REDUCED DRYING NEED SAVES ENERGY AND INCREASES CAPACITY

Solae Denmark A/S produced soya protein products for the food industry. The business analysed the possibility of reducing the drying need in the process and found that a higher water content did not reduce the quality of the product. This resulted in energy savings and higher capacity.

Solae Denmark A/S, Aarhus

PRODUCTION
Soya protein products

INITIATIVE
Reduced drying need

RESULT
Total savings and additional earnings of around DKK 300,000 (EUR 40,000) per year

Economy

132 tonnes
Annual steam for drying savings

300,000 DKK
Annual savings

88 tonnes
Annual additional production

2.8 years
Simple pay back period

The result

- Additional production of 88 tonnes per year
- Total savings and additional earnings of around DKK 300,000 (EUR 40,000) per year

How much did it cost?

The total investment was approx. DKK 850,000 (EUR 113,000). This results in a simple payback period of 2.8 years.

Why was the project carried out?

Solae dried its soya protein products to a water content of 4.8 %. However, the product specification allowed a water content of up to 8 %. Consequently, a higher water content would not reduce product quality.

The limitation was the ability of the fluid bed dryer to cope with a higher water content without clogging filters and causing other local humidity problems. Therefore, Solae wanted to examine the possibility of allowing higher water content in the product, thus saving energy in the drying process.

How was the project carried out?

Solae collected data from existing analysis equipment and found that the average water content in the product over 15 months was 4.8 %. At the same time, practical experience indicated that the fluid-bed dryer could cope with a water content of up to 6 %. Finally, Solae looked at the quality of the end product and this allowed a water content of up to 8 %.

In other words, there was every indication that drying could be reduced without this affecting the system or product quality.

Solae calculated the additional production and the savings on steam from increasing the water content by 0.2 %, 0.5 % and 1.0 %, respectively. The conclusion was that savings and additional earnings were possible and considerable, even for the conservative estimate of 0.2 %. Overall, this would generate savings of around DKK 300,000 (EUR 40,000) per year.

Therefore, Solae decided to increase the water content. Furthermore, online measuring equipment was installed on the dryer to increase data collection frequency from four times per hour to continuous, online measurements. This new procedure could provide even more accurate information on optimising the system and the water content.

What were the results of the project?

The analysis showed that it was possible to increase the water content by at least 0.2%. Savings on steam for drying would amount to 132 tonnes annually. An increase in water content would also lead to additional production of 88 tonnes annually.

Additional earnings and savings would be around DKK 300,000 (EUR 40,000) per year. This results in a simple payback period of 2.8 years.

The company has since been closed down as part of a group restructuring process.

Increased water content (%)	**Additional production** (tonnes/year)	**Additional earnings** (DKK/year)	**Steam savings** (tonnes/year)	**Steam savings** (DKK/year)
0.2	88	286,000	132	17,000
0.5	220	715,000	330	42,500
1.0	440	1,430,000	660	85,000

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