

PT. Bukit Muria Jaya Executive Summary Report

Augt - Sept 2024



DIREKTORAT JENDERAL ENERGI BARU TERBARUKAN
DAN KONSERVASI ENERGI (EBTKE)

Jujur, Profesional, Melayani, Inovatif, Berarti



PT. Konservasi Energi
Solusi Indonesia



Danish Energy
Agency



EMBASSY
OF DENMARK
Jakarta

Project no: Mapping/benchmark on Energy Efficiency in Industries
under the Energy Partnership Programme between Indonesia and
Denmark (INDODEPP)

Report: Executive Summary of Energy Audit Report

Date: 2nd September, 2024

Prepared by: PT. Konservasi Energi Solusi Indonesia (KEnSI)

QA by: Peter Kristensen, Chief Advisor, Viegand Maagøe
Emil Rosendal Albæk, Project Manager, Viegand Maagøe

Approved by: Nadeem Niwaz, Danish Energy Agency

VIEGAND MAAGØE A/S

ZEALAND
Head office
Nørre Søgade 35
DK 1370 Copenhagen K
Denmark

T +45 33 34 90 00
info@viegandmaagoe.dk
www.viegandmaagoe.dk

CBR 29688834

JUTLAND
Samsøvej 31
DK 8382 Hinnerup

1 Description of Company

PT. Bukit Muria Jaya located in Jl. Karawang Spoor, Kec. Teluk Jambe, P.O. BOX 54 KW Karawang 41300, Jawa Barat, Indonesia. It is cigarette paper industry by providing a total solution for non-tobacco material paper as Cigarette Paper, Plug Wrap Paper. Printed Tipping Paper, Tipping Base Paper, Aluminium Foil Laminated Paper, Inner Frame Paper and Printed Packaging Base Paper.

Based on agreement during Kick off Meeting, boundary of audit are

1. Steam Generation System and
2. Electricity System in Paper Machine 2

PT. Bukit Muria Jaya (BMJ) has 3 (three) coal fired boiler units, namely B-20 T, B-15 T & B-6 T where the B-6 T Boiler is only used as a back-up. The boiler is used to produce 8 bar steam which is used for processing needs in the Paper Machine and Stock Preparation.

2 Specific Energy Consumption

The scope of the energy audit is the organizational activities (paper mills) and utilities supporting these activities, including electrical systems and boiler water systems.

The energy sources included in the scope of the audit are coal and electricity. Fuel (oil) is not included in the scope of the audit because the amount is insignificant and does not have a direct effect on the Organization's production process.

The physical limitations of the energy audit carried out are Power Boiler Plant (Boiler #1-20T and Boiler #2-15T) and and electrical system in Paper Mill #2 (PM #2).

Based on daily data collected on September 4, 2024, the energy performance of Power Boiler #1-20T by heat loss method is 73,04% boiler #2-15T by heat loss method is 69,55%.

Daily average energy consumption of PM 2 until March 2024 is 116.533 kWh/day, the electric energy performance is 2917,25 kWh/ton.

3 Energy Saving Potential

3.1 Boiler

1. Reducing Unburnt Carbon Loss in fly ash, the efficiency of Boiler-20T and Boiler-15T will increase by 7.27% & 11.7% and it will be able to obtain savings of 217,487.51 USD/Year
2. Reducing Blowdown loss by install Reverse Osmosis System to improve the quality of the boiler water than the amount of blowdown from B 20T and B 15T can be reduced and it will be able to obtain savings of 37,032.00 USD/Year
3. Increasing Condensate return from 52% to 70% it will be able to obtain savings of 51,248 USD/Year
4. Optimizing the boiler load factor can reduce coal consumption 5,261.00 ton/year or equivalent to 420,880 USD/Year
5. Utilization of waste heat from Boiler-20T for power generation with an ORC system can generate 354.91 kW of electricity or equivalent savings of USD 190,230.00 / Year

3.2 Electric Motor

1. Replacing a standard motor 01-R-1050 SW REFINER#3, 500 Kw with a premium motor will save around 38,173 kWh of annual energy or equivalent with 3,283 USD/Year with a payback period of about 6.09 years.
2. Replacing a standard motor 01-b-301, BALE PULPER 250 kW with a premium motor will save around 53.693 kWh of annual energy or equivalent with 4,618 USD/Year with a payback period of about 2.92 years

3.3 Summary

Recommendation of energy saving opportunities are summarized as follow.

Table 1 Energy saving opportunities

No	Energy Saving Opportunity	Energy source	Energy Saving		Cost Saving USD	Investment (USD)	Pay-back (Year)
			MWh	%			
1	Reducing Unburnt Carbon Loss	Coal	13,818.55	9.02	217,487.51	Low cost	-
2	Reducing Blowdown loss by install RO System	Coal	1,618.69	1.08	37,032.00	134,500.00	3.63
3	Condensate return	Coal	2,152.67	1.41	51,248.00	Low cost	-
4	Optimizing the boiler load factor	Coal	26,510.62	12.90	420,880.00	Low cost	-
5	Utilization of waste heat from Boiler-20T for power generation with an ORC system	Waste heat	2,896.07		190,230.00	1,242,185.00	6,5
6	Replacing the standard motor 01-R-1050 SW REFINER#3, 500 Kw with premium motor	Electric	38.17	-	3,283.00	20,000.00	6.09
7	Replacing the standard motor 01-b-301, BALE PULPER, 250 kW with premium motor	Electric	53.69		4,618.00	13,000.00	2.92