .....	<b>60</b>
9.1 Raw Buoy Data .....	60
9.2 Filtered and Repaired LIDAR Data .....	61
9.3 Long-term Corrected LiDAR data .....	63
9.4 EMD-WRF Dataset.....	63
9.5 Turbulence Data .....	64
9.6 Wind Resource Map/Gradient File.....	65
<b>10 References</b> .....	<b>66</b>
<b>Appendix A. Verification and Classification Uncertainty</b> .....	<b>67</b>
<b>Appendix B. Filtered and Repaired Dataset: Position 1 (Lot 1), Position 2 (Lot 2)</b> .....	<b>70</b>
<b>Appendix C. Long-term Corrected Dataset: Position 1 (Lot 1), Position 2 (Lot 2), Position 3</b> ...	<b>115</b>
<b>Appendix D. Normal Turbulence Model (150 m)</b> .....	<b>162</b>





## List of Figures

Figure 1. Relative position of Lot 2 and Lot 2B.....	16
Figure 2. Directional distribution at selected heights of LiDAR measurements, Lot 1.....	23
Figure 3. Directional distribution at selected heights of LiDAR measurements, Lot 2.....	24
Figure 4. Diurnal wind speed variation, Lot 2.....	25
Figure 5. Diurnal temperature variation, Lot 1, 2 years (red), Lot 2, 1 year (green) and Lot 2, 2 years (purple). ....	25
Figure 6. Monthly mean wind speed, Lot 2.....	26
Figure 7. Monthly mean temperature, Lot 1, 2 years (red), Lot 2, 1 year (green) and Lot 2, 2 years (purple). ....	26
Figure 8. Wind direction roses for the concurrent period of LIDAR (blue) and EMD-WRF (red) data. Left: Lot 1, right: Lot 2.....	31
Figure 9. Wind direction roses for EMD-WRF data. Deep red represents the entire long-term period, light red represents the period concurrent with LIDAR measurements. Left: Concurrent period with Lot 1, right: Concurrent period with Lot 2. ....	32
Figure 10. Left: Wind direction distribution of long-term corrected LiDAR data (Lot 1) at 150 m. Right: Energy distribution of long-term corrected LiDAR data (Lot 1) at 150 m. Both are divided in wind speed intervals. ....	36
Figure 11. Left: Wind direction distribution of long-term corrected LiDAR data (Lot 2) at 150 m. Right: Energy distribution of long-term corrected LiDAR data (Lot 2) at 150 m. Both are divided in wind speed intervals. ....	36
Figure 12. Diurnal wind speed observed (purple), long-term corrected with 1 year of observations (red) and long-term corrected after 2 years of observations, Lot 2. ....	37
Figure 13. Seasonal variation of long-term corrected dataset (red) and observed dataset (purple) at 150 m, Lot 2. The long-term seasonal variation based on 1 year of measurements (green) is identical to the new seasonal variation. ....	38
Figure 14. Wind speed probability function for the five datasets at Position 1, Lot 1. Primary model based on 2 years (green), Primary model based on 1 year (red), Thor model (pink), Fino3 (purple) and Harald B (blue). ....	40
Figure 15. Wind speed probability function for the five datasets at Position 2, Lot 2. Primary model based on 2 years (green), Primary model based on 1 year (red), Thor model (pink), Fino3 (purple) and Harald B (blue). ....	41
Figure 16. Directional distribution of the five long-term wind models at Position 1, Lot 1. Primary model based on 2 years (green), Primary model based on 1 year (red), Thor model (pink), Fino3 (purple) and Harald B (blue). ....	42



Figure 17. Directional distribution of the five long-term wind models at Position 2, Lot 2. Primary model based on 2 years (green), Primary model based on 1 year (red), Thor model (pink), Fino3 (purple) and Harald B (blue). ..... 43

Figure 18. Wind resource map for the Energy Island North Sea OWF. .... 46

Figure 19. Location of measurement points and the selected Position 3. .... 47

Figure 20. Observed wind shear versus wind speed (0.5 m/s bins) at the two North Sea Energy Island buoys, Lot 1 (right) and Lot 2 (left). For both buoys the wind shear clearly levels off at around 0.11 for wind speeds above ca. 15m/s. At lower wind speeds the wind shear increases linearly with wind speed..... 57



## List of Tables

Table 1. Summary table of Site Wind Condition parameters at the three selected positions on the North Sea Energy Island OWF zone. All values refer to 150 m height above sea level (ASL and are based on 2 year of onsite measurements.....	5
Table 2. List of Site Wind Conditions Parameter.....	12
Table 3. Measurement stations considered in the revalidation note, measurement heights ASL and period.....	14
Table 4. List of documentation received on the Floating LiDAR Systems (FLS) in addition to documentation listed in the main report.....	15
Table 5. Locations of Lot 2 and Lot 2B.....	16
Table 6. Gantt chart of buoy deployment on Lot 1 and Lot 2. Green color marks which buoy is provides data on site. Yellow color marks the presence of buoy not providing data on site.....	17
Table 7. Correlation coefficient, $r$ , between Lot 1 and Lot 2 measurements at the same height. Correlation based on 2 years of concurrent data.....	19
Table 8. Data substitution, Lot 1.....	20
Table 9. Data substitution, Lot 2.....	20
Table 10. Weibull parameters of the repaired datasets, Lot 1.....	21
Table 11. Weibull parameters of the repaired datasets, Lot 2.....	22
Table 12. Measurement uncertainty of buoy mounted LiDARs.....	27
Table 13. Wind speed measurement uncertainty at 150 m ASL.....	28
Table 14. Correlation coefficient $r$ between the reference data (EMD-WRF, 150 m) and the onsite floating LiDAR data at 150 m ASL. Comparison between 1 year data reported in the main report and the addition of a second year of data.....	31
Table 15. Prediction test using a 24-hour slicing method and a self-test using the entire concurrent period. The parameter presented is over-prediction of production in percent. (Lot 1 - 150 m data). Comparison between 1 year concurrent data reported in the main report and 2 years of concurrent data.....	33
Table 16. Prediction test using a 24-hour slicing method and a self-test using the entire concurrent period. The parameter presented is over-prediction of production in percent. (Lot 2 - 150 m data). Comparison between 1 year concurrent data reported in the main report and 2 years of concurrent data.....	33
Table 17. Weibull parameters of the long-term wind data used, Lot 1.....	34
Table 18. Weibull parameters of the long-term wind data used, Lot 2.....	35
Table 19. Comparison of model results at Position 1, Lot 1 150 m ASL.....	39
Table 20. Comparison of model results at Position 2, Lot 2 150 m ASL.....	40
Table 21. Measurement uncertainty.....	44



Table 22. Combined uncertainty on long-term wind data. Uncertainty given as one standard deviation wind speed.  
..... 45

Table 23. Coordinates for Position 3. .... 47

Table 24. Weibull parameters of the long-term wind data, Position 3. .... 48

Table 25. Turbine specific information used for siting parameters. .... 49

Table 26. Weibull distribution parameters based on long-term corrected LIDAR data at 150 m ASL, Position 1 – Lot  
1. Wind speeds are derived from the Weibull distribution. .... 50

Table 27. Weibull distribution parameters based on long-term corrected LIDAR data at 150 m ASL, Position 2 – Lot  
2. Wind speeds are derived from the Weibull distribution. .... 51

Table 28. Weibull distribution parameters based on long-term corrected LIDAR data at 150 m ASL, Position 3. Wind  
speeds are derived from the Weibull distribution. .... 52

Table 29. Site specific omnidirectional wind shear exponent by season. Shear values in italics are based on first  
year of measurements. .... 53

Table 30. Site specific omnidirectional wind shear exponent. .... 53

Table 31. Temperature assessment at Position 1 – Lot 1 (150m). .... 55

Table 32. Temperature assessment at Position 2 – Lot 2 (150m). .... 55

Table 33. Extreme wind speed results (150 m). .... 56

Table 34. Extreme wind speed alternative results using different methods (150 m). .... 56

Table 35. Summary table of siting parameters (150m). .... 59

Table 36. Column explanation for data time series. .... 62

Table 37. Column explanation for EMD-WRF data time series. .... 64



# 1 Introduction

EMD International A/S has been tasked by Energinet to provide a revalidation note, which complement the initial site wind conditions assessment [1] for the Energy Island North Sea.

The objectives of the site wind condition assessment are outlined in the Scope of Services Site Wind Conditions Assessment [8] provided by Energinet and aims for a site wind condition assessment adequate for a preliminary site-suitability analysis for the Wind Turbine Generator (WTG) and Rotor Nacelle Assembly as well as input for Front-End Engineering and Design (FEED) of offshore support structures for WTGs and other structures.

The parameters for the wind condition assessment are listed in Table 2 and are defined according to IEC61400-1 [2], IEC 61400-3-1 [3] and IEC 61400-15-1 CD [7].

Table 2. List of Site Wind Conditions Parameter.

SITE WIND PARAMETERS AT 150 M MSL	
Normal Conditions Parameters	Extreme Conditions Parameters
Mean wind speed	Extreme Turbulence Model (ETM) at hub height
Omni-directional Weibull wind speed distribution parameters	Wind profile for extreme wind speed extrapolation with elevation
Wind profile for wind speed extrapolation with elevation	Wind profile for integrated load analysis
Wind profile for Integrated Load Analysis, Normal Wind Profile (NWP)	Turbulence intensity
Normal Turbulence Model (NTM)	Mean air density
Mean air density	Maximum 10-minute mean wind speed for a 50-year EWM
Mean air temperature	

The site wind condition parameter list is populated through a wind condition and resource assessment based on onsite floating LiDAR data from two locations and mesoscale WRF data. This model is supported by a selection of secondary stations located within meaningful distance of the North Sea Energy Island wind farm zone.

The parameter list in this revalidation note is updated with results from the extended wind measurement campaign.



Beside the present report, measurement data as well as mesoscale and long-term corrected datasets are provided in the form of time series text files.

All elevations throughout are referred to as Above Sea Level (ASL) with the reference sea level being the mean sea level.

A naming convention is used for turbulence conditioned on wind speed where 'mean turbulence' is the mean of 10min wind speed standard deviations ( $\sigma$ ) within a wind speed bin. The 'standard deviation of turbulence' is the standard deviation across 10min wind speed standard deviations ( $\sigma\sigma$ ) in a wind speed bin. Both these quantities (mean and standard deviation of turbulence) may be normalized to the wind speed of the wind speed bin in question, in this case the normalized turbulence is referred to as Turbulence Intensity (TI), either mean or standard deviation.

FLS is used as abbreviation for Floating LiDAR System.



## 2 Additional Data for Revalidation

Since the issue of the main report, “Site Wind Conditions Assessment, Baltic Sea”, the following data has been made available to EMD.

1. Measurement data from the buoy on Lot 1 until 22/11/2023
2. Measurement data from the buoy on Lot 2 until 22/11/2023

In addition, through the event records provided by Fugro, EMD has become aware that each of the Lots have not been covered by a single buoy, but that a third buoy, WS191 has been in use. Throughout the measurement campaign the buoy used on each of the lots have changed. Consequently, labelling each lot through the name of the buoy must be abandoned and, in the revalidation note, they are labelled exclusively through lot or position number.

*Table 3. Measurement stations considered in the revalidation note, measurement heights ASL and period.*

NAME	TYPE	MEASUREMENT HEIGHT [M] ASL	MEASUREMENT PERIOD	LENGTH [YEARS]
<b>Lot 1</b>	LiDAR (FLS)	30 - 270	15/11/2021 – 15/11/2022	2
<b>Lot 2</b>	LiDAR (FLS)	30 - 270	15/11/2021 – 15/11/2023	2



### 3 On-Site Floating LiDAR Measurements

Energinet has commissioned floating LiDAR measurements at two locations on site, operated by Fugro Norway AS. The measurement points are labelled Lot 1 and Lot 2. These two locations are in the following also referred to as Position 1 and Position 2. Three LiDAR buoys were deployed: WS170, WS181 and WS191. A plan for which buoy was operating on what location is presented in section 3.3. In addition to the data used in the main report, EMD has received measurement data as monthly batches covering the period 15/11/2022 to 15/11/2023 for Lot 1 and Lot 2.

The campaign was commenced on 15/11/2021 and ended on 15/11/2023, after 2 years of operation.

In addition to the documentation listed in the main report [1], EMD has received documentation as listed in Table 4.

Motion corrected turbulence data has been received for Lot 1 and Lot 2 but has not been used in this study, as explained later.

EMD has received documentation and measurements beyond those mentioned here, but those are not used directly in this study.

*Table 4. List of documentation received on the Floating LiDAR Systems (FLS) in addition to documentation listed in the main report.*

TITLE	SOURCE	DATE	CONTENT	REFERENCE
Energy Islands – Floating LiDAR Measurements, Monthly report (Lot 1 + 2, 24 instalments on each lot)	Fugro	25/03/2022 – 02/01/2024	Monthly reports on operation and measurements. Reports available until October - November 2023	[9]
Summary Reports of Major events (Lot 1 + 2, 8 instalments)	Fugro	21/06/2022 – 23/06/2023	8 event logs describing event with impact on measurements	[10]
ZX862, Independent analysis and reporting of ZX LiDARs performance verification executed by Zephir Ltd. at the UK Remote Sensing Test Site	DNV	12/11/2021	LiDAR verification report for ZX862, mounted on WS191	[11]
WS191, Independent performance verification of Seawatch Wind LiDAR Buoy at Frøya, Norway	DNV	04/04/2022	Pre-deployment verification document for WS191 (spare buoy)	[12]





### 3.1 Buoy Positions

The buoy deployment positions for Lot 1 and 2 were presented in the main report [1].

A secondary position was temporarily used in the period 13/06/2022 to 30/11/2022 labelled Lot 2B. The coordinates for Lot 2 and Lot 2B are listed in Table 5.

The position of Lot 2B relative to Lot 2 is presented in Figure 1. Lot 2B is 195m southwest of Lot 2. For all practical purposes, the two locations can be considered identical, and the difference will not be addressed any further.

Table 5. Locations of Lot 2 and Lot 2B.

BUOY	UTM WGS84, Zone 32		GEOGRAPHICAL COORDINATES WGS84	
Lot 2	342,856	6,247,314	6.4574°	56.3444°
Lot 2B	342,733	6,247,163	6.4555°	56.3430°

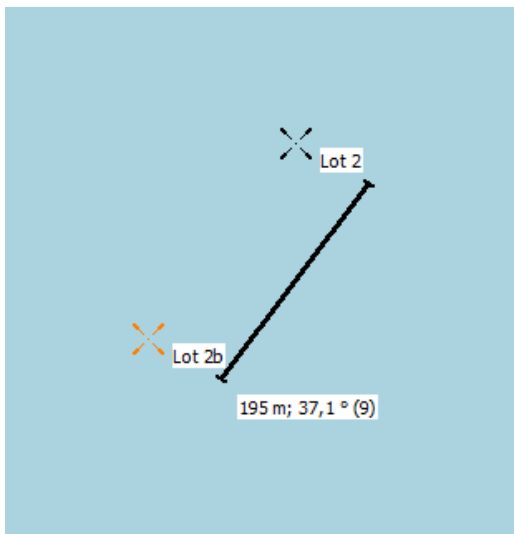


Figure 1. Relative position of Lot 2 and Lot 2B.



## 3.2 Instrumentation

The instrumentation of the Fugro Seawatch buoys is described in the main report.

A spare buoy, WS191 was deployed on site and is described in the following. The instrumentation on the WS191 is identical to that of WS170 and WS181.

### 3.2.1 LiDAR (on WS191)

The LiDAR (ZX862 on WS191) was verified at the onshore test site Pershore, UK, which is operated by DNV-GL [11].

Once mounted on the buoys, the LiDAR was verified again by DNV. WS191 was verified at Frøya Norway [12] against an onshore LiDAR of the brand ZephIR Z300 ground-mounted on the island of Frøya.

The information from the classification and the verification was used to assess the measurement uncertainty of the LiDAR.

## 3.3 Operation History

EMD has become aware of a more complex operation history than was presented in the main report [1]. This includes changes to which buoys were operating on the two lots at different periods. The Gantt chart in Table 6 provides overview of the measurement campaign.

Table 6. Gantt chart of buoy deployment on Lot 1 and Lot 2. Green color marks which buoy is provides data on site. Yellow color marks the presence of buoy not providing data on site.

		2021		2022												2023											
		Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	
Lot 1	WS170	◆						◆											◆		◆						
	WS191							◆											◆		◆					◆	
Lot 2	WS181	◆											◆	◆					◆		◆					◆	
	WS170									◆			◆	◆					◆		◆					◆	

### 3.3.1 Lot 1

15/11/2021 WS170 deployed at Lot 1.

22/05/2022 WS170 is recovered and replaced by WS191

16/02/2023 Severe storm causes data loss. WS191 reports no further data until it is recovered.

22/04/2023 WS191 is recovered and replaced by WS170

26/04/2023 Communication interruption. WS170 reports no further data until it is recovered. The monthly reports state that data was stored and will be added to the final dataset, but the FLS has not yet been recovered due to unsuitable weather since November 2023.

13/06/2023 WS170 is recovered and replaced by WS191



15/11/2023 WS191 remains at sea - weather forecast is being monitored to find a suitable weather window for buoy recovery. End of measurement campaign

### 3.3.2 Lot 2

15/11/2021 WS181 deployed at Lot 2.

13/07/2022 WS170 is deployed at Lot 2B. This is now the primary LiDAR source, but WS181 remains operational until recovered. As there is no hiatus in the LiDAR data on 13/07/2022 it is uncertain whether submitted LiDAR data are from WS170 or WS181.

26/10/2022 WS181 recovered.

30/11/2022 WS170 is recovered and replaced by WS181 at Lot 2.

16/02/2023 Severe storm damages WS181. From this point gaps becomes frequent until no more data are recorded after 14/04/2023.

22/04/2023 WS181 is recovered. No buoy at Lot 2 until 13/06/2023

13/06/2023 WS181 is redeployed.

27/06/2023 WS181 unintentionally dragged off the site. Data removed for off-site period.

05/07/2023 WS181 redeployed at Lot 2.

15/11/2023 WS181 remains at sea - weather forecast is being monitored to find a suitable weather window for buoy recovery. End of measurement campaign

## 3.4 Post-Processing of Data

### 3.4.1 Quality Control and Filtering Performed by Fugro

The quality control and filtering performed by Fugro is identical to that described in the main report [1]. The additional files are provided in the data package (section 9).

### 3.4.2 Quality Control and Filtering Performed by EMD

The quality control and filtering by EMD follows the method described in the main report [1].

For the second year of the campaign, the following data are removed.

At Lot 2, data from the period 17/03/2023 to 14/4/2023 was removed. After the 16/2/2023 storm data are suffering increasing number of gaps. From 17/03/2023 the gaps become so common that is a risk of potential bias in the data and they are removed.



### 3.4.3 Recovery Rate and Data Substitution

Data repair on the second year LiDAR data are conducted in the same manner as described in the main report [1].

Data on Lot 1 and 2 are shear extrapolated from a lower height to fill in gaps using a shear matrix. The source heights and heights used to derive the shear matrix are presented in Table 8 and Table 9.

Horizontal repair was conducted as described in the main report. The transfer function to translate data from Lot 1 to Lot 2 and from Lot 2 to Lot 1 are based on 2 years of data as opposed to 1 year of data in the main report. The correlation coefficient is marginally better with 2 years of data (Table 7).

While the data repair results in an improvement of recovery rate, it leaves a 2-month gap from mid-March 2023 to mid-May 2023 without data on both lots.

The recovery rate after data repair has dropped from 98.4% at 150m height (both lots) after year 1 to 86.7% (Lot 1) and 86.6% (Lot 2) after year 2.

*Table 7. Correlation coefficient,  $r$ , between Lot 1 and Lot 2 measurements at the same height. Correlation based on 2 years of concurrent data.*

MEASUREMENT HEIGHT [M]	CORRELATION COEFFICIENT, R [%]
30 - 60	95
100 - 200	96
240 - 270	97



Table 8. Data substitution, Lot 1

REPAIRED HEIGHT [M]	60	90	100	120	150	180	200	240	270
Source height [m]	40	60	90	100	120	150	180	200	240
Shear matrix heights [m]	40, 60, 90	60, 90, 100	90, 100, 120	100, 120, 150	120, 150, 180	150, 180, 200	180, 200, 240	200, 240, 270	200, 240, 270
Recovery rate before repair	77.8%	77.1%	77.0%	76.9%	76.6%	76.4%	76.3%	76.0%	75.8%
Recovery rate after shear repair	78.1%	77.9%	77.2%	77.1%	76.9%	76.7%	76.5%	76.4%	76.1%
Recovery rate after horizontal repair	87.7%	87.4%	86.9%	86.8%	86.7%	86.5%	86.3%	86.2%	86.0%
Share of repaired data	11.3%	11.8%	11.4%	11.4%	11.6%	11.7%	11.6%	11.8%	11.9%

Table 9. Data substitution, Lot 2

REPAIRED HEIGHT [M]	60	90	100	120	150	180	200	240	270
Source height [m]	40	60	90	100	120	150	180	200	240
Shear matrix heights [m]	40, 60, 90	60, 90, 100	90, 100, 120	100, 120, 150	120, 150, 180	150, 180, 200	180, 200, 240	200, 240, 270	200, 240, 270
Recovery rate before repair	84.7%	81.5%	81.4%	81.3%	81.0%	80.7%	80.5%	80.1%	79.9%
Recovery rate after shear repair	85.0%	84.8%	81.8%	81.7%	81.6%	81.3%	81.0%	80.9%	80.6%
Recovery rate after horizontal repair	87.7%	87.6%	87.0%	86.8%	86.7%	86.5%	86.3%	86.2%	86.1%
Share of repaired data	3.4%	7.0%	6.4%	6.3%	6.6%	6.7%	6.7%	7.1%	7.2%



## 3.5 Data Analysis

EMD has combined the data files, forming time series of wind speed, wind direction, turbulence intensity and data package count for each measurement height. For 4 m height ASL, temperature, relative humidity and pressure is added. The signals for maximum wind speed and vertical wind speed are only added to the 150 m dataset.

### 3.5.1 Wind Speed

The mean wind speed on the LiDAR measurements is calculated both as arithmetic mean wind speed and through a Weibull fit as Weibull-derived mean wind speed. The Weibull fitting is done in windPRO using an energy conservation condition [13].

The following Table 10 and Table 11 summarizes the resulting wind speeds before and after data substitution.

Table 10. Weibull parameters of the repaired datasets, Lot 1.

HEIGHT [M]	PERIODS [MONTHS]	ARITHMETIC MEAN WIND SPEEDS, BEFORE DATA SUBSTITUTION [M/S]	ARITHMETIC MEAN WIND SPEEDS AFTER DATA SUBSTITUTION [M/S]	WEIBULL MEAN [M/S]	WEIBULL – A PARAMETER	WEIBULL – K PARAMETER
4	24	8.04	8.04	8.08	9.12	2.32
30	24	9.69	9.60	9.57	10.80	2.24
40	24	9.90	9.81	9.79	11.06	2.25
60	24	10.25	10.15	10.15	11.46	2.26
90	24	10.61	10.51	10.55	11.90	2.30
100	24	10.70	10.62	10.66	12.04	2.31
120	24	10.87	10.79	10.84	12.24	2.30
150	24	11.07	11.00	11.04	12.47	2.28
180	24	11.23	11.15	11.19	12.63	2.24
200	24	11.33	11.25	11.27	12.73	2.23
240	24	11.48	11.39	11.40	12.87	2.19
270	24	11.59	11.49	11.48	12.96	2.17



Table 11. Weibull parameters of the repaired datasets, Lot 2.

HEIGHT [M]	PERIODS [MONTHS]	ARITHMETIC MEAN WIND SPEEDS, BEFORE DATA SUBSTITUTION [M/S]	ARITHMETIC MEAN WIND SPEEDS AFTER DATA SUBSTITUTION [M/S]	WEIBULL MEAN [M/S]	WEIBULL – A PARAMETER	WEIBULL – K PARAMETER
4	24	8.20	8.20	8.25	9.30	2.37
30	24	9.50	9.52	9.47	10.70	2.22
40	24	9.71	9.73	9.70	10.95	2.23
60	24	10.06	10.07	10.06	11.36	2.26
90	24	10.47	10.42	10.46	11.81	2.29
100	24	10.57	10.53	10.58	11.95	2.30
120	24	10.74	10.71	10.76	12.14	2.30
150	24	10.95	10.90	10.95	12.36	2.28
180	24	11.11	11.06	11.10	12.53	2.24
200	24	11.20	11.15	11.17	12.61	2.22
240	24	11.35	11.30	11.29	12.75	2.18
270	24	11.45	11.39	11.38	12.85	2.16

Further details on the directional wind speed and Weibull distribution can be found in Appendix B.

### 3.5.2 Turbulence Intensity

Standard deviation of wind speed and hence turbulence intensity from LiDAR measurements are not immediately comparable to those of cup anemometers. The standards referred to in this study do not recognize turbulence intensity measurements from LiDARs and the observed turbulence data from WS170 and WS181 are therefore not used or documented here. They are however included in the data package produced as part of the deliverables.

The motion corrected turbulence intensity data provided by Fugro has not been used for the revalidation of Energy Island North Sea Site Conditions Assessment. The purpose of analysing motion corrected turbulence data is to document an expected difference between North Sea and Baltic Sea floating LiDAR turbulence in support of the Baltic Sea turbulence model. The turbulence model for the Energy Island North Sea is well supported and a comparison to the Energy Island Baltic Sea turbulence model is unnecessary.



### 3.5.3 Wind Direction

The wind direction distribution for the 2 years of measurements is presented in Figure 2 and Figure 3. There is a rotation of the wind direction clockwise with increasing height at Lot 1 of  $5.7^\circ$  from 30 m to 270 m, amounting to a rate of 0.024 deg/m. At Lot 2, the rotation is  $5.5^\circ$  from 30 m to 270 m, amounting to a rate of 0.023 deg/m. This is normal and consistent with the findings of the main report.

The direction distribution for each height can be found in Appendix B.

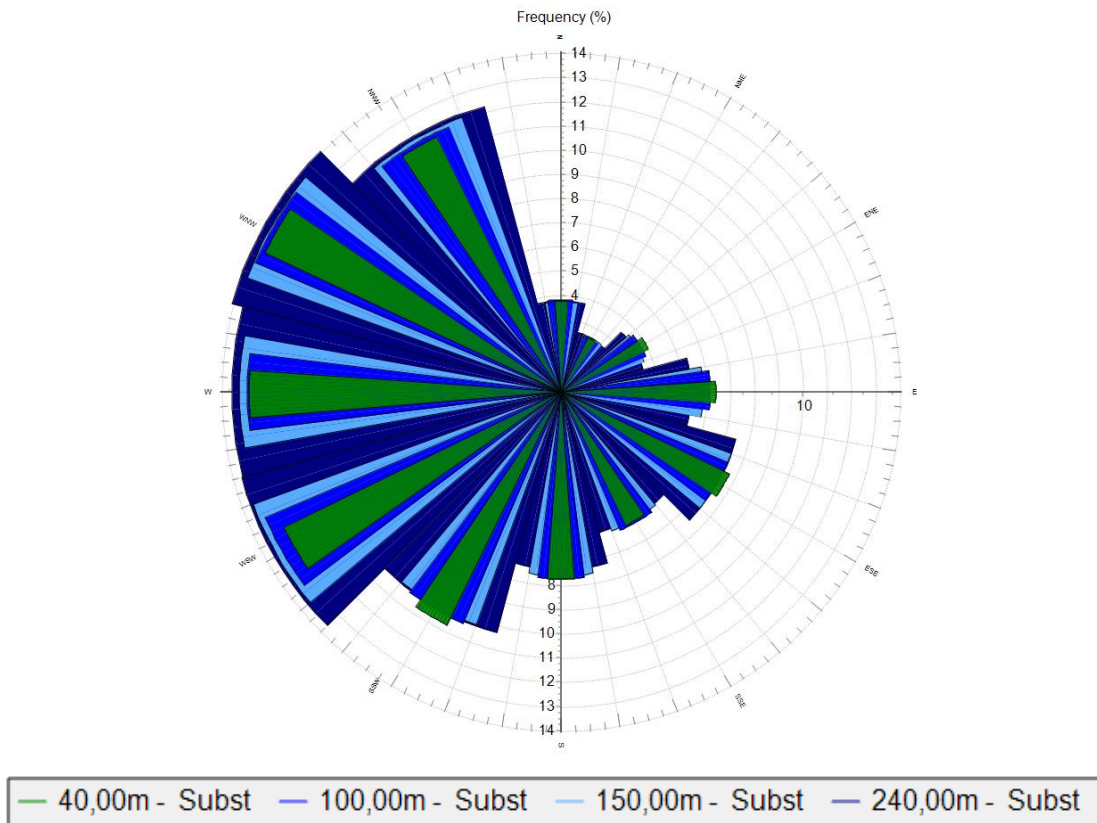


Figure 2. Directional distribution at selected heights of LiDAR measurements, Lot 1.



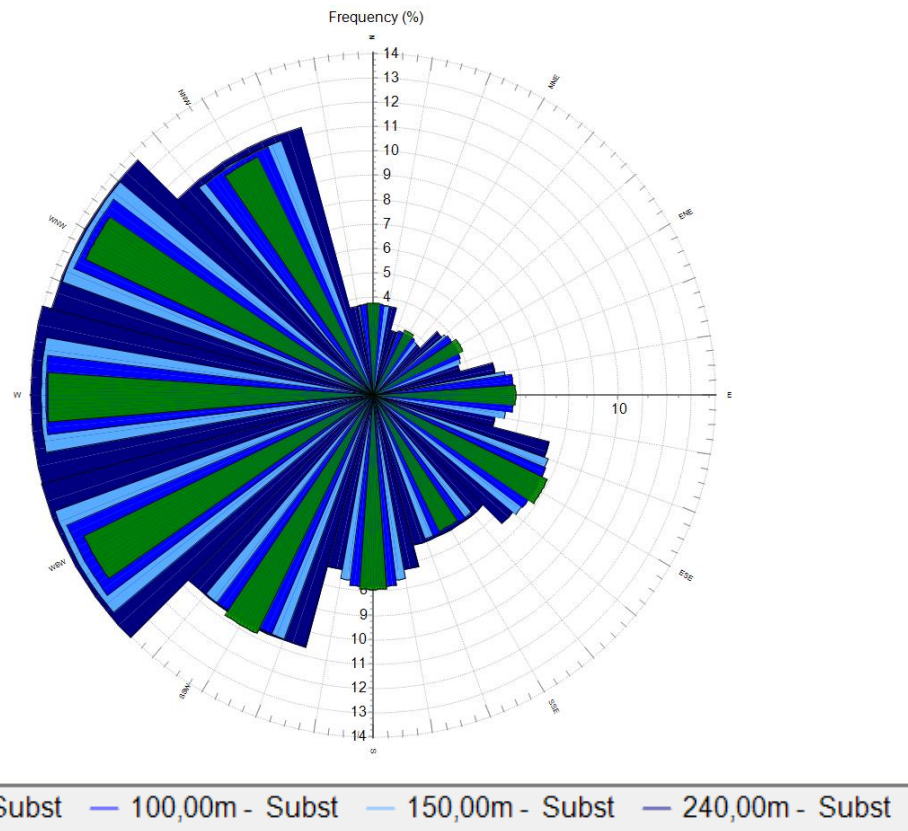


Figure 3. Directional distribution at selected heights of LiDAR measurements, Lot 2

### 3.5.4 Diurnal Variations

There is a minor variation in wind speed across the day with marginally higher wind speed at night and lower wind speed at daytime. The pattern is identical for the two buoys.

The temperature at the buoy is almost uniform across the day. There is a difference of 0.2°C between Lot 1 and Lot 2 and only a marginal difference on Lot 2 after a second year of measurements.

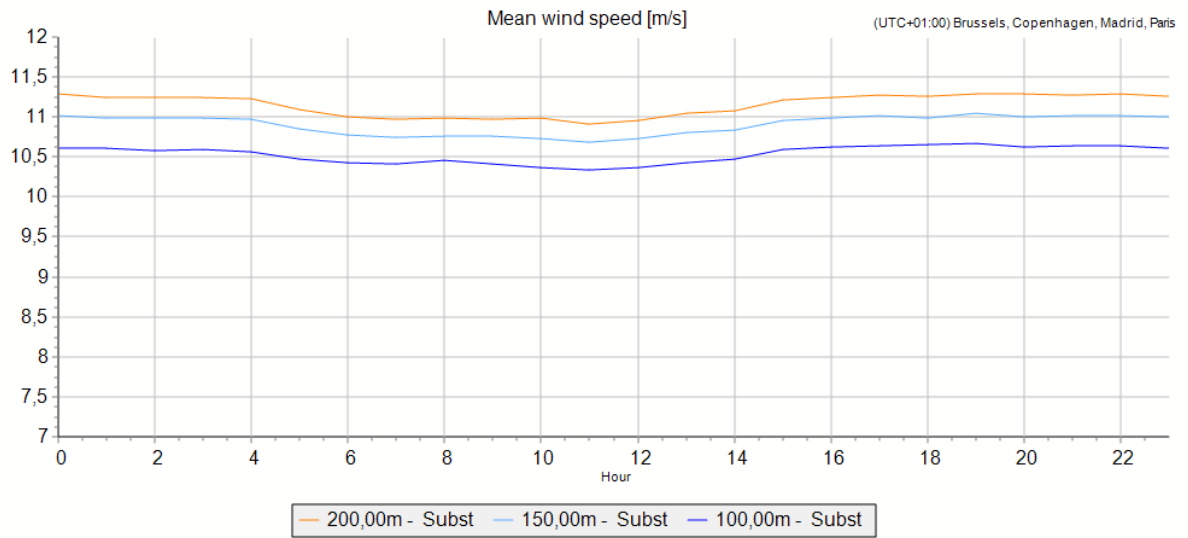


Figure 4. Diurnal wind speed variation, Lot 2.

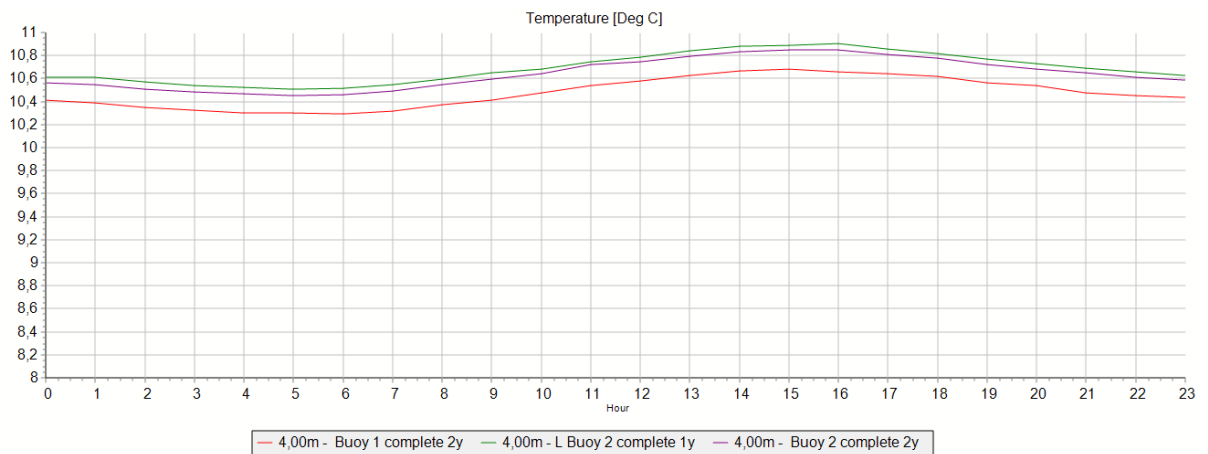


Figure 5. Diurnal temperature variation, Lot 1, 2 years (red), Lot 2, 1 year (green) and Lot 2, 2 years (purple).

### 3.5.5 Seasonal Variations

The specific year of measurement has the typical pattern for the region with higher wind speed during winter than during summer.

The temperature at the buoy varies across 2 years from a mean temperature in March of 5.6°C to 16.5°C in August.

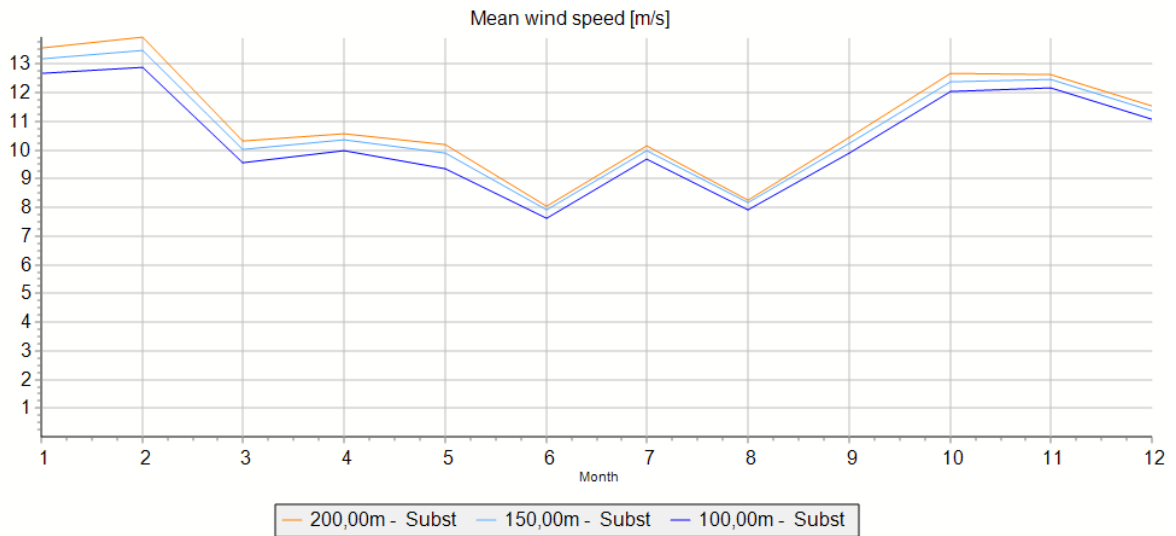


Figure 6. Monthly mean wind speed, Lot 2.

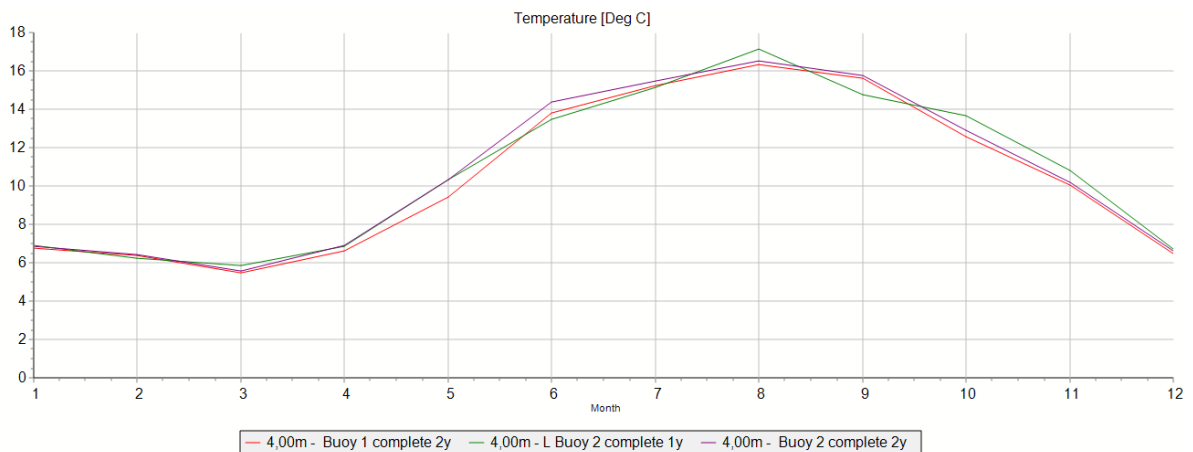


Figure 7. Monthly mean temperature, Lot 1, 2 years (red), Lot 2, 1 year (green) and Lot 2, 2 years (purple).

### 3.6 Measurement Uncertainty

Classification and verification tables from the main report are updated to include WS191.

The classification uncertainty, giving the maximum expected uncertainty, is obtained from the ZX300 classification document [14] as 1.41% (average at 130 and 135 m height). These heights are the tallest heights reported and are here considered representative of the 150 m measuring height. The classification table is included in Appendix A.

The verifications of the WS170, WS181 and WS191 buoy-mounted LiDARs were provided [15], [16], [12]. The two test sites were at the TNO Lichtland Goeree Offshore Test Site, The Netherlands (WS170) and Frøya, Norway (WS181, WS191).

In these studies the Key Performance Indicators (KPI) according to the OWA Roadmap [17] are tested and the verification uncertainty is here calculated according the method suggested by the CT/OWA LiDAR Uncertainty Standard Review [18]. All KPI's were successfully fulfilled.



The verification uncertainties from the verification reports are included in Appendix A for 120 m, the closest height to 150m. Note that the verification uncertainty from the Lichtland verification is substantially higher than at Frøya due to a higher reference uncertainty of the reference instrument against which the buoy LiDAR has been verified. It can therefore not be concluded that WS170 is poorer than WS181.

The measurement uncertainty of each buoy mounted LiDAR is a combination of classification and verification uncertainty (Table 12).

Table 12. Measurement uncertainty of buoy mounted LiDARs.

BUOY	CLASSIFICATION UNCERTAINTY	VERIFICATION UNCERTAINTY	TOTAL MEASUREMENT UNCERTAINTY
<b>WS170</b>	1.41%	3.28%	3.57%
<b>WS181</b>	1.41%	2.05%	2.49%
<b>WS191</b>	1.41%	2.37%	2.76%

The uncertainty from data repair is found by assuming a 20% uncertainty on the wind speed change from source to destination. With a 2% wind speed difference (from 120 to 150 m), this results in an uncertainty of 0.4% on wind speed of the synthesized data. At 150 m the vertically synthesized data contribute 0.4% of the dataset at Lot 1 and 0.7% at Lot 2. Resulting vertical uncertainty is 0.002% at Lot 1 and 0.003% at Lot 2.

Horizontally at 150 m, a linear regression method is used to transfer data between the LiDARs. From section 6.1.2 it is found that an MCP (Measure-Correlate-Predict) transformation based on 2 year of concurrent data may be estimated to 1.3% uncertainty. Horizontally synthesized data contribute 11.3% of the dataset at Lot 1, resulting in an uncertainty of 0.15%, while at Lot 2 the horizontally synthesized data contribute 5.9% of the dataset, resulting on an uncertainty of 0.08%.

Combined, vertical and horizontal data repair contribute 0.15% uncertainty at Lot 1 and 0.08% uncertainty at Lot 2 at 150 m.

As multiple buoys have been deployed at each of the lots, the measurement uncertainty is a combination of the buoys used at each lot. This is presented in Table 13 with a contribution from data repair uncertainty.



Table 13. Wind speed measurement uncertainty at 150 m ASL.

LOT	BUOYS	AVERAGE MEASUREMENT UNCERTAINTY	DATA REPAIR UNCERTAINTY	TOTAL MEASUREMENT UNCERTAINTY
<b>Lot 1</b>	WS170, WS191	3.16%	0.15%	3.17%
<b>Lot 2</b>	WS170, WS181	3.03%	0.08%	3.03%

---



## 4 Reference Data

The mesoscale data used for the revalidation are the same as use in the main report. Only difference is that all datasets are extended to include data from the year 2023.



## 5 Long-term Correction

### 5.1 Review of Reference Data

#### 5.1.1 Long-term Consistency

Compared to the reference data used for the main report, data from 2023 are included in the reference data dataset.

However, repeating the analysis described in the main report shows that both a 20-year period from 2004 to 2023 and a 21-year period from 2003 to 2024 results in a similar or not more consistent dataset. A 21-year period does result in higher Mann-Kendall test values, but the resulting wind speed is unchanged.

As the 2003 to 2022 period was found to be suitably consistent and representative of long-term conditions, this period continues to be the reference period for long-term conditions on the site.

2023 data from reference as well as the buoys are included, however, to generate transfer functions for long-term correction.

#### 5.1.2 Selection of Reference Data and Reference Period

The decision on reference data choice from the main report remains valid and 20 years of EMD-WRF data from the position 1 and 2 (Lot 1 and Lot 2) spanning the period 2003 to 2022 continue to be the reference dataset.

### 5.2 Correlation between Onsite and Reference Data

#### 5.2.1 Wind Speed and Energy Correlation

The concurrent period of LiDAR data and EMD-WRF data is 24 months (15/11/2021 to 15/11/2023).

The correlation of the wind speed between LiDAR measurements and EMD-WRF data has not significantly changed with the addition of an extra year to the datasets (Table 14).

Conclusions on correlation are unchanged.



Table 14. Correlation coefficient *r* between the reference data (EMD-WRF, 150 m) and the onsite floating LiDAR data at 150 m ASL. Comparison between 1 year data reported in the main report and the addition of a second year of data.

REF: EMD-WRF	LOT 1		LOT 2	
CONCURRENT PERIOD	1 YEAR	2 YEARS	1 YEAR	2 YEARS
Wind Speed Correlation, <i>r</i> [%] hourly	94.4	95.9	95.2	95.8
Wind Energy Correlation, <i>r</i> [%] monthly	99.6	99.5	99.4	99.4

### 5.2.2 Wind Direction Correlation

The comparison between measured and reference wind direction distribution continue to show a good match and conclusion are unchanged from the main report (Figure 8).

The 2 years of concurrent period is now very close to the long-term direction distribution (Figure 9).

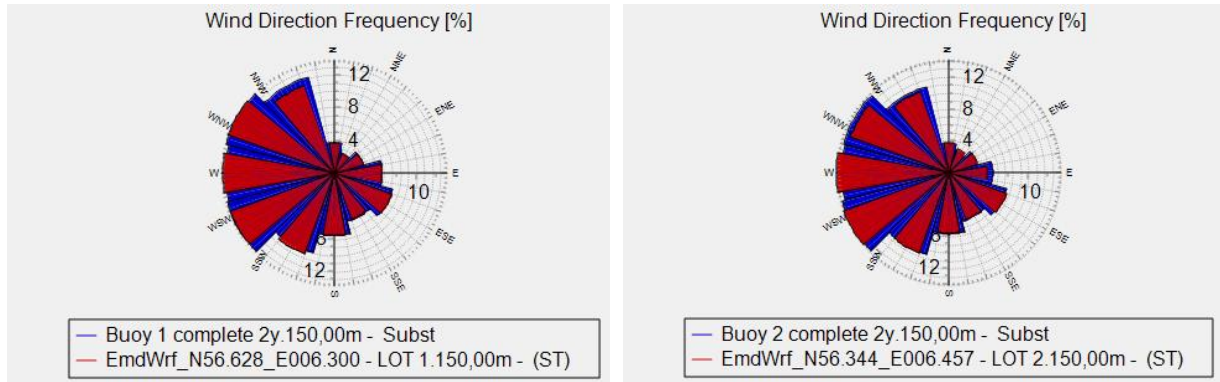


Figure 8. Wind direction roses for the concurrent period of LIDAR (blue) and EMD-WRF (red) data. Left: Lot 1, right: Lot 2.



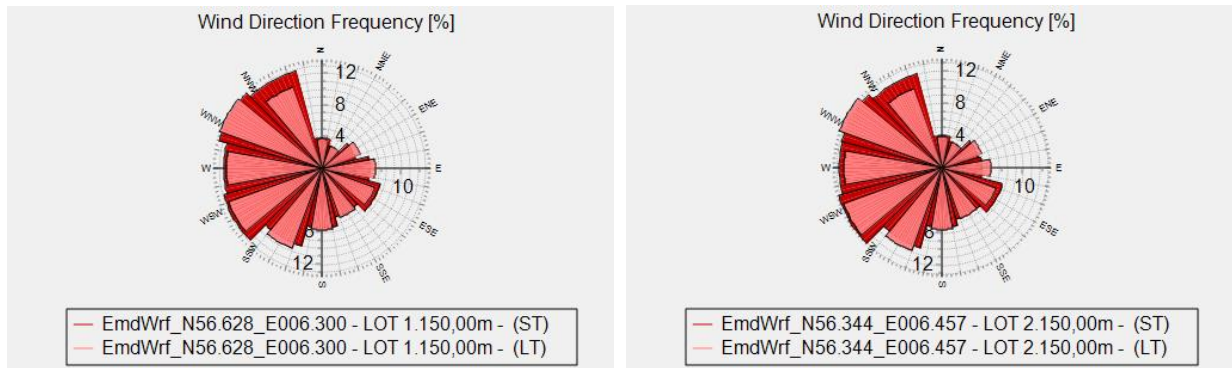


Figure 9. Wind direction roses for EMD-WRF data. Deep red represents the entire long-term period, light red represents the period concurrent with LIDAR measurements. Left: Concurrent period with Lot 1, right: Concurrent period with Lot 2.

### 5.2.3 Long-term Correction and Validation

The KPIs for the long-term correction have slightly improved with the addition of a second year of data. The relative difference between different MCP methodologies is unchanged.

The matrix correction method continues to be the preferred method for long-term correction.

A comparison of KPIs between 1 year and 2 years on concurrent data is presented in Table 15 and Table 16.

Please note, that the correlation and transfer functions are based on a reference dataset that includes the year 2023, but that the resulting long-term corrected dataset excludes 2023.

The long-term corrected wind speed for Lot 1 has only marginally changed from 10.83 m/s at 150 m height to 10.85 m/s.

The long-term corrected wind speed for Lot 2 has changed from 10.71 m/s at 150 m height to 10.77 m/s.



Table 15. Prediction test using a 24-hour slicing method and a self-test using the entire concurrent period. The parameter presented is over-prediction of production in percent. (Lot 1 - 150 m data). Comparison between 1 year concurrent data reported in the main report and 2 years of concurrent data.

REFERENCE: EMD-WRF LOCAL DATA: LOT 1, 150M	MATRIX	
	1 year	2 years
24-hour slicing test, % production	-0.29	-0.08
Concurrent period test, % production	0.37	0.1
Kolmogorov-Smirnov test, %	1.39	0.67
Predicted long-term mean wind speed, m/s	10.83	10.85

Table 16. Prediction test using a 24-hour slicing method and a self-test using the entire concurrent period. The parameter presented is over-prediction of production in percent. (Lot 2 - 150 m data). Comparison between 1 year concurrent data reported in the main report and 2 years of concurrent data.

REFERENCE: EMD-WRF LOCAL DATA: LOT 2, 150M	MATRIX	
	1 year	2 years
24-hour slicing test, % production	1.12	0.36
Concurrent period test, % production	0.16	0.10
Kolmogorov-Smirnov test, %	1.44	0.57
Predicted long-term mean wind speed, m/s	10.71	10.77

The artificially generated time series (30 m to 270 m) represent the long-term wind climate and the 150 m results are presented in the following.



## 5.3 Long-Term Wind Climate

### 5.3.1 Long-term Wind Speed Distribution

The long-term wind speeds for the two buoys in North Sea Energy Island OWF are summarized in the following tables. A detailed breakdown of the Weibull parameters can be found in Appendix C.

Table 17. Weibull parameters of the long-term wind data used, Lot 1.

LOT 1	PERIOD [Y]	ARITHMETIC MEAN WIND SPEEDS [M/S]	WEIBULL MEAN [M/S]	WEIBULL - A PARAMETER [M/S]	WEIBULL - K PARAMETER
30	20	9.43	9.44	10.65	2.333
40	20	9.66	9.68	10.93	2.356
60	20	10.02	10.06	11.35	2.379
90	20	10.39	10.46	11.79	2.398
100	20	10.49	10.57	11.93	2.413
120	20	10.66	10.76	12.14	2.412
150	20	10.85	10.94	12.35	2.355
180	20	11.00	11.06	12.49	2.297
200	20	11.10	11.15	12.58	2.272
240	20	11.24	11.26	12.71	2.216
270	20	11.33	11.35	12.81	2.194

*Table 18. Weibull parameters of the long-term wind data used, Lot 2.*

LOT 2	PERIOD [Y]	ARITHMETIC MEAN WIND SPEEDS [M/S]	WEIBULL MEAN [M/S]	WEIBULL - A PARAMETER [M/S]	WEIBULL - K PARAMETER
30	20	9.35	9.36	10.56	2.314
40	20	9.56	9.58	10.81	2.333
60	20	9.92	9.96	11.24	2.362
90	20	10.30	10.38	11.71	2.393
100	20	10.39	10.48	11.82	2.394
120	20	10.56	10.66	12.03	2.394
150	20	10.91	10.97	12.38	2.277
180	20	11.01	11.06	12.48	2.255
200	20	11.16	11.19	12.63	2.212
240	20	11.23	11.26	12.71	2.186
270	20	10.77	10.86	12.26	2.348

### 5.3.2 Long-term Wind Direction Distribution

The long-term frequency and energy distribution for the long-term corrected LiDAR data from Lot 1 and Lot 2 at 150 m ASL indicate a main wind direction from southwest to northwest.

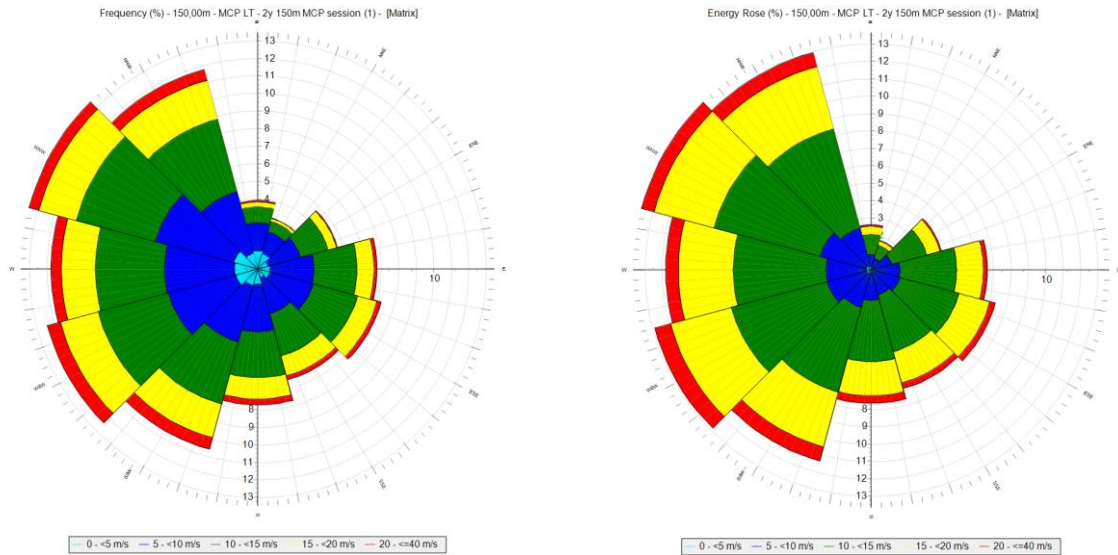


Figure 10. Left: Wind direction distribution of long-term corrected LiDAR data (Lot 1) at 150 m. Right: Energy distribution of long-term corrected LiDAR data (Lot 1) at 150 m. Both are divided in wind speed intervals.

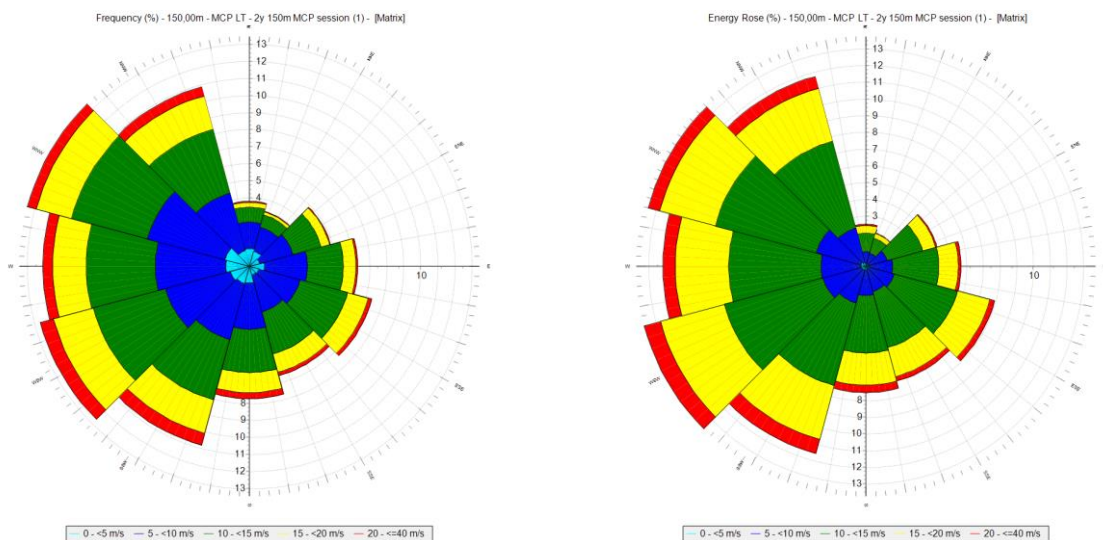


Figure 11. Left: Wind direction distribution of long-term corrected LiDAR data (Lot 2) at 150 m. Right: Energy distribution of long-term corrected LiDAR data (Lot 2) at 150 m. Both are divided in wind speed intervals.



### 5.3.3 Long-term Diurnal Variations

The diurnal long-term wind speed is comparable to the observed diurnal wind speed. Figure 12 shows the diurnal variations for Lot 2. The pattern is identical for the two buoys. The variation is similar, and the long-term diurnal variation matches well what was found using 1 year of measurements.

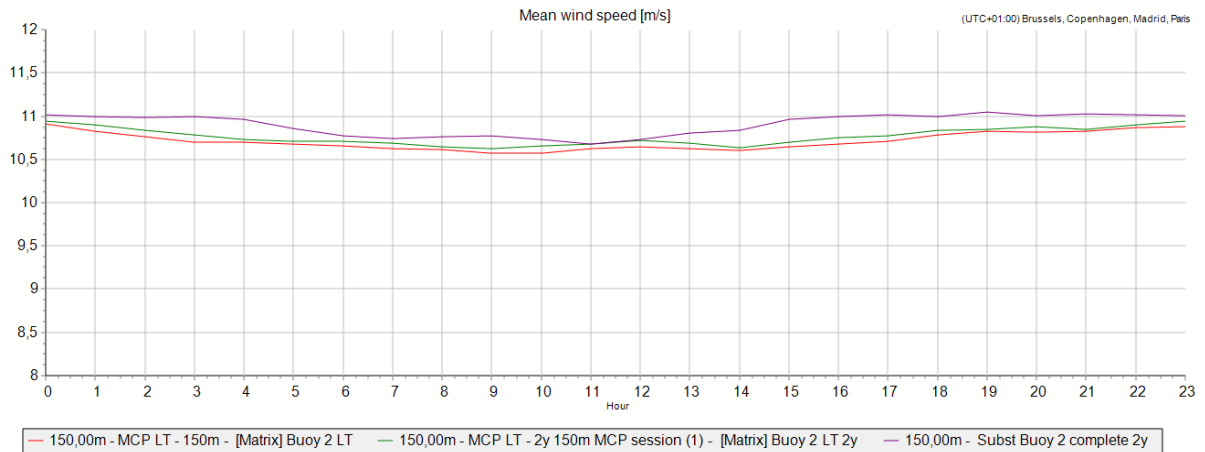


Figure 12. Diurnal wind speed observed (purple), long-term corrected with 1 year of observations (red) and long-term corrected after 2 years of observations, Lot 2.

### 5.3.4 Long-term Seasonal Variations

The long-term seasonal variation of wind speed at 150 m is presented in Figure 13 for Lot 2 and compared to the actual 2 years of observation. Whereas the seasonal variation of the measurements is based on a single year, the seasonal variation of the long-term timeseries is an average of 20 years of data and therefore predictably smoother. The long-term derived seasonal variation based on 2 years of measurements is identical to the seasonal variation presented in the main report [1]. This pattern is identical on Lot 1.

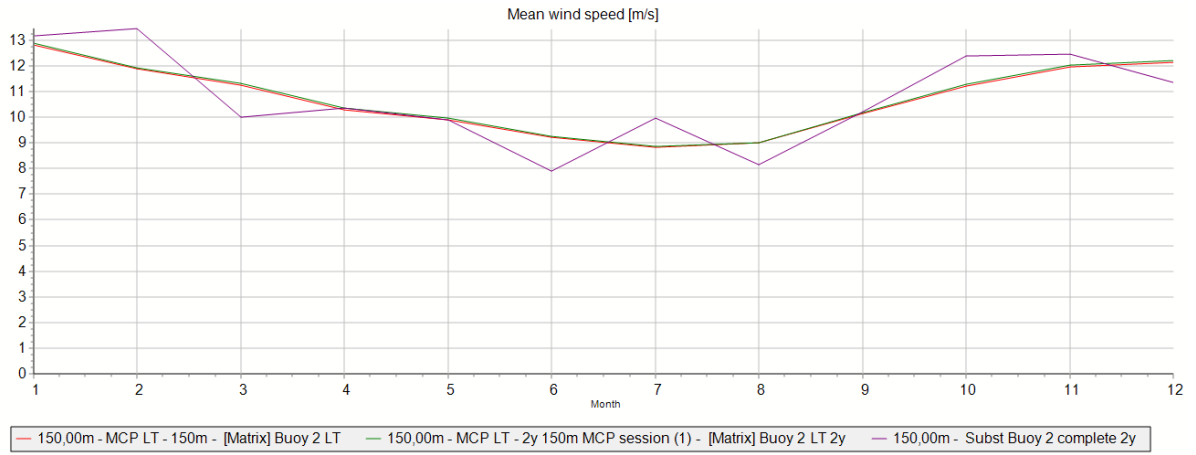


Figure 13. Seasonal variation of long-term corrected dataset (red) and observed dataset (purple) at 150 m, Lot 2. The long-term seasonal variation based on 1 year of measurements (green) is identical to the new seasonal variation.



## 6 Comparison of Wind Models

The primary wind model for Energy Island North Sea has been updated with a second year of LiDAR measurements at Lot 1 and Lot 2.

After data repair, the datasets include an almost 3-month gap from mid-March to mid-June 2023.

The datasets have been long-term corrected, resulting in a 20-year time series for each of the two positions. The long-term corrected wind models are labelled “Primary mode 2y” as opposed to the reported Primary model in the main report, which is henceforth labelled “Primary model 1y”.

The wind speed of Primary mode 2y for Lot 1 has a marginally higher wind speed than Primary model 1y (Table 19 and Figure 14) and an almost identical directional distribution (Figure 16).

The wind speed of Primary mode 2y for Lot 2 has also an almost identical wind speed and wind speed distribution to the Primary model 1y (Table 20 and Figure 15) and an almost identical directional distribution (Figure 17).

Compared to secondary models based on FINO3, Thor and Harald B data, the difference between Primary model 1y and Primary model 2y are well within the range of those models (Table 19 and Table 20) and especially with the model based on Thor data, there is a very good match.

**The decision is to replace the Primary model 1y with the Primary model 2y as the final primary model for Energy Island North Sea on both lots.**

Table 19. Comparison of model results at Position 1, Lot 1 150 m ASL.

	PRIMARY MODEL, 1 YEAR	PRIMARY MODEL, 2 YEARS	TRANSFERRED THOR MODEL	TRANSFERRED FINO3 MODEL	TRANSFERRED HARALD B MODEL
Wind speed [m/s]	10.83	10.85	10.85	10.97	11.23
Wind speed relative to primary model	99.8%		100.0%	101.1%	103.5%





Table 20. Comparison of model results at Position 2, Lot 2 150 m ASL.

	PRIMARY MODEL, 1 YEAR	PRIMARY MODEL, 2 YEARS	TRANSFERRED THOR MODEL	TRANSFERRED FINO3 MODEL	TRANSFERRED HARALD B MODEL
<b>Wind speed [m/s]</b>	10.71	10.77	10.75	10.86	11.12
<b>Wind speed relative to primary model</b>	99.4%		99.8%	100.8%	103.2%

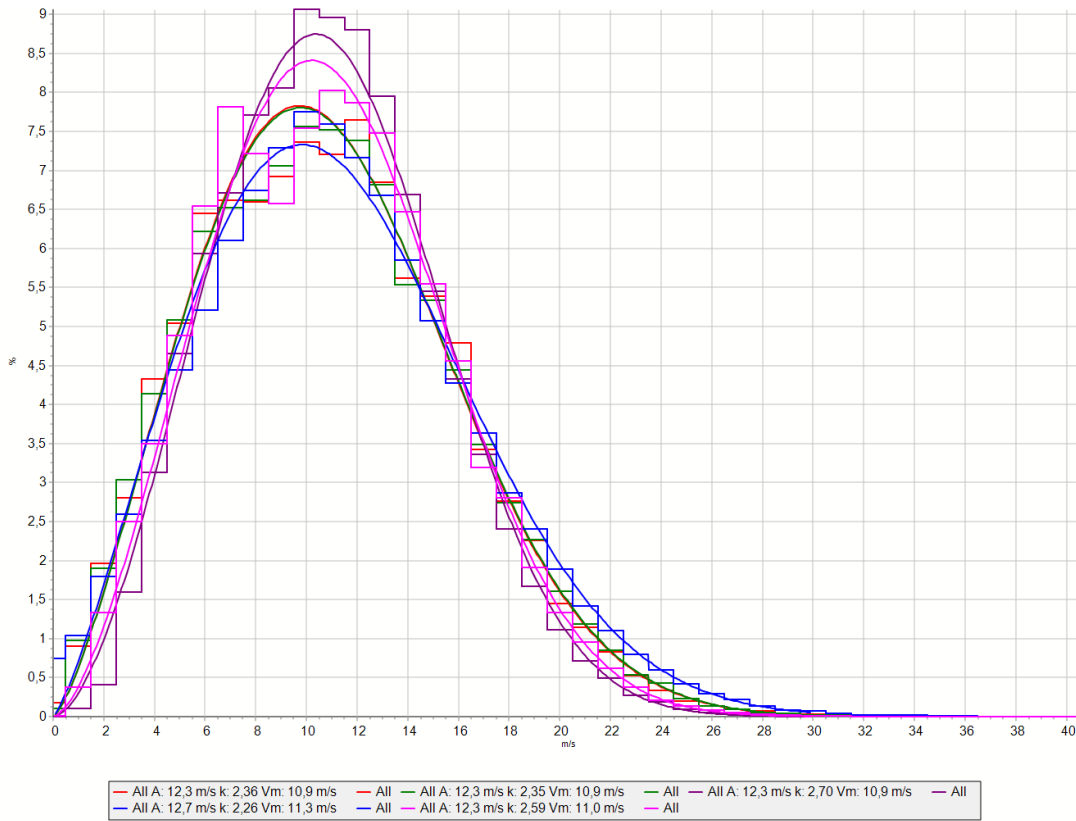


Figure 14. Wind speed probability function for the five datasets at Position 1, Lot 1. Primary model based on 2 years (green), Primary model based on 1 year (red), Thor model (pink), Fino3 (purple) and Harald B (blue).

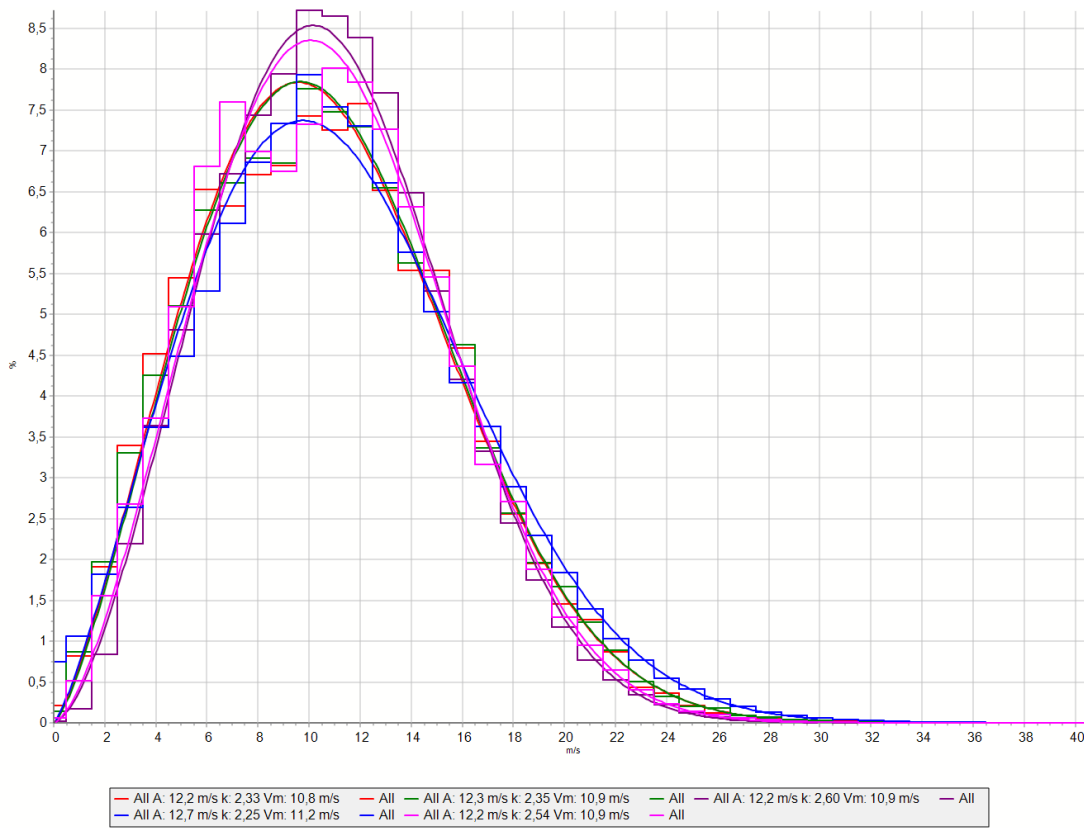


Figure 15. Wind speed probability function for the five datasets at Position 2, Lot 2. Primary model based on 2 years (green), Primary model based on 1 year (red), Thor model (pink), Fino3 (purple) and Harald B (blue).

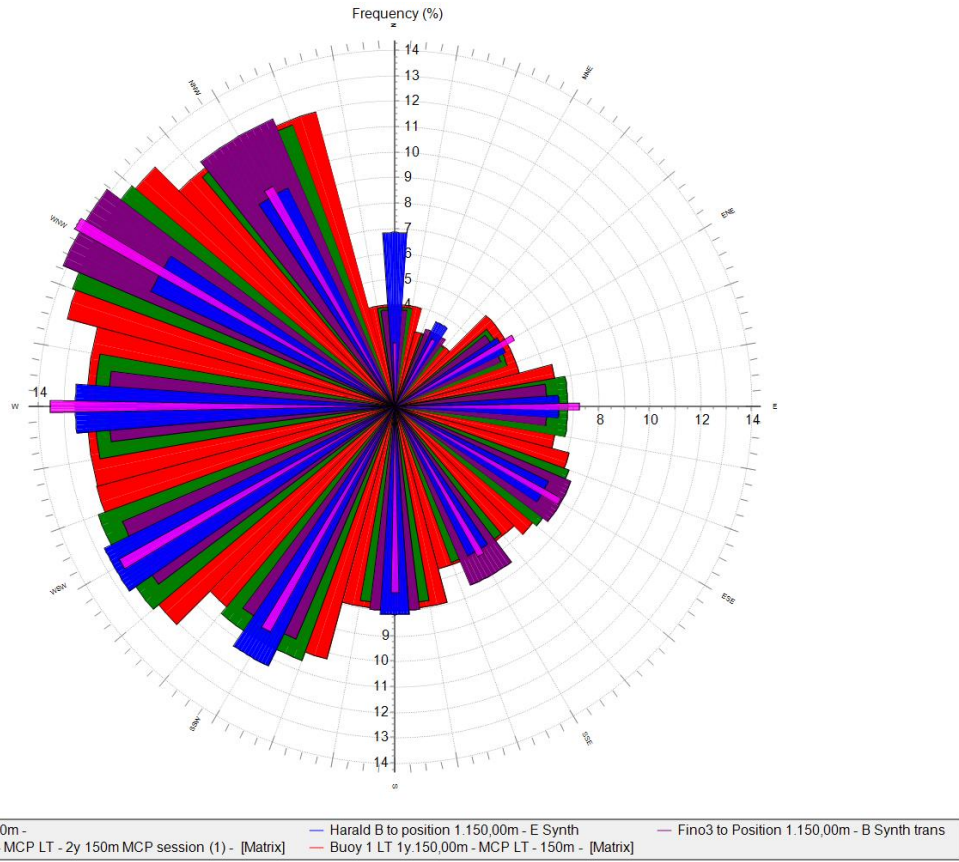


Figure 16. Directional distribution of the five long-term wind models at Position 1, Lot 1. Primary model based on 2 years (green), Primary model based on 1 year (red), Thor model (pink), Fino3 (purple) and Harald B (blue).

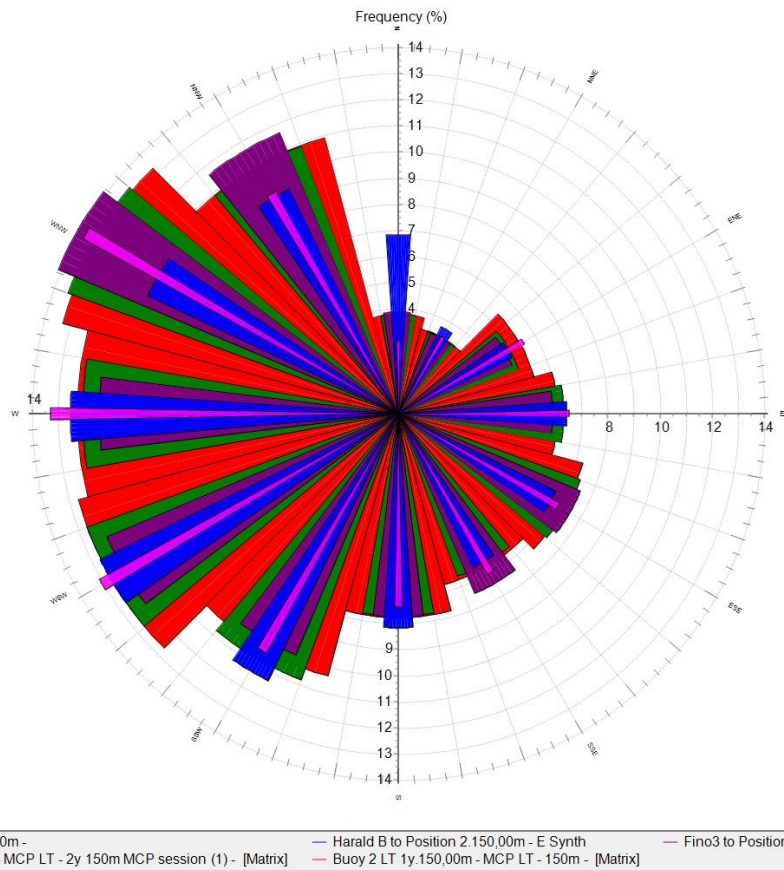


Figure 17. Directional distribution of the five long-term wind models at Position 2, Lot 2. Primary model based on 2 years (green), Primary model based on 1 year (red), Thor model (pink), Fino3 (purple) and Harald B (blue).



## 6.1 Uncertainty of Primary Wind Model

### 6.1.1 Measurement Uncertainty

Uncertainty on measurements was discussed in section 3.6. The results are summarized in Table 21.

Table 21. Measurement uncertainty.

BUOY	TOTAL MEASUREMENT UNCERTAINTY
Lot 1	3.17%
Lot 2	3.03%

---

### 6.1.2 Long-term Correction Uncertainty

The long-term correction uncertainty consists of components with very low uncertainty (correlation, reference consistency, reference period length) and one component with moderate uncertainty, which is the measurement period of 2 years. This is therefore the dominant uncertainty with very minor contributions from other components.

Based on [19], the combined long-term correction uncertainty of a 1-year period will range between 1.5% and 4% and for a 2-year period between 1% and 3%.

For the long-term correction, three different references (EMD-WRF, ERA5 and NORA3) were tested using four different methods in a sensitivity analysis. The standard deviation on predicted wind speed of these was 0.4%. The references are, however, not entirely independent from each other which make this standard deviation unreliable. Instead, the range from minimum to maximum resulting wind speed can be used as an indicator of the uncertainty. This range is 1.2% for Lot 1 and 1.4% for Lot 2.

We, therefore, consider an uncertainty on long-term correction of 1.3% a reasonable value for long-term correction of the primary data from the buoys.

### 6.1.3 Very Long-term Uncertainty

The future climate uncertainty is the potential difference in mean wind speed of the next 20 years from the past period considered in the wind study. Northern Europe is subject to longwave oscillations meaning that a 20-year operation period can be quite different from the very long-term average. As suggested by [19], we estimate that for a 20-year dataset in this region this uncertainty is 1.5 % on wind speed.

This is supported by [20] who indicate 20-year multidecadal variability amplitude of the North Sea on yield around 3%. Given a yield to wind speed ratio near unity, this translates well to wind speed and results in an uncertainty of wind speed of 1.5%.



### 6.1.4 Year-to-year Variability

Based on the annual variation on the EMD-WRF data the inter-annual variability is 3.3% at Lot 1 and Lot 2. Over a 20-year lifetime this uncertainty is reduced to 0.62%.

### 6.1.5 Total Uncertainty

The uncertainty components are combined to a total wind speed uncertainty. A total is given for 1- and 20-year period.

The results from the secondary data provide a standard deviation on the four reported wind speed results (FINO3, Harald B, Thor and the buoy) for each buoy at 1.7% at Lot 1 and 1.9% at Lot 2. Due to the horizontal extrapolation distortion and in some cases poorer measurement uncertainty than at the buoys, the uncertainty on the transferred secondary data should be considered higher than on the local data, however the standard deviation of the results from the four different models remain within the uncertain of the total wind speed uncertainty of the primary model (Table 22) and therefore confirm the primary model.

Table 22. Combined uncertainty on long-term wind data. Uncertainty given as one standard deviation wind speed.

WIND DATA UNCERTAINTY	LOT 1		LOT 2	
	1 YEAR	20 YEARS	1 YEAR	20 YEARS
Measurement uncertainty	3.17%	3.17%	3.03%	3.03%
Long-term correction uncertainty	1.3%	1.3%	1.3%	1.3%
Very long-term uncertainty	1.5%	1.5%	1.5%	1.5%
Annual variability	3.3%	0.74%	3.3%	0.74%
<b>Total</b>	<b>4.99%</b>	<b>3.81%</b>	<b>4.90%</b>	<b>3.70%</b>

## 7 Flow Modelling

### 7.1 Wind Resource Map

The wind resource map from the main report has been recalibrated with Primary model 2y.

The resulting recalibrated wind resource map is presented in Figure 18 and is provided as a deliverable.

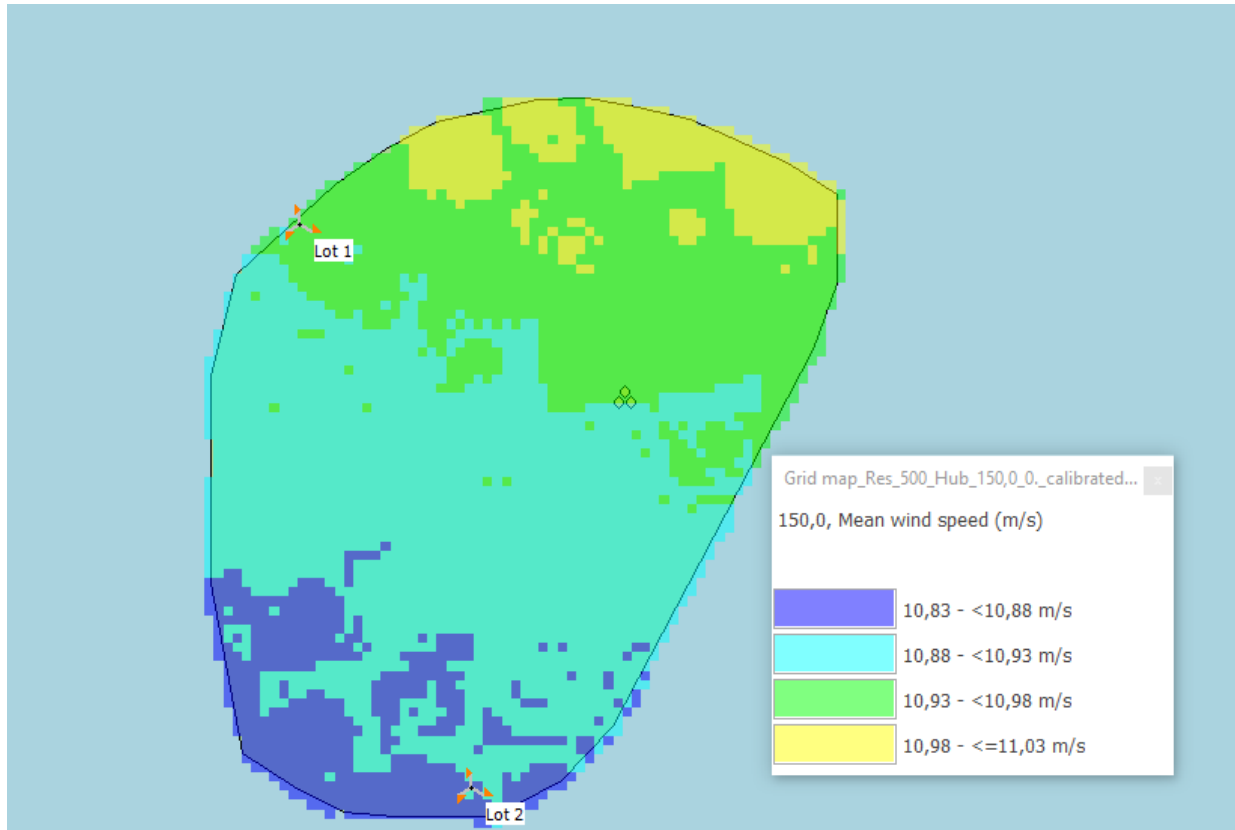


Figure 18. Wind resource map for the Energy Island North Sea OWF.

## 7.2 Wind Resource Model for Position 3

This site parameter assessment includes data for a third position beside the two measurement locations. The location of Position 3 was selected as the most remote location from Lot 1 and Lot 2 within the OWF. Coordinates for Position 3 are presented in Table 23. The location is 29 km east of Lot 1 and 37 km northeast of Lot 2.

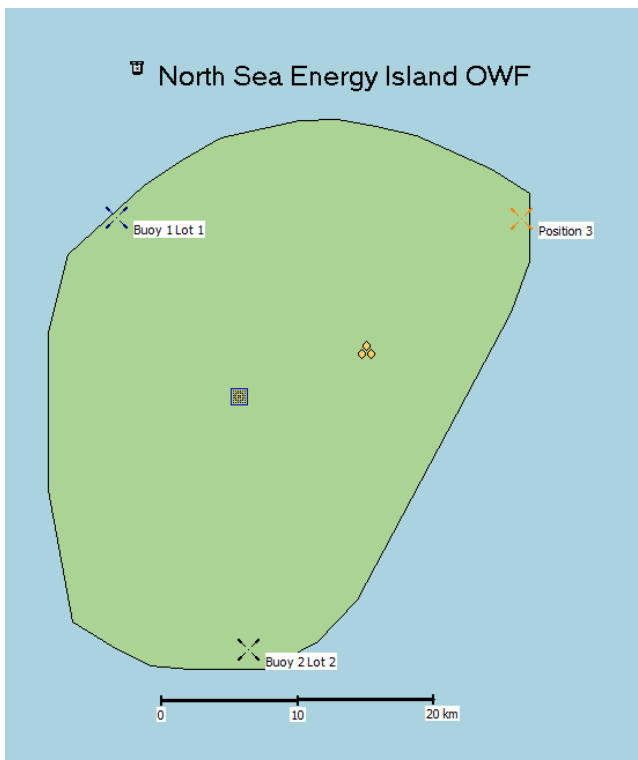


Figure 19. Location of measurement points and the selected Position 3.

Table 23. Coordinates for Position 3.

	UTM WGS84, ZONE 32		GEOGRAPHICAL COORDINATES WGS84	
Position 3	363,889	6,278,127	6.7813°	56.6275°

For Position 3 a long-term time series has been produced for 150 m ASL.

This is achieved through the gradient file method available in windPRO. With this method observed data are moved around the site using a wind resource map. From the wind resource map, the Weibull A parameter of the Weibull distribution is picked up from the location of the observed data and the prediction location and the ratio is applied to the observed time series. A specific ratio is found for each of 12 direction sectors. No change is made to the wind direction data.





For Position 3 the resulting time series at 150 m was generated using the long-term corrected time series for Lot 2 at 150 m (Primary model 2y) and the recalibrated wind resource map.

In principle, with this method, a time series can be extracted for any location on the site using the wind data time series and the gradient file. Both are included as deliverables.

The time series for Position 3 includes wind speed and wind direction for 20 years in an hourly resolution.

The arithmetic mean wind speed at Position 3 is 10.88 m/s. The Weibull distributions are presented in Table 24. Details can be found in Appendix C.

*Table 24. Weibull parameters of the long-term wind data, Position 3.*

POSITION 3	PERIOD [Y]	ARITHMETIC MEAN WIND SPEEDS [M/S]	WEIBULL MEAN [M/S]	WEIBULL - A PARAMETER [M/S]	WEIBULL - K PARAMETER
<b>150 m</b>	20	10.88	10.97	12.38	2.356



## 8 Siting Parameters

This chapter outlines the requested siting parameters for assessment of structural integrity of wind turbines in accordance with the relevant design standards: IEC 61400-1 Ed. 4 [2], IEC 61400-3-1 Ed. 1 [3], IEC 61400-15-1 CD [7], DS 472 Ed 2. [6], and EN1991-1-4 including the Danish Annex DK NA EN1991-1-4 [4] [5].

For siting parameters that require turbine specific information, the following has been assumed.

Table 25. Turbine specific information used for siting parameters.

TURBINE SPECIFICATION	VALUE
Hub height	150 m
Rotor diameter	240 m
Cut-in wind speed	3 m/s
Cut-out wind speed	25 m/s
Wind turbine class	II

### 8.1 Normal Wind Conditions

Normal wind conditions have been derived in accordance with IEC 61400-3-1 Ed. 1 [3], IEC 61400-1 Ed. 4 [2] and IEC 61400-15-1 CD [7]. All parameters except for the wind speed distribution have been estimated as omnidirectional characteristic values. This is in line with the IEC 61400-3-1, which allows omnidirectional values to be considered for offshore sites that are far away from the coast where the environment generally exhibits little directional variation.

Due to the site location being offshore, the terrain is classified as “not complex” (terrain complexity factor is 1.0) and the wind flow is assumed without any inclination (flow inclination 0°).

#### 8.1.1 Wind Speed Distribution

The 10-minute mean wind speed probability distribution at hub height is modelled by a Weibull distribution for each direction [2]. The distributions are estimated based on long-term corrected data from the LiDARs. Note that the temporal resolution of this data is 1 hour, but according to IEC 61400-3-1 the long-term probability distribution of mean wind speed may be assumed to be independent of averaging periods between 10 minutes and 3 hours. The results are summarized in the Table 26 to Table 28 below. Mean wind speed is derived from the Weibull distribution. Details can be found in Appendix C.



Table 26. Weibull distribution parameters based on long-term corrected LIDAR data at 150 m ASL, Position 1 – Lot 1. Wind speeds are derived from the Weibull distribution.

POSITION 1 – LOT 1 SECTOR	A PARAMETER [M/S]	K PARAMETER [-]	FREQUENCY [%]	MEAN WIND SPEED [M/S]
<b>Mean</b>	12.35	2.355	100.00	10.94
0-N	9.44	1.826	3.90	8.39
1-NNE	8.70	1.838	3.01	7.73
2-ENE	11.12	2.493	4.71	9.86
3-E	11.94	2.539	6.80	10.60
4-ESE	12.28	2.525	7.27	10.90
5-SSE	12.80	2.686	6.53	11.38
6-S	12.27	2.352	7.74	10.87
7-SSW	13.13	2.419	10.62	11.64
8-WSW	12.90	2.334	12.40	11.43
9-W	12.47	2.326	11.76	11.05
10-WNW	12.43	2.417	13.48	11.02
11-NNW	13.20	2.570	11.77	11.72



Table 27. Weibull distribution parameters based on long-term corrected LIDAR data at 150 m ASL, Position 2 – Lot 2. Wind speeds are derived from the Weibull distribution.

POSITION 2 – LOT 2 SECTOR	A PARAMETER [M/S]	K PARAMETER [-]	FREQUENCY [%]	MEAN WIND SPEED [M/S]
<b>Mean</b>	12.26	2.348	100.00	10.86
0-N	9.32	1.830	3.81	8.29
1-NNE	8.92	1.962	3.33	7.91
2-ENE	11.09	2.544	4.91	9.84
3-E	11.20	2.387	6.33	9.93
4-ESE	12.57	2.744	7.40	11.19
5-SSE	12.57	2.713	6.61	11.18
6-S	12.12	2.267	7.74	10.73
7-SSW	13.12	2.373	10.82	11.63
8-WSW	13.17	2.430	12.66	11.68
9-W	12.39	2.321	12.08	10.98
10-WNW	12.26	2.386	13.44	10.86
11-NNW	12.96	2.505	10.87	11.50



Table 28. Weibull distribution parameters based on long-term corrected LIDAR data at 150 m ASL, Position 3. Wind speeds are derived from the Weibull distribution.

POSITION 3 SECTOR	A PARAMETER [M/S]	K PARAMETER [-]	FREQUENCY [%]	MEAN WIND SPEED [M/S]
<b>Mean</b>	12.38	2.356	100.00	10.97
0-N	9.20	1.830	3.90	8.18
1-NNE	9.02	1.811	3.01	8.02
2-ENE	11.47	2.459	4.71	10.17
3-E	11.93	2.538	6.80	10.59
4-ESE	12.21	2.519	7.27	10.84
5-SSE	12.85	2.681	6.53	11.42
6-S	12.38	2.347	7.74	10.97
7-SSW	13.04	2.426	10.62	11.56
8-WSW	12.88	2.336	12.40	11.41
9-W	12.49	2.323	11.76	11.06
10-WNW	12.54	2.416	13.48	11.12
11-NNW	13.23	2.573	11.77	11.75

### 8.1.2 Normal Wind Profile (NWP)

The site-specific normal wind profile is characterised by the mean wind shear power law coefficient ( $\alpha_c$ ). According to IEC 61400-1 Ed. 4 [2] the site-specific omnidirectional characteristic wind shear should be evaluated as the energy-weighted average of the sector-wise values.

In the main report [1] the power coefficient describing the shear is presented based on 1 year of measurements. It is also presented, how shear is a function of season. With 3 months of data missing on both Lot 1 and Lot 2, the second year of data includes a seasonal bias. The bias is cancelled by calculating the shear in 2 months bins. For the March-April bin and for the May-June bin, the shear is based only the first year of data, while for the remaining bins, shear is based on data from both years. The monthly shear is presented in Table 29.



For Position 3, the Position 1 shear can be assumed.

*Table 29. Site specific omnidirectional wind shear exponent by season. Shear values in italics are based on first year of measurements.*

POSITION	WIND SHEAR POWER LAW EXPONENT [-]	JAN-FEB	MAR-APR	MAY-JUN	JUL-AUG	SEP-OCT	NOV-DEC	YEAR
Position 1 – Lot 1	Hub height range 120 m to 180 m	0.110	<i>0.082</i>	<i>0.076</i>	0.060	0.070	0.060	<b>0.076</b>
	Rotor range 30m to 270m	0.095	<i>0.101</i>	<i>0.096</i>	0.081	0.077	0.060	<b>0.085</b>
Position 2 – Lot 2	Hub height range 120 m to 180 m	0.112	<i>0.082</i>	<i>0.081</i>	0.066	0.075	0.051	<b>0.078</b>
	Rotor range 30m to 270m	0.093	<i>0.098</i>	<i>0.104</i>	0.083	0.076	0.056	<b>0.085</b>

*Table 30. Site specific omnidirectional wind shear exponent.*

WIND SHEAR POWER LAW EXPONENT [-]	POSITION 1 – Lot 1	POSITION 2 – Lot 2
Hub height range 120 m to 180 m	0.076	0.078
Rotor range 30m to 270m	0.085	0.085

### 8.1.3 Normal Turbulence Model (NTM)

#### TURBULENCE MODEL AND FIT

The main report presents a turbulence model for the Energy Island North Seas OWF based on FINO3 measurements. The addition of a second year of onsite LiDAR data has no impact on the turbulence model.



### 8.1.4 Air Density

Air density during normal wind conditions is characterised by its average value at hub height, which is here set to 150 m.

Based on long-term mean temperature found in section 8.1.5, air density is calculated at 150 m elevation assuming standard pressure at this height of 996 hPa. The resulting air density is 1.229 kg/m<sup>3</sup> for both Position 1 and 2. This is used as primary result.

Mean air density (150 m)	1.23 kg/m <sup>3</sup>
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### 8.1.5 Air Temperature

Air temperature has been measured at Lot 1 (Position 1) and Lot 2 (Position 2) for 2 years. The average temperature measured during that period was 10.5°C at Lot 1 and 10.6°C at Lot 2. The temperature has been long-term corrected with EMD-WRF Europe+ data from the buoy locations to 9.9°C on lot 1 and 10.0°C on Lot 2. These temperatures conform with temperatures at surrounding meteorological stations.

The temperature at 150 m has been found using the atmospheric lapse rate of -6.43 K/km derived from the EMD-WRF Europe+ data. The result is 9.0°C at both lots at 150m ASL.

The EMD-WRF timeseries at 100 m has been calibrated to represent the LiDAR position at 150m height by applying and offset 0.6°C on Lot 1 and 0.5°C on Lot 2 (difference between EMD-WRF Europe+ and measurements). The resulting timeseries has then been used to estimate how many hours the temperature is outside the normal and extreme temperature ranges defined in the IEC 61400-3-1 as -10°C to 30°C and -15°C to 40°C, respectively. The results are summarized in Table 31 and Table 32. The probability of temperatures falling outside the defined ranges is assessed by Gaussian distributions fitted to either the 10% highest or lowest temperatures [13].

For Position 3, temperature at Position 1 can be assumed.

*Table 31. Temperature assessment at Position 1 – Lot 1 (150m).*

CHECK	TMIN [°C]	TMAX [°C]	< TMIN [H/YEAR]	> TMAX [H/YEAR]	TOTAL HOURS OUTSIDE RANGE [H/YEAR]
Normal range	-10.0	30.0	0.100	0.022	0.122
Extreme range	-15.0	40.0	0.000	0.000	0.000
Mean air temperature					9.0°C
Standard deviation air temperature					5.0°C
Maximum temperature					27.2°C
Minimum temperature					-6.8°C

*Table 32. Temperature assessment at Position 2 – Lot 2 (150m).*

CHECK	TMIN [°C]	TMAX [°C]	< TMIN [H/YEAR]	> TMAX [H/YEAR]	TOTAL HOURS OUTSIDE RANGE [H/YEAR]
Normal range	-10.0	30.0	0.174	0.032	0.207
Extreme range	-15.0	40.0	0.001	0.000	0.001
Mean air temperature					9.0°C
Standard deviation air temperature					5.0°C
Maximum temperature					29.2°C
Minimum temperature					-7.1°C

### 8.1.6 Extreme Wind Speed Model (EWM)

The extreme wind model is unchanged compared to the main report [1].

Both Lot 1 and Lot 2 datasets contain an almost 3-month gap during the second year of measurements. As the gap is during spring which normally has a low concentration of extreme wind speeds, the Peak Over Threshold (POT) will not be biased when updating the result to 2 years of data.

This is presented in Table 34.





The preferred method remains the Danish Standard with results presented in Table 33.

Table 33. Extreme wind speed results (150 m).

TIME HORIZON	EXTREME WIND SPEED [M/S]
1-year	29.1
50-year	51.8

Table 34. Extreme wind speed alternative results using different methods (150 m).

EXTREME WIND METHOD	50-YEAR EXTREME WIND SPEED [M/S]
EN1991-1-4 + WEng + DS472	51.8 (main result)
AM Mesoscale (20y) + Spectral correction (theoretical)	42.2 (WS170 & WS181)
AM Mesoscale (20y) + Spectral correction (site specific)	43.2 (WS170), 43.6 (WS181)
POT (N=20, $\Delta t_{\min}=4$ days) based on 2 years of data	42.5 (WS170), 43.3 (WS181)

### 8.1.7 Wind Shear at Extreme Wind Speed

The site-specific wind profile associated with extreme wind speed events has been estimated based on the on-site LiDAR data at Lot 1 and Lot 2. For the revalidation, the shear version wind speed plots at 150 m above sea level are extended to cover two years of data. The wind shear exponent is estimated for each time step and then averaged in 0.5 m/s bins. Notice the linear increase in shear from around 0.03 at 3 m/s, to 0.11 around 15 m/s. Above 15 m/s wind shear appear to drop but with noticeable scatter. Observed shear data are typically quite noisy as they are based on measurement across multiple heights and accumulate errors from multiple sources.

The conclusion from the main report of an extreme wind shear of 0.11 is still valid with comment that the value is likely between 0.075 and 0.125.

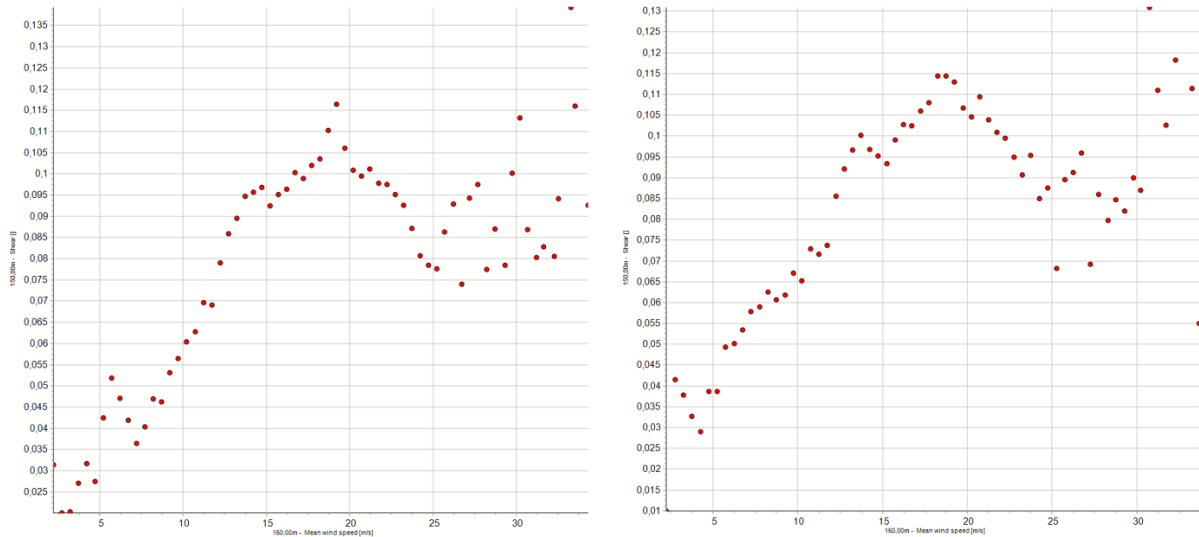


Figure 20. Observed wind shear versus wind speed (0.5 m/s bins) at the two North Sea Energy Island buoys, Lot 1 (right) and Lot 2 (left). For both buoys the wind shear clearly levels off at around 0.11 for wind speeds above ca. 15m/s. At lower wind speeds the wind shear increases linearly with wind speed.

Given these observations the expected wind shear at extreme wind speeds is summarized below.

<b>Expected wind shear at extreme wind speeds</b>	<b>0.11</b>
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### 8.1.8 Extreme Wind Shear (EWS)

To estimate the site-specific extreme wind shear, it is recommended to use equations (27) and (28) in section 6.3.3.7 of the IEC 61400-1 [2] with site-specific values for the ambient turbulence standard deviation together with the site-specific wind shear exponent.

### 8.1.9 Turbulence at Extreme Wind speed

The turbulence model is not based on site measurements, therefore turbulence at extreme wind speed is not changed from the main report [1].

### 8.1.10 Extreme Turbulence Model (ETM)

The extreme turbulence model is not based on site measurements; therefore, the extreme turbulence model is not changed from the main report [1].

### 8.1.11 Air Density for Extreme Wind

The air density for extreme wind conditions is found based on average temperature at high wind speed events. This is calculated as 1.24 kg/m<sup>3</sup> for both Position 1 and 2 and has not changed from the main



report. Alternatively, the air density for extreme wind conditions can be taken from GASP [21], which results in a value of 1.22 kg/m<sup>3</sup>.

It was decided to proceed with the air density for extreme wind speeds from the buoys.

<b>Air density for extreme wind speeds (150 m)</b>	<b>1.24 kg/m<sup>3</sup></b>
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## 8.2 Summary Table of Siting Parameters

The requested omnidirectional siting parameters are summarized in the table below.

Table 35. Summary table of siting parameters (150m).

Parameter	POSITION 1	POSITION 2	POSITION 3
Mean wind speed	10.94 m/s	10.86 m/s	10.97 m/s
Weibull distribution, A parameter (scale)	12.35 m/s	12.26 m/s	12.38 m/s
Weibull distribution, k parameter (shape)	2.36	2.35	2.36
Normal wind profile power law exponent	0.085	0.085	0.085
Turbulence intensity mean value ( $TI_{\mu}$ ) at a 10-min average wind speed of 15m/s*	5.1%	5.1%	5.1%
Turbulence intensity standard deviation ( $TI_{\sigma}$ ) at a 10-min average wind speed of 15m/s*	2.0%	2.0%	2.0%
Turbulence intensity 90% quantile at a 10-min average wind speed of 15m/s*	7.7%	7.7%	7.7%
Mean air density	1.23 kg/m <sup>3</sup>	1.23 kg/m <sup>3</sup>	1.23 kg/m <sup>3</sup>
Mean air temperature	9.0°C	9.0°C	9.0°C
50-year extreme wind speed	51.8 m/s	51.8 m/s	51.8 m/s
1-year extreme wind speed	29.1 m/s	29.1 m/s	29.1 m/s
Wind shear for extreme wind speed extrapolation	0.11	0.11	0.11
Characteristic turbulence intensity at 50-year extreme wind speed	13.0%	13.0%	13.0%
Air density for extreme wind	1.24 kg/m <sup>3</sup>	1.24 kg/m <sup>3</sup>	1.24 kg/m <sup>3</sup>

\*Turbulence values at other wind speeds can be found in Appendix D.



## 9 Data Package

EMD has submitted datasets in support of this study. These are as far as it is possible provided in accessible formats.

### 9.1 Raw Buoy Data

The raw data from the three buoys, WS170, WS181 and WS191 are provided as presented to EMD. These are the monthly data conforming to the description in this report.

The files are located in the folder Raw buoy data.

Four sets of data files are provided for each buoy. These the files used in this study:

- LiDAR buoy other parameters  
    Containing temperature data
- LiDAR buoy position data  
    Containing a time series record of the buoy location.
- LiDAR buoy wind parameters  
    Containing wind speed and wind direction data
- LiDAR buoy wind stats  
    Containing a record of returned data packages (data quality signal)

Please refer to Fugro's documentation for details on the content and data structure of the files [22]

For convenience, the raw data files are combined in a single text file. The text file can be imported directly into windPRO, but as an open format, it is generally accessible. Please note that maximum wind speed and vertical wind speed are only prepared for 150 m height data series. The datasets include a manual quality filtering by EMD.

- Lot 1 raw data 2y.txt
- Lot 2 raw data 2y.txt

Both datasets are included as windPRO Meteo objects in an Object export file

- Raw buoy data 2y.wpobjects

The object export files can be imported into windPRO 4.0 by right-clicking in the Object list and select Import -> Import from windPRO object import file.



## 9.2 Filtered and Repaired LIDAR Data

Datasets for the filtered and repaired datasets are provided. The filter and repair process is described in section 3.4.3. The two datasets represent two years of data, though with a gap from medio March 2023 to medio June 2023. The text file can be imported directly into windPRO, but as an open format, it is generally accessible.

- Lot 1 complete 2y.txt
- Lot 2 complete 2y.txt

The text file includes measurements at all heights. Measurements on the buoy (non-LiDAR data) are for practical reasons set at 4 m. The dataset is organized in columns, grouped by height. Data for a given height with SampleStatus flagged as "1" is disabled by EMD.

The content of the columns is explained in Table 36.

Both datasets are included as windPRO Meteo objects in an Object export file

- Complete 2y buoy data.wpobjects

The object export files can be imported into windPRO 4.0 by right-clicking in the Object list and select Import -> Import from windPRO object import file.



Table 36. Column explanation for data time series.

COLUMN LABEL	DESCRIPTION
TimeStamp	Date and time, dd/mm/yyyy hh.mm
MeanWindSpeedUID_xx,xm	Mean wind speed at height xx.x m, m/s
DirectionUID_xx,xm	Wind direction at height xx.x m, m/s
TurbIntUID_xx,xm	Turbulence intensity at height xx.x m
OtherUID_xx	Number of datapackages received at height xx.x m, m/s
WindSpeedVerticalUID_xx,xm	Vertical wind speed at height xx.x m, m/s
MaxWindspeedUID_xx,xm	Maximum wind speed at height xx.x m, m/s
OtherUID_xx,xm	Info flag at height xx.x m
TemperatureUID_4.0m,xm	Temperature at 4m, °C
RelativeHumidity_UID_4.0m,xm	Relative humidity at 4m, %
PressureUID_4.0m,xm	Pressure at 4m, hPa
Comment_xx,xm	Comments for height xx.x m (not used)
TimeStampStatus_12,0m	Internal setting for WindPRO
SampleStatus_12,0m	Status flag on entire sample: 0: OK, 1: disabled, 2: below limit, 4: above limit, 8: duplicate, 16: null value, 32: missing, 128: other error
DataStatus_yyyy_xx,xm	Status flag for parameter yyyy flagged at height xx.x m. Settings as for Sample Status.
DataStatus.....	Datastatus for other parameters.



## 9.3 Long-term Corrected LiDAR data

The long-term corrected time series at Position 1, 2 and 3 are included in the data package. Position 1 and 2 (WS179 and WS181) include all LiDAR measurement heights. Position 3 only includes the 150 m height.

- Position 1 Lot 1 LTC.txt
- Position 2 Lot 2 LTC.txt
- Position 3 LTC.txt

Parameters included are wind speed and wind direction. Data format follows the format described above. The text file can be imported directly into windPRO, but as an open format, it is generally accessible.

All three datasets are included as windPRO Meteo objects in an Object export file.

- LTC Position 1-3 2y.wpobjects

The object export files can be imported into windPRO 4.0 by right-clicking in the Object list and select Import -> Import from windPRO object import file.

## 9.4 EMD-WRF Dataset

The EMD-WRF datasets for the Position 1 (Lot 1), Position 2 (Lot 2) and Position 3 are included in the data package. Compared to the data from the main report, the datasets for Position 1 and Position 2 are extended to include 2023 data.

Text file export with selected parameters are included for each location

- EMD-WRF Position 1.txt
- EMD-WRF Position 2.txt
- EMD-WRF Position 3.txt

The data columns are described in Table 37.

All EMD-WRF datasets are included as windPRO Meteo objects in an Object export file

- EMD-WRF Position 1-3.wpobjects

The object export file can be imported into windPRO 4.0 by right-clicking in the Object list and select Import -> Import from windPRO object import file. The object export file includes more parameters than presented in the text file.





Table 37. Column explanation for EMD-WRF data time series.

COLUMN LABEL	DESCRIPTION
TimeStamp	Date and time, dd/mm/yyyy hh.mm
MeanWindSpeedUID_xx,xm	Mean wind speed at height xx.x m, m/s
DirectionUID_xx,xm	Wind direction at height xx.x m, m/s
TurbIntUID_xx,xm	Turbulence intensity at height xx.x m
TemperatureUID_100,0m	Temperature at height xx.x m
Comment_xx,xm	Comments for height xx.x m (not used)
TimeStampStatus_12,0m	Internal setting for WindPRO
SampleStatus_12,0m	Status flag on entire sample: 0: OK, 1: disabled, 2: below limit, 4: above limit, 8: duplicate, 16: null value, 32: missing, 128: other error
DataStatus_yyyy_xx,xm	Status flag for parameter yyyy flagged at height xx.x m. Settings as for Sample Status.
DataStatus	Datstatus for other parameters.

## 9.5 Turbulence Data

The FINO3 dataset was used as primary data for the turbulence analysis. Data for the measurement heights 91, 71 and 51 m are included in the data package.

- FINO3 4y combined anemometers.txt

Parameters included are wind speed, wind direction and turbulence intensity. Data format follows the format described above. The text file can be imported directly into windPRO, but as an open format, it is generally accessible.

The FINO3 dataset is included as windPRO Meteo objects in an Object export file.

- FINO3 4y combined anemometers.wpobjects

The object export file can be imported into windPRO 3.6 by right-clicking in the Object list and select Import -> Import from windPRO object import file. The object export file includes more parameters than presented in the text file.



## 9.6 Wind Resource Map/Gradient File

The wind resource map used as a gradient file in section 7.1 is provided as an .rsf file (recognized WAsP format).

- Grid map\_Res\_500\_Hub\_150,0\_0.\_calibrated\_Res map recalibrated buoy 1+2 interp linear 2y\_150,0m.rsf



## 10 References

- [1] EMD, "Site Wind Conditions Assessment - Energy Island North Sea," May 2023.
- [2] IEC, International Standard IEC 61400-1 ed. 4: Wind Turbines - Part 1: Design Requirements, 2019.
- [3] IEC, International Standard IEC 61400-3-1 ed. 1, Wind Energy generation systems - Part 3-1: Design requirements for fixed offshore wind turbines, 2019.
- [4] Eurocode, EN1991-1-4: Eurocode 1: Actions on structures - Part 1-4: General actions - Wind actions., 2005.
- [5] Eurocode, EN1991-1-4 DK NA, 2007.
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# Appendix A. Verification and Classification Uncertainty

Verification uncertainty at 140 m height for WS170 [15].

WS170 height 140 m														
BIN lower [m/s]	BIN upper [m/s]	# of 10 min data sets	V <sub>ref</sub> [m/s]	V <sub>ref</sub> [m/s]	V <sub>maxref</sub> [m/s]	V <sub>minref</sub> [m/s]	Std <sub>Vref</sub> [m/s]	Std <sub>Vref</sub> /Vn [m/s]	Mean deviation [%]	RSD Mounting uncertainty [%]	Separation Uncertainty [%]	V <sub>ref</sub> Uncertainty [%]	V <sub>ref</sub> Uncertainty (K=1) [%]	
3.75	4.25	119	4.01	3.98	5.14	3.45	0.25	0.023	0.69%	0.50%	0.01%	2.51%	2.71%	
4.25	4.75	146	4.48	4.51	5.99	3.34	0.30	0.025	-0.65%	0.50%	0.01%	2.51%	2.70%	
4.75	5.25	167	4.98	4.99	5.92	4.23	0.25	0.019	-0.32%	0.50%	0.01%	2.51%	2.61%	
5.25	5.75	184	5.45	5.49	6.55	4.52	0.25	0.018	-0.81%	0.50%	0.01%	2.51%	2.71%	
5.75	6.25	180	5.94	6.01	7.14	5.18	0.26	0.019	-1.24%	0.50%	0.01%	2.51%	2.86%	
6.25	6.75	192	6.38	6.49	7.49	5.86	0.26	0.018	-1.67%	0.50%	0.01%	2.51%	3.07%	
6.75	7.25	181	6.84	6.98	7.68	6.17	0.25	0.019	-1.95%	0.50%	0.01%	2.51%	3.23%	
7.25	7.75	130	7.27	7.47	8.26	6.07	0.33	0.029	-2.66%	0.50%	0.01%	2.51%	3.71%	
7.75	8.25	92	7.75	7.98	8.54	6.70	0.31	0.032	-2.93%	0.50%	0.01%	2.51%	3.92%	
8.25	8.75	82	8.31	8.50	9.60	7.41	0.32	0.035	-2.24%	0.50%	0.01%	2.51%	3.42%	
8.75	9.25	88	8.78	8.99	9.76	8.03	0.29	0.031	-2.34%	0.50%	0.01%	2.51%	3.49%	
9.25	9.75	72	9.33	9.48	10.60	8.35	0.39	0.046	-1.63%	0.50%	0.01%	2.51%	3.07%	
9.75	10.25	72	9.76	9.98	10.93	8.78	0.43	0.050	-2.22%	0.50%	0.01%	2.51%	3.43%	
10.25	10.75	89	10.34	10.53	11.14	9.25	0.33	0.035	-1.75%	0.50%	0.01%	2.51%	3.12%	
10.75	11.25	82	10.80	10.99	11.81	9.68	0.38	0.042	-1.69%	0.50%	0.01%	2.51%	3.09%	
11.25	11.75	73	11.38	11.46	12.16	10.72	0.32	0.038	0.70%	0.50%	0.01%	2.51%	2.70%	
11.75	12.25	45	11.71	12.02	12.41	10.18	0.42	0.063	-2.60%	0.50%	0.01%	2.51%	3.69%	
12.25	12.75	55	12.26	12.50	13.42	11.19	0.46	0.063	-1.89%	0.50%	0.01%	2.51%	3.22%	
12.75	13.25	38	12.92	12.99	13.74	11.71	0.36	0.058	-0.59%	0.50%	0.01%	2.51%	2.66%	
13.25	13.75	33	13.29	13.48	14.22	11.80	0.51	0.089	-1.38%	0.50%	0.01%	2.51%	2.98%	
13.75	14.25	18	13.59	14.01	14.47	12.97	0.49	0.116	-3.05%	0.50%	0.01%	2.51%	4.07%	
14.25	14.75	23	14.50	14.52	15.89	13.73	0.53	0.111	-0.10%	0.50%	0.01%	2.51%	2.67%	
14.75	15.25	22	14.66	15.01	15.70	13.79	0.45	0.095	-2.32%	0.50%	0.01%	2.51%	3.52%	
15.25	15.75	12	15.14	15.58	15.97	13.81	0.55	0.160	-2.78%	0.50%	0.01%	2.51%	3.93%	
15.75	16.25	17	15.75	15.94	16.36	14.66	0.50	0.121	-1.22%	0.50%	0.01%	2.51%	2.94%	

Verification uncertainty at 120 m height for WS181 [16].

WS181 height 120 m														
BIN lower [m/s]	BIN upper [m/s]	# of 10 min data sets	V <sub>ref</sub> [m/s]	V <sub>ref</sub> [m/s]	V <sub>maxref</sub> [m/s]	V <sub>minref</sub> [m/s]	Std <sub>Vref</sub> [m/s]	Std <sub>Vref</sub> /Vn [m/s]	Mean deviation [%]	RSD Mounting uncertainty [%]	Separation Uncertainty [%]	V <sub>ref</sub> Uncertainty [%]	V <sub>ref</sub> Uncertainty (K=1) [%]	
3.75	4.25	115	4.07	4.00	5.65	3.04	0.36	0.033	1.68%	0.50%	0.19%	1.84%	2.67%	
4.25	4.75	118	4.56	4.48	5.47	3.63	0.30	0.028	1.83%	0.50%	0.19%	1.76%	2.66%	
4.75	5.25	113	5.11	4.99	6.38	4.20	0.34	0.032	2.36%	0.50%	0.19%	1.67%	3.00%	
5.25	5.75	107	5.61	5.49	7.28	4.58	0.41	0.040	2.19%	0.50%	0.19%	1.64%	2.88%	
5.75	6.25	89	6.12	6.01	7.59	5.59	0.32	0.034	1.86%	0.50%	0.19%	1.73%	2.65%	
6.25	6.75	70	6.55	6.48	7.30	5.99	0.30	0.036	0.94%	0.50%	0.19%	1.65%	2.05%	
6.75	7.25	81	7.08	7.00	7.98	6.21	0.31	0.035	1.08%	0.50%	0.19%	1.52%	2.00%	
7.25	7.75	100	7.51	7.50	8.99	6.74	0.33	0.033	0.17%	0.50%	0.19%	1.55%	1.71%	
7.75	8.25	100	8.12	8.00	9.47	7.35	0.32	0.032	1.57%	0.50%	0.19%	1.49%	2.27%	
8.25	8.75	110	8.55	8.49	9.51	7.70	0.38	0.036	0.73%	0.50%	0.19%	1.47%	1.78%	
8.75	9.25	102	9.03	9.02	10.01	7.93	0.38	0.038	0.14%	0.50%	0.19%	1.52%	1.67%	
9.25	9.75	114	9.58	9.50	10.53	8.51	0.37	0.034	0.79%	0.50%	0.19%	1.44%	1.76%	
9.75	10.25	65	10.00	9.97	10.77	9.20	0.34	0.042	0.29%	0.50%	0.19%	1.43%	1.61%	
10.25	10.75	62	10.55	10.48	11.44	9.92	0.34	0.043	0.66%	0.50%	0.19%	1.47%	1.75%	
10.75	11.25	91	11.09	10.96	12.19	8.88	0.44	0.046	1.12%	0.50%	0.19%	1.45%	1.95%	
11.25	11.75	70	11.53	11.50	12.46	9.56	0.47	0.056	0.32%	0.50%	0.19%	1.47%	1.67%	
11.75	12.25	52	12.01	11.99	13.74	11.12	0.45	0.063	0.16%	0.50%	0.19%	1.49%	1.68%	
12.25	12.75	38	12.62	12.52	13.41	11.78	0.38	0.061	0.76%	0.50%	0.19%	1.54%	1.86%	
12.75	13.25	44	13.07	12.97	14.23	12.38	0.41	0.062	0.80%	0.50%	0.19%	1.50%	1.85%	
13.25	13.75	35	13.54	13.50	14.31	12.99	0.35	0.059	0.30%	0.50%	0.19%	1.69%	1.85%	
13.75	14.25	30	14.07	14.02	14.77	13.17	0.40	0.073	0.32%	0.50%	0.19%	1.66%	1.85%	
14.25	14.75	53												
14.75	15.25	58												
15.25	15.75	45												
15.75	16.25	22												



Verification uncertainty at 120 m height for WS191 [12]

WS191 height 120 m													
BIN lower [m/s]	BIN upper [m/s]	# of 10 min data sets	V <sub>FLS</sub> [m/s]	V <sub>REF</sub> [m/s]	V <sub>FLSmax</sub> [m/s]	V <sub>FLSmin</sub> [m/s]	Std <sub>VFLS</sub> [m/s]	Std <sub>VFLS</sub> /√n [m/s]	Mean deviation [%]	Mounting uncertainty [%]	Separation Uncertainty [%]	V <sub>REF</sub> Uncertainty [%]	V <sub>FLS</sub> Uncertainty (k=1) [%]
3.75	4.25	70	4.08	3.99	4.98	3.39	0.35	0.041	2.15%	0.50%	0.18%	1.68%	2.96%
4.25	4.75	50	4.66	4.52	6.27	3.97	0.36	0.051	3.08%	0.50%	0.18%	1.60%	3.68%
4.75	5.25	61	5.06	4.96	7.67	4.15	0.50	0.064	2.04%	0.50%	0.18%	1.57%	2.92%
5.25	5.75	49	5.58	5.49	6.72	3.83	0.44	0.063	1.70%	0.50%	0.18%	1.68%	2.69%
5.75	6.25	61	6.20	6.04	7.59	5.26	0.45	0.057	2.54%	0.50%	0.18%	1.70%	3.24%
6.25	6.75	60	6.64	6.49	7.47	5.79	0.33	0.043	2.34%	0.50%	0.18%	1.80%	3.07%
6.75	7.25	66	7.14	7.00	8.52	5.75	0.45	0.055	2.04%	0.50%	0.18%	1.76%	2.85%
7.25	7.75	66	7.63	7.51	8.45	5.85	0.47	0.058	1.54%	0.50%	0.18%	1.63%	2.43%
7.75	8.25	59	8.14	8.03	9.28	7.36	0.36	0.047	1.34%	0.50%	0.18%	1.56%	2.20%
8.25	8.75	70	8.54	8.50	9.47	7.08	0.43	0.052	0.43%	0.50%	0.18%	1.48%	1.74%
8.75	9.25	62	9.03	8.97	9.77	8.31	0.32	0.041	0.73%	0.50%	0.18%	1.36%	1.70%
9.25	9.75	48	9.56	9.54	10.62	8.76	0.39	0.056	0.25%	0.50%	0.18%	1.36%	1.60%
9.75	10.25	45	10.04	9.99	11.09	9.32	0.41	0.062	0.50%	0.50%	0.18%	1.38%	1.67%
10.25	10.75	50	10.69	10.50	12.26	9.57	0.52	0.074	1.83%	0.50%	0.18%	1.34%	2.43%
10.75	11.25	62	11.17	11.03	12.08	9.71	0.47	0.059	1.31%	0.50%	0.18%	1.38%	2.05%
11.25	11.75	56	11.61	11.52	13.48	10.07	0.47	0.063	0.85%	0.50%	0.18%	2.04%	2.34%
11.75	12.25	55	12.17	11.99	13.16	11.26	0.44	0.059	1.51%	0.50%	0.18%	1.36%	2.15%
12.25	12.75	53	12.62	12.52	14.35	11.45	0.53	0.073	0.83%	0.50%	0.18%	1.39%	1.80%
12.75	13.25	47	13.30	12.98	15.24	11.93	0.64	0.093	2.44%	0.50%	0.18%	1.49%	2.99%
13.25	13.75	51	13.64	13.50	14.76	12.09	0.56	0.078	1.05%	0.50%	0.18%	1.43%	1.94%
13.75	14.25	39	14.00	13.94	15.16	11.98	0.64	0.103	0.42%	0.50%	0.18%	1.49%	1.79%
14.25	14.75	34	14.61	14.51	16.10	13.41	0.58	0.099	0.68%	0.50%	0.18%	1.49%	1.85%
14.75	15.25	17	15.13	15.05	15.73	14.75	0.26	0.062	0.50%	0.50%	0.18%	1.49%	1.71%
15.25	15.75	23	15.90	15.48	17.09	14.48	0.72	0.150	2.76%	0.50%	0.18%	1.49%	3.31%
15.75	16.25	26	16.29	16.02	18.08	15.34	0.57	0.112	1.69%	0.50%	0.18%	1.49%	2.42%



Type specific classification uncertainty from classification report for ZX300 by DNV-GL [14]

ZX300 Type Class Table												
Heights	EVs	Max influence (m x Range)							Preliminary accuracy	Type specific class	Standard uncertainty	
		Temperature Gradient	Air Temperature	Turbulence Intensity	Wind Veer	Wind Shear	Air Density	Rain				Flow inclination angle
[m]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	
135	-1.85	-1.81	0.46	0.60	-2.48	*	-0.59	0.71	3.78	2.67	1.54	
130	-2.03	-1.34	0.62	0.57	-1.14	*	-0.60	1.17	3.11	2.20	1.27	
125	-1.80	-1.37	0.70	0.59	-1.20	*	-0.96	1.07	3.07	2.17	1.25	
120	-1.91	-1.13	0.78	0.58	-0.61	*	-0.92	0.96	2.83	2.00	1.16	
115	-1.97	-0.90	0.87	0.57	-0.02	*	-0.87	0.86	2.70	1.91	1.10	
110	-2.03	-0.66	0.95	0.57	0.57	*	-0.80	0.76	2.71	1.92	1.11	
105	-2.09	-0.42	1.04	0.56	1.16	*	-0.77	0.65	2.88	2.04	1.18	
100	-1.52	2.50	1.71	0.00	1.02	-0.45	-0.01	0.55	3.61	2.55	1.47	
95	-1.18	1.96	1.47	0.12	1.17	-0.33	0.20	0.22	2.99	2.12	1.22	
90	-0.82	1.42	1.43	0.23	1.31	-0.20	0.23	-0.11	2.57	1.81	1.05	
85	-0.46	0.91	1.40	0.34	1.52	-0.07	0.25	-0.66	2.43	1.72	0.99	
80	-0.10	0.57	1.50	0.47	1.68	0.05	0.28	-0.63	2.47	1.75	1.01	
75	0.11	0.61	1.61	0.60	2.23	0.18	0.30	-0.59	2.96	2.10	1.21	
70	0.14	1.11	1.33	0.72	2.79	0.31	0.28	-0.56	3.43	2.43	1.40	
65	0.23	1.35	1.09	0.89	2.36	0.75	0.26	-0.52	3.21	2.27	1.31	
60	0.23	1.77	0.86	1.04	2.05	1.13	0.24	-0.49	3.28	2.32	1.34	
55	0.25	2.07	0.71	0.45	1.91	1.51	0.23	*	3.32	2.34	1.35	
50	0.28	1.03	0.52	0.61	1.60	1.89	0.28	*	2.83	2.00	1.15	
45	0.32	0.41	0.39	0.77	1.29	2.27	0.31	*	2.82	2.00	1.15	
40	0.16	-0.22	0.27	0.93	0.99	2.66	0.35	*	3.03	2.14	1.24	
35	0.10	-0.61	0.41	0.45	0.13	0.48	0.38	*	1.07	0.75	0.44	
30	0.03	-0.76	0.53	0.34	-0.44	-0.41	0.41	*	1.23	0.87	0.50	
25	0.02	-0.78	0.67	0.29	-1.01	-1.30	0.45	*	2.01	1.42	0.82	
20	0.00	-0.71	0.82	0.23	-1.58	-2.18	0.48	*	2.95	2.09	1.21	

\* EV was not assessed in the height



## **Appendix B. Filtered and Repaired Dataset: Position 1 (Lot 1), Position 2 (Lot 2)**



Project: Energy Island North Sea

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Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 1 complete 2y; Complete period Period: Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Frequency distribution (TAB file data)

Table with columns: Bin, Start, End, Sum, 0-N, 1-NNE, 2-ENE, 3-E, 4-ESE, 5-SSE, 6-S, 7-SSW, 8-WSW, 9-W, 10-WNW, 11-NNW. Rows include Mean and values for bins 0 to 41.







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Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 1 complete 2y; Complete period Period: Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Frequency distribution (TAB file data)

240,00m - Subst

Table with columns: Bin, Start, End, Sum, 0-N, 1-NNE, 2-ENE, 3-E, 4-ESE, 5-SSE, 6-S, 7-SSW, 8-WSW, 9-W, 10-WNW, 11-NNW. Rows include Mean and bins from 0 to 41.





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Calculated:  
06/03/2024 09.29

Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 1 complete 2y; Complete period    Period: Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Frequency distribution (TAB file data)

200,00m - Subst															
Bin	Start	End	Sum	0-N	1-NNE	2-ENE	3-E	4-ESE	5-SSE	6-S	7-SSW	8-WSW	9-W	10-WNW	11-NNW
Mean			11,25	7,83	6,47	8,37	11,61	11,86	11,75	11,02	11,43	11,40	11,59	11,80	12,15
0		0,49	4	1	3	0	0	0	0	0	0	0	0	0	0
1	0,50	1,49	764	76	84	111	72	47	52	57	35	48	40	63	79
2	1,50	2,49	1854	173	138	224	158	127	157	140	180	140	143	136	138
3	2,50	3,49	2597	213	278	255	163	219	158	161	248	261	179	223	239
4	3,50	4,49	3758	305	281	227	224	325	175	190	232	478	434	520	367
5	4,50	5,49	4452	355	298	284	243	256	233	254	314	639	590	538	448
6	5,50	6,49	5170	434	255	274	298	293	204	388	532	588	706	682	516
7	6,50	7,49	6051	353	261	246	343	328	243	543	720	780	772	823	639
8	7,50	8,49	6069	286	234	207	345	293	295	565	673	974	778	784	635
9	8,50	9,49	5995	184	139	182	236	370	313	631	695	947	857	787	654
10	9,50	10,49	6279	226	92	189	362	417	280	522	719	921	874	982	695
11	10,50	11,49	6226	153	49	193	335	486	326	364	637	951	961	910	861
12	11,50	12,49	6205	110	54	172	334	567	389	362	618	860	948	1020	771
13	12,50	13,49	5951	97	41	142	376	425	518	378	578	835	824	940	797
14	13,50	14,49	5369	91	39	137	293	446	479	414	583	759	685	774	669
15	14,50	15,49	4730	68	21	138	193	525	409	365	520	575	737	630	549
16	15,50	16,49	4223	74	10	114	113	488	324	315	501	499	651	523	611
17	16,50	17,49	3426	64	15	45	107	307	298	262	424	505	482	483	434
18	17,50	18,49	2690	46	7	45	109	200	249	216	347	404	391	332	344
19	18,50	19,49	2169	23	5	29	90	142	172	176	249	337	331	249	366
20	19,50	20,49	1843	16	3	14	68	110	85	138	202	355	245	228	379
21	20,50	21,49	1400	12	2	0	79	82	73	106	136	202	199	241	268
22	21,50	22,49	1005	6	2	2	92	52	55	49	83	118	131	218	197
23	22,50	23,49	794	6	2	5	70	63	39	35	66	112	86	167	143
24	23,50	24,49	623	3	2	4	61	84	9	21	33	63	77	150	116
25	24,50	25,49	436	2	2	3	82	79	8	18	30	36	35	87	54
26	25,50	26,49	233	3	5	3	73	36	1	5	13	13	15	34	32
27	26,50	27,49	155	1	5	7	50	17	0	2	10	12	13	23	15
28	27,50	28,49	76	0	2	4	17	4	0	0	2	13	7	23	4
29	28,50	29,49	63	0	3	3	15	0	0	0	0	3	9	22	8
30	29,50	30,49	53	0	0	1	23	0	0	0	0	0	3	19	7
31	30,50	31,49	60	0	0	0	27	0	0	0	0	0	11	13	9
32	31,50	32,49	31	0	0	0	9	0	0	0	0	0	8	13	1
33	32,50	33,49	20	0	0	0	3	0	0	0	0	0	3	10	4
34	33,50	34,49	2	0	0	0	1	0	0	0	0	0	1	0	0
35	34,50	35,49	1	0	0	0	0	0	0	0	0	0	0	1	0
36	35,50	36,49	1	0	0	0	0	0	0	0	0	0	1	0	0
37	36,50	37,49	0	0	0	0	0	0	0	0	0	0	0	0	0
38	37,50	38,49	0	0	0	0	0	0	0	0	0	0	0	0	0
39	38,50	39,49	0	0	0	0	0	0	0	0	0	0	0	0	0
40	39,50	40,49	0	0	0	0	0	0	0	0	0	0	0	0	0
41	40,50		0	0	0	0	0	0	0	0	0	0	0	0	0





Project:

Energy Island North Sea

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Calculated:  
06/03/2024 09.29

### Meteo data report - Frequency distribution (TAB file data)

**Mast:** Lot 1 complete 2y; Complete period **Period:** Full period: 15/11/2021 - 15/11/2023 (24,0 months)

#### Frequency distribution (TAB file data)

180,00m - Subst

Bin	Start	End	Sum	0-N	1-NNE	2-ENE	3-E	4-ESE	5-SSE	6-S	7-SSW	8-WSW	9-W	10-WNW	11-NNW
Mean			11,15	7,80	6,45	8,39	11,57	11,80	11,71	10,91	11,30	11,33	11,46	11,65	12,08
0		0,49	4	1	0	1	0	0	0	0	0	0	1	0	1
1	0,50	1,49	753	85	81	103	67	50	53	50	41	45	48	70	60
2	1,50	2,49	1908	181	150	224	151	126	136	151	197	152	145	143	152
3	2,50	3,49	2605	214	265	268	180	223	159	177	239	237	185	235	223
4	3,50	4,49	3814	304	286	224	222	345	166	188	236	494	431	536	382
5	4,50	5,49	4492	350	304	305	239	252	220	244	320	610	612	565	471
6	5,50	6,49	5269	441	245	275	299	298	237	416	534	603	717	689	515
7	6,50	7,49	6101	363	263	237	356	311	251	557	728	781	777	816	661
8	7,50	8,49	6015	280	225	222	331	299	276	594	631	981	781	771	624
9	8,50	9,49	6148	208	152	170	265	372	313	654	709	947	848	847	663
10	9,50	10,49	6284	217	89	186	368	426	284	506	721	918	901	960	708
11	10,50	11,49	6446	153	56	192	372	499	355	396	670	1001	992	924	836
12	11,50	12,49	6228	114	47	175	338	529	404	362	607	866	966	1052	768
13	12,50	13,49	6024	109	30	141	381	427	551	424	609	819	807	940	786
14	13,50	14,49	5471	90	38	143	307	456	504	424	582	788	695	780	664
15	14,50	15,49	4702	79	18	138	187	564	367	353	536	575	745	593	547
16	15,50	16,49	4194	83	15	116	134	496	318	309	488	499	648	502	586
17	16,50	17,49	3379	53	13	59	117	276	328	282	404	491	465	462	429
18	17,50	18,49	2667	41	6	37	127	197	218	212	337	408	399	322	363
19	18,50	19,49	2168	26	4	34	78	144	157	181	248	365	302	254	375
20	19,50	20,49	1668	8	3	9	63	93	84	128	191	306	228	215	340
21	20,50	21,49	1334	11	1	4	82	90	71	79	107	176	185	246	282
22	21,50	22,49	935	8	2	5	82	41	52	46	78	121	104	206	190
23	22,50	23,49	770	2	4	3	77	70	28	35	50	91	102	163	145
24	23,50	24,49	549	8	1	2	65	85	14	14	26	46	68	135	85
25	24,50	25,49	369	1	4	6	80	78	3	11	19	22	20	66	59
26	25,50	26,49	209	5	4	2	60	31	0	6	15	20	9	32	25
27	26,50	27,49	136	0	8	7	48	11	0	0	4	16	9	22	11
28	27,50	28,49	83	0	1	2	20	4	0	0	2	7	8	28	11
29	28,50	29,49	47	0	2	1	17	2	0	0	0	0	5	17	3
30	29,50	30,49	54	0	0	5	20	0	0	0	0	0	12	13	4
31	30,50	31,49	56	0	0	1	21	0	0	0	0	0	5	19	10
32	31,50	32,49	31	0	0	0	13	0	0	0	0	0	4	10	4
33	32,50	33,49	9	0	0	0	2	0	0	0	0	0	4	3	0
34	33,50	34,49	3	0	0	0	1	0	0	0	0	0	1	1	0
35	34,50	35,49	1	0	0	0	0	0	0	0	0	0	1	0	0
36	35,50	36,49	0	0	0	0	0	0	0	0	0	0	0	0	0
37	36,50	37,49	0	0	0	0	0	0	0	0	0	0	0	0	0
38	37,50	38,49	0	0	0	0	0	0	0	0	0	0	0	0	0
39	38,50	39,49	0	0	0	0	0	0	0	0	0	0	0	0	0
40	39,50	40,49	0	0	0	0	0	0	0	0	0	0	0	0	0
41	40,50		0	0	0	0	0	0	0	0	0	0	0	0	0





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Calculated:  
06/03/2024 09.29

### Meteo data report - Frequency distribution (TAB file data)

**Mast:** Lot 1 complete 2y; Complete period **Period:** Full period: 15/11/2021 - 15/11/2023 (24,0 months)

#### Frequency distribution (TAB file data)

150,00m - Subst

Bin	Start	End	Sum	0-N	1-NNE	2-ENE	3-E	4-ESE	5-SSE	6-S	7-SSW	8-WSW	9-W	10-WNW	11-NNW
Mean			11,00	7,75	6,40	8,39	11,56	11,62	11,57	10,72	11,14	11,08	11,30	11,47	11,89
0		0,49	2	0	1	0	0	0	0	0	0	0	0	0	1
1	0,50	1,49	766	71	101	103	60	43	55	56	40	54	46	68	69
2	1,50	2,49	1946	191	139	234	161	135	142	155	201	155	134	150	149
3	2,50	3,49	2640	217	270	240	187	254	154	186	223	236	192	248	233
4	3,50	4,49	3860	290	288	230	205	336	159	201	218	522	455	557	399
5	4,50	5,49	4611	360	309	316	254	254	230	258	352	595	630	567	486
6	5,50	6,49	5441	463	248	265	296	319	220	438	565	623	728	698	578
7	6,50	7,49	6158	361	252	257	358	286	300	563	705	832	756	830	658
8	7,50	8,49	6147	280	220	218	366	332	265	609	687	1012	752	764	642
9	8,50	9,49	6116	196	149	160	271	386	293	657	667	954	885	844	654
10	9,50	10,49	6562	210	95	212	393	437	276	545	735	981	919	1016	743
11	10,50	11,49	6525	147	49	200	386	509	388	404	711	948	1009	930	844
12	11,50	12,49	6478	109	47	170	357	519	495	384	625	942	937	1093	800
13	12,50	13,49	6332	114	46	162	403	464	636	471	652	892	813	921	758
14	13,50	14,49	5348	78	36	139	338	479	435	407	602	695	726	772	641
15	14,50	15,49	4779	80	20	147	199	588	329	381	551	582	734	613	555
16	15,50	16,49	4043	76	11	115	130	437	312	334	468	482	632	474	572
17	16,50	17,49	3232	62	9	55	127	277	284	259	412	447	478	423	399
18	17,50	18,49	2602	33	10	33	124	172	218	229	296	410	388	314	375
19	18,50	19,49	2040	27	4	21	81	108	138	152	250	362	297	217	383
20	19,50	20,49	1532	13	2	18	78	112	79	111	135	240	196	226	322
21	20,50	21,49	1170	10	2	3	74	68	74	55	106	141	141	245	251
22	21,50	22,49	875	2	3	4	92	50	49	41	58	110	108	177	181
23	22,50	23,49	668	6	3	2	78	70	19	27	27	64	75	162	135
24	23,50	24,49	435	4	1	5	65	86	10	8	27	18	33	102	76
25	24,50	25,49	313	1	4	3	77	69	4	12	16	21	13	57	36
26	25,50	26,49	191	3	3	4	70	23	0	1	7	20	15	24	21
27	26,50	27,49	99	0	3	4	37	8	0	0	2	6	3	25	11
28	27,50	28,49	61	0	6	5	15	1	0	0	0	2	6	19	7
29	28,50	29,49	51	0	0	3	20	0	0	0	1	0	9	10	8
30	29,50	30,49	67	0	0	0	31	0	0	0	0	0	10	17	9
31	30,50	31,49	41	0	0	0	17	0	0	0	0	0	7	12	5
32	31,50	32,49	14	0	0	1	4	0	0	0	0	0	1	7	1
33	32,50	33,49	4	0	0	0	1	0	0	0	0	0	1	1	1
34	33,50	34,49	2	0	0	0	1	0	0	0	0	0	0	1	0
35	34,50	35,49	0	0	0	0	0	0	0	0	0	0	0	0	0
36	35,50	36,49	0	0	0	0	0	0	0	0	0	0	0	0	0
37	36,50	37,49	0	0	0	0	0	0	0	0	0	0	0	0	0
38	37,50	38,49	0	0	0	0	0	0	0	0	0	0	0	0	0
39	38,50	39,49	0	0	0	0	0	0	0	0	0	0	0	0	0
40	39,50	40,49	0	0	0	0	0	0	0	0	0	0	0	0	0
41	40,50		0	0	0	0	0	0	0	0	0	0	0	0	0





Project: Energy Island North Sea

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Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 1 complete 2y; Complete period Period: Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Frequency distribution (TAB file data)

Table with 13 columns: Bin, Start, End, Sum, 0-N, 1-NNE, 2-ENE, 3-E, 4-ESE, 5-SSE, 6-S, 7-SSW, 8-WSW, 9-W, 10-WNW, 11-NNW. Rows include Mean and bins from 0 to 41.





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Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 1 complete 2y; Complete period Period: Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Frequency distribution (TAB file data)

Table with columns: Bin, Start, End, Sum, 0-N, 1-NNE, 2-ENE, 3-E, 4-ESE, 5-SSE, 6-S, 7-SSW, 8-WSW, 9-W, 10-WNW, 11-NNW. Rows include Mean and data for bins 0 to 41.





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Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 1 complete 2y; Complete period Period: Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Frequency distribution (TAB file data)

Table with columns: Bin, Start, End, Sum, 0-N, 1-NNE, 2-ENE, 3-E, 4-ESE, 5-SSE, 6-S, 7-SSW, 8-WSW, 9-W, 10-WNW, 11-NNW. Rows include Mean and frequency counts for various wind directions and speeds.





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Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 1 complete 2y; Complete period Period: Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Frequency distribution (TAB file data)

Table with 13 columns: Bin, Start, End, Sum, 0-N, 1-NNE, 2-ENE, 3-E, 4-ESE, 5-SSE, 6-S, 7-SSW, 8-WSW, 9-W, 10-WNW, 11-NNW. Rows include Mean and values for bins 0 to 41.







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Calculated:  
06/03/2024 09.29

Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 1 complete 2y; Complete period    Period: Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Frequency distribution (TAB file data)

40,00m - Subst

Bin	Start	End	Sum	0-N	1-NNE	2-ENE	3-E	4-ESE	5-SSE	6-S	7-SSW	8-WSW	9-W	10-WNW	11-NNW
Mean			9,81	7,29	6,20	7,64	10,58	10,47	9,70	9,32	9,54	9,67	10,13	10,54	10,89
0		0,49	3	0	1	2	0	0	0	0	0	0	0	0	0
1	0,50	1,49	910	101	98	120	78	47	53	75	70	66	44	87	71
2	1,50	2,49	2160	204	161	252	164	157	109	158	187	200	166	199	203
3	2,50	3,49	3198	290	274	229	238	266	196	241	274	358	239	283	310
4	3,50	4,49	4708	260	301	297	260	392	256	251	380	676	581	632	422
5	4,50	5,49	5594	391	321	439	295	324	295	437	591	634	678	645	544
6	5,50	6,49	6623	497	272	322	328	380	419	600	844	761	820	728	652
7	6,50	7,49	7582	371	195	279	424	428	552	821	990	1046	937	851	688
8	7,50	8,49	7871	281	209	265	518	504	460	822	938	1081	1032	950	811
9	8,50	9,49	7740	225	153	270	518	595	536	627	916	1101	1022	1050	727
10	9,50	10,49	8012	189	98	338	494	631	603	561	891	1209	1062	1071	865
11	10,50	11,49	7258	120	50	280	460	604	520	463	834	976	966	1130	855
12	11,50	12,49	6278	106	54	193	409	507	307	428	747	795	856	1070	806
13	12,50	13,49	5329	97	34	148	347	463	251	419	587	637	847	807	692
14	13,50	14,49	4435	110	25	101	255	461	210	409	387	525	769	603	580
15	14,50	15,49	3942	79	12	56	154	406	221	312	367	550	657	523	605
16	15,50	16,49	3059	58	13	20	114	264	228	234	386	472	405	434	431
17	16,50	17,49	2151	40	9	29	119	159	165	119	232	315	271	300	393
18	17,50	18,49	1557	18	7	22	101	112	113	59	102	161	216	245	401
19	18,50	19,49	1185	11	2	12	84	110	78	48	81	108	131	244	276
20	19,50	20,49	858	5	3	9	91	62	46	31	43	52	70	223	223
21	20,50	21,49	637	6	4	4	91	78	24	22	19	20	58	178	133
22	21,50	22,49	432	5	2	5	82	97	14	11	8	21	25	97	65
23	22,50	23,49	262	4	4	6	78	64	2	2	13	2	17	35	35
24	23,50	24,49	161	1	2	6	73	24	2	0	6	2	7	19	19
25	24,50	25,49	92	0	7	8	35	5	0	0	1	0	10	16	10
26	25,50	26,49	69	0	5	0	28	2	0	0	0	0	10	19	5
27	26,50	27,49	47	0	0	1	19	0	0	0	0	0	3	16	8
28	27,50	28,49	42	0	0	0	30	0	0	0	0	0	1	9	2
29	28,50	29,49	17	0	0	0	16	0	0	0	0	0	0	1	0
30	29,50	30,49	5	0	0	0	3	0	0	0	0	0	0	2	0
31	30,50	31,49	0	0	0	0	0	0	0	0	0	0	0	0	0
32	31,50	32,49	0	0	0	0	0	0	0	0	0	0	0	0	0
33	32,50	33,49	0	0	0	0	0	0	0	0	0	0	0	0	0
34	33,50	34,49	0	0	0	0	0	0	0	0	0	0	0	0	0
35	34,50	35,49	0	0	0	0	0	0	0	0	0	0	0	0	0
36	35,50	36,49	0	0	0	0	0	0	0	0	0	0	0	0	0
37	36,50	37,49	0	0	0	0	0	0	0	0	0	0	0	0	0
38	37,50	38,49	0	0	0	0	0	0	0	0	0	0	0	0	0
39	38,50	39,49	0	0	0	0	0	0	0	0	0	0	0	0	0
40	39,50	40,49	0	0	0	0	0	0	0	0	0	0	0	0	0
41	40,50		0	0	0	0	0	0	0	0	0	0	0	0	0





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Calculated:  
06/03/2024 09.29

Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 1 complete 2y; Complete period Period: Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Frequency distribution (TAB file data)

30,00m - Subst

Bin	Start	End	Sum	0-N	1-NNE	2-ENE	3-E	4-ESE	5-SSE	6-S	7-SSW	8-WSW	9-W	10-WNW	11-NNW
Mean			9,60	7,18	6,12	7,50	10,29	10,23	9,39	9,07	9,28	9,46	9,93	10,33	10,72
0		0,49	1	0	0	0	1	0	0	0	0	0	0	0	0
1	0,50	1,49	955	103	104	124	76	58	58	77	72	79	43	86	75
2	1,50	2,49	2212	205	164	239	185	147	119	176	188	196	173	197	223
3	2,50	3,49	3339	299	263	242	257	295	202	229	282	396	273	287	314
4	3,50	4,49	4938	266	323	317	274	429	260	274	439	658	602	659	437
5	4,50	5,49	5854	423	328	437	305	310	382	472	671	668	681	646	531
6	5,50	6,49	6999	470	260	312	379	427	479	673	865	827	878	760	669
7	6,50	7,49	7977	392	202	312	515	487	532	858	1039	1108	961	875	696
8	7,50	8,49	7938	255	207	274	514	515	514	808	956	1088	1024	964	819
9	8,50	9,49	7934	256	153	282	520	604	535	612	917	1186	1065	1046	758
10	9,50	10,49	8174	181	97	324	532	660	605	547	936	1189	1082	1148	873
11	10,50	11,49	6992	116	56	245	420	554	412	448	794	947	963	1128	909
12	11,50	12,49	6134	118	53	186	366	485	275	435	744	743	877	1053	799
13	12,50	13,49	5116	117	30	141	357	470	218	431	484	586	855	775	652
14	13,50	14,49	4419	95	16	87	234	434	219	381	400	580	787	564	622
15	14,50	15,49	3827	76	12	35	138	398	233	277	411	540	588	538	581
16	15,50	16,49	2833	50	10	18	124	244	215	205	335	443	343	385	461
17	16,50	17,49	1905	35	9	31	116	155	138	80	166	221	260	272	422
18	17,50	18,49	1467	11	4	17	101	124	111	50	98	158	176	239	378
19	18,50	19,49	1023	14	2	13	93	86	59	51	55	75	91	229	255
20	19,50	20,49	754	3	6	4	103	64	45	23	30	24	75	209	168
21	20,50	21,49	546	7	2	4	84	92	16	12	12	27	46	142	102
22	21,50	22,49	349	5	0	7	90	94	4	4	13	10	16	52	54
23	22,50	23,49	198	1	6	9	85	38	2	0	3	2	12	22	18
24	23,50	24,49	128	0	10	6	52	11	0	0	4	0	11	18	16
25	24,50	25,49	80	0	2	6	21	3	0	0	1	0	14	25	8
26	25,50	26,49	49	0	1	1	25	0	0	0	0	0	2	18	2
27	26,50	27,49	43	0	0	2	29	0	0	0	0	0	1	9	2
28	27,50	28,49	24	0	0	1	18	0	0	0	0	0	1	3	1
29	28,50	29,49	5	0	0	0	5	0	0	0	0	0	0	0	0
30	29,50	30,49	2	0	0	0	1	0	0	0	0	0	0	1	0
31	30,50	31,49	0	0	0	0	0	0	0	0	0	0	0	0	0
32	31,50	32,49	0	0	0	0	0	0	0	0	0	0	0	0	0
33	32,50	33,49	0	0	0	0	0	0	0	0	0	0	0	0	0
34	33,50	34,49	0	0	0	0	0	0	0	0	0	0	0	0	0
35	34,50	35,49	0	0	0	0	0	0	0	0	0	0	0	0	0
36	35,50	36,49	0	0	0	0	0	0	0	0	0	0	0	0	0
37	36,50	37,49	0	0	0	0	0	0	0	0	0	0	0	0	0
38	37,50	38,49	0	0	0	0	0	0	0	0	0	0	0	0	0
39	38,50	39,49	0	0	0	0	0	0	0	0	0	0	0	0	0
40	39,50	40,49	0	0	0	0	0	0	0	0	0	0	0	0	0
41	40,50		0	0	0	0	0	0	0	0	0	0	0	0	0





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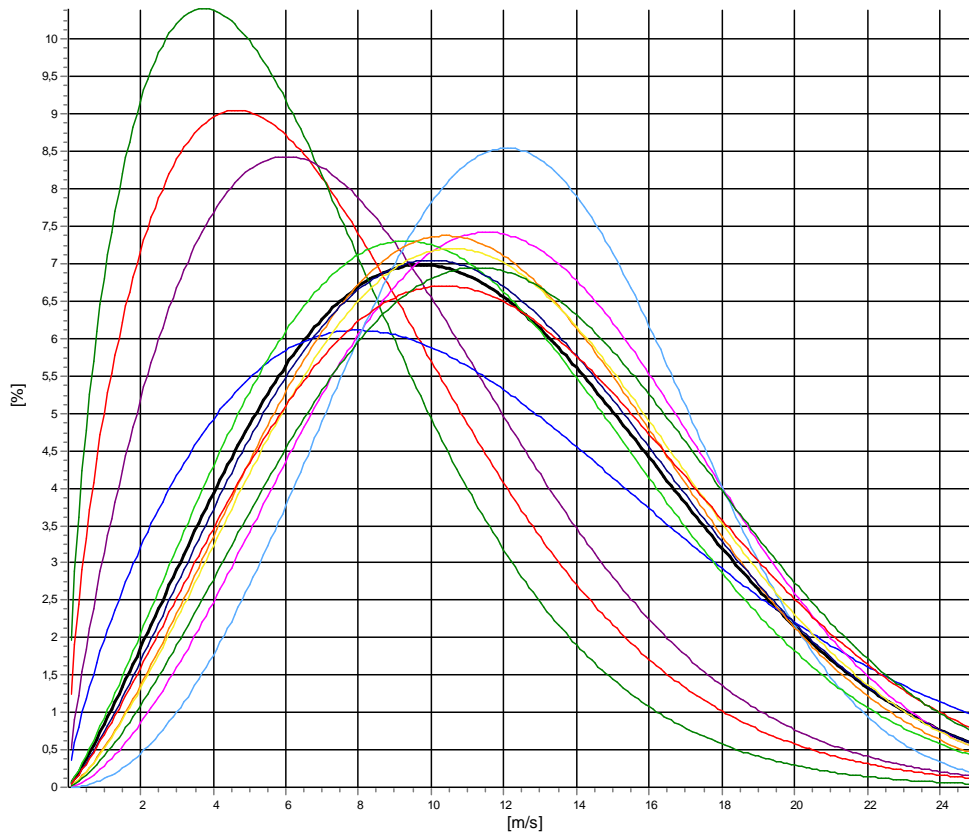
### Meteo data report - Weibull data overview

**Mast:** Lot 1 complete 2y; Complete period **Period:** Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Height: **270,00m - Subst**

#### Weibull data

Sector	A	k	f	Mean wind speed
	[m/s]			[m/s]
0-N	8,44	1,615	3,82	7,56
1-NNE	7,24	1,558	2,55	6,51
2-ENE	9,51	1,788	3,44	8,46
3-E	12,97	1,748	5,32	11,55
4-ESE	13,95	2,578	7,43	12,39
5-SSE	13,80	3,012	6,03	12,33
6-S	12,39	2,164	7,24	10,97
7-SSW	13,12	2,367	10,36	11,63
8-WSW	13,09	2,221	13,80	11,59
9-W	13,39	2,358	13,60	11,86
10-WNW	13,65	2,197	14,19	12,09
11-NNW	14,09	2,404	12,23	12,49
<b>Mean</b>	<b>12,96</b>	<b>2,166</b>	<b>100,00</b>	<b>11,48</b>



— All A: 13,0 m/s k: 2,17 Vm: 11,5 m/s	— N A: 8,4 m/s k: 1,61 Vm: 7,6 m/s	— NNE A: 7,2 m/s k: 1,56 Vm: 6,5 m/s	— ENE A: 9,5 m/s k: 1,79 Vm: 8,5 m/s
— E A: 13,0 m/s k: 1,75 Vm: 11,5 m/s	— ESE A: 13,9 m/s k: 2,58 Vm: 12,4 m/s	— SSE A: 13,8 m/s k: 3,01 Vm: 12,3 m/s	— S A: 12,4 m/s k: 2,16 Vm: 11,0 m/s
— SSW A: 13,1 m/s k: 2,37 Vm: 11,6 m/s	— WSW A: 13,1 m/s k: 2,22 Vm: 11,6 m/s	— W A: 13,4 m/s k: 2,36 Vm: 11,9 m/s	— WNW A: 13,7 m/s k: 2,20 Vm: 12,1 m/s
— NNW A: 14,1 m/s k: 2,40 Vm: 12,5 m/s			



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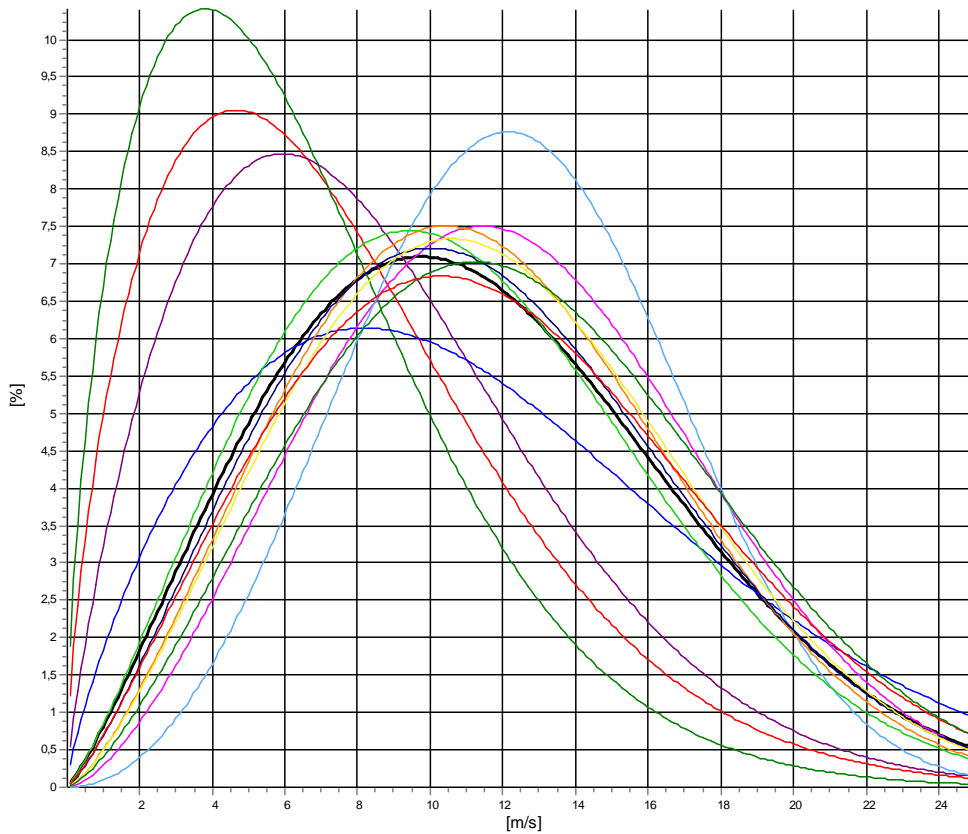
### Meteo data report - Weibull data overview

**Mast:** Lot 1 complete 2y; Complete period **Period:** Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Height: **240,00m - Subst**

#### Weibull data

Sector	A	k	f	Mean wind speed
	[m/s]			[m/s]
0-N	8,44	1,618	3,78	7,56
1-NNE	7,26	1,569	2,55	6,52
2-ENE	9,44	1,780	3,52	8,40
3-E	13,02	1,778	5,39	11,58
4-ESE	13,82	2,584	7,49	12,28
5-SSE	13,78	3,094	6,02	12,32
6-S	12,36	2,213	7,34	10,95
7-SSW	13,04	2,403	10,32	11,56
8-WSW	12,97	2,263	13,68	11,49
9-W	13,28	2,389	13,62	11,77
10-WNW	13,47	2,216	14,08	11,93
11-NNW	13,99	2,418	12,22	12,41
<b>Mean</b>	<b>12,87</b>	<b>2,192</b>	<b>100,00</b>	<b>11,40</b>



All A: 12,9 m/s k: 2,19 Vm: 11,4 m/s	N A: 8,4 m/s k: 1,62 Vm: 7,6 m/s	NNE A: 7,3 m/s k: 1,57 Vm: 6,5 m/s	ENE A: 9,4 m/s k: 1,78 Vm: 8,4 m/s
E A: 13,0 m/s k: 1,78 Vm: 11,6 m/s	ESE A: 13,8 m/s k: 2,58 Vm: 12,3 m/s	SSE A: 13,8 m/s k: 3,09 Vm: 12,3 m/s	S A: 12,4 m/s k: 2,21 Vm: 10,9 m/s
SSW A: 13,0 m/s k: 2,40 Vm: 11,6 m/s	WSW A: 13,0 m/s k: 2,26 Vm: 11,5 m/s	W A: 13,3 m/s k: 2,39 Vm: 11,8 m/s	WNW A: 13,5 m/s k: 2,22 Vm: 11,9 m/s
NNW A: 14,0 m/s k: 2,42 Vm: 12,4 m/s			



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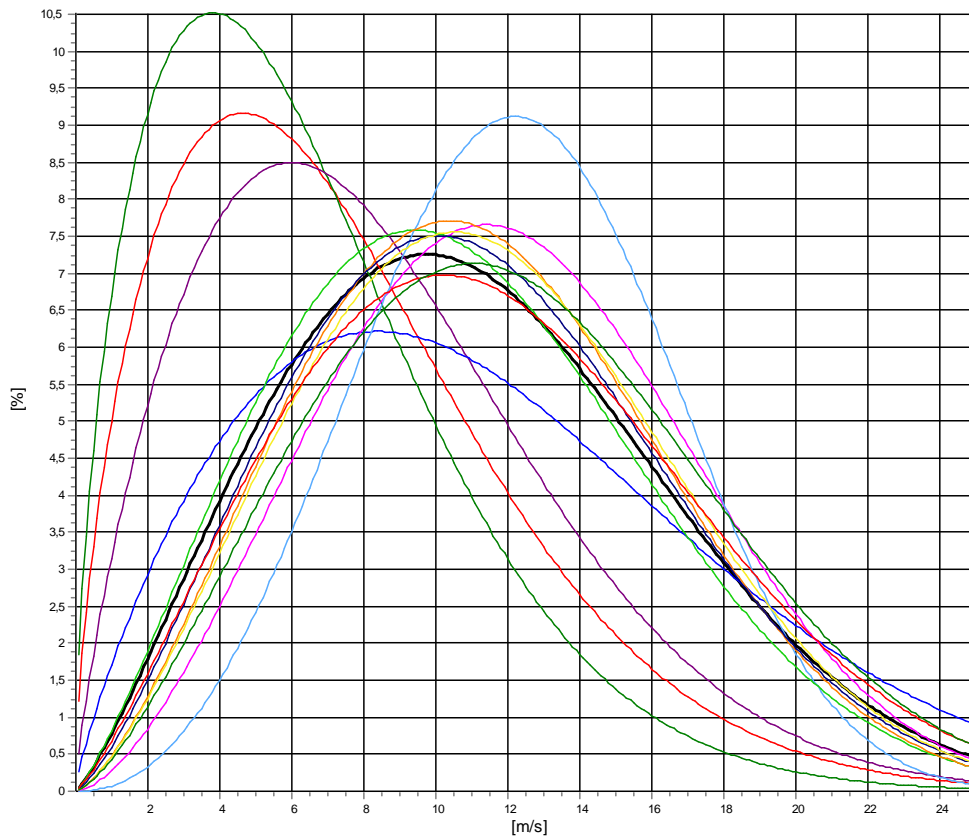
### Meteo data report - Weibull data overview

**Mast:** Lot 1 complete 2y ; Complete period **Period:** Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Height: **200,00m - Subst**

#### Weibull data

Sector	A [m/s]	k	f	Mean wind speed [m/s]
0-N	8,36	1,626	3,72	7,49
1-NNE	7,20	1,580	2,57	6,46
2-ENE	9,45	1,793	3,59	8,41
3-E	13,02	1,818	5,58	11,57
4-ESE	13,70	2,621	7,48	12,17
5-SSE	13,70	3,218	6,11	12,27
6-S	12,26	2,244	7,36	10,86
7-SSW	12,87	2,446	10,33	11,41
8-WSW	12,80	2,344	13,69	11,34
9-W	13,08	2,434	13,47	11,60
10-WNW	13,31	2,241	13,93	11,79
11-NNW	13,77	2,414	12,17	12,21
<b>Mean</b>	<b>12,73</b>	<b>2,226</b>	<b>100,00</b>	<b>11,27</b>



All A: 12,7 m/s k: 2,23 Vm: 11,3 m/s	N A: 8,4 m/s k: 1,63 Vm: 7,5 m/s	NNE A: 7,2 m/s k: 1,58 Vm: 6,5 m/s	ENE A: 9,5 m/s k: 1,79 Vm: 8,4 m/s
E A: 13,0 m/s k: 1,82 Vm: 11,6 m/s	ESE A: 13,7 m/s k: 2,62 Vm: 12,2 m/s	SSE A: 13,7 m/s k: 3,22 Vm: 12,3 m/s	S A: 12,3 m/s k: 2,24 Vm: 10,9 m/s
SSW A: 12,9 m/s k: 2,45 Vm: 11,4 m/s	WSW A: 12,8 m/s k: 2,34 Vm: 11,3 m/s	W A: 13,1 m/s k: 2,43 Vm: 11,6 m/s	WNW A: 13,3 m/s k: 2,24 Vm: 11,8 m/s
NNW A: 13,8 m/s k: 2,41 Vm: 12,2 m/s			





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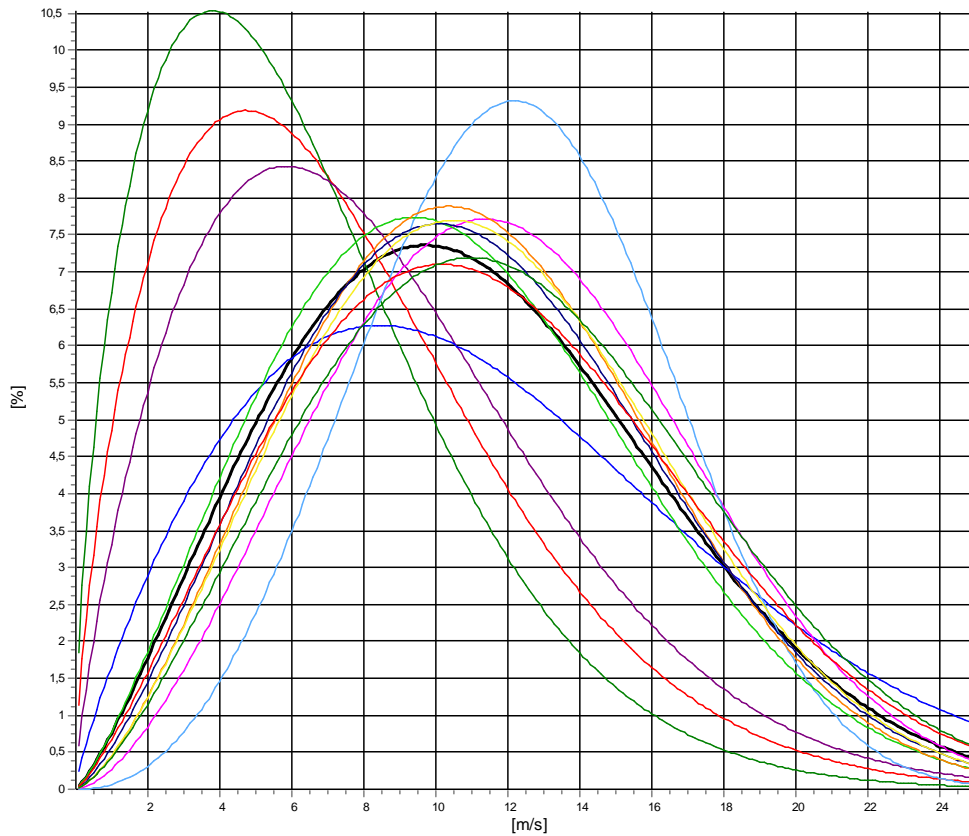
### Meteo data report - Weibull data overview

**Mast:** Lot 1 complete 2y ; Complete period **Period:** Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Height: **180,00m - Subst**

#### Weibull data

Sector	A [m/s]	k	f	Mean wind speed [m/s]
0-N	8,38	1,642	3,78	7,49
1-NNE	7,19	1,578	2,55	6,45
2-ENE	9,44	1,761	3,63	8,40
3-E	12,96	1,835	5,69	11,52
4-ESE	13,65	2,631	7,47	12,13
5-SSE	13,62	3,273	6,10	12,21
6-S	12,13	2,275	7,48	10,75
7-SSW	12,74	2,483	10,26	11,30
8-WSW	12,71	2,380	13,62	11,26
9-W	12,95	2,459	13,45	11,48
10-WNW	13,17	2,262	13,90	11,66
11-NNW	13,68	2,420	12,08	12,13
<b>Mean</b>	<b>12,63</b>	<b>2,244</b>	<b>100,00</b>	<b>11,19</b>



All A: 12,6 m/s k: 2,24 Vm: 11,2 m/s	N A: 8,4 m/s k: 1,64 Vm: 7,5 m/s	NNE A: 7,2 m/s k: 1,58 Vm: 6,5 m/s	ENE A: 9,4 m/s k: 1,76 Vm: 8,4 m/s
E A: 13,0 m/s k: 1,83 Vm: 11,5 m/s	ESE A: 13,6 m/s k: 2,63 Vm: 12,1 m/s	SSE A: 13,6 m/s k: 3,27 Vm: 12,2 m/s	S A: 12,1 m/s k: 2,27 Vm: 10,7 m/s
SSW A: 12,7 m/s k: 2,48 Vm: 11,3 m/s	WSW A: 12,7 m/s k: 2,38 Vm: 11,3 m/s	W A: 12,9 m/s k: 2,46 Vm: 11,5 m/s	WNW A: 13,2 m/s k: 2,26 Vm: 11,7 m/s
NNW A: 13,7 m/s k: 2,42 Vm: 12,1 m/s			





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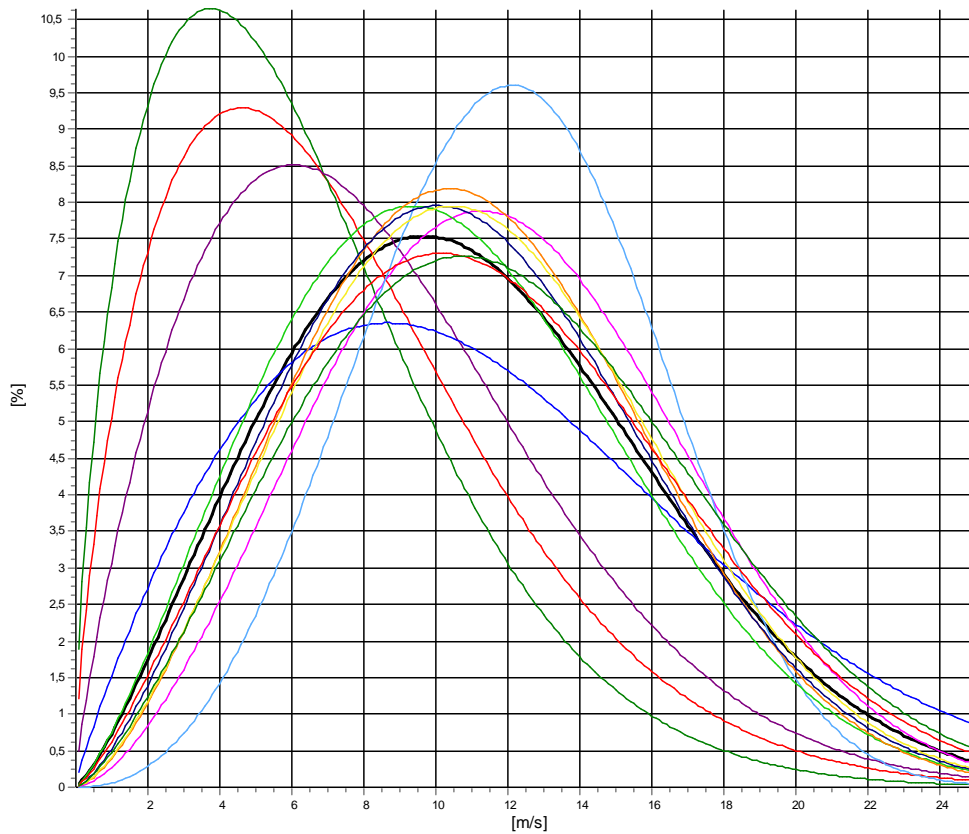
### Meteo data report - Weibull data overview

**Mast:** Lot 1 complete 2y; Complete period **Period:** Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Height: **150,00m - Subst**

#### Weibull data

Sector	A [m/s]	k	f	Mean wind speed [m/s]
0-N	8,25	1,631	3,73	7,39
1-NNE	7,11	1,578	2,56	6,38
2-ENE	9,47	1,805	3,65	8,42
3-E	12,98	1,878	5,88	11,53
4-ESE	13,46	2,658	7,48	11,97
5-SSE	13,47	3,343	6,10	12,09
6-S	11,95	2,311	7,62	10,59
7-SSW	12,58	2,563	10,25	11,17
8-WSW	12,47	2,443	13,54	11,05
9-W	12,78	2,519	13,31	11,34
10-WNW	12,99	2,307	13,81	11,51
11-NNW	13,46	2,400	12,07	11,93
<b>Mean</b>	<b>12,47</b>	<b>2,278</b>	<b>100,00</b>	<b>11,04</b>



All A: 12,5 m/s k: 2,28 Vm: 11,0 m/s	N A: 8,3 m/s k: 1,63 Vm: 7,4 m/s	NNE A: 7,1 m/s k: 1,58 Vm: 6,4 m/s	ENE A: 9,5 m/s k: 1,81 Vm: 8,4 m/s
E A: 13,0 m/s k: 1,88 Vm: 11,5 m/s	ESE A: 13,5 m/s k: 2,66 Vm: 12,0 m/s	SSE A: 13,5 m/s k: 3,34 Vm: 12,1 m/s	S A: 12,0 m/s k: 2,31 Vm: 10,6 m/s
SSW A: 12,6 m/s k: 2,56 Vm: 11,2 m/s	WSW A: 12,5 m/s k: 2,44 Vm: 11,1 m/s	W A: 12,8 m/s k: 2,52 Vm: 11,3 m/s	WNW A: 13,0 m/s k: 2,31 Vm: 11,5 m/s
NNW A: 13,5 m/s k: 2,40 Vm: 11,9 m/s			





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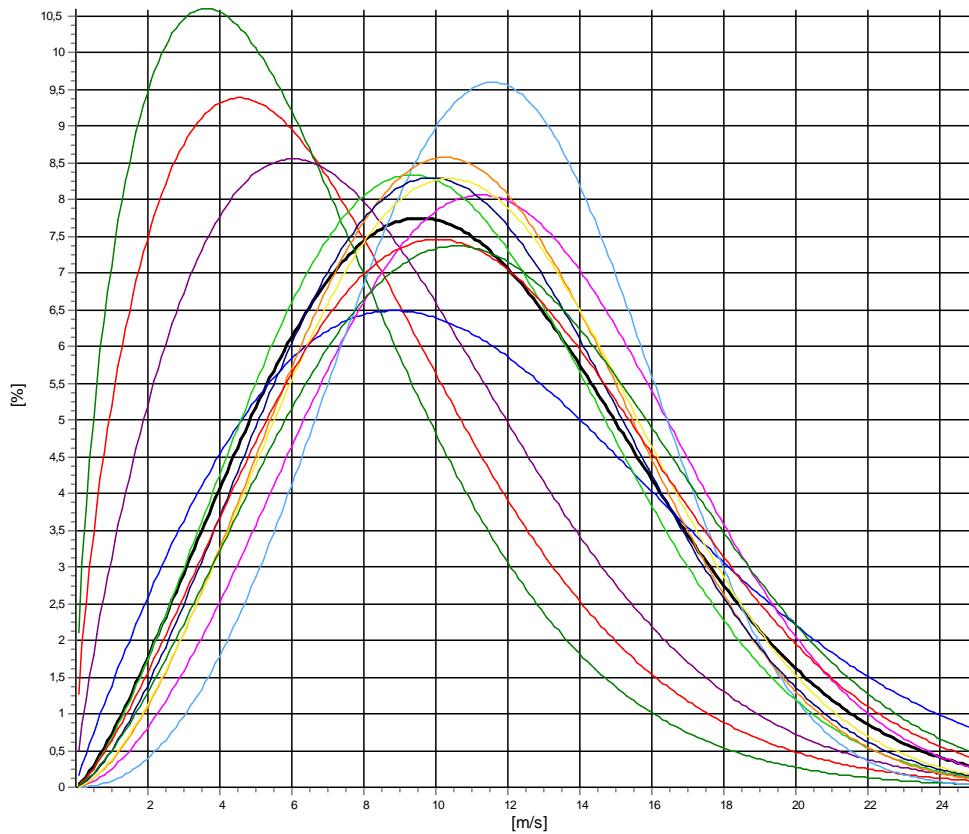
### Meteo data report - Weibull data overview

**Mast:** Lot 1 complete 2y; Complete period **Period:** Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Height: **120,00m - Subst**

#### Weibull data

Sector	A [m/s]	k	f	Mean wind speed [m/s]
0-N	8,17	1,626	3,79	7,31
1-NNE	7,10	1,549	2,49	6,39
2-ENE	9,43	1,803	3,78	8,38
3-E	12,93	1,928	6,05	11,47
4-ESE	13,34	2,700	7,40	11,86
5-SSE	13,01	3,211	6,23	11,65
6-S	11,71	2,391	7,71	10,38
7-SSW	12,30	2,635	10,30	10,93
8-WSW	12,15	2,491	13,38	10,77
9-W	12,53	2,585	13,14	11,12
10-WNW	12,78	2,321	13,83	11,33
11-NNW	13,25	2,394	11,90	11,75
<b>Mean</b>	<b>12,24</b>	<b>2,304</b>	<b>100,00</b>	<b>10,84</b>



All A: 12,2 m/s k: 2,30 Vm: 10,8 m/s	N A: 8,2 m/s k: 1,63 Vm: 7,3 m/s	NNE A: 7,1 m/s k: 1,55 Vm: 6,4 m/s	ENE A: 9,4 m/s k: 1,80 Vm: 8,4 m/s
E A: 12,9 m/s k: 1,93 Vm: 11,5 m/s	ESE A: 13,3 m/s k: 2,70 Vm: 11,9 m/s	SSE A: 13,0 m/s k: 3,21 Vm: 11,7 m/s	S A: 11,7 m/s k: 2,39 Vm: 10,4 m/s
SSW A: 12,3 m/s k: 2,64 Vm: 10,9 m/s	WSW A: 12,1 m/s k: 2,49 Vm: 10,8 m/s	W A: 12,5 m/s k: 2,59 Vm: 11,1 m/s	WNW A: 12,8 m/s k: 2,32 Vm: 11,3 m/s
NNW A: 13,3 m/s k: 2,39 Vm: 11,7 m/s			





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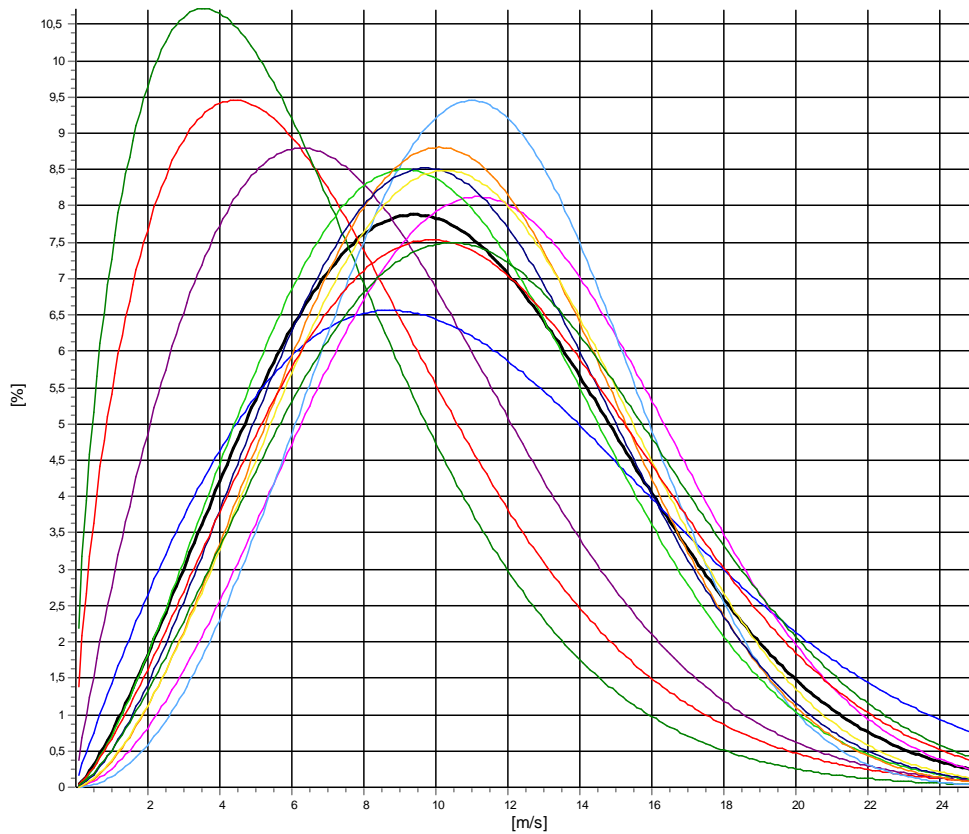
### Meteo data report - Weibull data overview

**Mast:** Lot 1 complete 2y; Complete period **Period:** Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Height: **100,00m - Subst**

#### Weibull data

Sector	A [m/s]	k	f	Mean wind speed [m/s]
0-N	8,07	1,609	3,81	7,23
1-NNE	7,01	1,543	2,49	6,31
2-ENE	9,39	1,881	3,80	8,33
3-E	12,76	1,927	6,17	11,32
4-ESE	13,24	2,702	7,48	11,77
5-SSE	12,55	3,030	6,22	11,21
6-S	11,47	2,391	7,73	10,17
7-SSW	12,06	2,661	10,39	10,72
8-WSW	11,90	2,512	13,29	10,56
9-W	12,33	2,615	12,98	10,96
10-WNW	12,62	2,313	13,72	11,18
11-NNW	13,05	2,401	11,91	11,57
<b>Mean</b>	<b>12,04</b>	<b>2,305</b>	<b>100,00</b>	<b>10,66</b>



All A: 12,0 m/s k: 2,31 Vm: 10,7 m/s	N A: 8,1 m/s k: 1,61 Vm: 7,2 m/s	NNE A: 7,0 m/s k: 1,54 Vm: 6,3 m/s	ENE A: 9,4 m/s k: 1,88 Vm: 8,3 m/s
E A: 12,8 m/s k: 1,93 Vm: 11,3 m/s	ESE A: 13,2 m/s k: 2,70 Vm: 11,8 m/s	SSE A: 12,5 m/s k: 3,03 Vm: 11,2 m/s	S A: 11,5 m/s k: 2,39 Vm: 10,2 m/s
SSW A: 12,1 m/s k: 2,66 Vm: 10,7 m/s	WSW A: 11,9 m/s k: 2,51 Vm: 10,6 m/s	W A: 12,3 m/s k: 2,61 Vm: 11,0 m/s	WNW A: 12,6 m/s k: 2,31 Vm: 11,2 m/s
NNW A: 13,1 m/s k: 2,40 Vm: 11,6 m/s			



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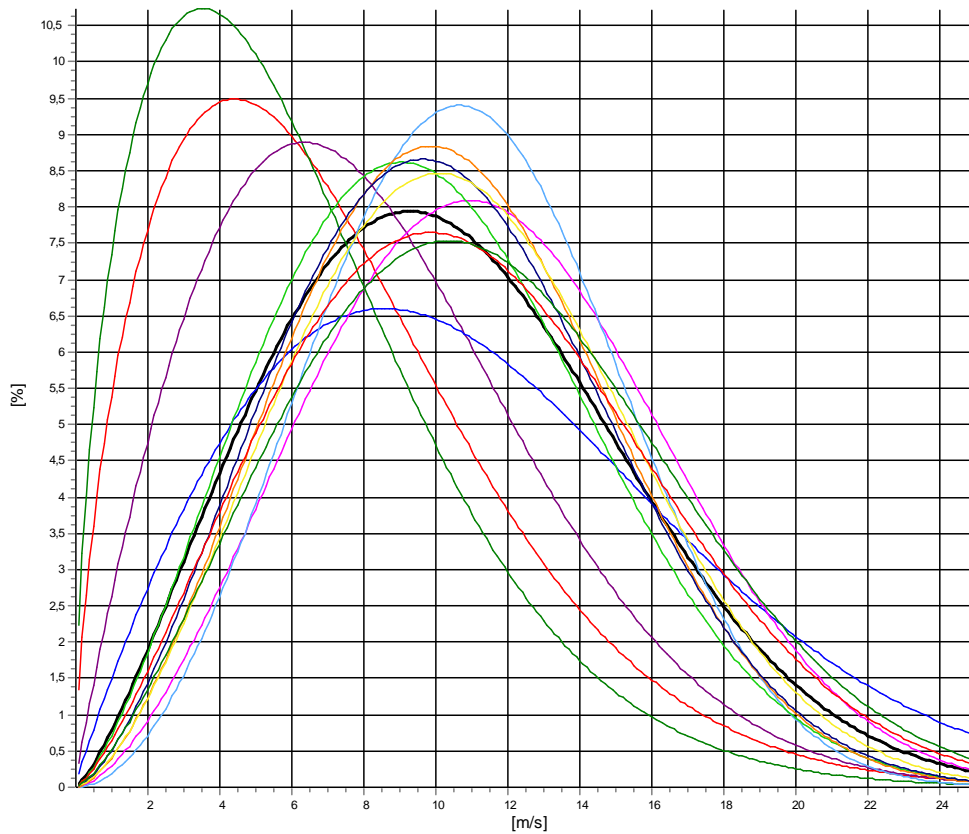
### Meteo data report - Weibull data overview

Mast: Lot 1 complete 2y; Complete period Period: Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Height: 90,00m - Subst

#### Weibull data

Sector	A [m/s]	k	f	Mean wind speed [m/s]
0-N	8,05	1,614	3,81	7,21
1-NNE	6,99	1,538	2,53	6,29
2-ENE	9,37	1,910	3,80	8,31
3-E	12,64	1,913	6,18	11,21
4-ESE	13,08	2,649	7,54	11,63
5-SSE	12,28	2,938	6,22	10,96
6-S	11,34	2,396	7,78	10,05
7-SSW	11,86	2,619	10,49	10,54
8-WSW	11,76	2,526	13,18	10,44
9-W	12,21	2,574	12,97	10,84
10-WNW	12,52	2,334	13,70	11,09
11-NNW	12,97	2,399	11,81	11,50
<b>Mean</b>	<b>11,90</b>	<b>2,296</b>	<b>100,00</b>	<b>10,55</b>



All A: 11,9 m/s k: 2,30 Vm: 10,5 m/s	N A: 8,1 m/s k: 1,61 Vm: 7,2 m/s	NNE A: 7,0 m/s k: 1,54 Vm: 6,3 m/s	ENE A: 9,4 m/s k: 1,91 Vm: 8,3 m/s
E A: 12,6 m/s k: 1,91 Vm: 11,2 m/s	ESE A: 13,1 m/s k: 2,65 Vm: 11,6 m/s	SSE A: 12,3 m/s k: 2,94 Vm: 11,0 m/s	SA: 11,3 m/s k: 2,40 Vm: 10,0 m/s
SSW A: 11,9 m/s k: 2,62 Vm: 10,5 m/s	WSW A: 11,8 m/s k: 2,53 Vm: 10,4 m/s	W A: 12,2 m/s k: 2,57 Vm: 10,8 m/s	WNW A: 12,5 m/s k: 2,33 Vm: 11,1 m/s
NNW A: 13,0 m/s k: 2,40 Vm: 11,5 m/s			





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06/03/2024 09.29

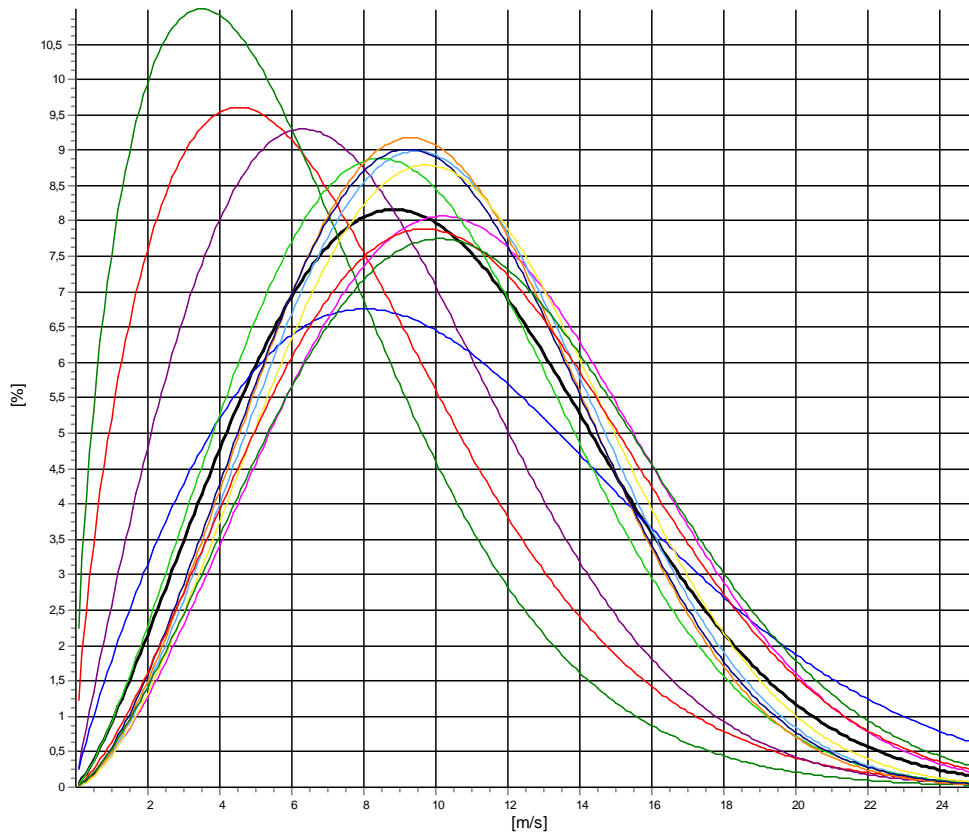
**Meteo data report - Weibull data overview**

**Mast:** Lot 1 complete 2y; Complete period **Period:** Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Height: **60,00m - Subst**

**Weibull data**

Sector	A	k	f	Mean wind speed
	[m/s]			[m/s]
0-N	8,01	1,644	3,83	7,17
1-NNE	6,84	1,547	2,51	6,15
2-ENE	9,10	1,959	3,95	8,07
3-E	12,13	1,859	6,27	10,77
4-ESE	12,51	2,499	7,71	11,10
5-SSE	11,49	2,570	6,11	10,20
6-S	10,76	2,330	7,79	9,54
7-SSW	11,26	2,572	10,67	10,00
8-WSW	11,29	2,524	12,96	10,02
9-W	11,78	2,578	12,92	10,46
10-WNW	12,25	2,360	13,53	10,85
11-NNW	12,64	2,406	11,76	11,21
<b>Mean</b>	<b>11,46</b>	<b>2,263</b>	<b>100,00</b>	<b>10,15</b>



All A: 11,5 m/s k: 2,26 Vm: 10,1 m/s	N A: 8,0 m/s k: 1,64 Vm: 7,2 m/s	NNE A: 6,8 m/s k: 1,55 Vm: 6,2 m/s	ENE A: 9,1 m/s k: 1,96 Vm: 8,1 m/s
E A: 12,1 m/s k: 1,86 Vm: 10,8 m/s	ESE A: 12,5 m/s k: 2,50 Vm: 11,1 m/s	SSE A: 11,5 m/s k: 2,57 Vm: 10,2 m/s	S A: 10,8 m/s k: 2,33 Vm: 9,5 m/s
SSW A: 11,3 m/s k: 2,57 Vm: 10,0 m/s	WSW A: 11,3 m/s k: 2,52 Vm: 10,0 m/s	W A: 11,8 m/s k: 2,58 Vm: 10,5 m/s	WNW A: 12,2 m/s k: 2,36 Vm: 10,9 m/s
NNW A: 12,6 m/s k: 2,41 Vm: 11,2 m/s			





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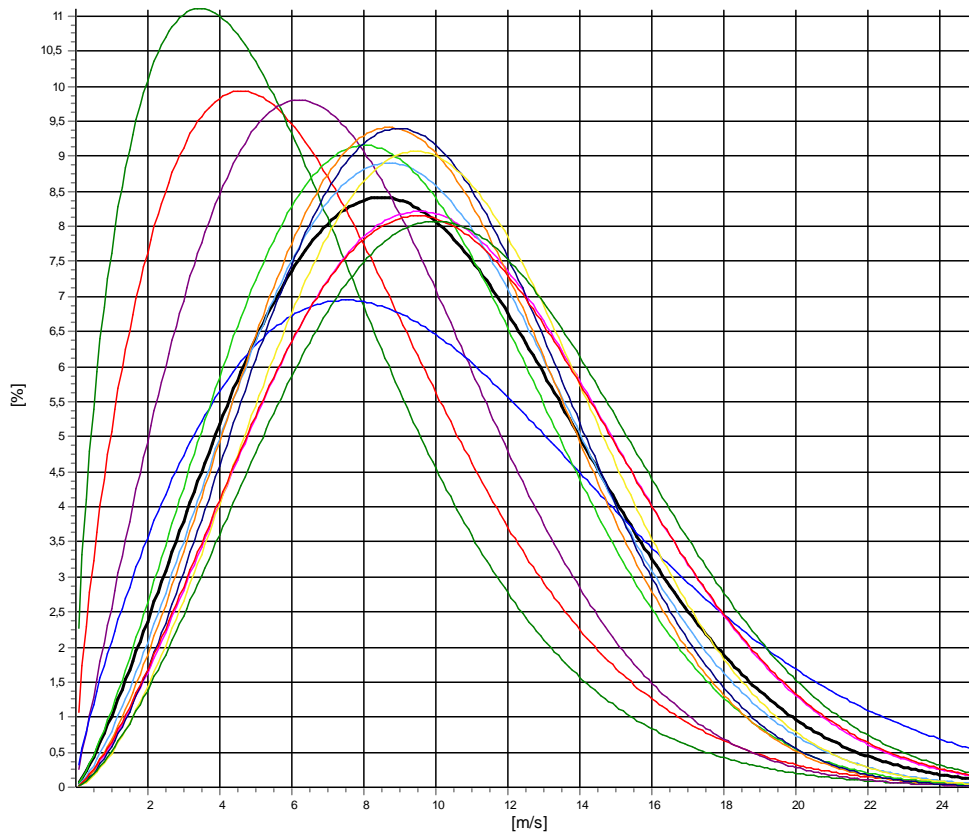
### Meteo data report - Weibull data overview

Mast: Lot 1 complete 2y; Complete period    Period: Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Height: 40,00m - Subst

#### Weibull data

Sector	A [m/s]	k	f	Mean wind speed [m/s]
0-N	7,84	1,686	3,76	7,00
1-NNE	6,77	1,547	2,51	6,09
2-ENE	8,76	2,004	4,03	7,76
3-E	11,65	1,818	6,40	10,36
4-ESE	11,92	2,403	7,74	10,57
5-SSE	10,92	2,381	6,14	9,68
6-S	10,31	2,289	7,75	9,13
7-SSW	10,70	2,491	10,73	9,49
8-WSW	10,91	2,546	12,76	9,68
9-W	11,42	2,580	12,90	10,14
10-WNW	11,93	2,382	13,52	10,58
11-NNW	12,36	2,462	11,75	10,96
<b>Mean</b>	<b>11,06</b>	<b>2,246</b>	<b>100,00</b>	<b>9,79</b>



All A: 11,1 m/s k: 2,25 Vm: 9,8 m/s	N A: 7,8 m/s k: 1,69 Vm: 7,0 m/s	NNE A: 6,8 m/s k: 1,55 Vm: 6,1 m/s	ENE A: 8,8 m/s k: 2,00 Vm: 7,8 m/s
E A: 11,7 m/s k: 1,82 Vm: 10,4 m/s	ESE A: 11,9 m/s k: 2,40 Vm: 10,6 m/s	SSE A: 10,9 m/s k: 2,38 Vm: 9,7 m/s	S A: 10,3 m/s k: 2,29 Vm: 9,1 m/s
SSW A: 10,7 m/s k: 2,49 Vm: 9,5 m/s	WSW A: 10,9 m/s k: 2,55 Vm: 9,7 m/s	W A: 11,4 m/s k: 2,58 Vm: 10,1 m/s	WNW A: 11,9 m/s k: 2,38 Vm: 10,6 m/s
NNW A: 12,4 m/s k: 2,46 Vm: 11,0 m/s			



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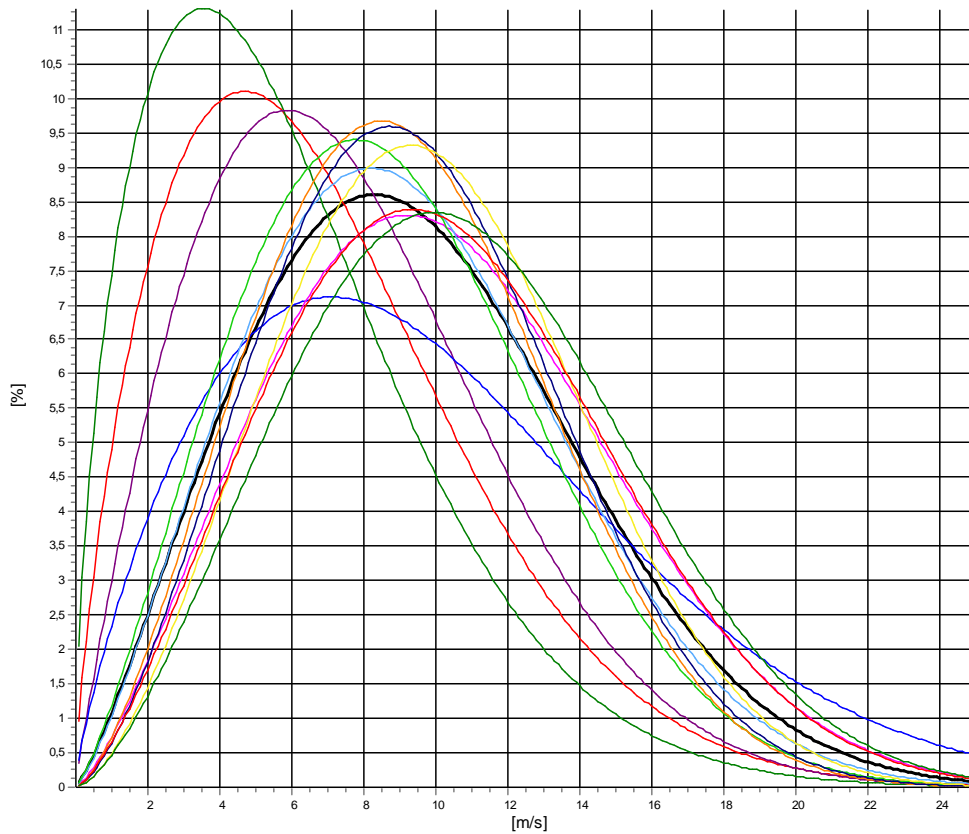
### Meteo data report - Weibull data overview

**Mast:** Lot 1 complete 2y ; Complete period **Period:** Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Height: **30,00m** - **Subst**

#### Weibull data

Sector	A [m/s]	k	f	Mean wind speed [m/s]
0-N	7,78	1,719	3,79	6,94
1-NNE	6,71	1,581	2,52	6,02
2-ENE	8,55	1,938	3,99	7,59
3-E	11,27	1,787	6,53	10,02
4-ESE	11,62	2,361	7,79	10,30
5-SSE	10,53	2,298	6,11	9,33
6-S	10,01	2,282	7,72	8,87
7-SSW	10,42	2,493	10,75	9,25
8-WSW	10,64	2,533	12,74	9,44
9-W	11,21	2,605	12,90	9,95
10-WNW	11,69	2,407	13,39	10,36
11-NNW	12,18	2,519	11,76	10,81
<b>Mean</b>	<b>10,80</b>	<b>2,244</b>	<b>100,00</b>	<b>9,57</b>



All A: 10,8 m/s k: 2,24 Vm: 9,6 m/s	N A: 7,8 m/s k: 1,72 Vm: 6,9 m/s	NNE A: 6,7 m/s k: 1,58 Vm: 6,0 m/s	ENE A: 8,6 m/s k: 1,94 Vm: 7,6 m/s
E A: 11,3 m/s k: 1,79 Vm: 10,0 m/s	ESE A: 11,6 m/s k: 2,36 Vm: 10,3 m/s	SSE A: 10,5 m/s k: 2,30 Vm: 9,3 m/s	S A: 10,0 m/s k: 2,28 Vm: 8,9 m/s
SSW A: 10,4 m/s k: 2,49 Vm: 9,2 m/s	WSW A: 10,6 m/s k: 2,53 Vm: 9,4 m/s	W A: 11,2 m/s k: 2,61 Vm: 10,0 m/s	WNW A: 11,7 m/s k: 2,41 Vm: 10,4 m/s
NNW A: 12,2 m/s k: 2,52 Vm: 10,8 m/s			



Project: Energy Island North Sea

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Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 2 complete 2y; Complete period Period: Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Frequency distribution (TAB file data)

Table with columns: Bin, Start, End, Sum, 0-N, 1-NNE, 2-ENE, 3-E, 4-ESE, 5-SSE, 6-S, 7-SSW, 8-WSW, 9-W, 10-WNW, 11-NNW. Rows include Mean and frequency counts for various wind directions and speeds.





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Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 2 complete 2y; Complete period    Period: Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Frequency distribution (TAB file data)

240,00m - Subst															
Bin	Start	End	Sum	0-N	1-NNE	2-ENE	3-E	4-ESE	5-SSE	6-S	7-SSW	8-WSW	9-W	10-WNW	11-NNW
Mean			11,30	7,86	6,76	8,56	10,76	11,95	11,74	11,06	11,64	11,80	11,61	11,87	12,07
0		0,49	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0,50	1,49	688	58	66	63	53	42	41	50	57	70	49	70	69
2	1,50	2,49	1669	152	171	167	149	109	101	100	154	148	150	141	127
3	2,50	3,49	2620	217	215	298	225	188	200	173	192	248	209	253	202
4	3,50	4,49	3777	333	241	240	354	255	219	229	242	411	431	450	372
5	4,50	5,49	4622	335	310	228	288	300	261	345	361	538	672	526	458
6	5,50	6,49	5354	427	291	267	234	295	241	430	572	617	770	714	496
7	6,50	7,49	5873	371	330	235	318	345	236	501	675	722	814	748	578
8	7,50	8,49	6142	274	197	224	261	431	297	531	775	992	792	798	570
9	8,50	9,49	6081	206	229	277	301	321	311	492	690	900	862	818	674
10	9,50	10,49	6345	196	158	211	335	327	333	482	768	931	987	887	730
11	10,50	11,49	6257	130	63	255	280	448	368	415	685	945	959	946	763
12	11,50	12,49	6227	111	44	229	339	544	396	427	595	980	930	957	675
13	12,50	13,49	5696	87	43	138	299	505	497	384	586	824	784	839	710
14	13,50	14,49	5026	97	36	112	180	483	501	349	477	742	653	733	663
15	14,50	15,49	4542	85	21	138	122	518	398	277	465	639	732	589	558
16	15,50	16,49	3992	97	13	97	73	463	333	302	448	556	626	565	419
17	16,50	17,49	3473	65	10	66	77	326	317	255	460	495	560	450	392
18	17,50	18,49	2700	36	1	41	98	201	252	211	423	450	406	299	282
19	18,50	19,49	2220	20	1	22	91	144	159	168	293	347	349	250	376
20	19,50	20,49	1955	12	2	7	98	109	105	152	243	356	242	243	386
21	20,50	21,49	1465	13	0	6	45	48	80	108	198	298	212	220	237
22	21,50	22,49	1169	4	3	4	56	64	61	80	139	187	172	214	185
23	22,50	23,49	879	6	4	3	46	60	38	58	78	133	112	192	149
24	23,50	24,49	631	3	1	1	40	88	25	32	45	76	69	155	96
25	24,50	25,49	459	2	3	4	57	68	5	17	37	49	53	106	58
26	25,50	26,49	251	1	4	3	48	39	1	13	10	31	34	43	24
27	26,50	27,49	155	0	3	3	31	20	0	2	11	18	22	33	12
28	27,50	28,49	107	0	6	2	27	13	0	1	7	12	11	21	7
29	28,50	29,49	98	0	2	0	32	6	0	0	8	14	7	23	6
30	29,50	30,49	74	0	4	1	20	0	0	0	2	12	4	24	7
31	30,50	31,49	47	0	2	0	9	0	0	0	0	2	12	17	5
32	31,50	32,49	26	0	0	0	4	0	0	0	0	1	1	11	2
33	32,50	33,49	25	0	0	0	4	0	0	0	0	0	10	11	0
34	33,50	34,49	4	0	0	0	0	0	0	0	0	0	2	2	0
35	34,50	35,49	0	0	0	0	0	0	0	0	0	0	0	0	0
36	35,50	36,49	3	0	0	0	0	0	0	0	0	0	1	2	0
37	36,50	37,49	0	0	0	0	0	0	0	0	0	0	0	0	0
38	37,50	38,49	0	0	0	0	0	0	0	0	0	0	0	0	0
39	38,50	39,49	0	0	0	0	0	0	0	0	0	0	0	0	0
40	39,50	40,49	0	0	0	0	0	0	0	0	0	0	0	0	0
41	40,50		0	0	0	0	0	0	0	0	0	0	0	0	0





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Calculated:  
06/03/2024 09.34

Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 2 complete 2y; Complete period Period: Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Frequency distribution (TAB file data)

200,00m - Subst															
Bin	Start	End	Sum	0-N	1-NNE	2-ENE	3-E	4-ESE	5-SSE	6-S	7-SSW	8-WSW	9-W	10-WNW	11-NNW
Mean			11,15	7,79	6,70	8,54	10,73	11,91	11,67	10,93	11,45	11,61	11,44	11,64	11,95
0		0,49	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0,50	1,49	687	63	61	55	48	60	36	49	67	61	51	74	62
2	1,50	2,49	1680	164	170	184	152	92	84	112	144	134	164	153	127
3	2,50	3,49	2694	224	224	301	220	203	202	189	194	263	201	274	199
4	3,50	4,49	3875	325	260	236	372	269	218	247	224	438	445	468	373
5	4,50	5,49	4667	339	326	237	262	294	268	330	396	541	666	544	464
6	5,50	6,49	5487	419	288	272	270	269	228	457	609	644	775	728	528
7	6,50	7,49	6023	396	339	237	350	368	234	491	704	749	822	764	569
8	7,50	8,49	6182	256	214	224	257	416	283	562	745	1005	823	806	591
9	8,50	9,49	6091	223	203	282	315	344	312	486	719	891	832	820	664
10	9,50	10,49	6408	194	148	209	326	348	374	487	751	926	982	933	730
11	10,50	11,49	6366	120	73	268	286	455	373	445	675	970	974	943	784
12	11,50	12,49	6313	110	37	225	337	578	407	431	602	1036	933	946	671
13	12,50	13,49	5648	90	51	143	317	470	507	376	536	824	781	875	678
14	13,50	14,49	5278	89	29	110	211	533	572	333	555	771	717	704	654
15	14,50	15,49	4587	90	26	149	119	553	395	290	486	648	694	585	552
16	15,50	16,49	4020	92	15	82	92	492	331	286	463	514	650	568	435
17	16,50	17,49	3401	53	6	66	77	322	327	284	428	513	547	426	352
18	17,50	18,49	2624	28	1	49	98	188	226	229	404	407	405	269	320
19	18,50	19,49	2229	24	1	17	82	146	152	184	306	378	309	239	391
20	19,50	20,49	1820	13	0	3	81	83	86	143	230	351	207	255	368
21	20,50	21,49	1354	16	1	4	73	54	65	98	169	250	213	200	211
22	21,50	22,49	1002	2	3	6	61	61	56	70	96	159	130	200	158
23	22,50	23,49	803	7	1	4	41	64	35	43	65	120	109	185	129
24	23,50	24,49	594	8	3	3	33	102	10	23	37	52	70	159	94
25	24,50	25,49	328	0	2	5	65	56	3	14	18	31	35	56	43
26	25,50	26,49	196	0	4	6	40	36	0	8	7	22	27	27	19
27	26,50	27,49	110	1	4	2	20	19	0	1	7	12	6	27	11
28	27,50	28,49	117	0	7	0	38	8	0	0	8	19	8	23	6
29	28,50	29,49	87	0	5	1	32	3	0	0	4	11	7	16	8
30	29,50	30,49	48	0	1	0	14	2	0	0	0	0	5	22	4
31	30,50	31,49	37	0	1	0	10	0	0	0	1	0	8	14	3
32	31,50	32,49	24	0	0	0	2	0	0	0	0	0	8	11	3
33	32,50	33,49	13	0	0	0	3	0	0	0	0	0	4	6	0
34	33,50	34,49	4	0	0	0	0	0	0	0	0	0	1	3	0
35	34,50	35,49	1	0	0	0	0	0	0	0	0	0	1	0	0
36	35,50	36,49	0	0	0	0	0	0	0	0	0	0	0	0	0
37	36,50	37,49	0	0	0	0	0	0	0	0	0	0	0	0	0
38	37,50	38,49	0	0	0	0	0	0	0	0	0	0	0	0	0
39	38,50	39,49	0	0	0	0	0	0	0	0	0	0	0	0	0
40	39,50	40,49	0	0	0	0	0	0	0	0	0	0	0	0	0
41	40,50		0	0	0	0	0	0	0	0	0	0	0	0	0







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Calculated:  
06/03/2024 09.34

**Meteo data report - Frequency distribution (TAB file data)**

**Mast:** Lot 2 complete 2y; Complete period **Period:** Full period: 15/11/2021 - 15/11/2023 (24,0 months)

**Frequency distribution (TAB file data)**

180,00m - Subst															
Bin	Start	End	Sum	0-N	1-NNE	2-ENE	3-E	4-ESE	5-SSE	6-S	7-SSW	8-WSW	9-W	10-WNW	11-NNW
Mean			11,06	7,78	6,68	8,64	10,68	11,89	11,54	10,90	11,31	11,49	11,31	11,54	11,84
0		0,49	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0,50	1,49	702	65	54	58	53	54	43	51	59	69	54	85	57
2	1,50	2,49	1731	176	188	163	150	92	101	105	150	152	151	155	148
3	2,50	3,49	2709	216	226	302	233	189	207	182	196	262	218	280	198
4	3,50	4,49	3947	326	271	232	377	301	210	247	221	441	461	487	373
5	4,50	5,49	4664	327	299	243	252	279	273	317	412	554	683	542	483
6	5,50	6,49	5531	449	275	295	276	260	236	464	619	611	768	728	550
7	6,50	7,49	6111	392	340	247	345	341	231	505	761	776	820	793	560
8	7,50	8,49	6230	256	203	215	292	442	271	594	710	1011	833	793	610
9	8,50	9,49	6170	223	206	276	326	338	346	495	745	877	839	840	659
10	9,50	10,49	6391	179	148	223	311	355	336	470	755	937	954	954	769
11	10,50	11,49	6522	137	70	253	307	467	408	478	679	1029	1001	935	758
12	11,50	12,49	6414	103	44	234	328	576	444	459	633	970	968	955	700
13	12,50	13,49	5677	94	49	157	335	495	523	382	518	848	735	871	670
14	13,50	14,49	5364	84	29	114	226	534	558	330	588	796	759	686	660
15	14,50	15,49	4581	100	21	148	114	613	358	286	510	614	677	596	544
16	15,50	16,49	4051	83	23	95	94	476	323	332	461	559	627	563	415
17	16,50	17,49	3358	66	5	68	97	288	314	286	427	499	542	424	342
18	17,50	18,49	2595	30	0	42	92	194	218	227	402	437	403	246	304
19	18,50	19,49	2181	15	2	19	94	147	144	180	277	353	263	269	418
20	19,50	20,49	1726	21	0	5	73	78	75	151	210	335	229	209	340
21	20,50	21,49	1221	9	0	4	69	48	73	83	140	191	172	240	192
22	21,50	22,49	1029	6	2	7	61	63	60	56	90	166	136	205	177
23	22,50	23,49	726	7	1	4	43	75	21	31	63	94	91	176	120
24	23,50	24,49	478	6	3	3	36	87	6	20	19	42	60	120	76
25	24,50	25,49	294	2	3	3	57	58	4	17	8	28	24	54	36
26	25,50	26,49	165	0	1	7	44	28	0	4	12	14	15	23	17
27	26,50	27,49	136	0	7	3	30	21	0	1	4	21	5	30	14
28	27,50	28,49	84	0	6	0	26	6	0	0	5	15	5	16	5
29	28,50	29,49	69	0	3	3	22	5	0	0	1	4	6	15	10
30	29,50	30,49	65	0	4	3	21	0	0	0	0	0	10	23	4
31	30,50	31,49	39	0	0	1	9	0	0	0	1	0	7	19	2
32	31,50	32,49	14	0	0	0	1	0	0	0	0	0	7	4	2
33	32,50	33,49	9	0	0	0	2	0	0	0	0	0	2	5	0
34	33,50	34,49	2	0	0	0	0	0	0	0	0	0	1	1	0
35	34,50	35,49	0	0	0	0	0	0	0	0	0	0	0	0	0
36	35,50	36,49	0	0	0	0	0	0	0	0	0	0	0	0	0
37	36,50	37,49	0	0	0	0	0	0	0	0	0	0	0	0	0
38	37,50	38,49	0	0	0	0	0	0	0	0	0	0	0	0	0
39	38,50	39,49	0	0	0	0	0	0	0	0	0	0	0	0	0
40	39,50	40,49	0	0	0	0	0	0	0	0	0	0	0	0	0
41	40,50		0	0	0	0	0	0	0	0	0	0	0	0	0





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Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 2 complete 2y; Complete period Period: Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Frequency distribution (TAB file data)

150,00m - Subst

Table with columns: Bin, Start, End, Sum, 0-N, 1-NNE, 2-ENE, 3-E, 4-ESE, 5-SSE, 6-S, 7-SSW, 8-WSW, 9-W, 10-WNW, 11-NNW. Rows include Mean and data for bins 0 to 41.





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06/03/2024 09.34

Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 2 complete 2y; Complete period Period: Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Frequency distribution (TAB file data)

120,00m - Subst															
Bin	Start	End	Sum	0-N	1-NNE	2-ENE	3-E	4-ESE	5-SSE	6-S	7-SSW	8-WSW	9-W	10-WNW	11-NNW
Mean			10,71	7,63	6,61	8,61	10,71	11,70	11,03	10,35	10,98	10,92	10,90	11,23	11,49
0		0,49	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0,50	1,49	701	67	57	51	41	44	38	59	59	80	60	72	73
2	1,50	2,49	1799	170	202	185	131	90	106	123	151	156	157	176	152
3	2,50	3,49	2861	214	263	285	240	202	214	202	182	304	220	292	243
4	3,50	4,49	4025	320	271	258	326	322	200	258	233	477	483	509	368
5	4,50	5,49	4957	377	297	265	287	311	245	378	437	587	689	554	530
6	5,50	6,49	5868	478	269	275	366	247	251	539	658	642	821	738	584
7	6,50	7,49	6338	379	351	249	367	321	267	591	709	863	851	821	569
8	7,50	8,49	6419	265	187	255	332	402	338	671	747	1020	826	784	592
9	8,50	9,49	6485	228	212	264	340	344	359	563	783	901	911	903	677
10	9,50	10,49	6836	169	157	225	344	370	410	543	774	1062	1006	941	835
11	10,50	11,49	6849	123	71	292	357	537	444	559	655	1097	991	995	728
12	11,50	12,49	6941	87	56	223	344	640	698	443	741	1057	938	969	745
13	12,50	13,49	5880	85	42	198	377	539	560	348	607	870	717	876	661
14	13,50	14,49	5062	107	45	142	250	568	360	346	615	677	715	665	572
15	14,50	15,49	4530	97	19	118	150	594	269	363	510	583	748	579	500
16	15,50	16,49	3930	89	17	111	114	477	252	324	497	550	625	502	372
17	16,50	17,49	3044	46	4	64	89	262	239	284	414	442	469	361	370
18	17,50	18,49	2424	28	0	30	111	152	176	203	362	400	319	278	365
19	18,50	19,49	1813	20	2	9	90	99	102	150	191	328	217	237	368
20	19,50	20,49	1335	9	0	6	89	67	83	72	139	193	185	209	283
21	20,50	21,49	1013	8	2	9	50	53	66	54	86	166	132	209	178
22	21,50	22,49	747	8	0	2	62	65	21	28	49	55	91	235	131
23	22,50	23,49	506	4	3	5	44	85	13	19	28	33	51	121	100
24	23,50	24,49	307	2	3	5	40	70	6	14	13	19	17	67	51
25	24,50	25,49	211	0	4	9	62	46	0	2	2	21	14	26	25
26	25,50	26,49	122	0	3	2	42	22	0	0	6	14	3	21	9
27	26,50	27,49	81	0	3	2	24	13	0	0	5	2	4	15	13
28	27,50	28,49	86	0	4	1	32	7	0	0	3	2	10	22	5
29	28,50	29,49	66	0	6	1	25	0	0	0	2	0	9	17	6
30	29,50	30,49	51	0	0	0	15	0	0	0	0	0	7	26	3
31	30,50	31,49	9	0	0	0	5	0	0	0	0	0	1	3	0
32	31,50	32,49	5	0	0	0	2	0	0	0	0	0	2	1	0
33	32,50	33,49	2	0	0	0	0	0	0	0	0	0	1	1	0
34	33,50	34,49	0	0	0	0	0	0	0	0	0	0	0	0	0
35	34,50	35,49	0	0	0	0	0	0	0	0	0	0	0	0	0
36	35,50	36,49	0	0	0	0	0	0	0	0	0	0	0	0	0
37	36,50	37,49	0	0	0	0	0	0	0	0	0	0	0	0	0
38	37,50	38,49	0	0	0	0	0	0	0	0	0	0	0	0	0
39	38,50	39,49	0	0	0	0	0	0	0	0	0	0	0	0	0
40	39,50	40,49	0	0	0	0	0	0	0	0	0	0	0	0	0
41	40,50		0	0	0	0	0	0	0	0	0	0	0	0	0





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Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 2 complete 2y; Complete period Period: Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Frequency distribution (TAB file data)

Table with columns: Bin, Start, End, Sum, 0-N, 1-NNE, 2-ENE, 3-E, 4-ESE, 5-SSE, 6-S, 7-SSW, 8-WSW, 9-W, 10-WNW, 11-NNW. Rows include Mean and frequency counts for various wind directions and speeds.





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Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 2 complete 2y; Complete period Period: Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Frequency distribution (TAB file data)

Table with 13 columns: Bin, Start, End, Sum, 0-N, 1-NNE, 2-ENE, 3-E, 4-ESE, 5-SSE, 6-S, 7-SSW, 8-WSW, 9-W, 10-WNW, 11-NNW. Rows include Mean and frequency counts for various wind speed bins from 0 to 41.





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Calculated:  
06/03/2024 09.34

### Meteo data report - Frequency distribution (TAB file data)

**Mast:** Lot 2 complete 2y; Complete period **Period:** Full period: 15/11/2021 - 15/11/2023 (24,0 months)

#### Frequency distribution (TAB file data)

60,00m - Subst															
Bin	Start	End	Sum	0-N	1-NNE	2-ENE	3-E	4-ESE	5-SSE	6-S	7-SSW	8-WSW	9-W	10-WNW	11-NNW
Mean			10,07	7,39	6,53	8,13	10,26	11,04	9,88	9,63	10,09	10,22	10,25	10,77	11,00
0		0,49	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0,50	1,49	787	67	68	49	55	42	38	55	71	81	82	88	91
2	1,50	2,49	1974	173	221	214	137	101	112	148	166	161	182	193	166
3	2,50	3,49	3118	257	278	306	219	225	235	195	209	324	275	311	284
4	3,50	4,49	4421	346	308	276	315	352	234	302	318	504	575	521	370
5	4,50	5,49	5505	396	271	250	347	342	300	453	583	662	755	591	555
6	5,50	6,49	6627	488	321	359	387	317	311	623	754	772	912	766	617
7	6,50	7,49	7327	397	343	274	394	393	448	850	869	972	913	847	627
8	7,50	8,49	7394	295	177	298	423	480	529	721	868	1064	981	875	683
9	8,50	9,49	7354	211	231	316	387	432	520	635	933	1081	949	975	684
10	9,50	10,49	7696	173	150	300	428	475	679	653	823	1197	1029	947	842
11	10,50	11,49	7552	107	81	326	468	732	646	421	851	1101	990	1066	763
12	11,50	12,49	6277	80	65	241	311	598	404	392	735	873	915	946	717
13	12,50	13,49	5235	99	64	186	329	487	279	371	577	693	759	786	605
14	13,50	14,49	4820	102	33	114	212	564	218	424	547	618	750	642	596
15	14,50	15,49	4056	97	20	67	106	512	158	355	461	575	697	539	469
16	15,50	16,49	3319	69	6	61	77	329	206	299	441	511	518	447	355
17	16,50	17,49	2488	40	2	41	93	218	190	193	300	415	343	291	362
18	17,50	18,49	1785	25	0	21	95	122	110	115	171	300	196	239	391
19	18,50	19,49	1401	15	1	5	101	83	78	65	124	203	158	234	334
20	19,50	20,49	1014	8	2	11	68	55	62	42	78	90	135	261	202
21	20,50	21,49	722	11	1	4	63	71	31	34	38	51	69	207	142
22	21,50	22,49	497	5	3	2	46	81	11	22	19	25	52	139	92
23	22,50	23,49	311	3	2	5	58	74	8	7	9	18	21	54	52
24	23,50	24,49	189	1	4	4	68	51	1	0	2	10	10	20	18
25	24,50	25,49	114	0	6	2	31	25	0	0	5	4	9	19	13
26	25,50	26,49	98	0	8	0	37	9	0	0	6	0	11	17	10
27	26,50	27,49	74	0	4	0	27	4	0	0	3	0	8	24	4
28	27,50	28,49	66	0	4	3	25	0	0	0	0	0	8	20	6
29	28,50	29,49	20	0	0	0	13	0	0	0	0	0	1	6	0
30	29,50	30,49	7	0	0	0	3	0	0	0	0	0	1	2	1
31	30,50	31,49	0	0	0	0	0	0	0	0	0	0	0	0	0
32	31,50	32,49	0	0	0	0	0	0	0	0	0	0	0	0	0
33	32,50	33,49	0	0	0	0	0	0	0	0	0	0	0	0	0
34	33,50	34,49	0	0	0	0	0	0	0	0	0	0	0	0	0
35	34,50	35,49	0	0	0	0	0	0	0	0	0	0	0	0	0
36	35,50	36,49	0	0	0	0	0	0	0	0	0	0	0	0	0
37	36,50	37,49	0	0	0	0	0	0	0	0	0	0	0	0	0
38	37,50	38,49	0	0	0	0	0	0	0	0	0	0	0	0	0
39	38,50	39,49	0	0	0	0	0	0	0	0	0	0	0	0	0
40	39,50	40,49	0	0	0	0	0	0	0	0	0	0	0	0	0
41	40,50		0	0	0	0	0	0	0	0	0	0	0	0	0





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Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 2 complete 2y; Complete period Period: Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Frequency distribution (TAB file data)

Table with 14 columns: Bin, Start, End, Sum, 0-N, 1-NNE, 2-ENE, 3-E, 4-ESE, 5-SSE, 6-S, 7-SSW, 8-WSW, 9-W, 10-WNW, 11-NNW. Rows include Mean and bins 0 to 41.





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Calculated:  
06/03/2024 09.34

Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 2 complete 2y; Complete period    Period: Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Frequency distribution (TAB file data)

30,00m - Subst

Bin	Start	End	Sum	0-N	1-NNE	2-ENE	3-E	4-ESE	5-SSE	6-S	7-SSW	8-WSW	9-W	10-WNW	11-NNW
Mean			9,52	7,08	6,27	7,62	9,72	10,37	9,13	9,02	9,40	9,61	9,78	10,26	10,59
0		0,49	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0,50	1,49	897	79	77	75	60	48	58	48	75	93	82	112	90
2	1,50	2,49	2115	196	215	214	149	96	144	153	194	185	187	207	175
3	2,50	3,49	3527	278	311	327	264	289	233	226	243	366	337	352	301
4	3,50	4,49	4923	373	323	265	360	349	272	357	411	598	643	558	414
5	4,50	5,49	6165	412	300	354	362	385	393	518	744	718	811	617	551
6	5,50	6,49	7497	479	382	359	405	384	484	827	903	894	957	821	602
7	6,50	7,49	8108	393	293	338	528	556	571	899	939	1103	970	860	658
8	7,50	8,49	8098	272	206	381	458	615	583	754	970	1150	1040	952	717
9	8,50	9,49	7937	209	190	343	455	451	673	615	1002	1232	946	989	832
10	9,50	10,49	7821	151	140	305	464	611	595	503	853	1193	1104	1045	857
11	10,50	11,49	6983	103	80	309	377	667	402	414	787	919	1009	1126	790
12	11,50	12,49	5682	90	73	168	300	524	248	398	666	749	873	884	709
13	12,50	13,49	5034	100	47	115	276	467	207	391	566	660	825	723	657
14	13,50	14,49	4480	99	23	76	150	539	172	388	466	665	780	604	518
15	14,50	15,49	3668	90	14	45	106	415	212	321	432	559	539	517	418
16	15,50	16,49	2808	56	0	54	85	261	221	217	328	424	401	343	418
17	16,50	17,49	1945	24	0	33	106	155	132	106	180	327	232	234	416
18	17,50	18,49	1518	13	0	8	106	95	90	61	128	190	168	279	380
19	18,50	19,49	1084	10	0	11	83	66	79	46	72	85	128	275	229
20	19,50	20,49	699	8	5	5	71	63	24	32	30	36	69	207	149
21	20,50	21,49	444	9	1	1	49	99	15	15	11	25	44	105	70
22	21,50	22,49	261	1	3	7	59	68	4	5	7	12	25	31	39
23	22,50	23,49	185	2	3	5	66	40	1	1	9	5	8	21	24
24	23,50	24,49	125	0	9	5	35	21	0	0	5	2	13	24	11
25	24,50	25,49	99	0	6	3	37	8	0	0	2	0	9	26	8
26	25,50	26,49	59	0	3	0	25	2	0	0	0	0	8	20	1
27	26,50	27,49	40	0	2	1	26	0	0	0	1	0	0	8	2
28	27,50	28,49	12	0	0	0	7	0	0	0	0	0	2	3	0
29	28,50	29,49	1	0	0	0	0	0	0	0	0	0	0	1	0
30	29,50	30,49	0	0	0	0	0	0	0	0	0	0	0	0	0
31	30,50	31,49	0	0	0	0	0	0	0	0	0	0	0	0	0
32	31,50	32,49	0	0	0	0	0	0	0	0	0	0	0	0	0
33	32,50	33,49	0	0	0	0	0	0	0	0	0	0	0	0	0
34	33,50	34,49	0	0	0	0	0	0	0	0	0	0	0	0	0
35	34,50	35,49	0	0	0	0	0	0	0	0	0	0	0	0	0
36	35,50	36,49	0	0	0	0	0	0	0	0	0	0	0	0	0
37	36,50	37,49	0	0	0	0	0	0	0	0	0	0	0	0	0
38	37,50	38,49	0	0	0	0	0	0	0	0	0	0	0	0	0
39	38,50	39,49	0	0	0	0	0	0	0	0	0	0	0	0	0
40	39,50	40,49	0	0	0	0	0	0	0	0	0	0	0	0	0
41	40,50		0	0	0	0	0	0	0	0	0	0	0	0	0







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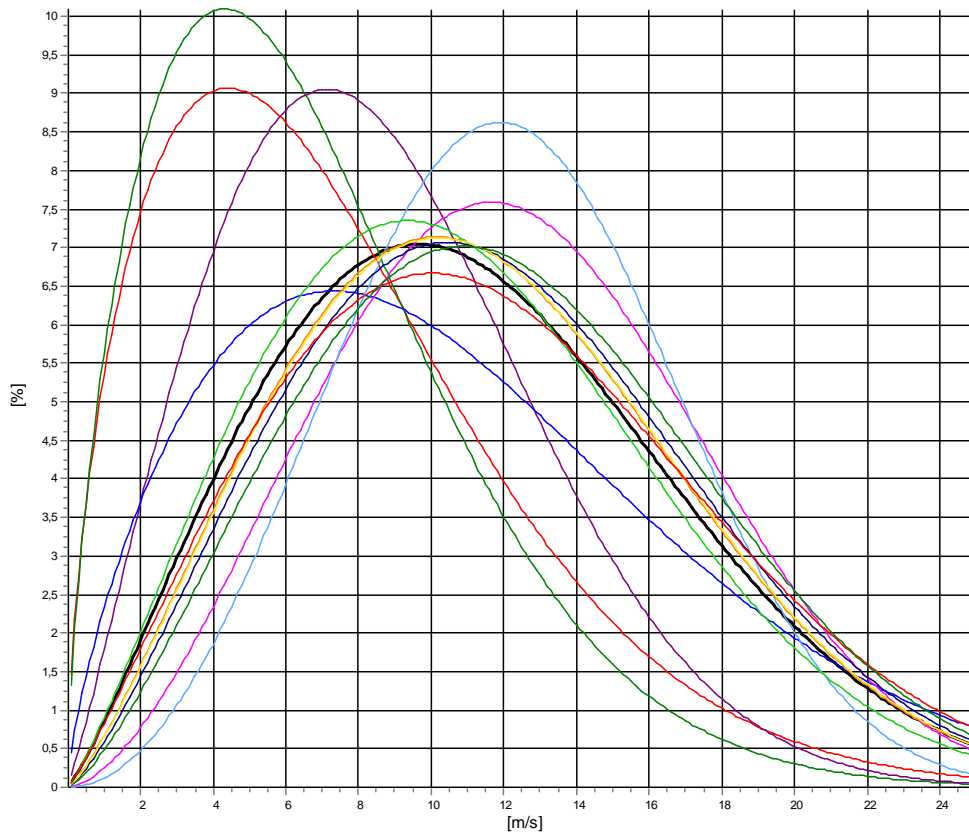
### Meteo data report - Weibull data overview

**Mast:** Lot 2 complete 2y; Complete period    **Period:** Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Height: **270,00m - Subst**

#### Weibull data

Sector	A	k	f	Mean wind speed
	[m/s]			[m/s]
0-N	8,35	1,578	3,69	7,50
1-NNE	7,62	1,644	2,69	6,82
2-ENE	9,75	2,088	3,69	8,64
3-E	12,19	1,714	4,91	10,87
4-ESE	13,94	2,647	7,45	12,39
5-SSE	13,62	2,997	6,36	12,16
6-S	12,38	2,179	7,30	10,96
7-SSW	13,11	2,265	10,57	11,61
8-WSW	13,39	2,300	14,12	11,87
9-W	13,16	2,270	14,14	11,65
10-WNW	13,46	2,137	13,60	11,92
11-NNW	13,76	2,360	11,47	12,19
<b>Mean</b>	<b>12,85</b>	<b>2,164</b>	<b>100,00</b>	<b>11,38</b>



— All A: 12,9 m/s k: 2,16 Vm: 11,4 m/s	— N A: 8,4 m/s k: 1,58 Vm: 7,5 m/s	— NNE A: 7,6 m/s k: 1,64 Vm: 6,8 m/s	— ENE A: 9,8 m/s k: 2,09 Vm: 8,6 m/s
— E A: 12,2 m/s k: 1,71 Vm: 10,9 m/s	— ESE A: 13,9 m/s k: 2,65 Vm: 12,4 m/s	— SSE A: 13,6 m/s k: 3,00 Vm: 12,2 m/s	— S A: 12,4 m/s k: 2,18 Vm: 11,0 m/s
— SSW A: 13,1 m/s k: 2,27 Vm: 11,6 m/s	— WSW A: 13,4 m/s k: 2,30 Vm: 11,9 m/s	— W A: 13,2 m/s k: 2,27 Vm: 11,7 m/s	— WNW A: 13,5 m/s k: 2,14 Vm: 11,9 m/s
— NNW A: 13,8 m/s k: 2,36 Vm: 12,2 m/s			





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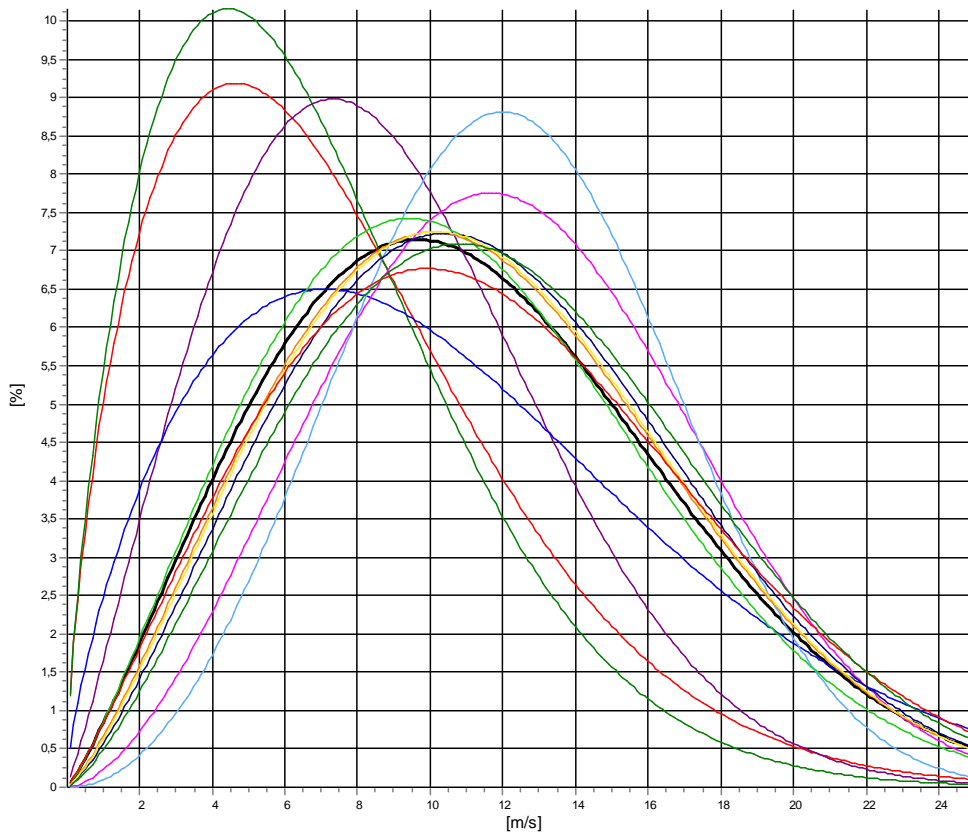
### Meteo data report - Weibull data overview

**Mast:** Lot 2 complete 2y; Complete period **Period:** Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Height: **240,00m - Subst**

#### Weibull data

Sector	A [m/s]	k	f	Mean wind speed [m/s]
0-N	8,34	1,626	3,68	7,47
1-NNE	7,63	1,671	2,73	6,82
2-ENE	9,91	2,112	3,69	8,77
3-E	12,01	1,694	5,07	10,72
4-ESE	13,85	2,696	7,46	12,32
5-SSE	13,64	3,078	6,37	12,19
6-S	12,38	2,208	7,26	10,96
7-SSW	12,98	2,277	10,70	11,50
8-WSW	13,23	2,331	14,06	11,73
9-W	13,04	2,295	14,02	11,55
10-WNW	13,30	2,146	13,62	11,78
11-NNW	13,64	2,366	11,35	12,09
<b>Mean</b>	<b>12,75</b>	<b>2,184</b>	<b>100,00</b>	<b>11,29</b>



All A: 12,8 m/s k: 2,18 Vm: 11,3 m/s	N A: 8,3 m/s k: 1,63 Vm: 7,5 m/s	NNE A: 7,6 m/s k: 1,67 Vm: 6,8 m/s	ENE A: 9,9 m/s k: 2,11 Vm: 8,8 m/s
E A: 12,0 m/s k: 1,69 Vm: 10,7 m/s	ESE A: 13,9 m/s k: 2,70 Vm: 12,3 m/s	SSE A: 13,6 m/s k: 3,08 Vm: 12,2 m/s	S A: 12,4 m/s k: 2,21 Vm: 11,0 m/s
SSW A: 13,0 m/s k: 2,28 Vm: 11,5 m/s	WSW A: 13,2 m/s k: 2,33 Vm: 11,7 m/s	W A: 13,0 m/s k: 2,29 Vm: 11,6 m/s	WNW A: 13,3 m/s k: 2,15 Vm: 11,8 m/s
NNW A: 13,6 m/s k: 2,37 Vm: 12,1 m/s			





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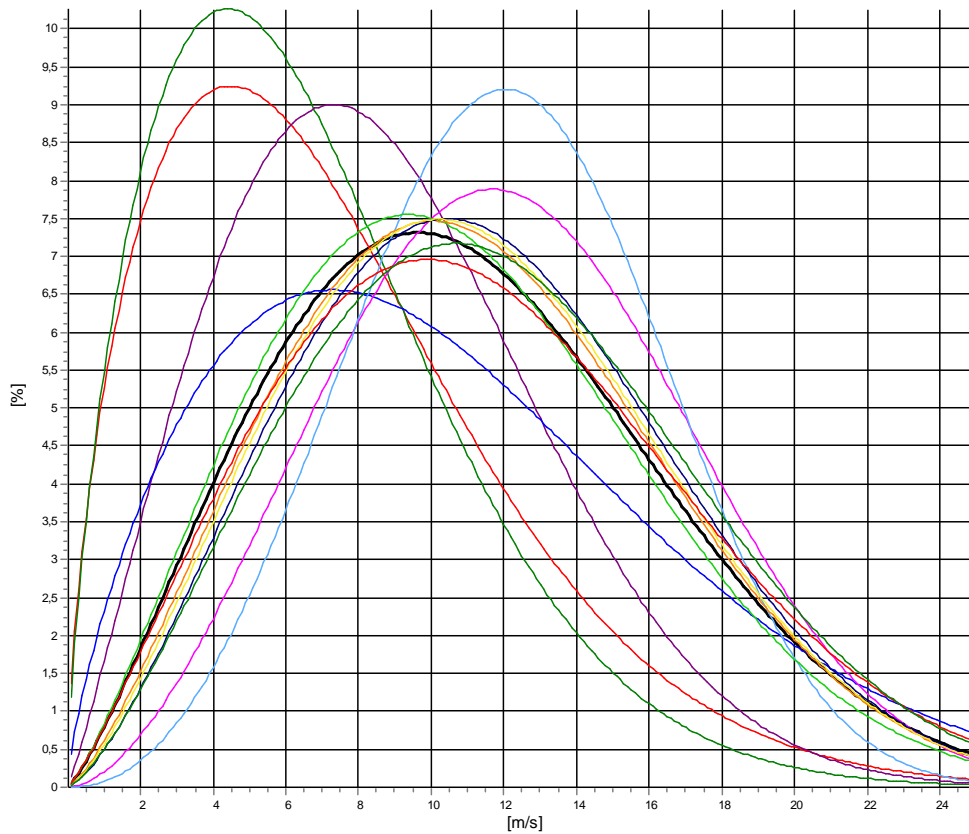
### Meteo data report - Weibull data overview

**Mast:** Lot 2 complete 2y; Complete period **Period:** Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Height: **200,00m - Subst**

#### Weibull data

Sector	A	k	f	Mean wind speed
	[m/s]			[m/s]
0-N	8,24	1,604	3,69	7,39
1-NNE	7,56	1,675	2,76	6,75
2-ENE	9,89	2,113	3,72	8,76
3-E	12,01	1,728	5,18	10,71
4-ESE	13,80	2,740	7,59	12,28
5-SSE	13,53	3,206	6,37	12,12
6-S	12,24	2,227	7,34	10,84
7-SSW	12,79	2,328	10,63	11,33
8-WSW	13,07	2,404	14,03	11,58
9-W	12,89	2,361	13,89	11,43
10-WNW	13,09	2,182	13,57	11,59
11-NNW	13,48	2,365	11,23	11,95
<b>Mean</b>	<b>12,61</b>	<b>2,221</b>	<b>100,00</b>	<b>11,17</b>



All A: 12,6 m/s k: 2,22 Vm: 11,2 m/s	N A: 8,2 m/s k: 1,60 Vm: 7,4 m/s	NNE A: 7,6 m/s k: 1,68 Vm: 6,8 m/s	ENE A: 9,9 m/s k: 2,11 Vm: 8,8 m/s
E A: 12,0 m/s k: 1,73 Vm: 10,7 m/s	ESE A: 13,8 m/s k: 2,74 Vm: 12,3 m/s	SSE A: 13,5 m/s k: 3,21 Vm: 12,1 m/s	S A: 12,2 m/s k: 2,23 Vm: 10,8 m/s
SSW A: 12,8 m/s k: 2,33 Vm: 11,3 m/s	WSW A: 13,1 m/s k: 2,40 Vm: 11,6 m/s	W A: 12,9 m/s k: 2,36 Vm: 11,4 m/s	WNW A: 13,1 m/s k: 2,18 Vm: 11,6 m/s
NNW A: 13,5 m/s k: 2,36 Vm: 11,9 m/s			





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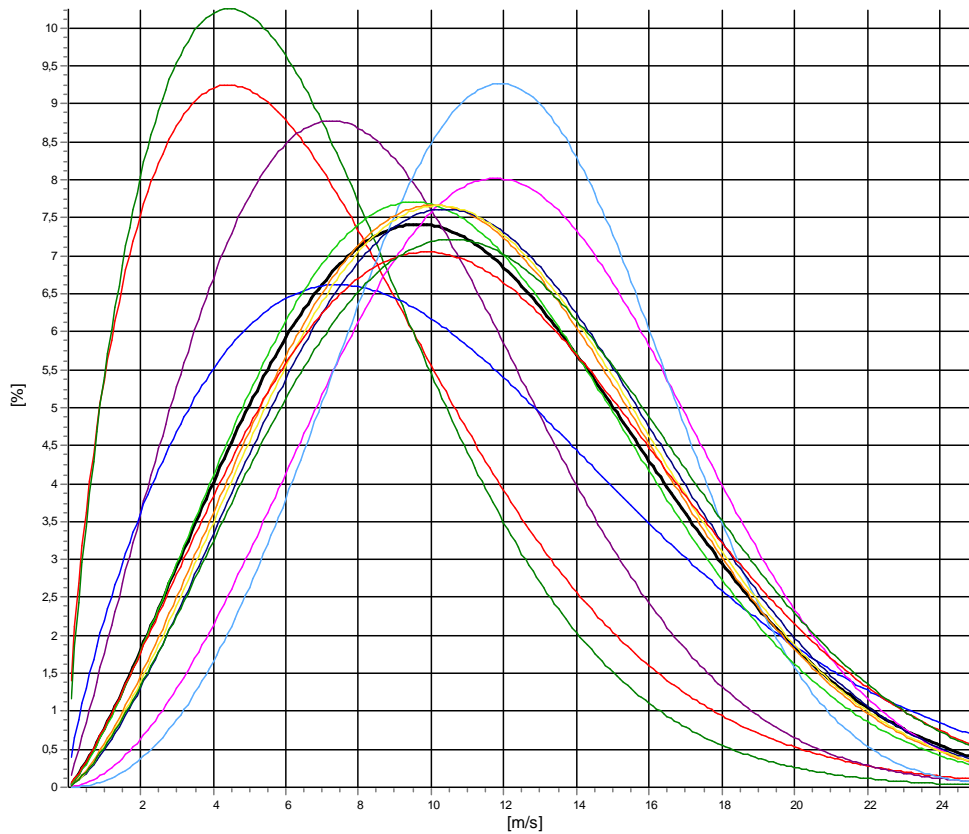
### Meteo data report - Weibull data overview

**Mast:** Lot 2 complete 2y; Complete period **Period:** Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Height: **180,00m - Subst**

#### Weibull data

Sector	A	k	f	Mean wind speed
	[m/s]			[m/s]
0-N	8,22	1,595	3,71	7,37
1-NNE	7,58	1,682	2,73	6,77
2-ENE	9,99	2,067	3,77	8,85
3-E	12,01	1,758	5,27	10,69
4-ESE	13,79	2,793	7,59	12,28
5-SSE	13,39	3,192	6,36	11,99
6-S	12,23	2,288	7,42	10,83
7-SSW	12,65	2,376	10,63	11,22
8-WSW	12,93	2,421	13,96	11,47
9-W	12,77	2,400	13,77	11,32
10-WNW	12,99	2,199	13,56	11,51
11-NNW	13,36	2,356	11,22	11,84
<b>Mean</b>	<b>12,53</b>	<b>2,243</b>	<b>100,00</b>	<b>11,10</b>



All A: 12,5 m/s k: 2,24 Vm: 11,1 m/s	N A: 8,2 m/s k: 1,60 Vm: 7,4 m/s	NNE A: 7,6 m/s k: 1,68 Vm: 6,8 m/s	ENE A: 10,0 m/s k: 2,07 Vm: 8,8 m/s
E A: 12,0 m/s k: 1,76 Vm: 10,7 m/s	ESE A: 13,8 m/s k: 2,79 Vm: 12,3 m/s	SSE A: 13,4 m/s k: 3,19 Vm: 12,0 m/s	S A: 12,2 m/s k: 2,29 Vm: 10,8 m/s
SSW A: 12,7 m/s k: 2,38 Vm: 11,2 m/s	WSW A: 12,9 m/s k: 2,42 Vm: 11,5 m/s	W A: 12,8 m/s k: 2,40 Vm: 11,3 m/s	WNW A: 13,0 m/s k: 2,20 Vm: 11,5 m/s
NNW A: 13,4 m/s k: 2,36 Vm: 11,8 m/s			





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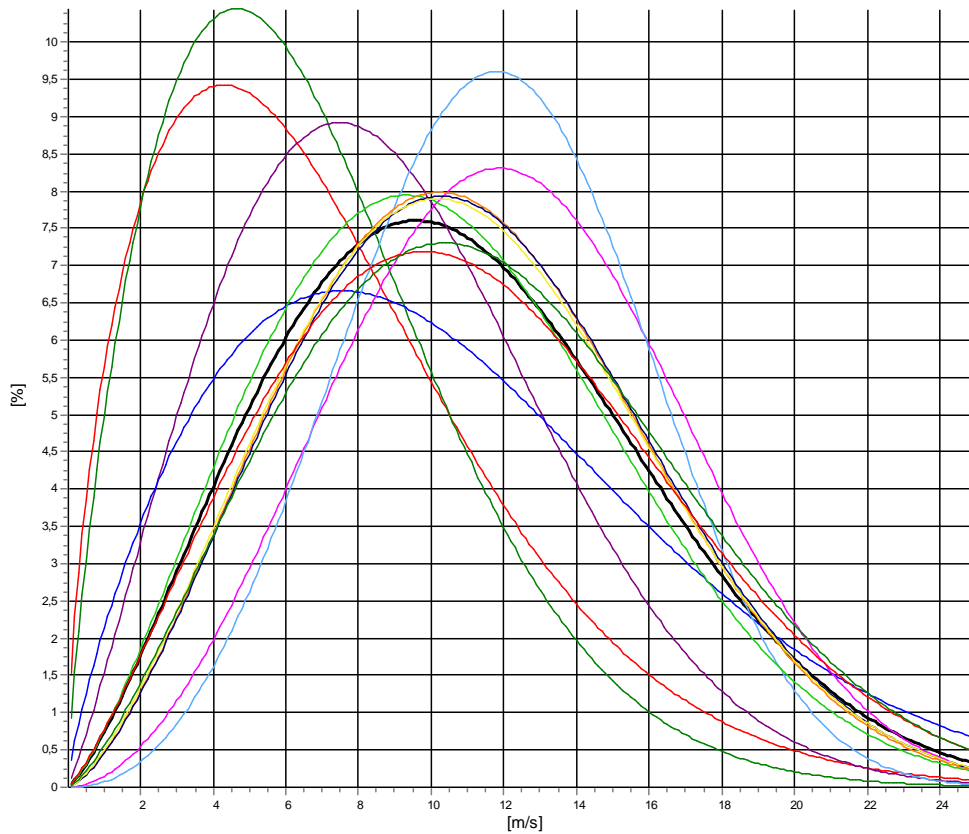
### Meteo data report - Weibull data overview

**Mast:** Lot 2 complete 2y; Complete period **Period:** Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Height: **150,00m - Subst**

#### Weibull data

Sector	A [m/s]	k	f	Mean wind speed [m/s]
0-N	8,04	1,582	3,70	7,22
1-NNE	7,57	1,741	2,76	6,74
2-ENE	10,06	2,136	3,81	8,91
3-E	12,00	1,776	5,45	10,68
4-ESE	13,74	2,898	7,62	12,25
5-SSE	13,20	3,270	6,26	11,83
6-S	11,93	2,302	7,64	10,57
7-SSW	12,59	2,484	10,64	11,17
8-WSW	12,66	2,482	13,88	11,23
9-W	12,58	2,449	13,60	11,16
10-WNW	12,82	2,220	13,56	11,36
11-NNW	13,16	2,346	11,09	11,66
<b>Mean</b>	<b>12,36</b>	<b>2,278</b>	<b>100,00</b>	<b>10,95</b>



All A: 12,4 m/s k: 2,28 Vm: 11,0 m/s	N A: 8,0 m/s k: 1,58 Vm: 7,2 m/s	NNE A: 7,6 m/s k: 1,74 Vm: 6,7 m/s	ENE A: 10,1 m/s k: 2,14 Vm: 8,9 m/s
E A: 12,0 m/s k: 1,78 Vm: 10,7 m/s	ESE A: 13,7 m/s k: 2,90 Vm: 12,2 m/s	SSE A: 13,2 m/s k: 3,27 Vm: 11,8 m/s	S A: 11,9 m/s k: 2,30 Vm: 10,6 m/s
SSW A: 12,6 m/s k: 2,48 Vm: 11,2 m/s	WSW A: 12,7 m/s k: 2,48 Vm: 11,2 m/s	W A: 12,6 m/s k: 2,45 Vm: 11,2 m/s	NNW A: 12,8 m/s k: 2,22 Vm: 11,4 m/s
NNW A: 13,2 m/s k: 2,35 Vm: 11,7 m/s			





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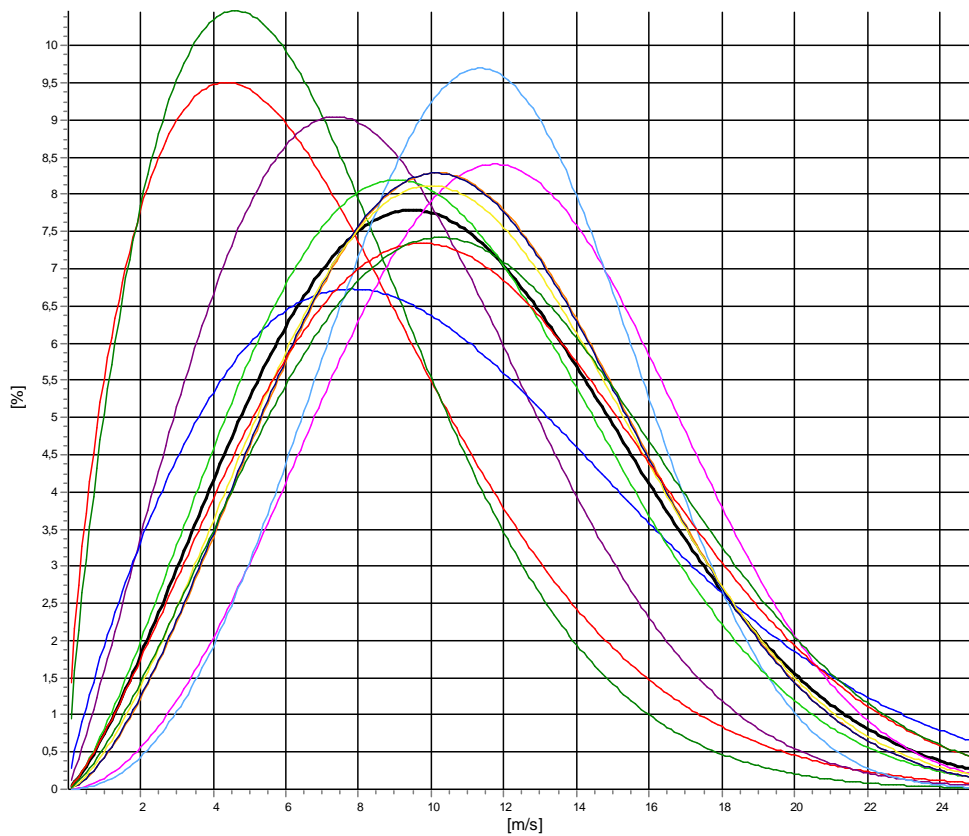
### Meteo data report - Weibull data overview

**Mast:** Lot 2 complete 2y; Complete period **Period:** Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Height: **120,00m - Subst**

#### Weibull data

Sector	A	k	f	Mean wind speed
	[m/s]			[m/s]
0-N	8,01	1,602	3,70	7,18
1-NNE	7,54	1,736	2,79	6,72
2-ENE	9,91	2,134	3,88	8,78
3-E	12,05	1,824	5,64	10,71
4-ESE	13,58	2,899	7,61	12,11
5-SSE	12,77	3,184	6,26	11,44
6-S	11,57	2,304	7,82	10,25
7-SSW	12,36	2,547	10,58	10,98
8-WSW	12,33	2,537	13,80	10,95
9-W	12,32	2,469	13,46	10,93
10-WNW	12,67	2,247	13,39	11,23
11-NNW	12,97	2,350	11,07	11,49
<b>Mean</b>	<b>12,14</b>	<b>2,297</b>	<b>100,00</b>	<b>10,76</b>



All A: 12,1 m/s k: 2,30 Vm: 10,8 m/s	N A: 8,0 m/s k: 1,60 Vm: 7,2 m/s	NNE A: 7,5 m/s k: 1,74 Vm: 6,7 m/s	ENE A: 9,9 m/s k: 2,13 Vm: 8,8 m/s
E A: 12,1 m/s k: 1,82 Vm: 10,7 m/s	ESE A: 13,6 m/s k: 2,90 Vm: 12,1 m/s	SSE A: 12,8 m/s k: 3,18 Vm: 11,4 m/s	S A: 11,6 m/s k: 2,30 Vm: 10,2 m/s
SSW A: 12,4 m/s k: 2,55 Vm: 11,0 m/s	WSW A: 12,3 m/s k: 2,54 Vm: 10,9 m/s	W A: 12,3 m/s k: 2,47 Vm: 10,9 m/s	WNW A: 12,7 m/s k: 2,25 Vm: 11,2 m/s
NNW A: 13,0 m/s k: 2,35 Vm: 11,5 m/s			



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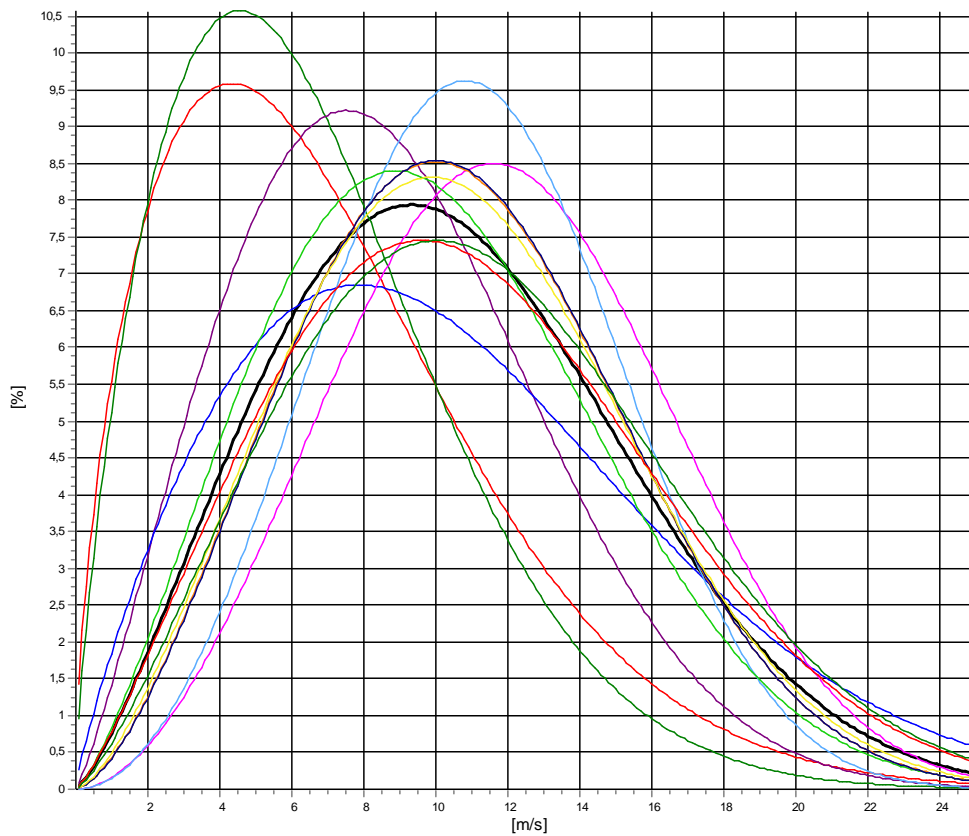
### Meteo data report - Weibull data overview

**Mast:** Lot 2 complete 2y; Complete period **Period:** Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Height: **100,00m - Subst**

#### Weibull data

Sector	A [m/s]	k	f	Mean wind speed [m/s]
0-N	7,95	1,606	3,72	7,13
1-NNE	7,47	1,738	2,83	6,66
2-ENE	9,93	2,198	3,89	8,79
3-E	11,96	1,856	5,74	10,62
4-ESE	13,42	2,895	7,67	11,96
5-SSE	12,34	3,036	6,29	11,03
6-S	11,35	2,320	7,84	10,05
7-SSW	12,11	2,568	10,63	10,75
8-WSW	12,12	2,577	13,63	10,77
9-W	12,14	2,498	13,41	10,77
10-WNW	12,49	2,248	13,30	11,06
11-NNW	12,80	2,323	11,04	11,34
<b>Mean</b>	<b>11,95</b>	<b>2,304</b>	<b>100,00</b>	<b>10,58</b>



All A: 11,9 m/s k: 2,30 Vm: 10,6 m/s	N A: 8,0 m/s k: 1,61 Vm: 7,1 m/s	NNE A: 7,5 m/s k: 1,74 Vm: 6,7 m/s	ENE A: 9,9 m/s k: 2,20 Vm: 8,8 m/s
E A: 12,0 m/s k: 1,86 Vm: 10,6 m/s	ESE A: 13,4 m/s k: 2,90 Vm: 12,0 m/s	SSE A: 12,3 m/s k: 3,04 Vm: 11,0 m/s	S A: 11,3 m/s k: 2,32 Vm: 10,1 m/s
SSW A: 12,1 m/s k: 2,57 Vm: 10,8 m/s	WSW A: 12,1 m/s k: 2,58 Vm: 10,8 m/s	W A: 12,1 m/s k: 2,50 Vm: 10,8 m/s	WNW A: 12,5 m/s k: 2,25 Vm: 11,1 m/s
NNW A: 12,8 m/s k: 2,32 Vm: 11,3 m/s			





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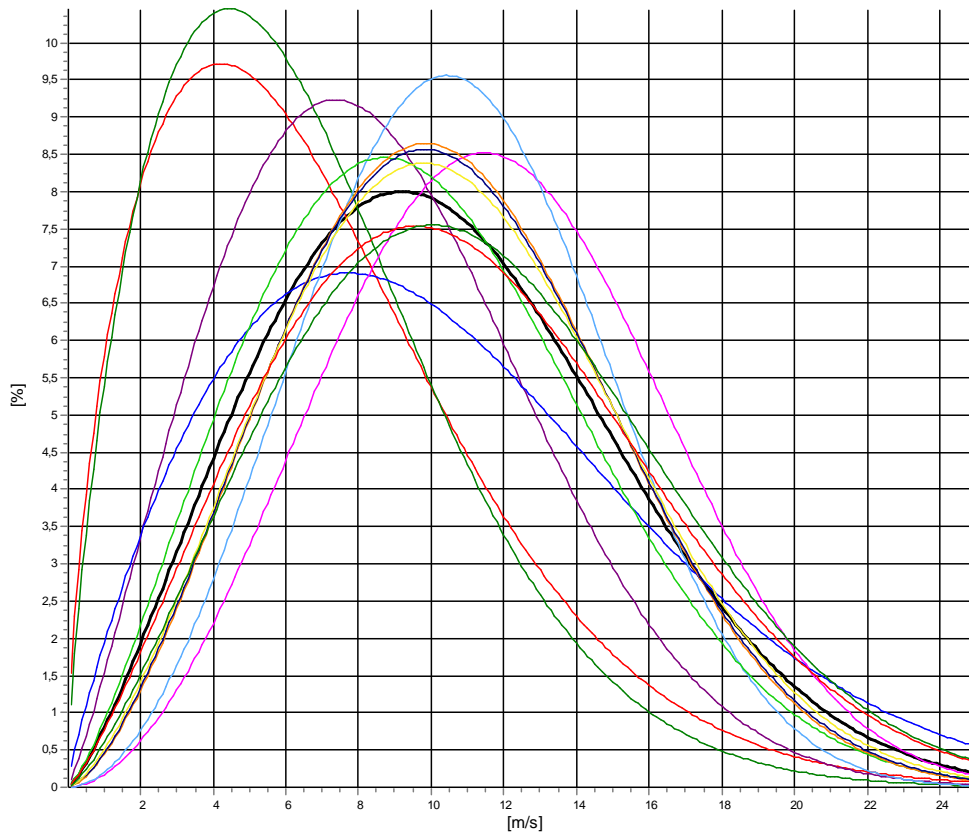
### Meteo data report - Weibull data overview

**Mast:** Lot 2 complete 2y; Complete period **Period:** Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Height: **90,00m - Subst**

#### Weibull data

Sector	A [m/s]	k	f	Mean wind speed [m/s]
0-N	7,82	1,594	3,72	7,02
1-NNE	7,47	1,700	2,84	6,67
2-ENE	9,81	2,166	3,93	8,69
3-E	11,81	1,841	5,72	10,49
4-ESE	13,30	2,874	7,62	11,86
5-SSE	12,04	2,928	6,36	10,74
6-S	11,18	2,295	7,98	9,90
7-SSW	11,94	2,567	10,63	10,60
8-WSW	11,96	2,544	13,57	10,61
9-W	12,03	2,494	13,35	10,68
10-WNW	12,39	2,258	13,24	10,98
11-NNW	12,73	2,346	11,03	11,28
<b>Mean</b>	<b>11,81</b>	<b>2,292</b>	<b>100,00</b>	<b>10,46</b>



All A: 11,8 m/s k: 2,29 Vm: 10,5 m/s	N A: 7,8 m/s k: 1,59 Vm: 7,0 m/s	NNE A: 7,5 m/s k: 1,70 Vm: 6,7 m/s	ENE A: 9,8 m/s k: 2,17 Vm: 8,7 m/s
E A: 11,8 m/s k: 1,84 Vm: 10,5 m/s	ESE A: 13,3 m/s k: 2,87 Vm: 11,9 m/s	SSE A: 12,0 m/s k: 2,93 Vm: 10,7 m/s	S A: 11,2 m/s k: 2,30 Vm: 9,9 m/s
SSW A: 11,9 m/s k: 2,57 Vm: 10,6 m/s	WSW A: 12,0 m/s k: 2,54 Vm: 10,6 m/s	W A: 12,0 m/s k: 2,49 Vm: 10,7 m/s	WNW A: 12,4 m/s k: 2,26 Vm: 11,0 m/s
NNW A: 12,7 m/s k: 2,35 Vm: 11,3 m/s			





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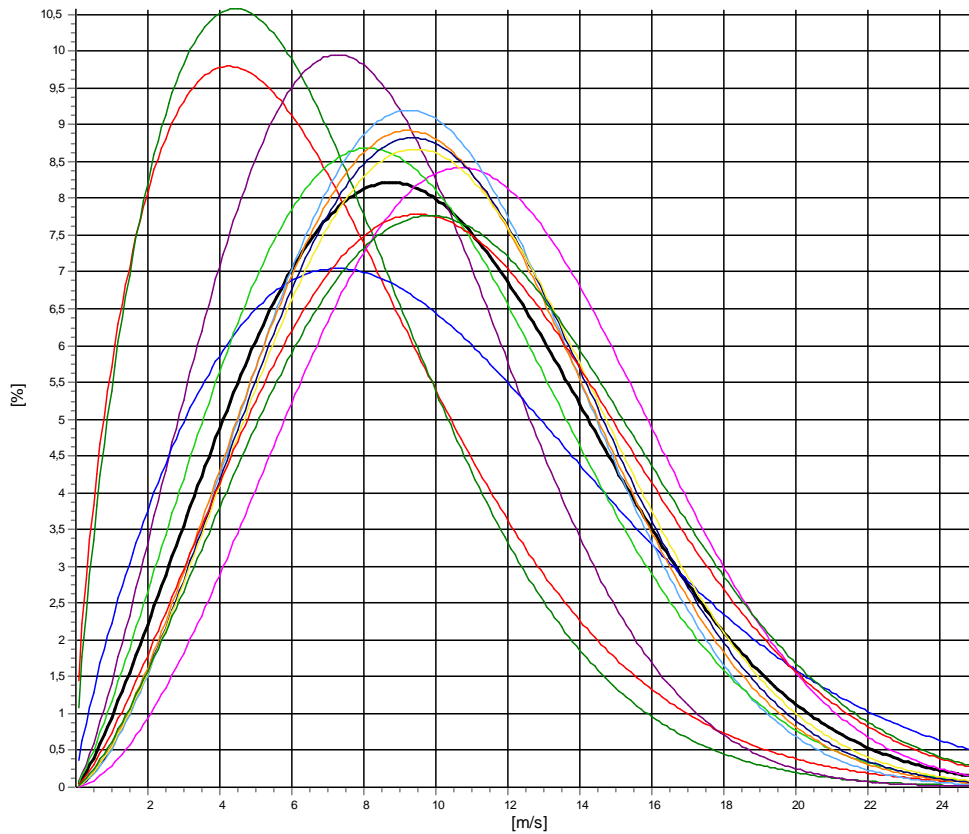
### Meteo data report - Weibull data overview

**Mast:** Lot 2 complete 2y ; Complete period **Period:** Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Height: **60,00m - Subst**

#### Weibull data

Sector	A [m/s]	k	f	Mean wind speed [m/s]
0-N	7,79	1,609	3,76	6,98
1-NNE	7,41	1,710	2,90	6,61
2-ENE	9,40	2,265	4,05	8,33
3-E	11,42	1,799	5,77	10,15
4-ESE	12,71	2,685	7,78	11,30
5-SSE	11,22	2,568	6,30	9,96
6-S	10,64	2,224	7,99	9,42
7-SSW	11,32	2,500	10,80	10,04
8-WSW	11,47	2,506	13,34	10,18
9-W	11,61	2,489	13,34	10,30
10-WNW	12,16	2,299	13,09	10,78
11-NNW	12,43	2,359	10,90	11,02
<b>Mean</b>	<b>11,36</b>	<b>2,256</b>	<b>100,00</b>	<b>10,06</b>



All A: 11,4 m/s k: 2,26 Vm: 10,1 m/s	N A: 7,8 m/s k: 1,61 Vm: 7,0 m/s	NNE A: 7,4 m/s k: 1,71 Vm: 6,6 m/s	ENE A: 9,4 m/s k: 2,26 Vm: 8,3 m/s
E A: 11,4 m/s k: 1,80 Vm: 10,2 m/s	ESE A: 12,7 m/s k: 2,69 Vm: 11,3 m/s	SSE A: 11,2 m/s k: 2,57 Vm: 10,0 m/s	S A: 10,6 m/s k: 2,22 Vm: 9,4 m/s
SSW A: 11,3 m/s k: 2,50 Vm: 10,0 m/s	WSW A: 11,5 m/s k: 2,51 Vm: 10,2 m/s	W A: 11,6 m/s k: 2,49 Vm: 10,3 m/s	WNW A: 12,2 m/s k: 2,30 Vm: 10,8 m/s
NNW A: 12,4 m/s k: 2,36 Vm: 11,0 m/s			



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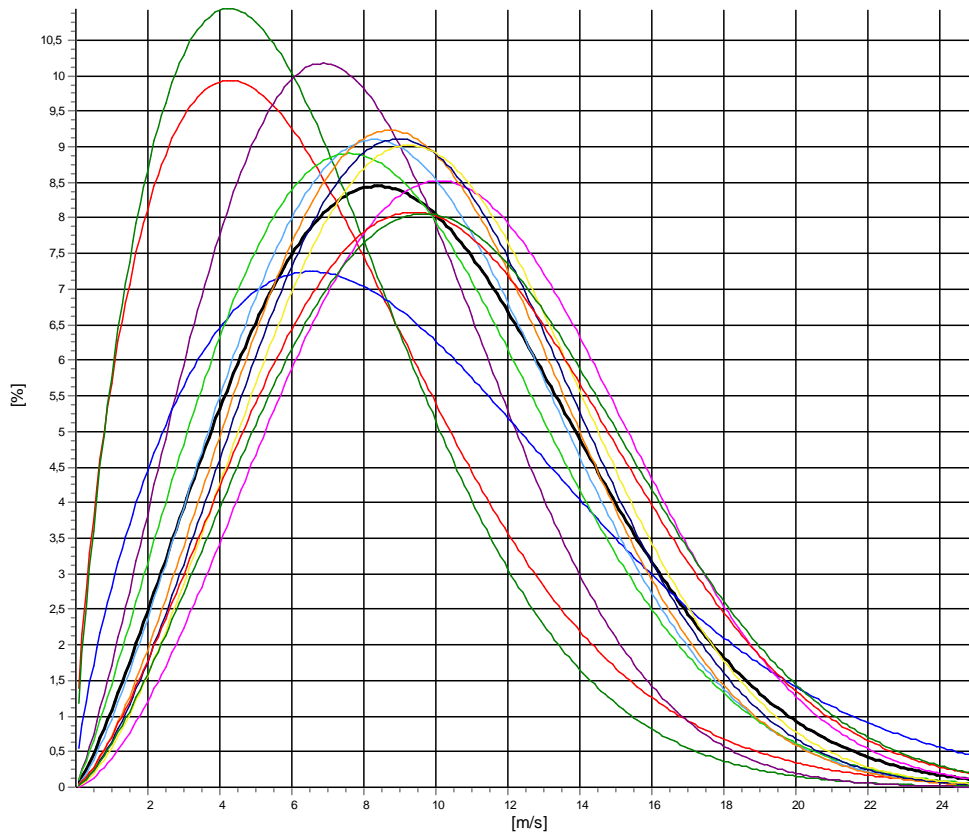
### Meteo data report - Weibull data overview

**Mast:** Lot 2 complete 2y; Complete period **Period:** Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Height: **40,00m - Subst**

#### Weibull data

Sector	A [m/s]	k	f	Mean wind speed [m/s]
0-N	7,71	1,625	3,75	6,90
1-NNE	7,15	1,705	2,96	6,38
2-ENE	9,03	2,207	4,10	8,00
3-E	10,85	1,720	5,84	9,68
4-ESE	12,19	2,589	7,93	10,82
5-SSE	10,53	2,338	6,21	9,33
6-S	10,15	2,160	7,97	8,99
7-SSW	10,79	2,457	10,87	9,57
8-WSW	11,04	2,485	13,18	9,79
9-W	11,30	2,529	13,34	10,03
10-WNW	11,89	2,345	13,02	10,54
11-NNW	12,12	2,397	10,83	10,75
<b>Mean</b>	<b>10,95</b>	<b>2,230</b>	<b>100,00</b>	<b>9,70</b>



All A: 11,0 m/s k: 2,23 Vm: 9,7 m/s	N A: 7,7 m/s k: 1,62 Vm: 6,9 m/s	NNE A: 7,2 m/s k: 1,71 Vm: 6,4 m/s	ENE A: 9,0 m/s k: 2,21 Vm: 8,0 m/s
E A: 10,9 m/s k: 1,72 Vm: 9,7 m/s	ESE A: 12,2 m/s k: 2,59 Vm: 10,8 m/s	SSE A: 10,5 m/s k: 2,34 Vm: 9,3 m/s	S A: 10,2 m/s k: 2,16 Vm: 9,0 m/s
SSW A: 10,8 m/s k: 2,46 Vm: 9,6 m/s	WSW A: 11,0 m/s k: 2,49 Vm: 9,8 m/s	W A: 11,3 m/s k: 2,53 Vm: 10,0 m/s	WNW A: 11,9 m/s k: 2,35 Vm: 10,5 m/s
NNW A: 12,1 m/s k: 2,40 Vm: 10,7 m/s			



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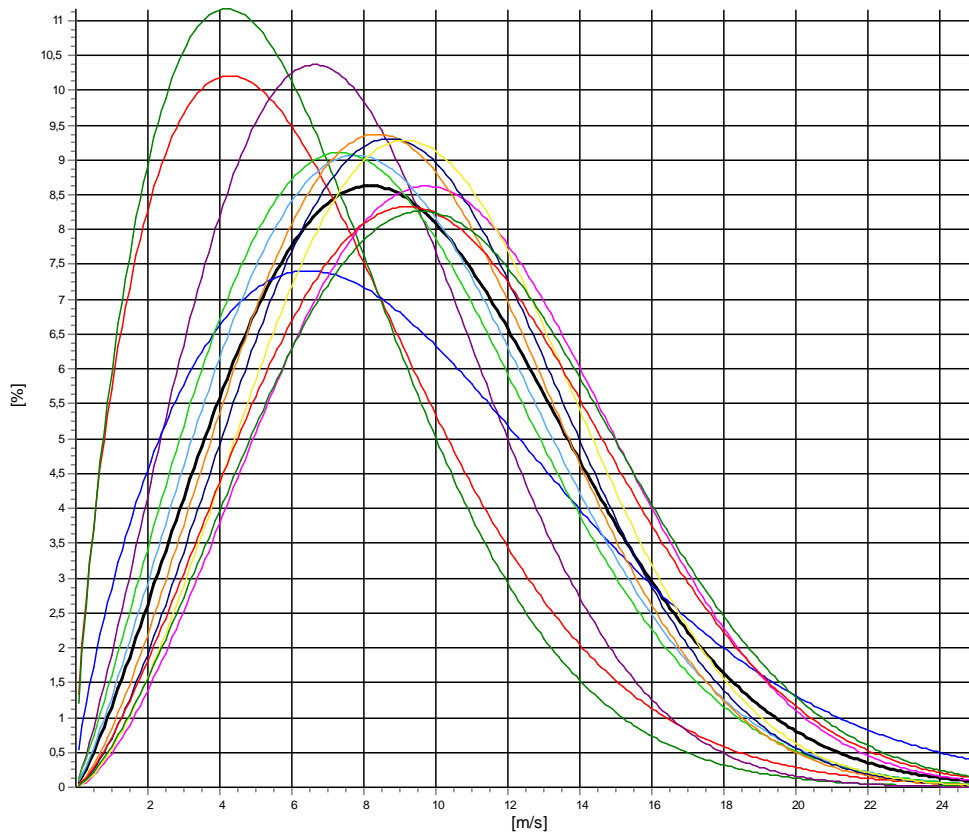
### Meteo data report - Weibull data overview

**Mast:** Lot 2 complete 2y; Complete period **Period:** Full period: 15/11/2021 - 15/11/2023 (24,0 months)

Height: **30,00m - Subst**

#### Weibull data

Sector	A [m/s]	k	f	Mean wind speed [m/s]
0-N	7,55	1,648	3,74	6,75
1-NNE	7,01	1,708	2,93	6,26
2-ENE	8,79	2,182	4,13	7,78
3-E	10,64	1,731	5,93	9,48
4-ESE	11,86	2,538	7,89	10,52
5-SSE	10,18	2,221	6,30	9,01
6-S	9,86	2,139	7,91	8,73
7-SSW	10,48	2,412	10,87	9,29
8-WSW	10,76	2,472	13,22	9,54
9-W	11,10	2,564	13,24	9,86
10-WNW	11,63	2,369	12,95	10,31
11-NNW	11,96	2,431	10,88	10,60
<b>Mean</b>	<b>10,70</b>	<b>2,222</b>	<b>100,00</b>	<b>9,47</b>



All A: 10,7 m/s k: 2,22 Vm: 9,5 m/s	N A: 7,5 m/s k: 1,65 Vm: 6,7 m/s	NNE A: 7,0 m/s k: 1,71 Vm: 6,3 m/s	ENE A: 8,8 m/s k: 2,18 Vm: 7,8 m/s
E A: 10,6 m/s k: 1,73 Vm: 9,5 m/s	ESE A: 11,9 m/s k: 2,54 Vm: 10,5 m/s	SSE A: 10,2 m/s k: 2,22 Vm: 9,0 m/s	S A: 9,9 m/s k: 2,14 Vm: 8,7 m/s
SSW A: 10,5 m/s k: 2,41 Vm: 9,3 m/s	WSW A: 10,8 m/s k: 2,47 Vm: 9,5 m/s	W A: 11,1 m/s k: 2,56 Vm: 9,9 m/s	WNW A: 11,6 m/s k: 2,37 Vm: 10,3 m/s
NNW A: 12,0 m/s k: 2,43 Vm: 10,6 m/s			





## **Appendix C. Long-term Corrected Dataset: Position 1 (Lot 1), Position 2 (Lot 2), Position 3**



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Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 1 LT 2y ; 20 year period Period: Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Frequency distribution (TAB file data)

270,00m - MCP LT - 2y 270m MCP session (1) - [Matrix]

Table with columns: Bin, Start, End, Sum, 0-N, 1-NNE, 2-ENE, 3-E, 4-ESE, 5-SSE, 6-S, 7-SSW, 8-WSW, 9-W, 10-WNW, 11-NNW. Rows include Mean and data for bins 0 to 41.





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Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 1 LT 2y; 20 year period Period: Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Frequency distribution (TAB file data)

240,00m - MCP LT - 2y 240m MCP session (1) - [Matrix]

Table with columns: Bin, Start, End, Sum, 0-N, 1-NNE, 2-ENE, 3-E, 4-ESE, 5-SSE, 6-S, 7-SSW, 8-WSW, 9-W, 10-WNW, 11-NNW. Rows include Mean and values for bins 0 to 41.





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Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 1 LT 2y; 20 year period Period: Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Frequency distribution (TAB file data)

200,00m - MCP LT - 2y 200m MCP session (1) - [Matrix]

Table with columns: Bin, Start, End, Sum, 0-N, 1-NNE, 2-ENE, 3-E, 4-ESE, 5-SSE, 6-S, 7-SSW, 8-WSW, 9-W, 10-WNW, 11-NNW. Rows include Mean and frequency counts for various wind directions and speeds.





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Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 1 LT 2y; 20 year period Period: Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Frequency distribution (TAB file data)

180,00m - MCP LT - 2y 180m MCP session (1) - [Matrix]

Table with columns: Bin, Start, End, Sum, 0-N, 1-NNE, 2-ENE, 3-E, 4-ESE, 5-SSE, 6-S, 7-SSW, 8-WSW, 9-W, 10-WNW, 11-NNW. Rows include Mean and frequency counts for various wind directions and speeds.







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### Meteo data report - Frequency distribution (TAB file data)

**Mast:** Lot 1 LT 2y ; 20 year period **Period:** Full period: 01/01/2003 - 01/01/2023 (240,0 months)

#### Frequency distribution (TAB file data)

150,00m - MCP LT - 2y 150m MCP session (1) - [Matrix]

Bin	Start	End	Sum	0-N	1-NNE	2-ENE	3-E	4-ESE	5-SSE	6-S	7-SSW	8-WSW	9-W	10-WNW	11-NNW
Mean			10,85	8,57	7,79	9,47	10,43	10,72	11,05	10,83	11,57	11,41	11,00	11,01	11,63
0		0,49	184	11	24	36	13	3	7	14	16	19	12	14	15
1	0,50	1,49	1719	151	142	234	128	124	128	139	90	143	137	155	148
2	1,50	2,49	3336	218	295	398	279	261	243	297	307	262	223	287	266
3	2,50	3,49	5331	389	401	319	424	541	277	386	427	548	506	614	499
4	3,50	4,49	7249	483	453	392	453	677	494	442	514	845	950	837	709
5	4,50	5,49	8911	722	495	527	547	541	544	582	800	990	1237	1104	822
6	5,50	6,49	10906	781	562	513	735	633	761	887	1164	1248	1369	1243	1010
7	6,50	7,49	11429	565	416	570	762	711	743	1074	1269	1384	1237	1595	1103
8	7,50	8,49	11609	536	538	550	723	904	653	1028	1232	1445	1380	1593	1027
9	8,50	9,49	12377	447	338	516	980	917	664	1086	1207	1455	1483	1957	1327
10	9,50	10,49	13254	441	244	778	1089	972	621	901	1252	1649	1567	1993	1747
11	10,50	11,49	13190	331	222	635	1130	886	871	889	1331	1637	1515	2026	1717
12	11,50	12,49	12939	336	303	617	939	882	958	941	1307	1579	1461	1908	1708
13	12,50	13,49	11954	330	260	508	895	869	900	911	1366	1500	1272	1658	1485
14	13,50	14,49	9713	235	187	389	593	749	630	817	1069	1093	1296	1421	1234
15	14,50	15,49	9362	252	115	388	547	889	679	685	1062	1229	1119	1132	1265
16	15,50	16,49	7784	208	77	289	457	601	584	514	891	1057	921	988	1197
17	16,50	17,49	6105	132	86	185	291	499	499	516	769	825	762	765	776
18	17,50	18,49	4812	95	51	156	276	379	334	405	663	693	543	604	613
19	18,50	19,49	3983	54	24	88	247	244	223	349	541	618	488	509	598
20	19,50	20,49	2816	50	23	65	146	169	257	250	315	357	307	400	477
21	20,50	21,49	2077	30	8	55	136	107	162	190	315	320	213	241	300
22	21,50	22,49	1486	11	6	31	43	65	103	93	211	334	223	182	184
23	22,50	23,49	930	17	3	15	31	61	39	66	108	152	138	155	145
24	23,50	24,49	759	11	0	7	29	40	37	45	187	117	100	91	95
25	24,50	25,49	408	5	5	1	12	23	16	25	92	71	43	37	78
26	25,50	26,49	246	1	2	1	4	4	8	17	48	60	34	31	36
27	26,50	27,49	172	2	0	0	14	2	4	7	29	43	27	28	16
28	27,50	28,49	100	0	0	0	2	0	3	4	17	25	18	22	9
29	28,50	29,49	77	0	0	0	2	0	0	3	10	19	12	12	19
30	29,50	30,49	41	0	0	0	0	0	1	0	4	9	13	8	6
31	30,50	31,49	28	0	0	0	0	0	0	0	2	7	7	9	3
32	31,50	32,49	14	0	0	0	0	0	0	0	0	6	4	3	1
33	32,50	33,49	8	0	0	0	0	0	0	0	2	0	4	2	0
34	33,50	34,49	5	0	0	0	0	0	0	0	0	1	1	1	2
35	34,50	35,49	5	0	0	0	0	0	0	0	2	1	1	0	1
36	35,50	36,49	1	0	0	0	0	0	0	0	0	0	1	0	0
37	36,50	37,49	0	0	0	0	0	0	0	0	0	0	0	0	0
38	37,50	38,49	0	0	0	0	0	0	0	0	0	0	0	0	0
39	38,50	39,49	0	0	0	0	0	0	0	0	0	0	0	0	0
40	39,50	40,49	0	0	0	0	0	0	0	0	0	0	0	0	0
41	40,50		0	0	0	0	0	0	0	0	0	0	0	0	0





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Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 1 LT 2y; 20 year period Period: Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Frequency distribution (TAB file data)

120,00m - MCP LT - 2y 120m MCP session (1) - [Matrix]

Table with columns: Bin, Start, End, Sum, 0-N, 1-NNE, 2-ENE, 3-E, 4-ESE, 5-SSE, 6-S, 7-SSW, 8-WSW, 9-W, 10-WNW, 11-NNW. Rows include Mean and frequency counts for various wind directions and speeds.





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Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 1 LT 2y; 20 year period Period: Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Frequency distribution (TAB file data)

100,00m - MCP LT - 2y 100m MCP session (1) - [Matrix]

Table with columns: Bin, Start, End, Sum, 0-N, 1-NNE, 2-ENE, 3-E, 4-ESE, 5-SSE, 6-S, 7-SSW, 8-WSW, 9-W, 10-WNW, 11-NNW. Rows include Mean and values for bins 0 to 41.





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Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 1 LT 2y; 20 year period Period: Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Frequency distribution (TAB file data)

90,00m - MCP LT - 2y 90m MCP session (1) - [Matrix]

Table with columns: Bin, Start, End, Sum, 0-N, 1-NNE, 2-ENE, 3-E, 4-ESE, 5-SSE, 6-S, 7-SSW, 8-WSW, 9-W, 10-WNW, 11-NNW. Rows include Mean and frequency counts for various wind directions and speeds.





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Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 1 LT 2y; 20 year period Period: Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Frequency distribution (TAB file data)

60,00m - MCP LT - 2y 60m MCP session (1) - [Matrix]

Table with 13 columns: Bin, Start, End, Sum, 0-N, 1-NNW, 2-ENE, 3-E, 4-ESE, 5-SSE, 6-S, 7-SSW, 8-WSW, 9-W, 10-WNW, 11-NNW. Rows include Mean and bins from 0 to 41.





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Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 1 LT 2y ; 20 year period Period: Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Frequency distribution (TAB file data)

40,00m - MCP LT - 2y 40m MCP session (1) - [Matrix]

Table with columns: Bin, Start, End, Sum, 0-N, 1-NNE, 2-ENE, 3-E, 4-ESE, 5-SSE, 6-S, 7-SSW, 8-WSW, 9-W, 10-WNW, 11-NNW. Rows include Mean and values for bins 0 to 41.





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Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 1 LT 2y ; 20 year period    Period: Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Frequency distribution (TAB file data)

30,00m - MCP LT - 2y 30m MCP session (1) - [Matrix]

Bin	Start	End	Sum	0-N	1-NNE	2-ENE	3-E	4-ESE	5-SSE	6-S	7-SSW	8-WSW	9-W	10-WNW	11-NNW
Mean			9,43	7,71	7,18	8,43	9,19	9,26	9,18	9,03	9,77	9,77	9,59	9,86	10,47
0		0,49	234	33	22	26	22	8	14	29	17	7	23	20	13
1	0,50	1,49	1973	170	165	188	150	171	112	189	137	163	197	171	160
2	1,50	2,49	3931	287	294	325	296	337	312	312	339	405	281	370	373
3	2,50	3,49	6757	429	413	390	492	679	499	487	508	822	747	756	535
4	3,50	4,49	8966	544	496	690	566	753	548	719	909	973	1019	983	766
5	4,50	5,49	11478	817	608	731	817	715	823	1035	1204	1162	1310	1265	991
6	5,50	6,49	13212	847	540	679	880	986	986	1364	1338	1472	1479	1573	1068
7	6,50	7,49	14919	652	605	858	1138	998	1086	1461	1637	1629	1803	1770	1282
8	7,50	8,49	15740	571	609	894	1254	1216	980	1400	1642	1654	1908	2209	1403
9	8,50	9,49	16615	466	463	958	1352	1299	1069	1294	1761	1998	1983	2379	1593
10	9,50	10,49	15177	376	325	852	1262	1143	1006	1114	1559	1803	1732	2322	1683
11	10,50	11,49	13707	385	220	628	1053	862	842	971	1519	1653	1508	2186	1880
12	11,50	12,49	11708	332	235	485	784	726	629	839	1365	1620	1503	1781	1409
13	12,50	13,49	10049	278	202	485	717	689	536	749	1029	1239	1330	1387	1408
14	13,50	14,49	8433	226	125	373	428	607	527	589	856	1146	1011	1198	1347
15	14,50	15,49	6755	141	89	188	286	555	428	472	858	950	703	1025	1060
16	15,50	16,49	4923	96	46	144	276	371	312	385	658	606	585	711	733
17	16,50	17,49	3644	75	33	108	210	308	284	250	397	426	427	524	602
18	17,50	18,49	2556	57	14	79	164	221	166	228	271	320	247	301	488
19	18,50	19,49	1690	33	8	44	171	79	100	97	223	211	200	248	276
20	19,50	20,49	1198	10	2	38	86	56	81	53	154	142	224	177	175
21	20,50	21,49	738	19	2	24	39	64	25	49	118	105	60	113	120
22	21,50	22,49	403	7	2	4	17	33	19	18	67	67	44	45	80
23	22,50	23,49	226	2	3	1	15	18	7	12	30	42	34	34	28
24	23,50	24,49	114	0	1	0	4	2	5	4	15	15	18	26	24
25	24,50	25,49	69	0	2	0	0	1	1	0	9	12	17	14	13
26	25,50	26,49	59	1	0	0	4	0	0	0	3	8	9	22	12
27	26,50	27,49	22	0	0	0	0	0	0	0	0	6	7	5	4
28	27,50	28,49	14	0	0	0	0	0	0	0	0	5	4	4	1
29	28,50	29,49	5	0	0	0	0	0	0	0	1	1	1	2	0
30	29,50	30,49	3	0	0	0	0	0	0	0	0	1	2	0	0
31	30,50	31,49	1	0	0	0	0	0	0	0	0	1	0	0	0
32	31,50	32,49	1	0	0	0	0	0	0	0	0	0	0	1	0
33	32,50	33,49	0	0	0	0	0	0	0	0	0	0	0	0	0
34	33,50	34,49	0	0	0	0	0	0	0	0	0	0	0	0	0
35	34,50	35,49	0	0	0	0	0	0	0	0	0	0	0	0	0
36	35,50	36,49	0	0	0	0	0	0	0	0	0	0	0	0	0
37	36,50	37,49	0	0	0	0	0	0	0	0	0	0	0	0	0
38	37,50	38,49	0	0	0	0	0	0	0	0	0	0	0	0	0
39	38,50	39,49	0	0	0	0	0	0	0	0	0	0	0	0	0
40	39,50	40,49	0	0	0	0	0	0	0	0	0	0	0	0	0
41	40,50		0	0	0	0	0	0	0	0	0	0	0	0	0





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Calculated:  
06/03/2024 10.33

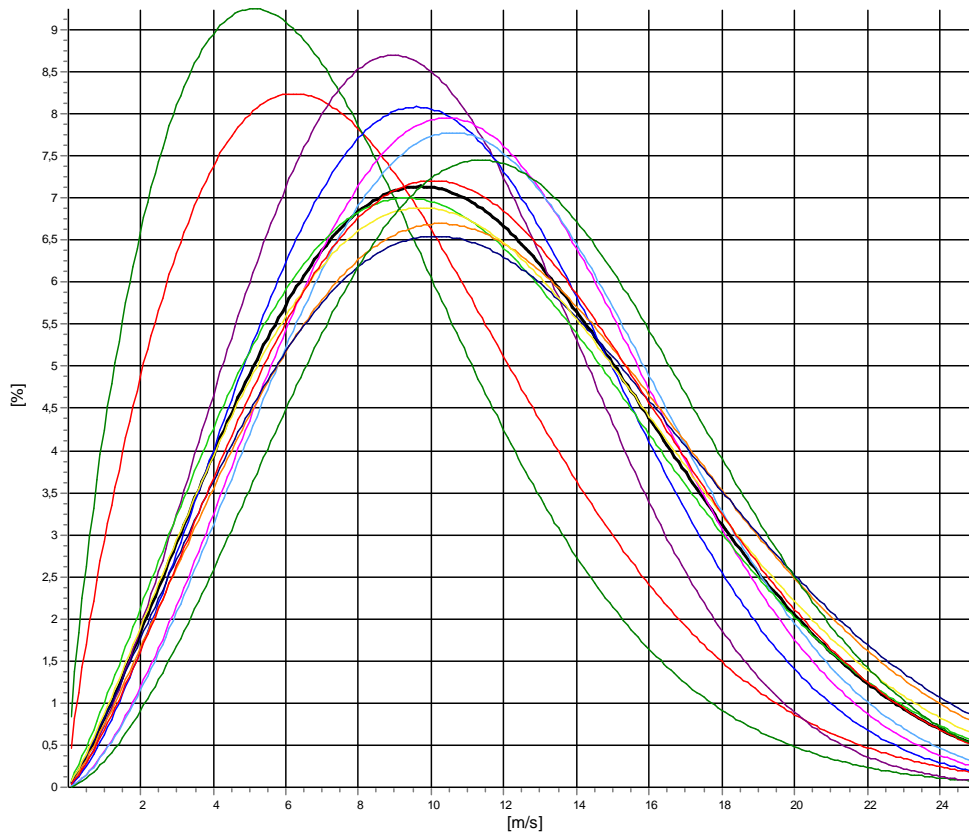
### Meteo data report - Weibull data overview

**Mast:** Lot 1 LT 2y; 20 year period **Period:** Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Height: **270,00m - MCP LT - 2y 270m MCP session (1) - [Matrix]**

#### Weibull data

Sector	A	k	f	Mean wind speed
	[m/s]			[m/s]
0-N	9,77	1,802	3,98	8,69
1-NNE	8,49	1,718	2,99	7,57
2-ENE	11,22	2,393	4,49	9,95
3-E	12,05	2,386	6,29	10,68
4-ESE	12,74	2,511	7,22	11,31
5-SSE	12,99	2,501	6,41	11,53
6-S	12,67	2,102	7,57	11,22
7-SSW	13,58	2,177	10,69	12,03
8-WSW	13,66	2,127	12,62	12,10
9-W	13,05	2,141	12,20	11,56
10-WNW	12,99	2,265	13,57	11,51
11-NNW	13,81	2,558	11,96	12,26
<b>Mean</b>	<b>12,81</b>	<b>2,194</b>	<b>100,00</b>	<b>11,35</b>



All A: 12,8 m/s k: 2,19 Vm: 11,3 m/s	N A: 9,8 m/s k: 1,80 Vm: 8,7 m/s	NNE A: 8,5 m/s k: 1,72 Vm: 7,6 m/s	ENE A: 11,2 m/s k: 2,39 Vm: 9,9 m/s
E A: 12,0 m/s k: 2,39 Vm: 10,7 m/s	ESE A: 12,7 m/s k: 2,51 Vm: 11,3 m/s	SSE A: 13,0 m/s k: 2,50 Vm: 11,5 m/s	S A: 12,7 m/s k: 2,10 Vm: 11,2 m/s
SSW A: 13,6 m/s k: 2,18 Vm: 12,0 m/s	WSW A: 13,7 m/s k: 2,13 Vm: 12,1 m/s	W A: 13,1 m/s k: 2,14 Vm: 11,6 m/s	WNW A: 13,0 m/s k: 2,26 Vm: 11,5 m/s
NNW A: 13,8 m/s k: 2,56 Vm: 12,3 m/s			





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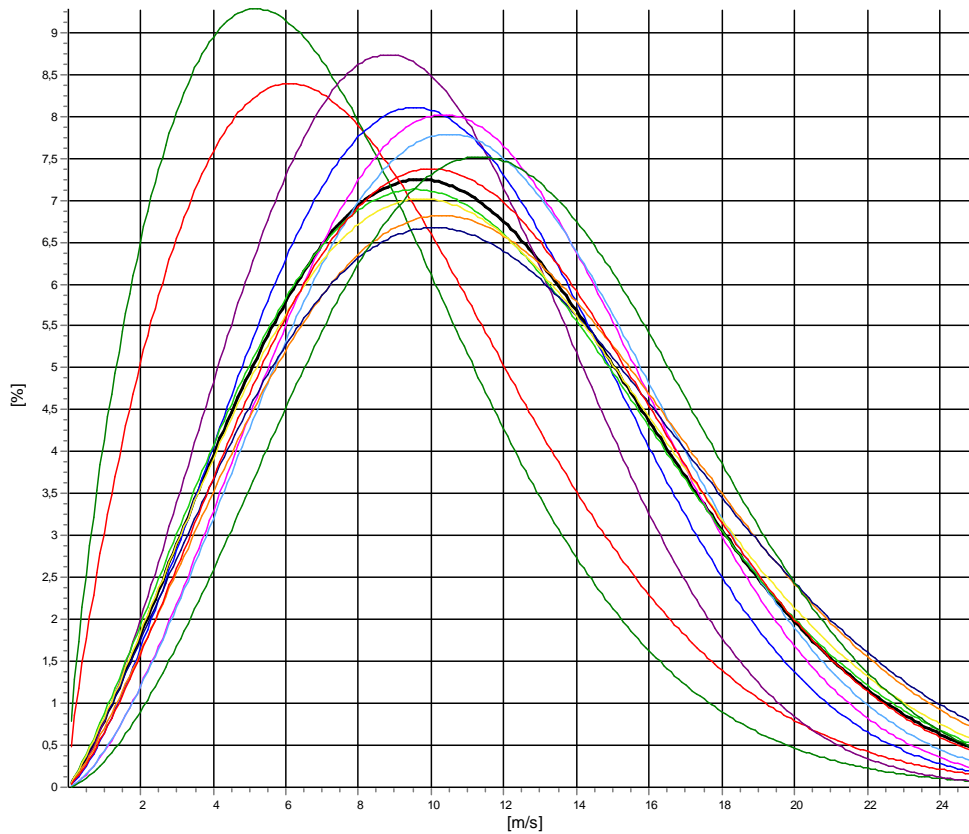
### Meteo data report - Weibull data overview

**Mast:** Lot 1 LT 2y ; 20 year period    **Period:** Full period: 01/01/2003 - 01/01/2023 (240,0 months)

**Height:** 240,00m - MCP LT - 2y 240m MCP session (1) - [Matrix]

#### Weibull data

Sector	A	k	f	Mean wind speed
	[m/s]			[m/s]
0-N	9,59	1,799	3,97	8,53
1-NNE	8,50	1,735	2,98	7,58
2-ENE	11,09	2,372	4,57	9,83
3-E	11,99	2,380	6,36	10,63
4-ESE	12,65	2,514	7,28	11,22
5-SSE	12,91	2,485	6,46	11,45
6-S	12,71	2,167	7,61	11,26
7-SSW	13,49	2,210	10,67	11,94
8-WSW	13,49	2,147	12,49	11,95
9-W	12,95	2,173	12,16	11,47
10-WNW	12,84	2,298	13,59	11,37
11-NNW	13,73	2,570	11,86	12,19
<b>Mean</b>	<b>12,71</b>	<b>2,216</b>	<b>100,00</b>	<b>11,26</b>



All A: 12,7 m/s k: 2,22 Vm: 11,3 m/s	N A: 9,6 m/s k: 1,80 Vm: 8,5 m/s	NNE A: 8,5 m/s k: 1,73 Vm: 7,6 m/s	ENE A: 11,1 m/s k: 2,37 Vm: 9,8 m/s
E A: 12,0 m/s k: 2,38 Vm: 10,6 m/s	ESE A: 12,6 m/s k: 2,51 Vm: 11,2 m/s	SSE A: 12,9 m/s k: 2,49 Vm: 11,4 m/s	S A: 12,7 m/s k: 2,17 Vm: 11,3 m/s
SSW A: 13,5 m/s k: 2,21 Vm: 11,9 m/s	WSW A: 13,5 m/s k: 2,15 Vm: 11,9 m/s	W A: 12,9 m/s k: 2,17 Vm: 11,5 m/s	WNW A: 12,8 m/s k: 2,30 Vm: 11,4 m/s
NNW A: 13,7 m/s k: 2,57 Vm: 12,2 m/s			



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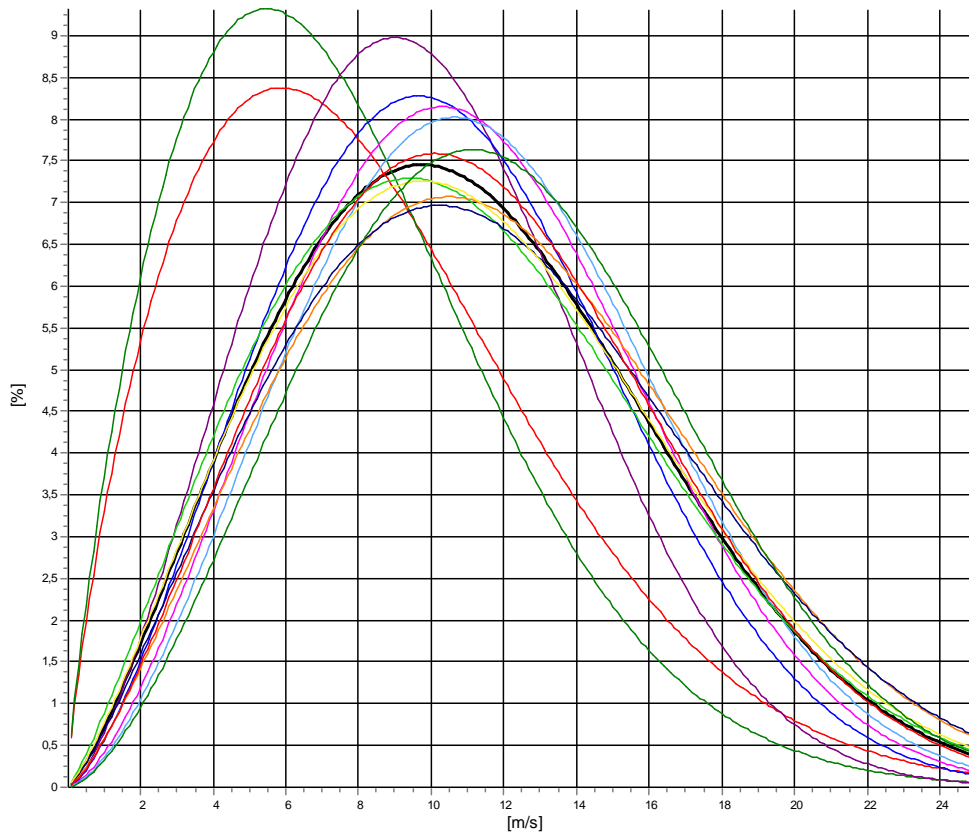
### Meteo data report - Weibull data overview

**Mast:** Lot 1 LT 2y; 20 year period **Period:** Full period: 01/01/2003 - 01/01/2023 (240,0 months)

**Height:** 200,00m - MCP LT - 2y 200m MCP session (1) - [Matrix]

#### Weibull data

Sector	A [m/s]	k	f	Mean wind speed [m/s]
0-N	9,49	1,758	3,93	8,45
1-NNE	8,61	1,791	3,04	7,66
2-ENE	11,11	2,462	4,62	9,86
3-E	11,99	2,447	6,57	10,64
4-ESE	12,54	2,537	7,24	11,13
5-SSE	12,89	2,576	6,48	11,45
6-S	12,48	2,179	7,68	11,05
7-SSW	13,41	2,305	10,59	11,88
8-WSW	13,31	2,237	12,45	11,79
9-W	12,74	2,228	12,09	11,29
10-WNW	12,75	2,367	13,50	11,30
11-NNW	13,49	2,563	11,80	11,98
<b>Mean</b>	<b>12,58</b>	<b>2,272</b>	<b>100,00</b>	<b>11,15</b>



All A: 12.6 m/s k: 2.27 Vm: 11.1 m/s	N A: 9.5 m/s k: 1.76 Vm: 8.4 m/s	NNE A: 8.6 m/s k: 1.79 Vm: 7.7 m/s	ENE A: 11.1 m/s k: 2.46 Vm: 9.9 m/s
E A: 12.0 m/s k: 2.45 Vm: 10.6 m/s	ESE A: 12.5 m/s k: 2.54 Vm: 11.1 m/s	SSE A: 12.9 m/s k: 2.58 Vm: 11.4 m/s	S A: 12.5 m/s k: 2.18 Vm: 11.0 m/s
SSW A: 13.4 m/s k: 2.31 Vm: 11.9 m/s	WSW A: 13.3 m/s k: 2.24 Vm: 11.8 m/s	W A: 12.7 m/s k: 2.23 Vm: 11.3 m/s	WNW A: 12.7 m/s k: 2.37 Vm: 11.3 m/s
NNW A: 13.5 m/s k: 2.56 Vm: 12.0 m/s			



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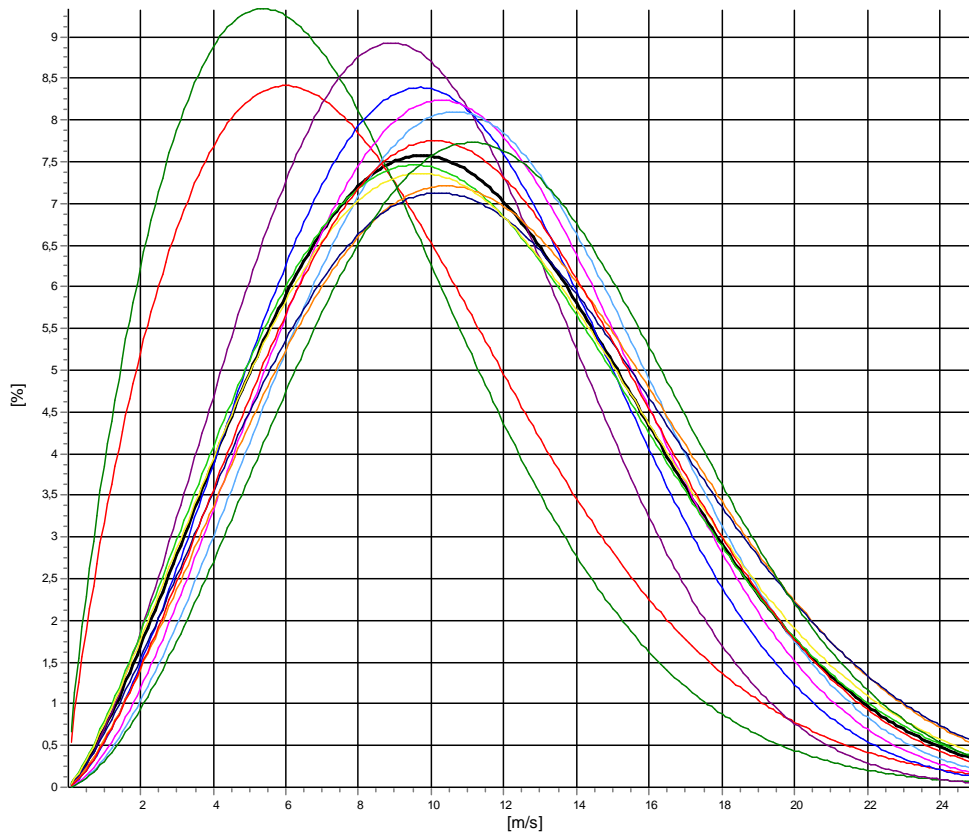
### Meteo data report - Weibull data overview

**Mast:** Lot 1 LT 2y; 20 year period **Period:** Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Height: **180,00m - MCP LT - 2y 180m MCP session (1) - [Matrix]**

#### Weibull data

Sector	A	k	f	Mean wind speed
	[m/s]			[m/s]
0-N	9,51	1,781	3,98	8,46
1-NNE	8,56	1,775	3,05	7,62
2-ENE	11,09	2,435	4,62	9,83
3-E	11,94	2,474	6,65	10,59
4-ESE	12,46	2,552	7,26	11,06
5-SSE	12,84	2,594	6,48	11,40
6-S	12,44	2,239	7,79	11,02
7-SSW	13,25	2,328	10,57	11,74
8-WSW	13,17	2,274	12,35	11,67
9-W	12,62	2,244	12,01	11,18
10-WNW	12,62	2,401	13,55	11,19
11-NNW	13,43	2,587	11,69	11,92
<b>Mean</b>	<b>12,49</b>	<b>2,297</b>	<b>100,00</b>	<b>11,06</b>



All A: 12,5 m/s k: 2,30 Vm: 11,1 m/s	N A: 9,5 m/s k: 1,78 Vm: 8,5 m/s	NNE A: 8,6 m/s k: 1,78 Vm: 7,6 m/s	ENE A: 11,1 m/s k: 2,43 Vm: 9,8 m/s
E A: 11,9 m/s k: 2,47 Vm: 10,6 m/s	ESE A: 12,5 m/s k: 2,55 Vm: 11,1 m/s	SSE A: 12,8 m/s k: 2,59 Vm: 11,4 m/s	S A: 12,4 m/s k: 2,24 Vm: 11,0 m/s
SSW A: 13,2 m/s k: 2,33 Vm: 11,7 m/s	WSW A: 13,2 m/s k: 2,27 Vm: 11,7 m/s	W A: 12,6 m/s k: 2,24 Vm: 11,2 m/s	WNW A: 12,6 m/s k: 2,40 Vm: 11,2 m/s
NNW A: 13,4 m/s k: 2,59 Vm: 11,9 m/s			



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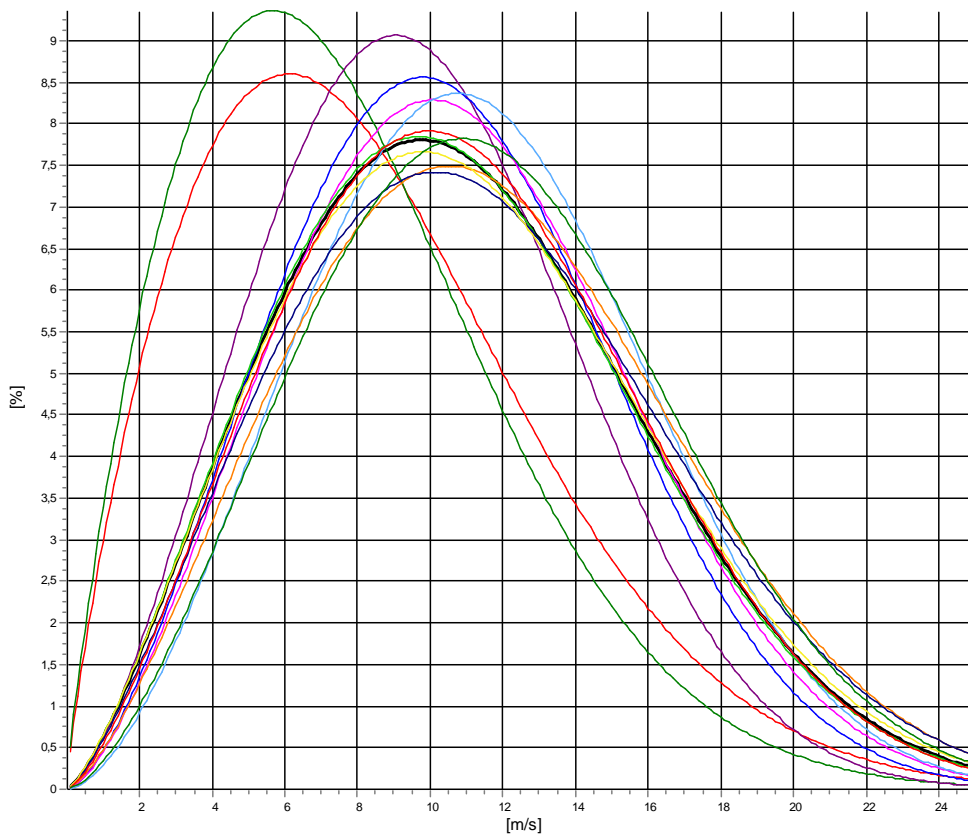
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### Meteo data report - Weibull data overview

**Mast:** Lot 1 LT 2y; 20 year period **Period:** Full period: 01/01/2003 - 01/01/2023 (240,0 months)  
**Height:** 150,00m - MCP LT - 2y 150m MCP session (1) - [Matrix]

#### Weibull data

Sector	A	k	f	Mean wind speed
	[m/s]			[m/s]
0-N	9,44	1,826	3,90	8,38
1-NNE	8,70	1,838	3,01	7,73
2-ENE	11,12	2,492	4,71	9,86
3-E	11,94	2,539	6,80	10,60
4-ESE	12,28	2,525	7,27	10,90
5-SSE	12,80	2,685	6,53	11,38
6-S	12,27	2,352	7,74	10,87
7-SSW	13,13	2,419	10,62	11,64
8-WSW	12,90	2,334	12,40	11,43
9-W	12,47	2,326	11,76	11,04
10-WNW	12,43	2,417	13,48	11,02
11-NNW	13,20	2,570	11,77	11,72
<b>Mean</b>	<b>12,35</b>	<b>2,355</b>	<b>100,00</b>	<b>10,94</b>



All A: 12,3 m/s k: 2,35 Vm: 10,9 m/s	N A: 9,4 m/s k: 1,83 Vm: 8,4 m/s	NNE A: 8,7 m/s k: 1,84 Vm: 7,7 m/s	ENE A: 11,1 m/s k: 2,49 Vm: 9,9 m/s
E A: 11,9 m/s k: 2,54 Vm: 10,6 m/s	ESE A: 12,3 m/s k: 2,52 Vm: 10,9 m/s	SSE A: 12,8 m/s k: 2,69 Vm: 11,4 m/s	S A: 12,3 m/s k: 2,35 Vm: 10,9 m/s
SSW A: 13,1 m/s k: 2,42 Vm: 11,6 m/s	WSW A: 12,9 m/s k: 2,33 Vm: 11,4 m/s	W A: 12,5 m/s k: 2,33 Vm: 11,0 m/s	WNW A: 12,4 m/s k: 2,42 Vm: 11,0 m/s
NNW A: 13,2 m/s k: 2,57 Vm: 11,7 m/s			





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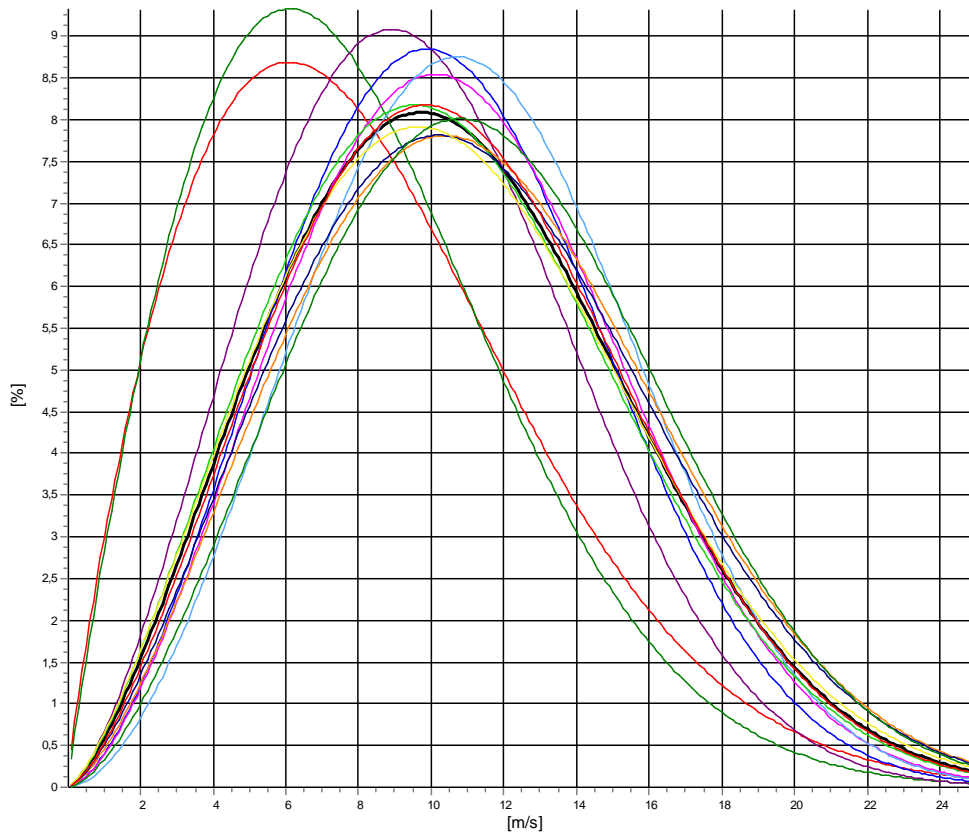
### Meteo data report - Weibull data overview

**Mast:** Lot 1 LT 2y; 20 year period **Period:** Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Height: 120,00m - MCP LT - 2y 120m MCP session (1) - [Matrix]

#### Weibull data

Sector	A	k	f	Mean wind speed
	[m/s]			[m/s]
0-N	9,36	1,834	3,85	8,32
1-NNE	8,96	1,919	2,93	7,94
2-ENE	11,00	2,467	4,85	9,76
3-E	11,87	2,624	6,90	10,55
4-ESE	12,18	2,597	7,36	10,82
5-SSE	12,58	2,779	6,49	11,20
6-S	11,95	2,396	7,85	10,59
7-SSW	12,81	2,470	10,63	11,36
8-WSW	12,67	2,436	12,26	11,23
9-W	12,19	2,357	11,59	10,80
10-WNW	12,18	2,457	13,70	10,80
11-NNW	13,00	2,598	11,57	11,55
<b>Mean</b>	<b>12,14</b>	<b>2,412</b>	<b>100,00</b>	<b>10,76</b>



All A: 12,1 m/s k: 2,41 Vm: 10,8 m/s	N A: 9,4 m/s k: 1,83 Vm: 8,3 m/s	NNE A: 9,0 m/s k: 1,92 Vm: 7,9 m/s	ENE A: 11,0 m/s k: 2,47 Vm: 9,8 m/s
E A: 11,9 m/s k: 2,62 Vm: 10,5 m/s	ESE A: 12,2 m/s k: 2,60 Vm: 10,8 m/s	SSE A: 12,6 m/s k: 2,78 Vm: 11,2 m/s	SA: 11,9 m/s k: 2,40 Vm: 10,6 m/s
SSW A: 12,8 m/s k: 2,47 Vm: 11,4 m/s	WSW A: 12,7 m/s k: 2,44 Vm: 11,2 m/s	W A: 12,2 m/s k: 2,36 Vm: 10,8 m/s	WNW A: 12,2 m/s k: 2,46 Vm: 10,8 m/s
NNW A: 13,0 m/s k: 2,60 Vm: 11,5 m/s			



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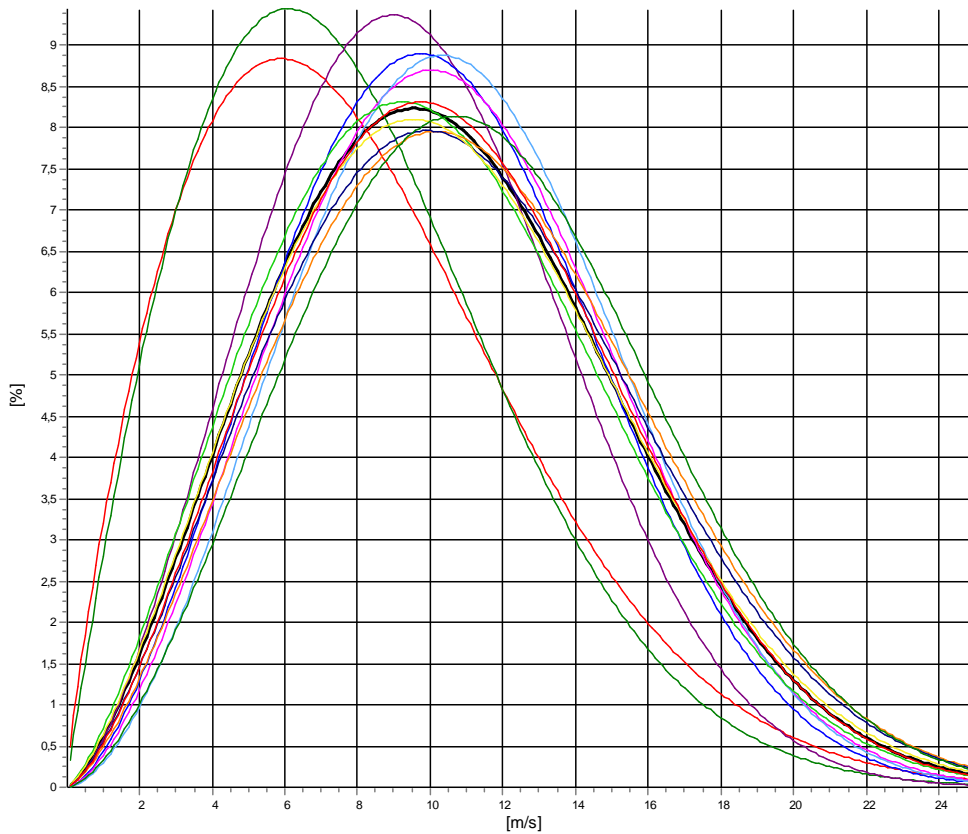
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### Meteo data report - Weibull data overview

**Mast:** Lot 1 LT 2y; 20 year period **Period:** Full period: 01/01/2003 - 01/01/2023 (240,0 months)  
**Height:** 100,00m - MCP LT - 2y 100m MCP session (1) - [Matrix]

#### Weibull data

Sector	A	k	f	Mean wind speed
	[m/s]			[m/s]
0-N	9,15	1,815	3,87	8,14
1-NNE	8,89	1,932	2,98	7,88
2-ENE	10,92	2,540	4,86	9,69
3-E	11,72	2,602	7,06	10,41
4-ESE	12,05	2,619	7,35	10,71
5-SSE	12,21	2,728	6,51	10,87
6-S	11,63	2,365	7,94	10,31
7-SSW	12,55	2,463	10,61	11,13
8-WSW	12,35	2,418	12,18	10,95
9-W	11,99	2,380	11,47	10,63
10-WNW	12,02	2,467	13,75	10,66
11-NNW	12,85	2,612	11,44	11,42
<b>Mean</b>	<b>11,93</b>	<b>2,412</b>	<b>100,00</b>	<b>10,57</b>



All A: 11,9 m/s k: 2,41 Vm: 10,6 m/s	N A: 9,2 m/s k: 1,82 Vm: 8,1 m/s	NNE A: 8,9 m/s k: 1,93 Vm: 7,9 m/s	ENE A: 10,9 m/s k: 2,54 Vm: 9,7 m/s
E A: 11,7 m/s k: 2,60 Vm: 10,4 m/s	ESE A: 12,1 m/s k: 2,62 Vm: 10,7 m/s	SSE A: 12,2 m/s k: 2,73 Vm: 10,9 m/s	SA: 11,6 m/s k: 2,36 Vm: 10,3 m/s
SSW A: 12,6 m/s k: 2,46 Vm: 11,1 m/s	WSW A: 12,4 m/s k: 2,42 Vm: 11,0 m/s	W A: 12,0 m/s k: 2,38 Vm: 10,6 m/s	WNW A: 12,0 m/s k: 2,47 Vm: 10,7 m/s
NNW A: 12,9 m/s k: 2,61 Vm: 11,4 m/s			



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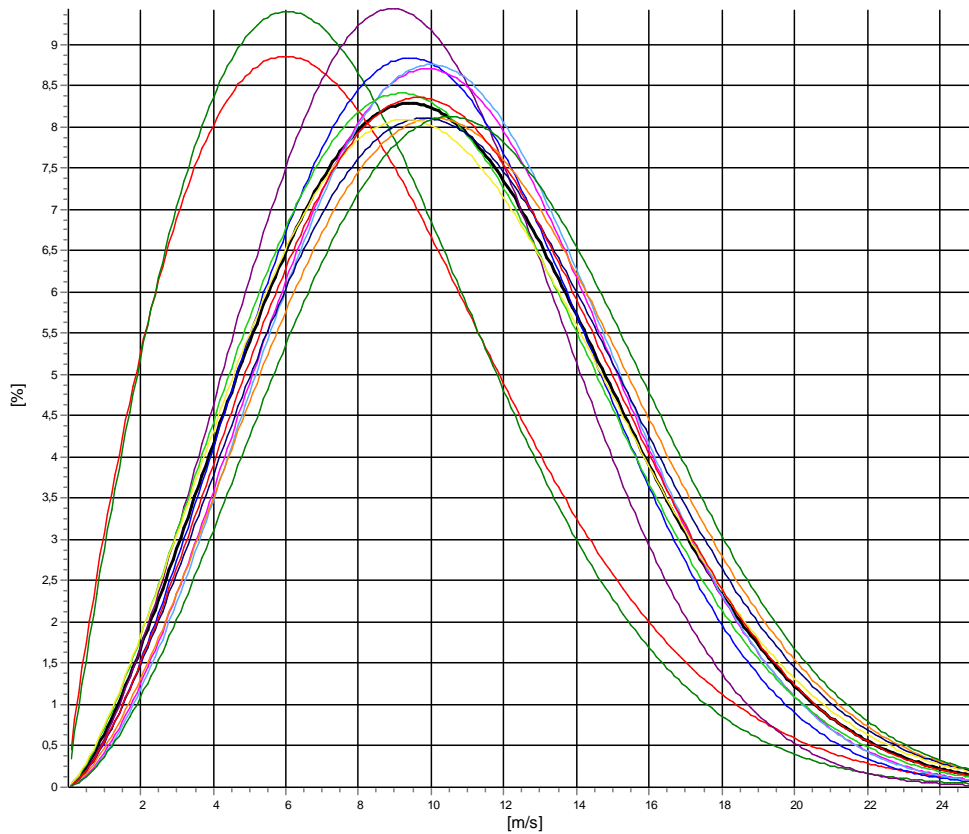
### Meteo data report - Weibull data overview

**Mast:** Lot 1 LT 2y; 20 year period **Period:** Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Height: **90,00m - MCP LT - 2y 90m MCP session (1) - [Matrix]**

#### Weibull data

Sector	A	k	f	Mean wind speed
	[m/s]			[m/s]
0-N	9,19	1,836	3,75	8,17
1-NNE	8,89	1,917	3,12	7,88
2-ENE	10,86	2,545	4,90	9,64
3-E	11,50	2,519	7,08	10,20
4-ESE	11,94	2,592	7,32	10,61
5-SSE	12,00	2,626	6,53	10,66
6-S	11,54	2,376	7,88	10,23
7-SSW	12,41	2,488	10,67	11,01
8-WSW	12,20	2,433	12,15	10,81
9-W	11,81	2,329	11,54	10,47
10-WNW	11,93	2,460	13,63	10,58
11-NNW	12,73	2,574	11,41	11,30
<b>Mean</b>	<b>11,79</b>	<b>2,398</b>	<b>100,00</b>	<b>10,46</b>



All A: 11,8 m/s k: 2,40 Vm: 10,5 m/s	N A: 9,2 m/s k: 1,84 Vm: 8,2 m/s	NNE A: 8,9 m/s k: 1,92 Vm: 7,9 m/s	ENE A: 10,9 m/s k: 2,55 Vm: 9,6 m/s
E A: 11,5 m/s k: 2,52 Vm: 10,2 m/s	ESE A: 11,9 m/s k: 2,59 Vm: 10,6 m/s	SSE A: 12,0 m/s k: 2,63 Vm: 10,7 m/s	S A: 11,5 m/s k: 2,38 Vm: 10,2 m/s
SSW A: 12,4 m/s k: 2,49 Vm: 11,0 m/s	WSW A: 12,2 m/s k: 2,43 Vm: 10,8 m/s	W A: 11,8 m/s k: 2,33 Vm: 10,5 m/s	WNW A: 11,9 m/s k: 2,46 Vm: 10,6 m/s
NNW A: 12,7 m/s k: 2,57 Vm: 11,3 m/s			



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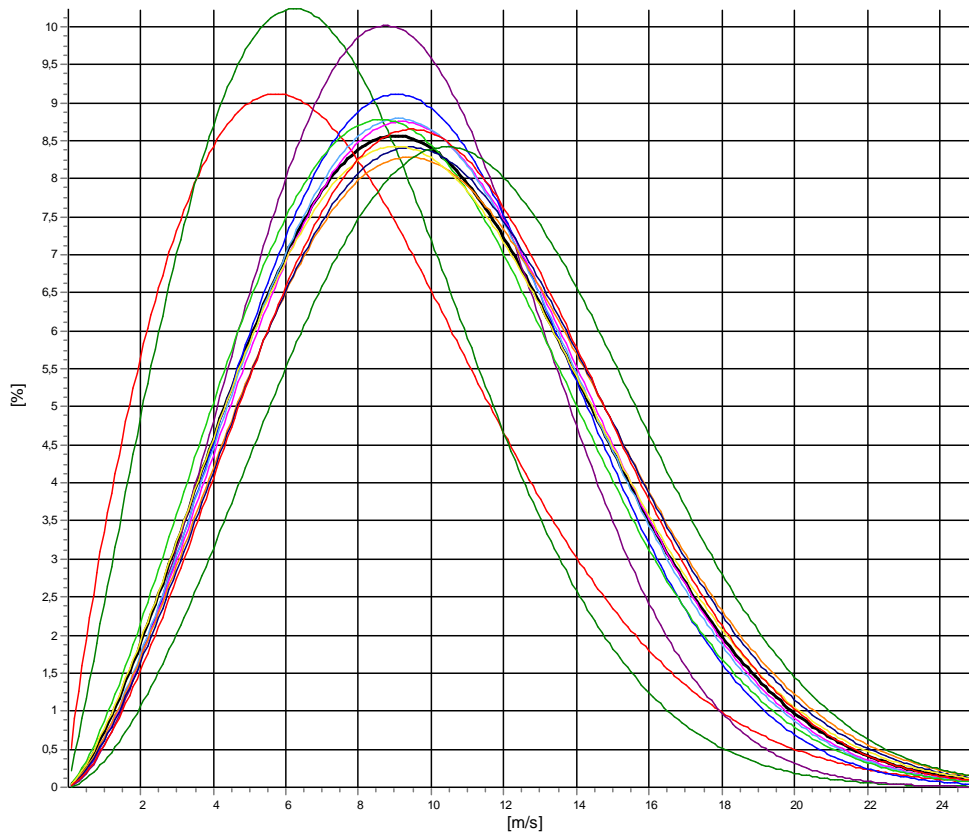
### Meteo data report - Weibull data overview

**Mast:** Lot 1 LT 2y; 20 year period **Period:** Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Height: **60,00m - MCP LT - 2y 60m MCP session (1) - [Matrix]**

#### Weibull data

Sector	A	k	f	Mean wind speed
	[m/s]			[m/s]
0-N	8,88	1,820	3,95	7,90
1-NNE	8,57	2,069	3,11	7,59
2-ENE	10,50	2,628	5,12	9,33
3-E	11,09	2,501	7,02	9,84
4-ESE	11,38	2,455	7,41	10,09
5-SSE	11,29	2,446	6,51	10,02
6-S	10,94	2,342	7,93	9,69
7-SSW	11,77	2,392	10,72	10,44
8-WSW	11,73	2,428	11,92	10,40
9-W	11,43	2,351	11,52	10,13
10-WNW	11,64	2,490	13,59	10,33
11-NNW	12,49	2,628	11,19	11,10
<b>Mean</b>	<b>11,35</b>	<b>2,379</b>	<b>100,00</b>	<b>10,06</b>



All A: 11,3 m/s k: 2,38 Vm: 10,1 m/s	N A: 8,9 m/s k: 1,82 Vm: 7,9 m/s	NNE A: 8,6 m/s k: 2,07 Vm: 7,6 m/s	ENE A: 10,5 m/s k: 2,63 Vm: 9,3 m/s
E A: 11,1 m/s k: 2,50 Vm: 9,8 m/s	ESE A: 11,4 m/s k: 2,45 Vm: 10,1 m/s	SSE A: 11,3 m/s k: 2,45 Vm: 10,0 m/s	S A: 10,9 m/s k: 2,34 Vm: 9,7 m/s
SSW A: 11,8 m/s k: 2,39 Vm: 10,4 m/s	WSW A: 11,7 m/s k: 2,43 Vm: 10,4 m/s	W A: 11,4 m/s k: 2,35 Vm: 10,1 m/s	NNW A: 11,6 m/s k: 2,49 Vm: 10,3 m/s
NNW A: 12,5 m/s k: 2,63 Vm: 11,1 m/s			







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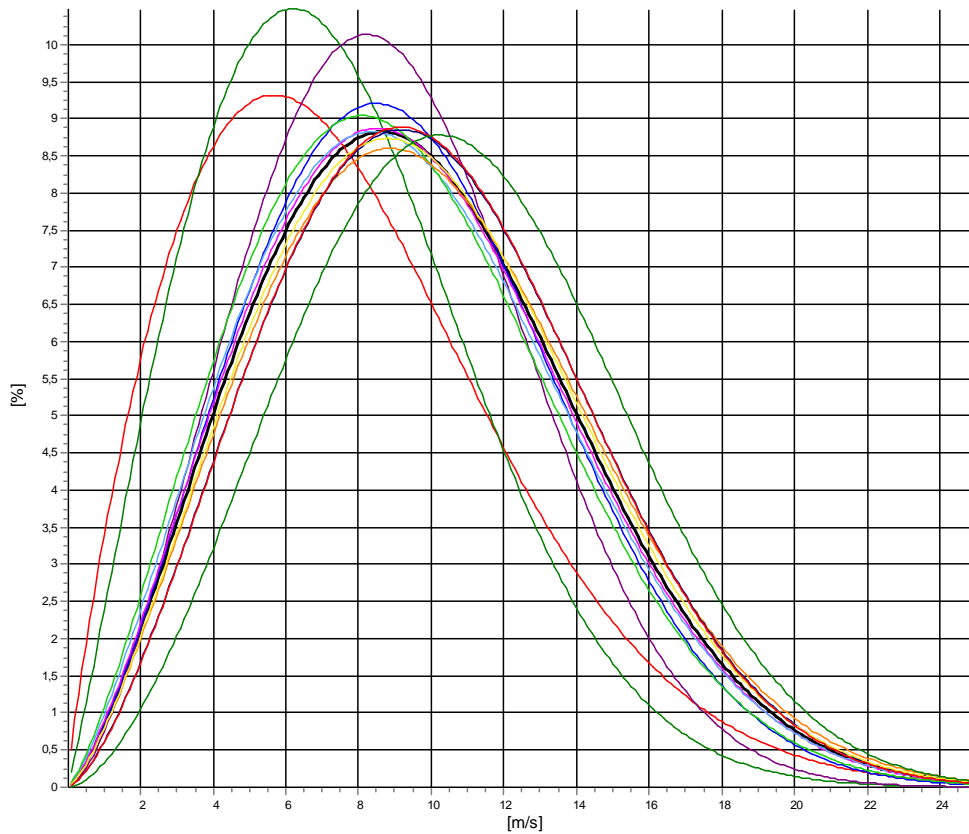
### Meteo data report - Weibull data overview

**Mast:** Lot 1 LT 2y; 20 year period **Period:** Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Height: **40,00m - MCP LT - 2y 40m MCP session (1) - [Matrix]**

#### Weibull data

Sector	A [m/s]	k	f	Mean wind speed [m/s]
0-N	8,73	1,834	3,95	7,76
1-NNE	8,44	2,095	3,12	7,48
2-ENE	10,04	2,524	5,21	8,91
3-E	10,62	2,400	7,07	9,42
4-ESE	10,82	2,343	7,48	9,59
5-SSE	10,72	2,299	6,48	9,50
6-S	10,42	2,285	7,91	9,23
7-SSW	11,22	2,358	10,79	9,94
8-WSW	11,31	2,474	11,83	10,03
9-W	11,08	2,369	11,44	9,82
10-WNW	11,30	2,482	13,51	10,02
11-NNW	12,18	2,682	11,20	10,83
<b>Mean</b>	<b>10,93</b>	<b>2,356</b>	<b>100,00</b>	<b>9,68</b>



All A: 10,9 m/s k: 2,36 Vm: 9,7 m/s	N A: 8,7 m/s k: 1,83 Vm: 7,8 m/s	NNE A: 8,4 m/s k: 2,09 Vm: 7,5 m/s	ENE A: 10,0 m/s k: 2,52 Vm: 8,9 m/s
E A: 10,6 m/s k: 2,40 Vm: 9,4 m/s	ESE A: 10,8 m/s k: 2,34 Vm: 9,6 m/s	SSE A: 10,7 m/s k: 2,30 Vm: 9,5 m/s	S A: 10,4 m/s k: 2,29 Vm: 9,2 m/s
SSW A: 11,2 m/s k: 2,36 Vm: 9,9 m/s	WSW A: 11,3 m/s k: 2,47 Vm: 10,0 m/s	W A: 11,1 m/s k: 2,37 Vm: 9,8 m/s	WNW A: 11,3 m/s k: 2,48 Vm: 10,0 m/s
NNW A: 12,2 m/s k: 2,68 Vm: 10,8 m/s			





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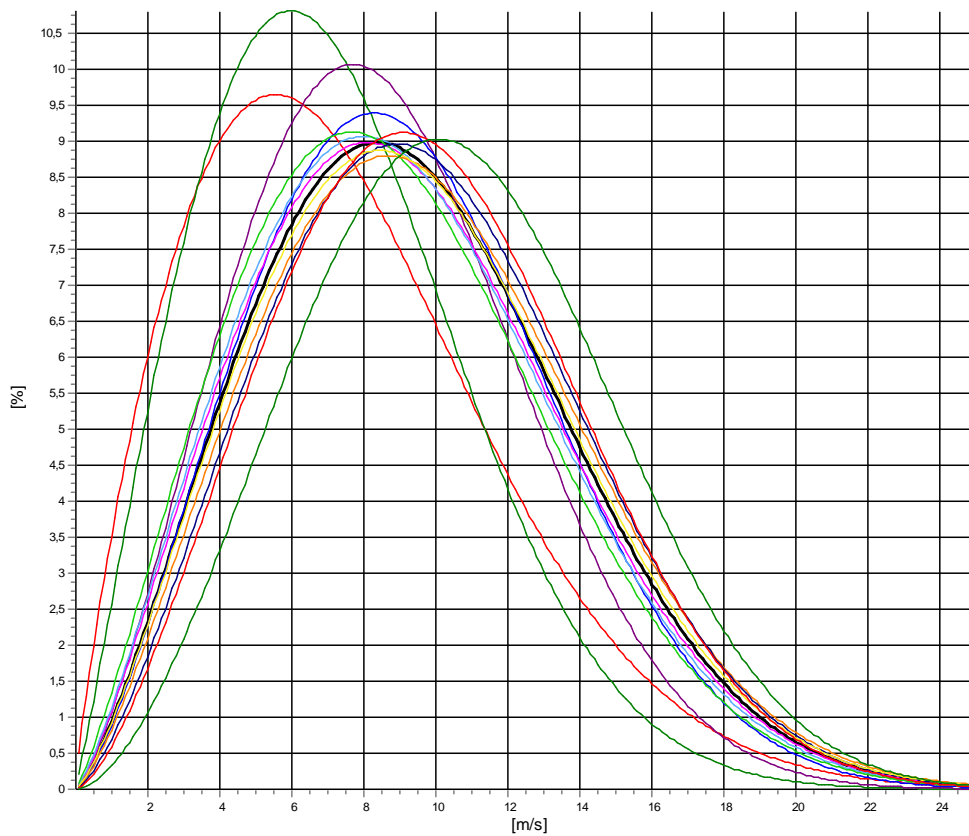
### Meteo data report - Weibull data overview

**Mast:** Lot 1 LT 2y; 20 year period **Period:** Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Height: **30,00m - MCP LT - 2y 30m MCP session (1) - [Matrix]**

#### Weibull data

Sector	A	k	f	Mean wind speed
	[m/s]			[m/s]
0-N	8,47	1,848	3,91	7,52
1-NNE	8,17	2,090	3,15	7,24
2-ENE	9,67	2,388	5,24	8,57
3-E	10,40	2,395	7,12	9,22
4-ESE	10,46	2,278	7,36	9,27
5-SSE	10,34	2,270	6,50	9,16
6-S	10,07	2,211	8,05	8,92
7-SSW	10,98	2,361	10,62	9,73
8-WSW	11,07	2,445	11,79	9,82
9-W	10,77	2,327	11,64	9,54
10-WNW	11,12	2,514	13,47	9,87
11-NNW	11,95	2,713	11,14	10,63
<b>Mean</b>	<b>10,65</b>	<b>2,333</b>	<b>100,00</b>	<b>9,44</b>



— All A: 10,7 m/s k: 2,33 Vm: 9,4 m/s	— N A: 8,5 m/s k: 1,85 Vm: 7,5 m/s	— NNE A: 8,2 m/s k: 2,09 Vm: 7,2 m/s	— ENE A: 9,7 m/s k: 2,39 Vm: 8,6 m/s
— E A: 10,4 m/s k: 2,39 Vm: 9,2 m/s	— ESE A: 10,5 m/s k: 2,28 Vm: 9,3 m/s	— SSE A: 10,3 m/s k: 2,27 Vm: 9,2 m/s	— S A: 10,1 m/s k: 2,21 Vm: 8,9 m/s
— SSW A: 11,0 m/s k: 2,36 Vm: 9,7 m/s	— WSW A: 11,1 m/s k: 2,45 Vm: 9,8 m/s	— W A: 10,8 m/s k: 2,33 Vm: 9,5 m/s	— WNW A: 11,1 m/s k: 2,51 Vm: 9,9 m/s
— NNW A: 12,0 m/s k: 2,71 Vm: 10,6 m/s			





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Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 2 LT 2y; 20 year period Period: Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Frequency distribution (TAB file data)

270,00m - MCP LT - 2y 270m MCP session (1) - [Matrix]

Table with columns: Bin, Start, End, Sum, 0-N, 1-NNE, 2-ENE, 3-E, 4-ESE, 5-SSE, 6-S, 7-SSW, 8-WSW, 9-W, 10-WNW, 11-NNW. Rows include Mean and frequency counts for various wind directions and speeds.





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Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 2 LT 2y; 20 year period Period: Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Frequency distribution (TAB file data)

240,00m - MCP LT - 2y 240m MCP session (1) - [Matrix]

Table with columns: Bin, Start, End, Sum, 0-N, 1-NNE, 2-ENE, 3-E, 4-ESE, 5-SSE, 6-S, 7-SSW, 8-WSW, 9-W, 10-WNW, 11-NNW. Rows include Mean and frequency counts for various wind directions and speeds.





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Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 2 LT 2y; 20 year period Period: Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Frequency distribution (TAB file data)

200,00m - MCP LT - 2y 200m MCP session (1) - [Matrix]

Table with 13 columns: Bin, Start, End, Sum, 0-N, 1-NNE, 2-ENE, 3-E, 4-ESE, 5-SSE, 6-S, 7-SSW, 8-WSW, 9-W, 10-WNW, 11-NNW. Rows 0-41 show frequency data for various wind directions and speeds.





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### Meteo data report - Frequency distribution (TAB file data)

**Mast:** Lot 2 LT 2y ; 20 year period    **Period:** Full period: 01/01/2003 - 01/01/2023 (240,0 months)

#### Frequency distribution (TAB file data)

180,00m - MCP LT - 2y 180m MCP session (1) - [Matrix]

Bin	Start	End	Sum	0-N	1-NNE	2-ENE	3-E	4-ESE	5-SSE	6-S	7-SSW	8-WSW	9-W	10-WNW	11-NNW
Mean			10,91	8,52	7,72	9,45	9,96	10,93	11,15	10,91	11,72	11,79	11,10	11,01	11,55
0		0,49	303	15	35	18	15	15	22	35	27	20	18	39	44
1	0,50	1,49	1435	140	161	123	94	82	107	106	133	140	123	142	84
2	1,50	2,49	3481	308	290	299	301	274	228	217	266	278	373	343	304
3	2,50	3,49	5737	410	480	519	480	496	344	394	403	542	535	634	500
4	3,50	4,49	7323	463	463	428	562	575	459	540	610	809	919	834	661
5	4,50	5,49	8866	636	522	487	544	528	524	663	926	942	1124	1146	824
6	5,50	6,49	10774	696	633	560	702	626	594	893	1215	1193	1353	1323	986
7	6,50	7,49	11381	556	509	472	783	852	646	1027	1185	1406	1445	1443	1057
8	7,50	8,49	12159	476	393	653	751	863	719	1099	1280	1447	1394	1815	1269
9	8,50	9,49	12713	497	475	776	912	909	713	987	1244	1346	1522	1978	1354
10	9,50	10,49	12827	400	379	876	907	882	803	864	1203	1601	1577	1857	1478
11	10,50	11,49	13092	293	248	774	973	1070	832	959	1339	1705	1573	1888	1438
12	11,50	12,49	11506	283	249	574	696	838	914	871	1121	1551	1382	1721	1306
13	12,50	13,49	11360	307	240	487	695	861	865	812	1296	1662	1283	1481	1371
14	13,50	14,49	10158	344	238	434	643	891	691	664	1141	1271	1118	1403	1320
15	14,50	15,49	8458	245	140	330	357	857	656	445	895	1085	1068	1271	1109
16	15,50	16,49	8125	180	79	250	277	703	691	610	960	1181	1146	1084	964
17	16,50	17,49	6312	124	64	186	272	512	487	553	863	848	855	774	774
18	17,50	18,49	4904	75	44	126	322	334	334	451	671	692	545	618	692
19	18,50	19,49	3868	67	25	105	196	234	283	341	579	610	381	460	587
20	19,50	20,49	2972	24	20	74	129	195	203	266	463	555	335	392	316
21	20,50	21,49	2310	38	12	37	99	153	160	229	341	402	283	319	237
22	21,50	22,49	1914	23	6	27	26	85	107	172	315	313	271	299	270
23	22,50	23,49	1172	9	6	15	29	74	59	93	176	242	165	128	176
24	23,50	24,49	709	5	5	11	4	52	25	43	106	155	106	82	115
25	24,50	25,49	504	5	1	2	7	16	14	23	88	143	83	49	73
26	25,50	26,49	357	4	1	1	5	8	4	25	102	97	60	20	30
27	26,50	27,49	256	5	0	0	4	8	4	18	59	78	38	25	17
28	27,50	28,49	120	1	0	0	1	0	2	3	20	43	23	10	17
29	28,50	29,49	89	0	0	0	0	0	0	4	13	26	28	10	8
30	29,50	30,49	47	0	0	0	0	0	0	1	7	16	10	9	4
31	30,50	31,49	35	0	0	0	0	0	0	0	6	3	11	10	5
32	31,50	32,49	26	0	0	0	0	0	0	0	4	9	9	3	1
33	32,50	33,49	11	0	0	0	0	0	0	0	3	3	4	0	1
34	33,50	34,49	5	0	0	0	0	0	0	0	1	2	2	0	0
35	34,50	35,49	8	0	0	0	0	0	0	0	1	4	1	2	0
36	35,50	36,49	3	0	0	0	0	0	0	0	1	0	1	1	0
37	36,50	37,49	0	0	0	0	0	0	0	0	0	0	0	0	0
38	37,50	38,49	0	0	0	0	0	0	0	0	0	0	0	0	0
39	38,50	39,49	0	0	0	0	0	0	0	0	0	0	0	0	0
40	39,50	40,49	0	0	0	0	0	0	0	0	0	0	0	0	0
41	40,50		0	0	0	0	0	0	0	0	0	0	0	0	0





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Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 2 LT 2y ; 20 year period Period: Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Frequency distribution (TAB file data)

150,00m - MCP LT - 2y 150m MCP session (1) - [Matrix]

Table with columns: Bin, Start, End, Sum, 0-N, 1-NNE, 2-ENE, 3-E, 4-ESE, 5-SSE, 6-S, 7-SSW, 8-WSW, 9-W, 10-WNW, 11-NNW. Rows include Mean and frequency counts for various wind directions and speeds.





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Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 2 LT 2y; 20 year period Period: Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Frequency distribution (TAB file data)

120,00m - MCP LT - 2y 120m MCP session (1) - [Matrix]

Table with columns: Bin, Start, End, Sum, 0-N, 1-NNW, 2-ENE, 3-E, 4-ESE, 5-SSE, 6-S, 7-SSW, 8-WSW, 9-W, 10-WNW, 11-NNW. Rows include Mean and values for bins 0 to 41.







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Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 2 LT 2y; 20 year period Period: Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Frequency distribution (TAB file data)

100,00m - MCP LT - 2y 100m MCP session (1) - [Matrix]

Table with columns: Bin, Start, End, Sum, 0-N, 1-NNE, 2-ENE, 3-E, 4-ESE, 5-SSE, 6-S, 7-SSW, 8-WSW, 9-W, 10-WNW, 11-NNW. Rows include Mean and frequency counts for various wind directions and speeds.





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Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 2 LT 2y; 20 year period Period: Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Frequency distribution (TAB file data)

90,00m - MCP LT - 2y 90m MCP session (1) - [Matrix]

Table with columns: Bin, Start, End, Sum, 0-N, 1-NNE, 2-ENE, 3-E, 4-ESE, 5-SSE, 6-S, 7-SSW, 8-WSW, 9-W, 10-WNW, 11-NNW. Rows include Mean and frequency counts for various wind directions and speeds.





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Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 2 LT 2y ; 20 year period Period: Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Frequency distribution (TAB file data)

60,00m - MCP LT - 2y 60m MCP session (1) - [Matrix]

Table with columns: Bin, Start, End, Sum, 0-N, 1-NNE, 2-ENE, 3-E, 4-ESE, 5-SSE, 6-S, 7-SSW, 8-WSW, 9-W, 10-WNW, 11-NNW. Rows include Mean and frequency counts for various wind directions and speeds.





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### Meteo data report - Frequency distribution (TAB file data)

**Mast:** Lot 2 LT 2y ; 20 year period **Period:** Full period: 01/01/2003 - 01/01/2023 (240,0 months)

#### Frequency distribution (TAB file data)

40,00m - MCP LT - 2y 40m MCP session (1) - [Matrix]

Bin	Start	End	Sum	0-N	1-NNE	2-ENE	3-E	4-ESE	5-SSE	6-S	7-SSW	8-WSW	9-W	10-WNW	11-NNW
Mean			9,56	7,78	7,41	8,51	8,97	9,67	9,30	9,22	10,07	10,06	9,71	9,90	10,50
0		0,49	319	26	19	16	23	6	30	32	33	49	27	33	25
1	0,50	1,49	1806	155	174	139	131	91	88	170	142	210	186	161	159
2	1,50	2,49	3975	283	360	367	267	272	308	346	311	312	404	420	325
3	2,50	3,49	6494	428	422	433	590	523	455	532	453	678	740	776	464
4	3,50	4,49	8769	624	504	528	636	718	607	703	782	962	959	930	816
5	4,50	5,49	10969	765	566	621	777	684	685	915	1179	1251	1347	1279	900
6	5,50	6,49	13358	821	688	778	859	917	993	1359	1434	1326	1616	1495	1072
7	6,50	7,49	14741	588	502	795	1214	1174	1032	1489	1451	1604	1714	1885	1293
8	7,50	8,49	15153	508	489	1013	1153	1102	1072	1309	1573	1672	1718	2254	1290
9	8,50	9,49	15897	532	676	927	1246	1052	1106	1250	1643	2008	1794	2097	1566
10	9,50	10,49	15665	380	474	1115	1148	1243	1101	1073	1786	1873	1770	2151	1551
11	10,50	11,49	13577	285	326	785	934	972	767	904	1552	1839	1705	1958	1550
12	11,50	12,49	11353	288	333	537	667	783	606	850	1337	1453	1412	1569	1518
13	12,50	13,49	10275	259	249	385	542	792	571	782	1174	1549	1288	1408	1276
14	13,50	14,49	8901	286	162	262	316	775	547	667	1112	1259	1172	1220	1123
15	14,50	15,49	6867	158	91	222	268	668	489	508	864	923	895	933	848
16	15,50	16,49	5399	131	41	146	328	373	347	469	726	730	557	761	790
17	16,50	17,49	3545	76	28	97	248	269	232	217	422	538	382	515	521
18	17,50	18,49	2898	55	11	69	175	180	194	248	383	443	279	390	471
19	18,50	19,49	2089	36	5	63	98	143	121	142	298	230	259	364	330
20	19,50	20,49	1411	13	4	23	72	104	70	75	172	222	169	224	263
21	20,50	21,49	773	11	1	15	31	72	45	46	100	86	119	116	131
22	21,50	22,49	444	12	1	0	18	30	18	41	67	68	58	44	87
23	22,50	23,49	279	7	2	0	5	12	8	15	42	59	52	35	42
24	23,50	24,49	162	4	0	2	6	12	1	11	20	40	32	15	19
25	24,50	25,49	79	1	0	0	2	2	2	9	10	6	24	12	11
26	25,50	26,49	53	1	0	0	1	2	0	0	3	10	8	15	13
27	26,50	27,49	30	0	0	0	0	0	0	0	2	6	9	8	5
28	27,50	28,49	20	0	0	0	0	0	0	0	2	6	6	6	0
29	28,50	29,49	12	0	0	0	0	0	0	0	0	4	5	2	1
30	29,50	30,49	5	0	0	0	0	0	0	0	1	0	1	0	3
31	30,50	31,49	0	0	0	0	0	0	0	0	0	0	0	0	0
32	31,50	32,49	2	0	0	0	0	0	0	0	0	1	1	0	0
33	32,50	33,49	0	0	0	0	0	0	0	0	0	0	0	0	0
34	33,50	34,49	0	0	0	0	0	0	0	0	0	0	0	0	0
35	34,50	35,49	0	0	0	0	0	0	0	0	0	0	0	0	0
36	35,50	36,49	0	0	0	0	0	0	0	0	0	0	0	0	0
37	36,50	37,49	0	0	0	0	0	0	0	0	0	0	0	0	0
38	37,50	38,49	0	0	0	0	0	0	0	0	0	0	0	0	0
39	38,50	39,49	0	0	0	0	0	0	0	0	0	0	0	0	0
40	39,50	40,49	0	0	0	0	0	0	0	0	0	0	0	0	0
41	40,50		0	0	0	0	0	0	0	0	0	0	0	0	0





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Meteo data report - Frequency distribution (TAB file data)

Mast: Lot 2 LT 2y ; 20 year period    Period: Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Frequency distribution (TAB file data)

30,00m - MCP LT - 2y 30m MCP session (1) - [Matrix]

Bin	Start	End	Sum	0-N	1-NNE	2-ENE	3-E	4-ESE	5-SSE	6-S	7-SSW	8-WSW	9-W	10-WNW	11-NNW
Mean			9,35	7,52	7,24	8,30	8,72	9,44	9,04	9,03	9,80	9,87	9,53	9,74	10,29
0		0,49	266	17	17	12	26	7	27	26	21	38	22	32	21
1	0,50	1,49	1743	131	163	128	126	101	98	129	126	193	158	195	195
2	1,50	2,49	4266	338	327	405	339	319	319	340	351	366	383	469	310
3	2,50	3,49	6733	466	469	497	565	532	390	498	526	665	753	825	547
4	3,50	4,49	9053	564	497	549	727	669	602	715	953	975	1052	930	820
5	4,50	5,49	12064	831	623	751	742	765	824	1206	1258	1236	1420	1350	1058
6	5,50	6,49	13884	865	693	785	1048	1010	1027	1485	1424	1481	1617	1443	1006
7	6,50	7,49	15331	653	548	873	1183	1192	1168	1441	1548	1612	1851	1961	1301
8	7,50	8,49	15808	532	530	1111	1246	1007	1138	1287	1573	1912	1765	2297	1410
9	8,50	9,49	16142	473	663	964	1092	1163	1237	1256	1808	2053	1853	2019	1561
10	9,50	10,49	15233	399	460	970	1216	1309	934	1002	1566	1820	1802	2227	1528
11	10,50	11,49	13545	304	305	755	846	1004	784	951	1572	1745	1565	2107	1607
12	11,50	12,49	11146	292	236	539	636	730	562	898	1319	1589	1415	1570	1360
13	12,50	13,49	9777	301	230	369	461	703	515	756	1050	1372	1240	1474	1306
14	13,50	14,49	8516	180	140	198	342	722	532	630	1098	1188	1151	1248	1087
15	14,50	15,49	6492	121	72	214	288	478	424	538	817	850	724	1008	958
16	15,50	16,49	4781	116	50	159	254	416	339	309	604	717	535	588	694
17	16,50	17,49	3439	57	24	102	275	296	183	227	498	465	370	430	512
18	17,50	18,49	2629	28	10	78	137	173	182	232	341	374	283	380	411
19	18,50	19,49	1857	40	7	42	82	82	85	106	236	238	268	364	307
20	19,50	20,49	1101	8	1	23	45	82	64	84	161	155	151	163	164
21	20,50	21,49	649	7	3	8	26	63	19	42	67	104	91	81	138
22	21,50	22,49	379	5	0	8	8	38	12	28	54	73	58	26	69
23	22,50	23,49	227	7	2	1	8	17	6	12	37	40	30	21	46
24	23,50	24,49	105	1	0	0	1	4	2	11	8	16	23	25	14
25	24,50	25,49	71	1	0	0	1	2	2	1	7	21	18	11	7
26	25,50	26,49	40	0	0	0	0	0	0	0	6	10	6	11	7
27	26,50	27,49	27	0	0	0	0	0	0	0	0	7	11	7	2
28	27,50	28,49	7	1	0	0	0	0	0	0	0	2	1	2	1
29	28,50	29,49	3	0	0	0	0	0	0	0	1	0	1	1	0
30	29,50	30,49	4	0	0	0	0	0	0	0	0	0	2	0	2
31	30,50	31,49	0	0	0	0	0	0	0	0	0	0	0	0	0
32	31,50	32,49	1	0	0	0	0	0	0	0	1	0	0	0	0
33	32,50	33,49	0	0	0	0	0	0	0	0	0	0	0	0	0
34	33,50	34,49	0	0	0	0	0	0	0	0	0	0	0	0	0
35	34,50	35,49	0	0	0	0	0	0	0	0	0	0	0	0	0
36	35,50	36,49	0	0	0	0	0	0	0	0	0	0	0	0	0
37	36,50	37,49	1	0	0	0	0	0	0	0	0	1	0	0	0
38	37,50	38,49	0	0	0	0	0	0	0	0	0	0	0	0	0
39	38,50	39,49	0	0	0	0	0	0	0	0	0	0	0	0	0
40	39,50	40,49	0	0	0	0	0	0	0	0	0	0	0	0	0
41	40,50		0	0	0	0	0	0	0	0	0	0	0	0	0





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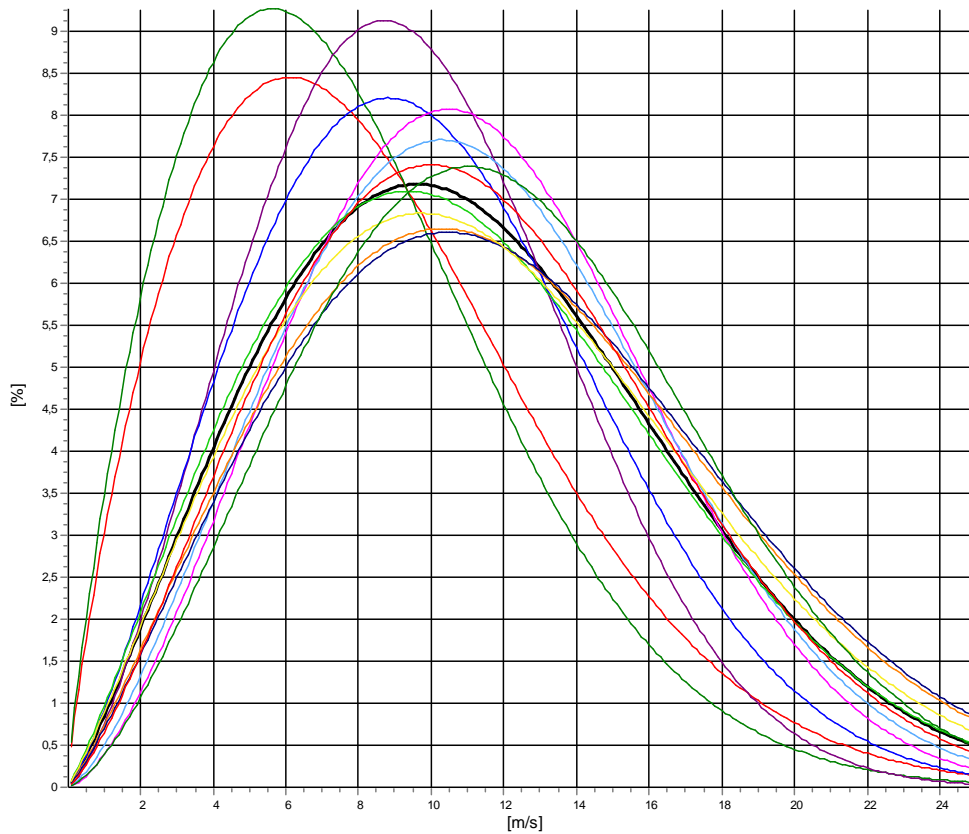
### Meteo data report - Weibull data overview

**Mast:** Lot 2 LT 2y ; 20 year period **Period:** Full period: 01/01/2003 - 01/01/2023 (240,0 months)

**Height:** 270,00m - MCP LT - 2y 270m MCP session (1) - [Matrix]

#### Weibull data

Sector	A	k	f	Mean wind speed
	[m/s]			[m/s]
0-N	9,55	1,806	3,86	8,49
1-NNE	8,74	1,818	3,17	7,77
2-ENE	10,82	2,429	4,85	9,60
3-E	11,40	2,262	5,87	10,10
4-ESE	12,72	2,550	7,32	11,29
5-SSE	12,81	2,427	6,47	11,36
6-S	12,61	2,127	7,54	11,17
7-SSW	13,67	2,175	10,87	12,11
8-WSW	13,82	2,188	12,92	12,24
9-W	13,11	2,130	12,44	11,61
10-WNW	12,80	2,303	13,46	11,34
11-NNW	13,59	2,479	11,23	12,05
<b>Mean</b>	<b>12,71</b>	<b>2,186</b>	<b>100,00</b>	<b>11,26</b>



All A: 12,7 m/s k: 2,19 Vm: 11,3 m/s	N A: 9,5 m/s k: 1,81 Vm: 8,5 m/s	NNE A: 8,7 m/s k: 1,82 Vm: 7,8 m/s	ENE A: 10,8 m/s k: 2,43 Vm: 9,6 m/s
E A: 11,4 m/s k: 2,26 Vm: 10,1 m/s	ESE A: 12,7 m/s k: 2,55 Vm: 11,3 m/s	SSE A: 12,8 m/s k: 2,43 Vm: 11,4 m/s	S A: 12,6 m/s k: 2,13 Vm: 11,2 m/s
SSW A: 13,7 m/s k: 2,18 Vm: 12,1 m/s	WSW A: 13,8 m/s k: 2,19 Vm: 12,2 m/s	W A: 13,1 m/s k: 2,13 Vm: 11,6 m/s	WNW A: 12,8 m/s k: 2,30 Vm: 11,3 m/s
NNW A: 13,6 m/s k: 2,48 Vm: 12,1 m/s			



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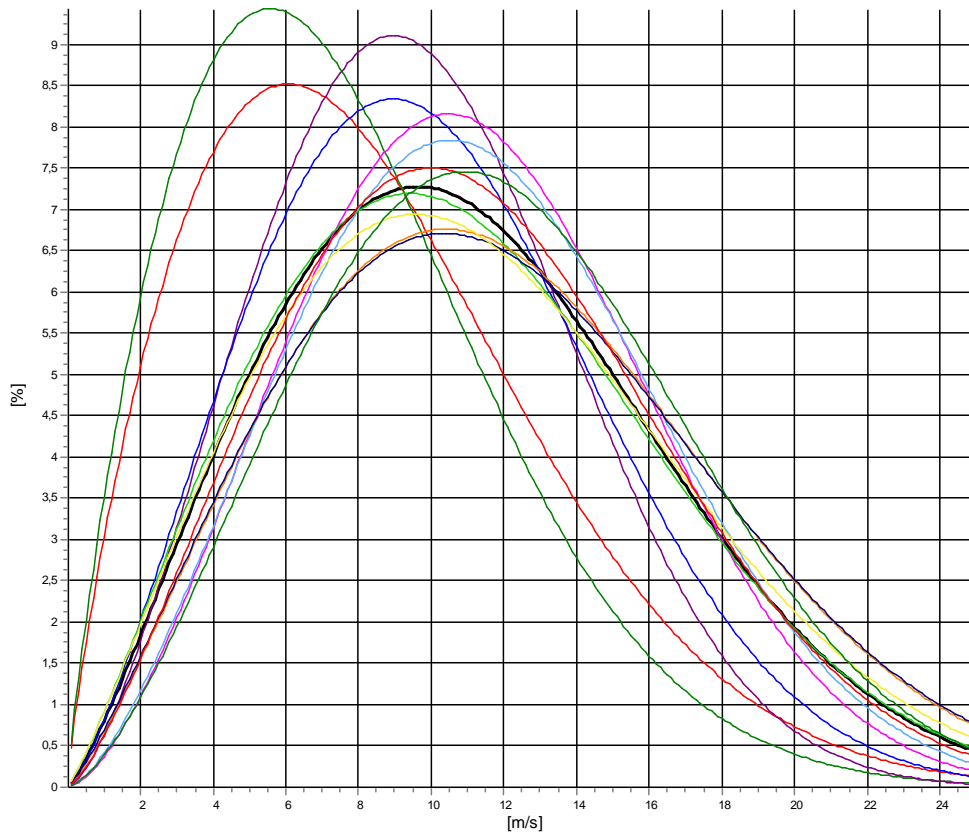
### Meteo data report - Weibull data overview

**Mast:** Lot 2 LT 2y ; 20 year period **Period:** Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Height: **240,00m - MCP LT - 2y 240m MCP session (1) - [Matrix]**

#### Weibull data

Sector	A [m/s]	k	f	Mean wind speed [m/s]
0-N	9,48	1,811	3,82	8,43
1-NNE	8,60	1,827	3,23	7,65
2-ENE	11,03	2,484	4,80	9,79
3-E	11,41	2,317	6,04	10,11
4-ESE	12,68	2,575	7,29	11,26
5-SSE	12,89	2,503	6,52	11,44
6-S	12,56	2,158	7,55	11,12
7-SSW	13,63	2,218	10,89	12,07
8-WSW	13,65	2,201	12,91	12,09
9-W	12,90	2,131	12,30	11,42
10-WNW	12,73	2,326	13,51	11,28
11-NNW	13,45	2,481	11,14	11,94
<b>Mean</b>	<b>12,63</b>	<b>2,212</b>	<b>100,00</b>	<b>11,19</b>



All A: 12,6 m/s k: 2,21 Vm: 11,2 m/s	N A: 9,5 m/s k: 1,81 Vm: 8,4 m/s	NNE A: 8,6 m/s k: 1,83 Vm: 7,6 m/s	ENE A: 11,0 m/s k: 2,48 Vm: 9,8 m/s
E A: 11,4 m/s k: 2,32 Vm: 10,1 m/s	ESE A: 12,7 m/s k: 2,58 Vm: 11,3 m/s	SSE A: 12,9 m/s k: 2,50 Vm: 11,4 m/s	S A: 12,6 m/s k: 2,16 Vm: 11,1 m/s
SSW A: 13,6 m/s k: 2,22 Vm: 12,1 m/s	WSW A: 13,7 m/s k: 2,20 Vm: 12,1 m/s	W A: 12,9 m/s k: 2,13 Vm: 11,4 m/s	WNW A: 12,7 m/s k: 2,33 Vm: 11,3 m/s
NNW A: 13,5 m/s k: 2,48 Vm: 11,9 m/s			



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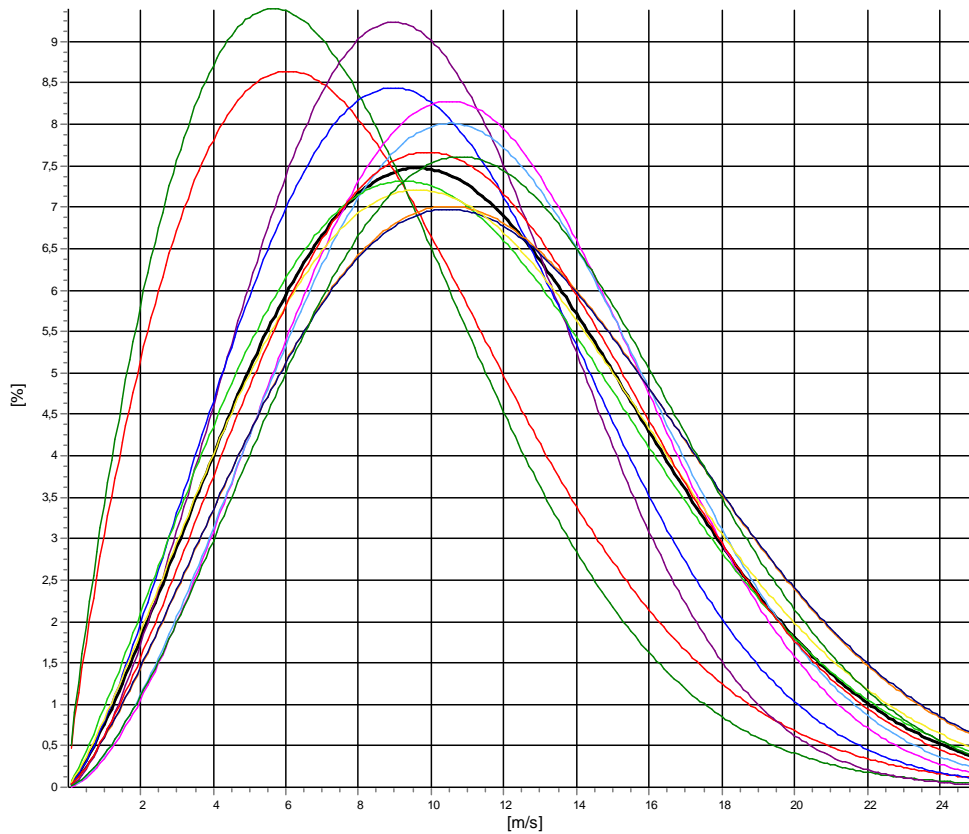
### Meteo data report - Weibull data overview

**Mast:** Lot 2 LT 2y ; 20 year period **Period:** Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Height: **200,00m - MCP LT - 2y 200m MCP session (1) - [Matrix]**

#### Weibull data

Sector	A	k	f	Mean wind speed
	[m/s]			[m/s]
0-N	9,37	1,821	3,81	8,33
1-NNE	8,67	1,838	3,28	7,70
2-ENE	10,98	2,512	4,82	9,74
3-E	11,36	2,341	6,15	10,07
4-ESE	12,64	2,612	7,35	11,22
5-SSE	12,80	2,548	6,53	11,36
6-S	12,34	2,155	7,66	10,93
7-SSW	13,46	2,291	10,84	11,92
8-WSW	13,49	2,281	12,78	11,95
9-W	12,70	2,197	12,19	11,25
10-WNW	12,54	2,347	13,53	11,11
11-NNW	13,26	2,498	11,05	11,77
<b>Mean</b>	<b>12,48</b>	<b>2,255</b>	<b>100,00</b>	<b>11,06</b>



All A: 12,5 m/s k: 2,26 Vm: 11,1 m/s	N A: 9,4 m/s k: 1,82 Vm: 8,3 m/s	NNE A: 8,7 m/s k: 1,84 Vm: 7,7 m/s	ENE A: 11,0 m/s k: 2,51 Vm: 9,7 m/s
E A: 11,4 m/s k: 2,34 Vm: 10,1 m/s	ESE A: 12,6 m/s k: 2,61 Vm: 11,2 m/s	SSE A: 12,8 m/s k: 2,55 Vm: 11,4 m/s	S A: 12,3 m/s k: 2,15 Vm: 10,9 m/s
SSW A: 13,5 m/s k: 2,29 Vm: 11,9 m/s	WSW A: 13,5 m/s k: 2,28 Vm: 11,9 m/s	W A: 12,7 m/s k: 2,20 Vm: 11,2 m/s	WNW A: 12,5 m/s k: 2,35 Vm: 11,1 m/s
NNW A: 13,3 m/s k: 2,50 Vm: 11,8 m/s			







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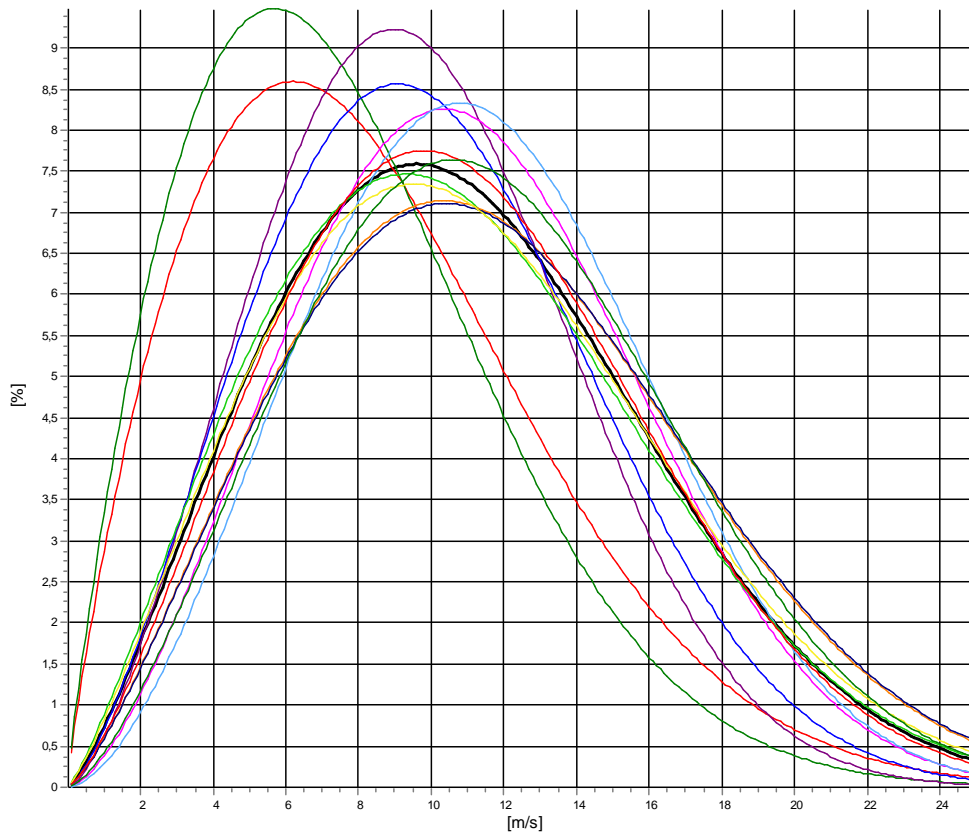
**Meteo data report - Weibull data overview**

**Mast:** Lot 2 LT 2y ; 20 year period **Period:** Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Height: **180,00m - MCP LT - 2y 180m MCP session (1) - [Matrix]**

**Weibull data**

Sector	A	k	f	Mean wind speed
	[m/s]			[m/s]
0-N	9,49	1,842	3,78	8,43
1-NNE	8,64	1,856	3,26	7,67
2-ENE	10,97	2,509	4,93	9,74
3-E	11,39	2,393	6,15	10,10
4-ESE	12,53	2,576	7,41	11,13
5-SSE	12,84	2,683	6,55	11,41
6-S	12,27	2,198	7,65	10,86
7-SSW	13,27	2,302	10,87	11,75
8-WSW	13,32	2,300	12,79	11,80
9-W	12,52	2,210	12,07	11,09
10-WNW	12,41	2,349	13,47	10,99
11-NNW	13,11	2,473	11,06	11,62
<b>Mean</b>	<b>12,38</b>	<b>2,277</b>	<b>100,00</b>	<b>10,97</b>



All A: 12,4 m/s k: 2,28 Vm: 11,0 m/s	N A: 9,5 m/s k: 1,84 Vm: 8,4 m/s	NNE A: 8,6 m/s k: 1,86 Vm: 7,7 m/s	ENE A: 11,0 m/s k: 2,51 Vm: 9,7 m/s
E A: 11,4 m/s k: 2,39 Vm: 10,1 m/s	ESE A: 12,5 m/s k: 2,58 Vm: 11,1 m/s	SSE A: 12,8 m/s k: 2,68 Vm: 11,4 m/s	S A: 12,3 m/s k: 2,20 Vm: 10,9 m/s
SSW A: 13,3 m/s k: 2,30 Vm: 11,8 m/s	WSW A: 13,3 m/s k: 2,30 Vm: 11,8 m/s	W A: 12,5 m/s k: 2,21 Vm: 11,1 m/s	WNW A: 12,4 m/s k: 2,35 Vm: 11,0 m/s
NNW A: 13,1 m/s k: 2,47 Vm: 11,6 m/s			





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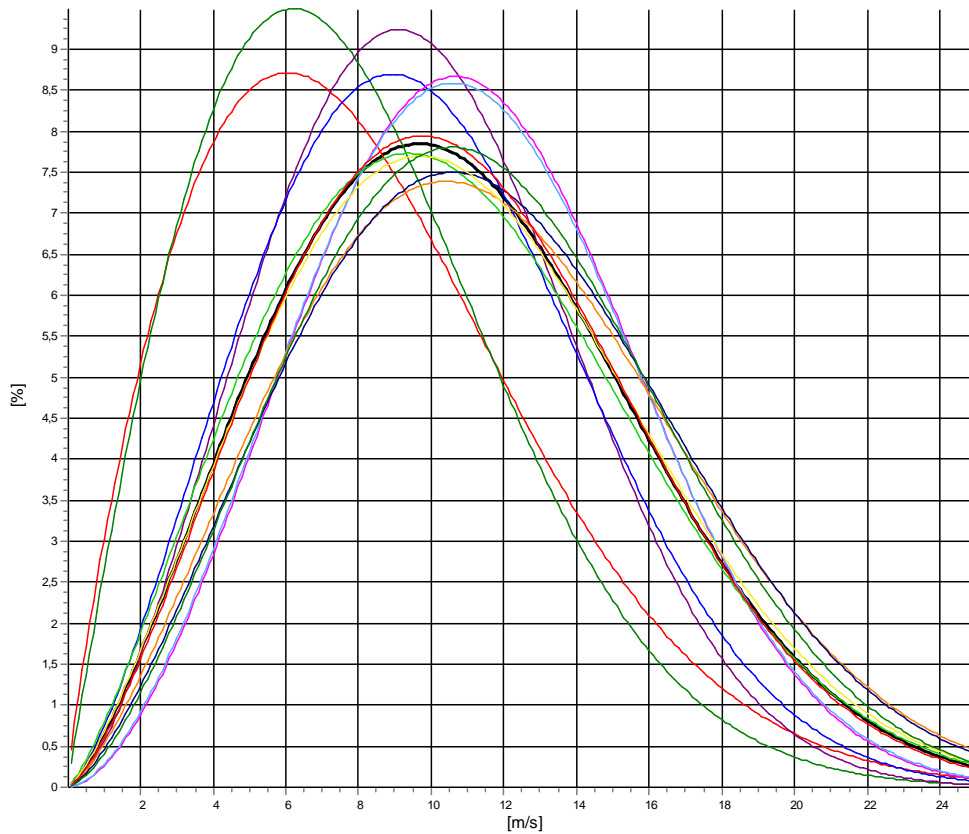
**Meteo data report - Weibull data overview**

**Mast:** Lot 2 LT 2y; 20 year period **Period:** Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Height: **150,00m - MCP LT - 2y 150m MCP session (1) - [Matrix]**

**Weibull data**

Sector	A	k	f	Mean wind speed
	[m/s]			[m/s]
0-N	9,32	1,830	3,81	8,29
1-NNE	8,92	1,962	3,33	7,91
2-ENE	11,09	2,544	4,91	9,84
3-E	11,20	2,387	6,33	9,93
4-ESE	12,57	2,744	7,40	11,19
5-SSE	12,57	2,713	6,61	11,18
6-S	12,12	2,267	7,73	10,73
7-SSW	13,12	2,373	10,82	11,63
8-WSW	13,17	2,430	12,66	11,68
9-W	12,39	2,321	12,08	10,97
10-WNW	12,26	2,386	13,44	10,86
11-NNW	12,96	2,505	10,87	11,50
<b>Mean</b>	<b>12,26</b>	<b>2,348</b>	<b>100,00</b>	<b>10,86</b>



All A: 12,3 m/s k: 2,35 Vm: 10,9 m/s	N A: 9,3 m/s k: 1,83 Vm: 8,3 m/s	NNE A: 8,9 m/s k: 1,96 Vm: 7,9 m/s	ENE A: 11,1 m/s k: 2,54 Vm: 9,8 m/s
E A: 11,2 m/s k: 2,39 Vm: 9,9 m/s	ESE A: 12,6 m/s k: 2,74 Vm: 11,2 m/s	SSE A: 12,6 m/s k: 2,71 Vm: 11,2 m/s	S A: 12,1 m/s k: 2,27 Vm: 10,7 m/s
SSW A: 13,1 m/s k: 2,37 Vm: 11,6 m/s	WSW A: 13,2 m/s k: 2,43 Vm: 11,7 m/s	W A: 12,4 m/s k: 2,32 Vm: 11,0 m/s	WNW A: 12,3 m/s k: 2,39 Vm: 10,9 m/s
NNW A: 13,0 m/s k: 2,50 Vm: 11,5 m/s			





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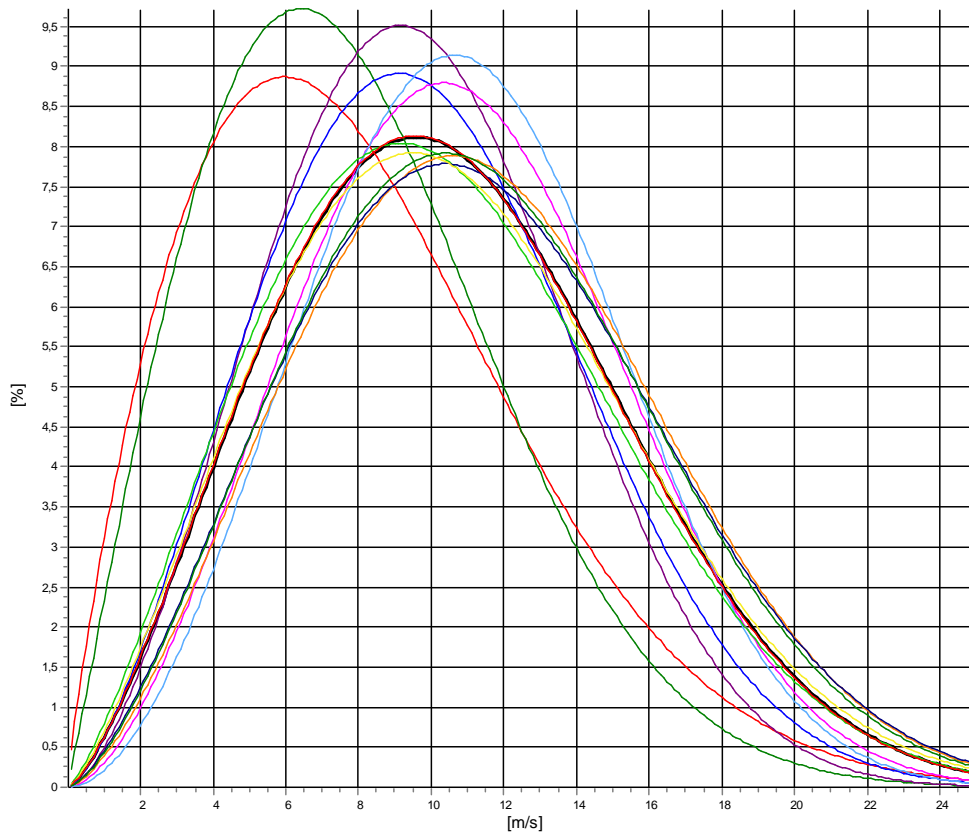
### Meteo data report - Weibull data overview

**Mast:** Lot 2 LT 2y ; 20 year period **Period:** Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Height: **120,00m - MCP LT - 2y 120m MCP session (1) - [Matrix]**

#### Weibull data

Sector	A	k	f	Mean wind speed
	[m/s]			[m/s]
0-N	9,17	1,833	3,82	8,15
1-NNE	8,93	2,037	3,27	7,91
2-ENE	11,01	2,617	5,06	9,78
3-E	11,23	2,473	6,46	9,96
4-ESE	12,26	2,710	7,40	10,91
5-SSE	12,36	2,864	6,52	11,02
6-S	11,77	2,298	7,82	10,42
7-SSW	12,94	2,533	10,83	11,49
8-WSW	12,84	2,466	12,58	11,38
9-W	12,08	2,332	11,89	10,70
10-WNW	11,99	2,392	13,50	10,63
11-NNW	12,76	2,499	10,83	11,32
<b>Mean</b>	<b>12,03</b>	<b>2,394</b>	<b>100,00</b>	<b>10,66</b>



All A: 12,0 m/s k: 2,39 Vm: 10,7 m/s	N A: 9,2 m/s k: 1,83 Vm: 8,1 m/s	NNE A: 8,9 m/s k: 2,04 Vm: 7,9 m/s	ENE A: 11,0 m/s k: 2,62 Vm: 9,8 m/s
E A: 11,2 m/s k: 2,47 Vm: 10,0 m/s	ESE A: 12,3 m/s k: 2,71 Vm: 10,9 m/s	SSE A: 12,4 m/s k: 2,86 Vm: 11,0 m/s	S A: 11,8 m/s k: 2,30 Vm: 10,4 m/s
SSW A: 12,9 m/s k: 2,53 Vm: 11,5 m/s	WSW A: 12,8 m/s k: 2,47 Vm: 11,4 m/s	W A: 12,1 m/s k: 2,33 Vm: 10,7 m/s	WNW A: 12,0 m/s k: 2,39 Vm: 10,6 m/s
NNW A: 12,8 m/s k: 2,50 Vm: 11,3 m/s			





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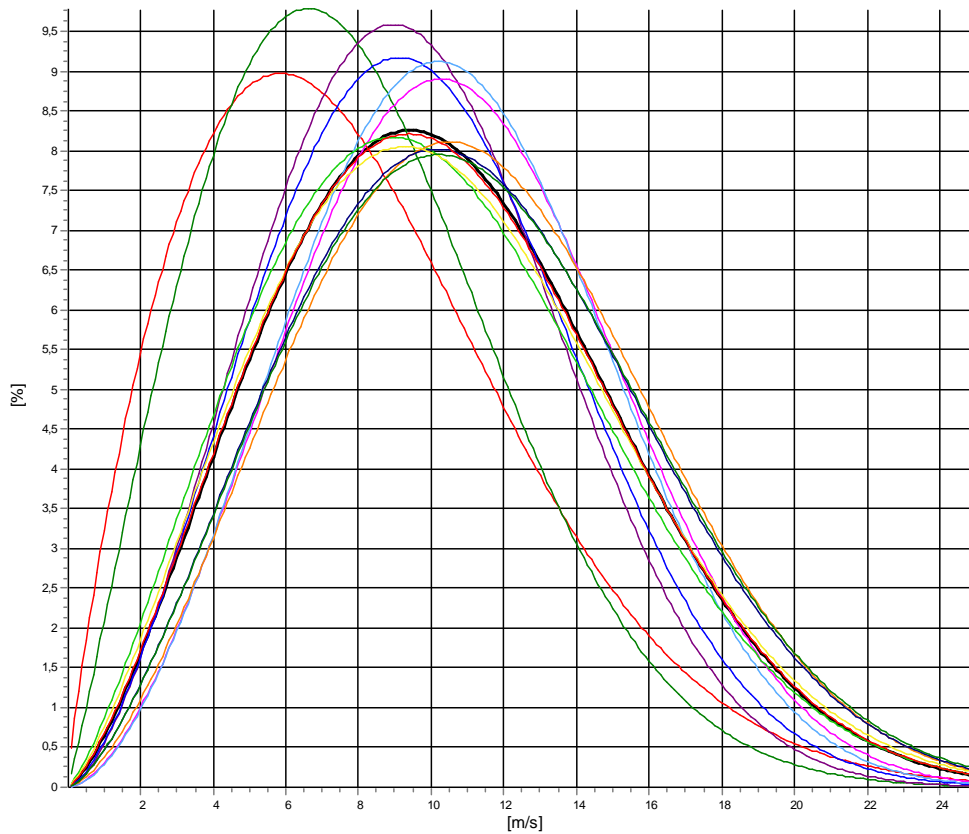
### Meteo data report - Weibull data overview

**Mast:** Lot 2 LT 2y; 20 year period **Period:** Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Height: **100,00m - MCP LT - 2y 100m MCP session (1) - [Matrix]**

#### Weibull data

Sector	A	k	f	Mean wind speed
	[m/s]			[m/s]
0-N	9,04	1,826	3,83	8,04
1-NNE	9,03	2,090	3,34	8,00
2-ENE	10,82	2,586	5,09	9,61
3-E	11,12	2,530	6,55	9,87
4-ESE	12,15	2,720	7,39	10,81
5-SSE	12,00	2,759	6,60	10,68
6-S	11,52	2,281	7,85	10,20
7-SSW	12,72	2,568	10,81	11,29
8-WSW	12,53	2,483	12,55	11,11
9-W	11,83	2,318	11,80	10,48
10-WNW	11,82	2,376	13,42	10,48
11-NNW	12,60	2,474	10,77	11,18
<b>Mean</b>	<b>11,82</b>	<b>2,394</b>	<b>100,00</b>	<b>10,48</b>



All A: 11,8 m/s k: 2,39 Vm: 10,5 m/s	N A: 9,0 m/s k: 1,83 Vm: 8,0 m/s	NNE A: 9,0 m/s k: 2,09 Vm: 8,0 m/s	ENE A: 10,8 m/s k: 2,59 Vm: 9,6 m/s
E A: 11,1 m/s k: 2,53 Vm: 9,9 m/s	ESE A: 12,2 m/s k: 2,72 Vm: 10,8 m/s	SSE A: 12,0 m/s k: 2,76 Vm: 10,7 m/s	S A: 11,5 m/s k: 2,28 Vm: 10,2 m/s
SSW A: 12,7 m/s k: 2,57 Vm: 11,3 m/s	WSW A: 12,5 m/s k: 2,48 Vm: 11,1 m/s	W A: 11,8 m/s k: 2,32 Vm: 10,5 m/s	WNW A: 11,8 m/s k: 2,38 Vm: 10,5 m/s
NNW A: 12,6 m/s k: 2,47 Vm: 11,2 m/s			





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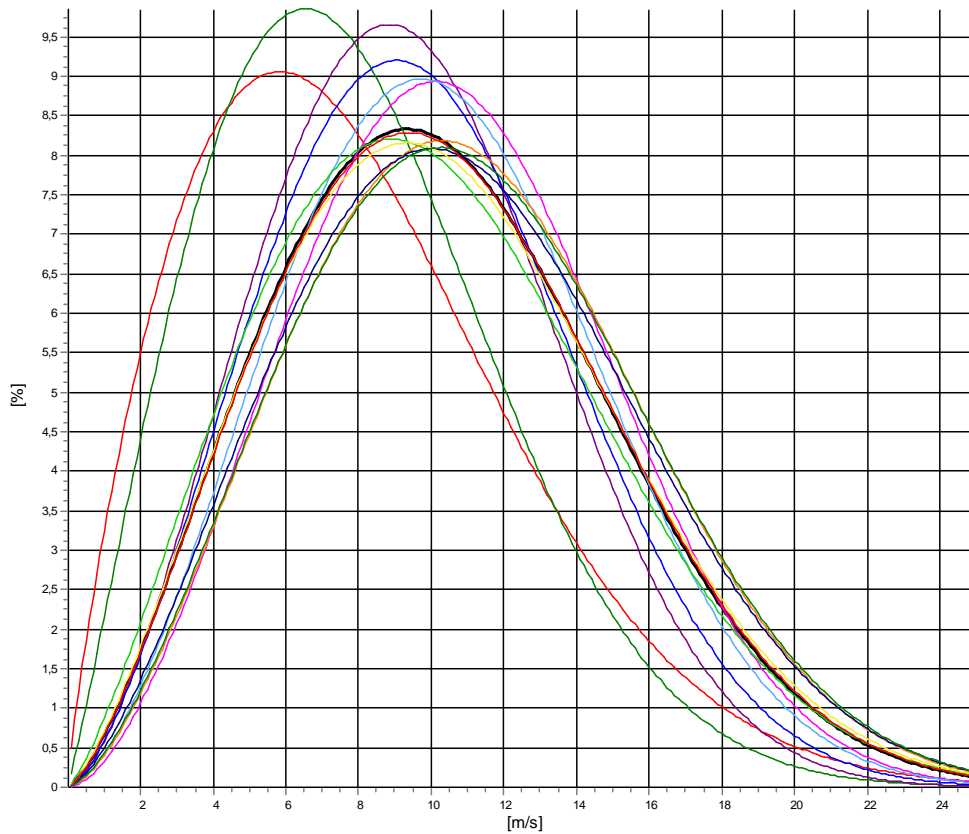
### Meteo data report - Weibull data overview

**Mast:** Lot 2 LT 2y ; 20 year period **Period:** Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Height: **90,00m - MCP LT - 2y 90m MCP session (1) - [Matrix]**

#### Weibull data

Sector	A	k	f	Mean wind speed
	[m/s]			[m/s]
0-N	8,97	1,832	3,81	7,97
1-NNE	8,95	2,084	3,28	7,93
2-ENE	10,71	2,573	5,19	9,51
3-E	11,05	2,523	6,54	9,81
4-ESE	12,02	2,697	7,33	10,69
5-SSE	11,69	2,617	6,66	10,38
6-S	11,47	2,282	7,96	10,16
7-SSW	12,52	2,546	10,80	11,12
8-WSW	12,37	2,469	12,50	10,98
9-W	11,81	2,353	11,81	10,46
10-WNW	11,77	2,390	13,35	10,43
11-NNW	12,55	2,520	10,76	11,14
<b>Mean</b>	<b>11,71</b>	<b>2,393</b>	<b>100,00</b>	<b>10,38</b>



All A: 11,7 m/s k: 2,39 Vm: 10,4 m/s	N A: 9,0 m/s k: 1,83 Vm: 8,0 m/s	NNE A: 8,9 m/s k: 2,08 Vm: 7,9 m/s	ENE A: 10,7 m/s k: 2,57 Vm: 9,5 m/s
E A: 11,1 m/s k: 2,52 Vm: 9,8 m/s	ESE A: 12,0 m/s k: 2,70 Vm: 10,7 m/s	SSE A: 11,7 m/s k: 2,62 Vm: 10,4 m/s	S A: 11,5 m/s k: 2,28 Vm: 10,2 m/s
SSW A: 12,5 m/s k: 2,55 Vm: 11,1 m/s	WSW A: 12,4 m/s k: 2,47 Vm: 11,0 m/s	W A: 11,8 m/s k: 2,35 Vm: 10,5 m/s	WNW A: 11,8 m/s k: 2,39 Vm: 10,4 m/s
NNW A: 12,6 m/s k: 2,52 Vm: 11,1 m/s			



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06/03/2024 10.36

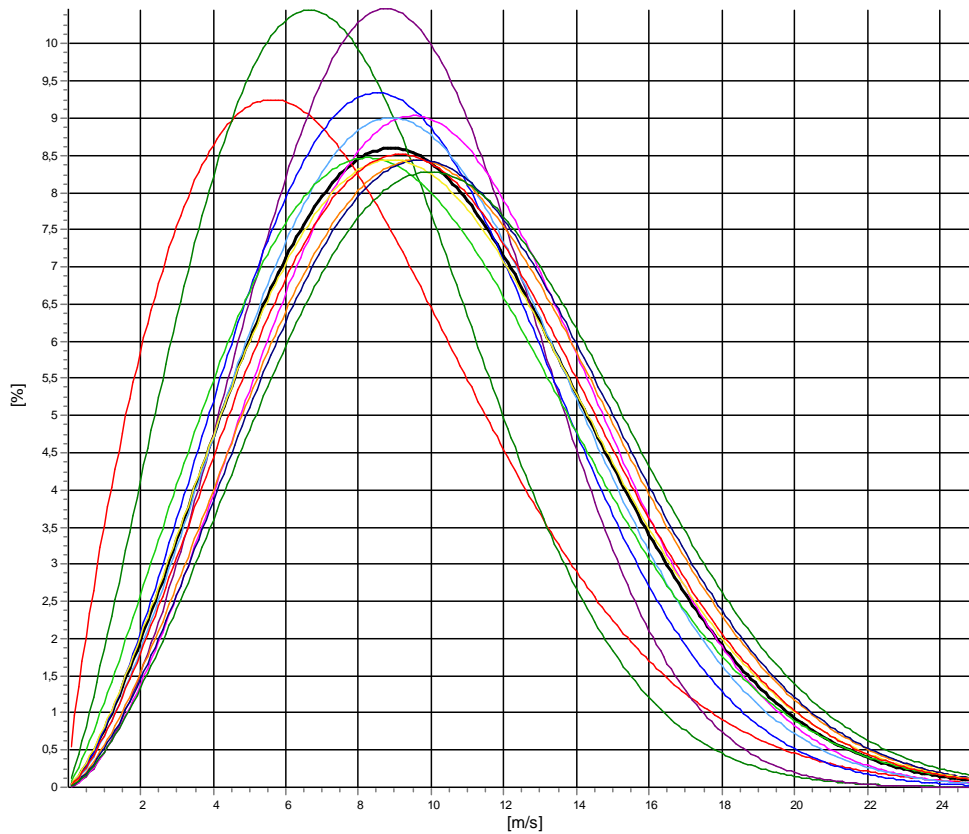
### Meteo data report - Weibull data overview

**Mast:** Lot 2 LT 2y; 20 year period **Period:** Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Height: **60,00m - MCP LT - 2y 60m MCP session (1) - [Matrix]**

#### Weibull data

Sector	A [m/s]	k	f	Mean wind speed [m/s]
0-N	8,73	1,812	3,90	7,76
1-NNE	8,76	2,198	3,42	7,76
2-ENE	10,35	2,727	5,28	9,21
3-E	10,58	2,433	6,66	9,38
4-ESE	11,50	2,590	7,31	10,21
5-SSE	11,03	2,448	6,58	9,78
6-S	10,85	2,207	8,06	9,61
7-SSW	11,82	2,460	10,88	10,48
8-WSW	11,92	2,488	12,27	10,58
9-W	11,32	2,328	11,87	10,03
10-WNW	11,47	2,394	13,25	10,17
11-NNW	12,22	2,506	10,52	10,84
<b>Mean</b>	<b>11,24</b>	<b>2,362</b>	<b>100,00</b>	<b>9,96</b>



All A: 11,2 m/s k: 2,36 Vm: 10,0 m/s	N A: 8,7 m/s k: 1,81 Vm: 7,8 m/s	NNE A: 8,8 m/s k: 2,20 Vm: 7,8 m/s	ENE A: 10,3 m/s k: 2,73 Vm: 9,2 m/s
E A: 10,6 m/s k: 2,43 Vm: 9,4 m/s	ESE A: 11,5 m/s k: 2,59 Vm: 10,2 m/s	SSE A: 11,0 m/s k: 2,45 Vm: 9,8 m/s	S A: 10,8 m/s k: 2,21 Vm: 9,6 m/s
SSW A: 11,8 m/s k: 2,46 Vm: 10,5 m/s	WSW A: 11,9 m/s k: 2,49 Vm: 10,6 m/s	W A: 11,3 m/s k: 2,33 Vm: 10,0 m/s	WNW A: 11,5 m/s k: 2,39 Vm: 10,2 m/s
NNW A: 12,2 m/s k: 2,51 Vm: 10,8 m/s			



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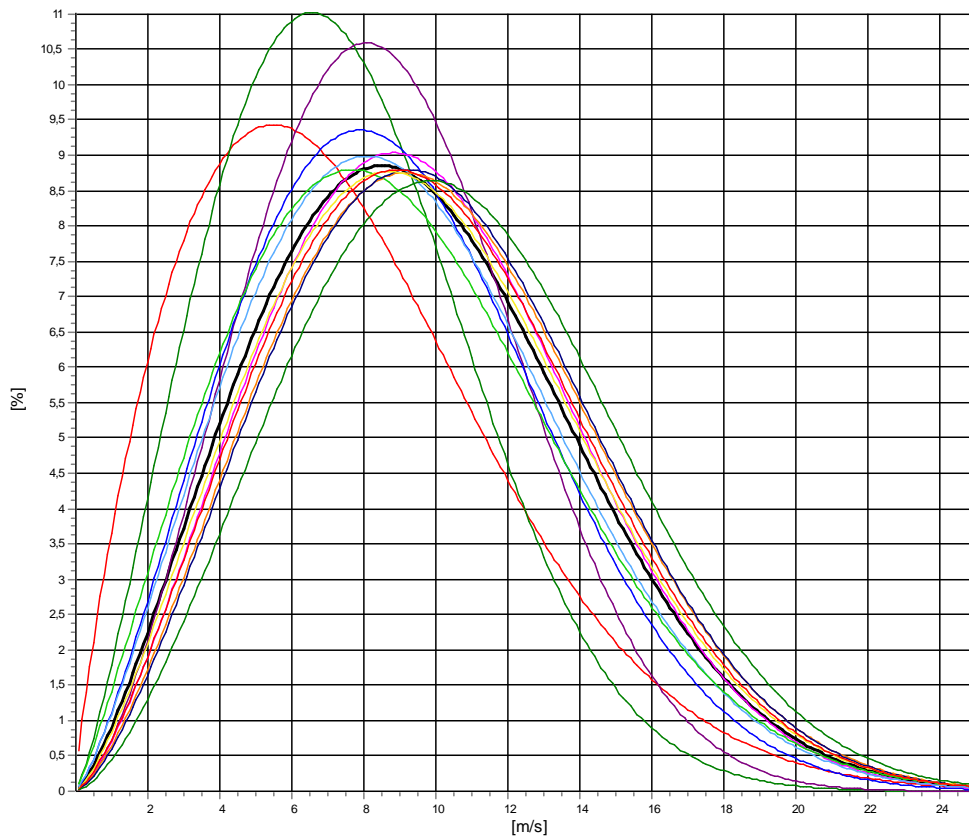
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06/03/2024 10.36

### Meteo data report - Weibull data overview

**Mast:** Lot 2 LT 2y; 20 year period **Period:** Full period: 01/01/2003 - 01/01/2023 (240,0 months)  
**Height:** 40,00m - MCP LT - 2y 40m MCP session (1) - [Matrix]

#### Weibull data

Sector	A	k	f	Mean wind speed
	[m/s]			[m/s]
0-N	8,56	1,809	3,84	7,61
1-NNE	8,49	2,264	3,50	7,52
2-ENE	9,77	2,579	5,33	8,68
3-E	10,13	2,303	6,70	8,97
4-ESE	10,97	2,441	7,40	9,73
5-SSE	10,45	2,276	6,56	9,26
6-S	10,27	2,157	8,08	9,09
7-SSW	11,35	2,450	10,88	10,07
8-WSW	11,41	2,479	12,22	10,12
9-W	11,00	2,359	11,81	9,75
10-WNW	11,15	2,408	13,16	9,88
11-NNW	11,94	2,569	10,53	10,60
<b>Mean</b>	<b>10,81</b>	<b>2,333</b>	<b>100,00</b>	<b>9,58</b>



All A: 10,8 m/s k: 2,33 Vm: 9,6 m/s	N A: 8,6 m/s k: 1,81 Vm: 7,6 m/s	NNE A: 8,5 m/s k: 2,26 Vm: 7,5 m/s	ENE A: 9,8 m/s k: 2,58 Vm: 8,7 m/s
E A: 10,1 m/s k: 2,30 Vm: 9,0 m/s	ESE A: 11,0 m/s k: 2,44 Vm: 9,7 m/s	SSE A: 10,4 m/s k: 2,28 Vm: 9,3 m/s	S A: 10,3 m/s k: 2,16 Vm: 9,1 m/s
SSW A: 11,4 m/s k: 2,45 Vm: 10,1 m/s	WSW A: 11,4 m/s k: 2,48 Vm: 10,1 m/s	W A: 11,0 m/s k: 2,36 Vm: 9,7 m/s	WNW A: 11,1 m/s k: 2,41 Vm: 9,9 m/s
NNW A: 11,9 m/s k: 2,57 Vm: 10,6 m/s			



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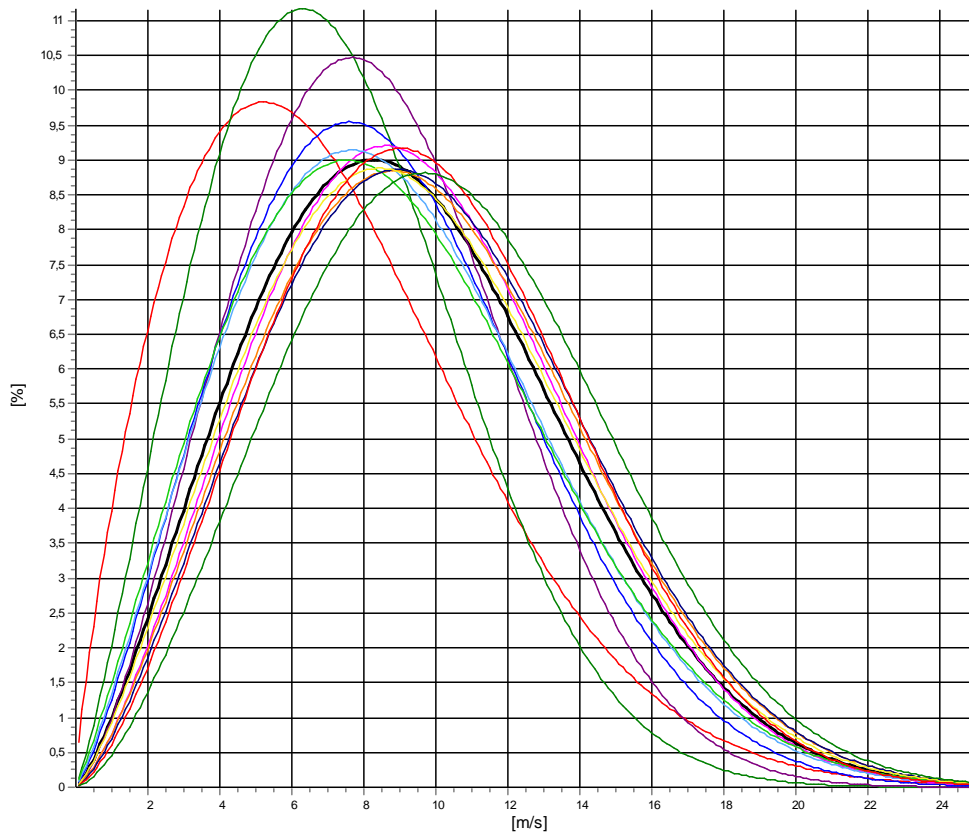
### Meteo data report - Weibull data overview

Mast: Lot 2 LT 2y; 20 year period Period: Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Height: 30,00m - MCP LT - 2y 30m MCP session (1) - [Matrix]

#### Weibull data

Sector	A [m/s]	k	f	Mean wind speed [m/s]
0-N	8,20	1,804	3,84	7,29
1-NNE	8,26	2,221	3,46	7,31
2-ENE	9,50	2,453	5,44	8,42
3-E	9,83	2,275	6,68	8,71
4-ESE	10,73	2,430	7,35	9,51
5-SSE	10,06	2,212	6,55	8,91
6-S	10,04	2,158	8,11	8,89
7-SSW	11,04	2,395	10,86	9,79
8-WSW	11,14	2,430	12,16	9,88
9-W	10,75	2,327	11,76	9,53
10-WNW	11,04	2,507	13,27	9,80
11-NNW	11,72	2,571	10,52	10,40
<b>Mean</b>	<b>10,56</b>	<b>2,314</b>	<b>100,00</b>	<b>9,36</b>



All A: 10,6 m/s k: 2,31 Vm: 9,4 m/s	N A: 8,2 m/s k: 1,80 Vm: 7,3 m/s	NNE A: 8,3 m/s k: 2,22 Vm: 7,3 m/s	ENE A: 9,5 m/s k: 2,45 Vm: 8,4 m/s
E A: 9,8 m/s k: 2,28 Vm: 8,7 m/s	ESE A: 10,7 m/s k: 2,43 Vm: 9,5 m/s	SSE A: 10,1 m/s k: 2,21 Vm: 8,9 m/s	S A: 10,0 m/s k: 2,16 Vm: 8,9 m/s
SSW A: 11,0 m/s k: 2,40 Vm: 9,8 m/s	WSW A: 11,1 m/s k: 2,43 Vm: 9,9 m/s	W A: 10,8 m/s k: 2,33 Vm: 9,5 m/s	WNW A: 11,0 m/s k: 2,51 Vm: 9,8 m/s
NNW A: 11,7 m/s k: 2,57 Vm: 10,4 m/s			







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Meteo data report - Frequency distribution (TAB file data)

Mast: North Sea position 3 LT 2y; 20 year period Period: Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Frequency distribution (TAB file data)

Table with columns: Bin, Start, End, Sum, 0-N, 1-NNE, 2-ENE, 3-E, 4-ESE, 5-SSE, 6-S, 7-SSW, 8-WSW, 9-W, 10-WNW, 11-NNW. Rows include Mean and data for bins 0 to 41.





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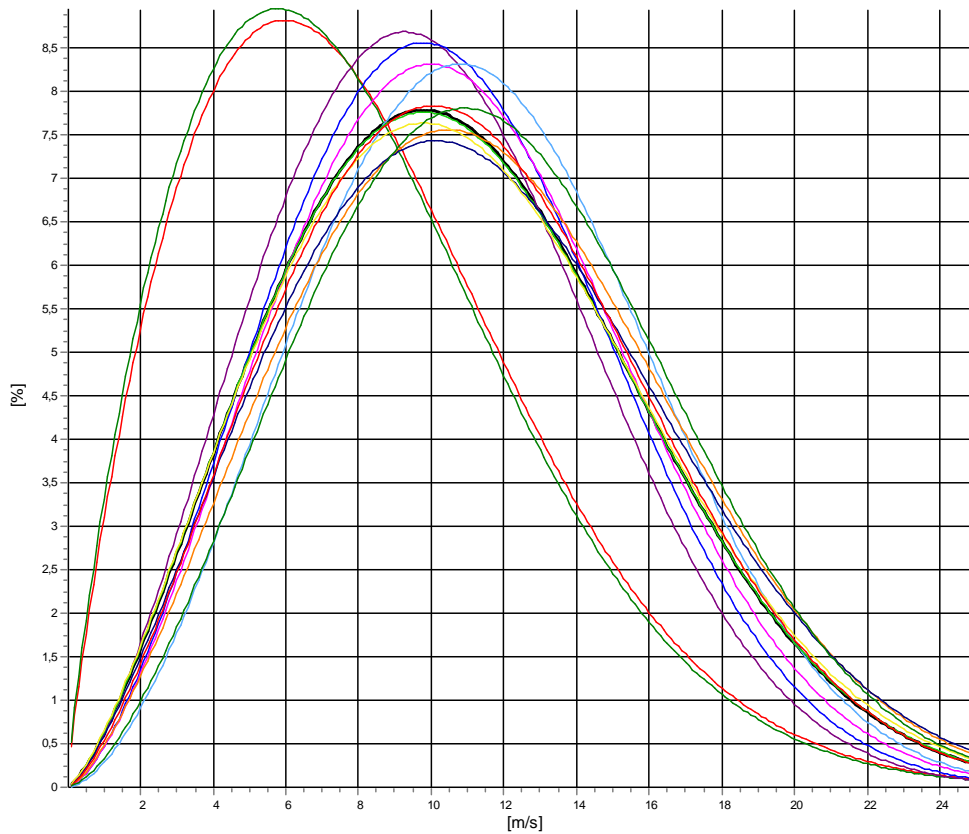
### Meteo data report - Weibull data overview

**Mast:** North Sea position 3 LT 2y; 20 year period **Period:** Full period: 01/01/2003 - 01/01/2023 (240,0 months)

Height: **150,00m - MCP LT - 2y 150m MCP session (1) - [Matrix] Scaled Buoy 1+2 gradient**

#### Weibull data

Sector	A [m/s]	k	f	Mean wind speed [m/s]
0-N	9,20	1,830	3,90	8,18
1-NNE	9,02	1,811	3,01	8,02
2-ENE	11,47	2,459	4,71	10,17
3-E	11,93	2,538	6,80	10,59
4-ESE	12,21	2,519	7,27	10,84
5-SSE	12,85	2,681	6,53	11,42
6-S	12,38	2,347	7,74	10,97
7-SSW	13,04	2,426	10,62	11,56
8-WSW	12,88	2,336	12,40	11,41
9-W	12,48	2,323	11,76	11,06
10-WNW	12,54	2,416	13,48	11,12
11-NNW	13,23	2,573	11,77	11,75
<b>Mean</b>	<b>12,38</b>	<b>2,356</b>	<b>100,00</b>	<b>10,97</b>



All A: 12,4 m/s k: 2,36 Vm: 11,0 m/s	N A: 9,2 m/s k: 1,83 Vm: 8,2 m/s	NNE A: 9,0 m/s k: 1,81 Vm: 8,0 m/s	ENE A: 11,5 m/s k: 2,46 Vm: 10,2 m/s
E A: 11,9 m/s k: 2,54 Vm: 10,6 m/s	ESE A: 12,2 m/s k: 2,52 Vm: 10,8 m/s	SSE A: 12,8 m/s k: 2,68 Vm: 11,4 m/s	S A: 12,4 m/s k: 2,35 Vm: 11,0 m/s
SSW A: 13,0 m/s k: 2,43 Vm: 11,6 m/s	WSW A: 12,9 m/s k: 2,34 Vm: 11,4 m/s	W A: 12,5 m/s k: 2,32 Vm: 11,1 m/s	WNW A: 12,5 m/s k: 2,42 Vm: 11,1 m/s
NNW A: 13,2 m/s k: 2,57 Vm: 11,7 m/s			





## **Appendix D. Normal Turbulence Model (150 m)**



Wind speed [m/s]	Turbulence intensity mean value ( $TI_{\mu}$ ) [%]	Turbulence intensity standard deviation ( $TI_{\sigma}$ ) [%]	Turbulence intensity 90% quantile [%]
3	10.1	5.9	17.6
4	7.9	4.7	13.9
5	6.7	3.9	11.8
6	6.0	3.5	10.4
7	5.6	3.1	9.5
8	5.3	2.8	8.9
9	5.1	2.6	8.5
10	5.0	2.5	8.2
11	5.0	2.4	8.0
12	5.0	2.3	7.9
13	5.0	2.2	7.8
14	5.1	2.1	7.7
15	5.1	2.0	7.7
16	5.2	2.0	7.7
17	5.4	1.9	7.8
18	5.5	1.9	7.9
19	5.7	1.8	8.0
20	5.8	1.8	8.1
21	6.0	1.7	8.2
22	6.1	1.7	8.3
23	6.3	1.7	8.5
24	6.5	1.7	8.6
25	6.7	1.6	8.8



Wind speed [m/s]	TURBULENCE MEAN VALUE ( $\sigma_{\mu}$ ) [M/S]	TURBULENCE STANDARD DEVIATION ( $\sigma_{\sigma}$ ) [M/S]	Turbulence 90% QUANTILE [m/s]
3	0.30	0.18	0.53
4	0.32	0.19	0.56
5	0.34	0.20	0.59
6	0.36	0.21	0.63
7	0.39	0.22	0.67
8	0.42	0.23	0.71
9	0.46	0.24	0.76
10	0.50	0.25	0.82
11	0.55	0.26	0.88
12	0.60	0.27	0.94
13	0.65	0.28	1.01
14	0.71	0.29	1.08
15	0.77	0.30	1.16
16	0.84	0.31	1.24
17	0.91	0.32	1.33
18	0.99	0.33	1.42
19	1.07	0.34	1.51
20	1.16	0.35	1.62
21	1.25	0.37	1.72
22	1.35	0.38	1.83
23	1.45	0.39	1.95
24	1.56	0.40	2.07
25	1.67	0.41	2.19

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