

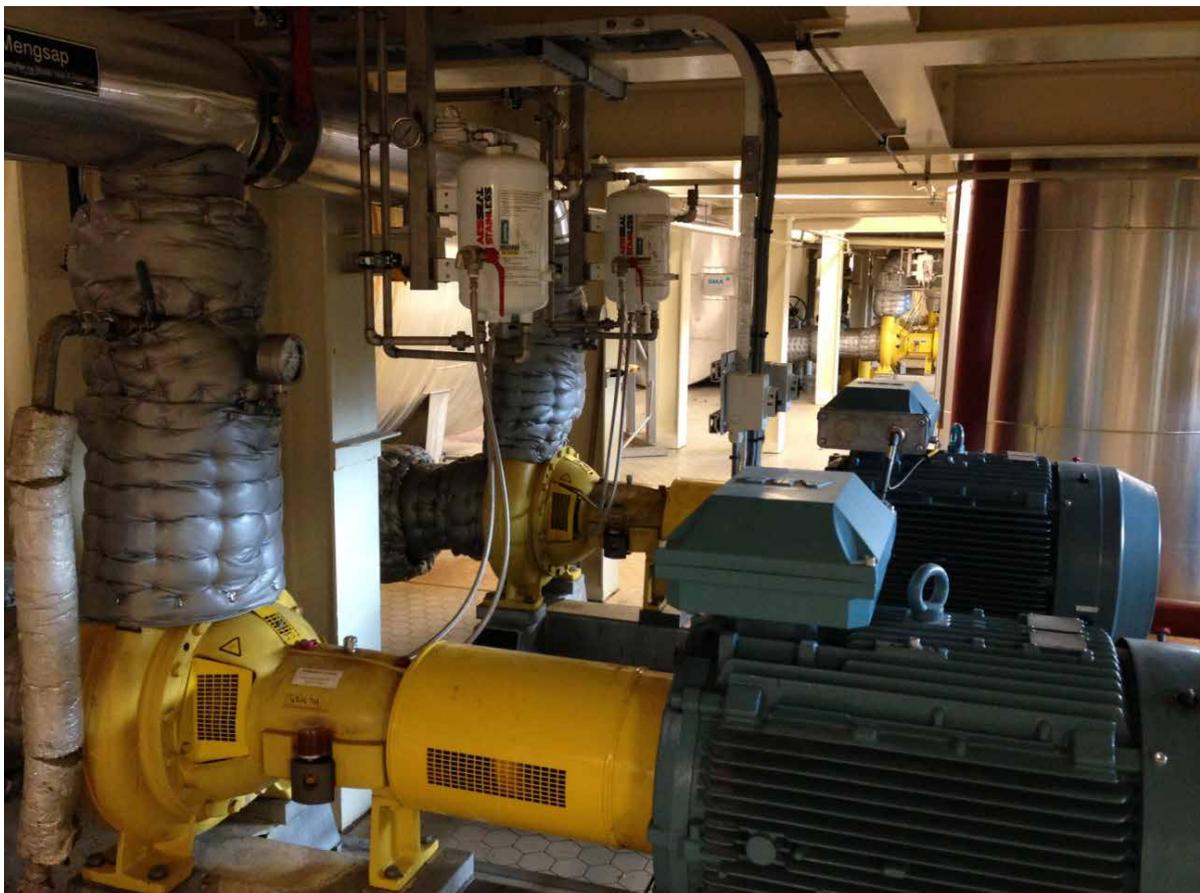


ENVIRONMENTAL TECHNOLOGY

Reducing Energy Usage and improving reliability

Suiker Unie were using packing to seal juice circulation pumps at their Dinteloord sugar refinery. Typically after 3 campaigns the packing on these pumps required replacement, and as a result of wear caused by the packing the shaft sleeves also required replacement.

In addition water used to maximise the life of the packing leaked into the product, and needed to be removed by evaporation. For Netherlands based sugar producer Suiker Unie saving energy is a key element of its sustainability program and have a goal to cut energy consumption by 50% by 2030 relative to 2005. Removing the need to evaporate off seal water from the product has the potential to save energy.





In order to address the leakage and shaft wear issues AESSEAL® recommended replacing the packing with a CDSA dual seal along with a SW2 seal support system on twelve pumps coupled with a single FDU installation. Changing from packing to a dual mechanical seal eliminated shaft wear and after 6 years of operation (approximately 7 campaigns) the system is operating without failure.

The change from packing to double seals with support system has resulted in Suiker Unie receiving tax benefits from the government for saving both water and energy. In order to qualify for this tax benefit; the company must achieve an energy saving of between 0.6 and 1.5 Nm³ Natural gas equivalent per invested Euro.

Water savings: With packing water usage was measured to be 48 litres/hour per pump, giving water usage per campaign to be:

12 pumps x 48 Litres x 24hours x 120 days campaign = 1,658m³.

1,658 m³ is 1,658 tonne return flow. To evaporate 1 tonne of water requires approximately 100m³ of gas. Total gas usage to evaporate the injected seal water is therefore 165,888 m³.

Changing to dual seals with support systems has resulted in no significant leakage of water and therefore saved energy as there is now no requirement to evaporate off seal water.

As a result of the excellent performance the plant has subsequently installed additional seals and support systems replacing packing on 43 pumps.

With the upgrade applied to 43 pumps more than 5,944 m³ / year of water will be saved, reducing gas usage by 594,432 m³ / year.

This is equivalent to approximately £181,000 / year saving*



(* Based on a cost of gas of £0.0274 / kWh)



ENVIRONMENTAL TECHNOLOGY

“For Suiker Unie, Saving energy is one of our highest priorities, both during cultivation and in the production process.

Energy savings in production: Suiker Unie’s energy saving target was to cut energy consumption throughout the supply chain by 4% by 2014 relative to 2005, the year in which the Multiyear Energy Efficiency Agreement was signed for businesses participating in the EU emissions trading system. Energy consumption was reduced further in 2011. Suiker Unie has invested in a compressor park in Dinteloord. All compressors are now air-cooled instead of water-cooled. This has produced an energy saving of 304,000 kWh.

The sugar factories at Dinteloord and Viervelaten operate cogeneration plants to produce steam and electricity they use in the production process during the campaign. Suiker Unie produces more electricity than it actually needs. Suiker Unie is also working with the Brabant Environmental Federation to reduce its CO2 emissions.

Concerning Seals: The biggest cost reduction was based on the flush water what went into the process. This water needed to be evaporated. Now Suiker Unie have almost no water entering the process due to the support systems. A smaller cost reduction is based on the energy for the motors. they needed a lot of energy because of the breaking or chucking impact of the packing on to the shaft. A seal hasn’t got any friction.”

Ab Barendregt, Projectleader Maintenance Senior Operator

Suiker Unie Dinteloord



Reducing Energy Usage

Industry:	Sugar Refining
Product:	CDSA and SW02 Seal Support System with cooling coil supported by FDU with air blast cooler in an API plan 53A configuration
Application:	Juice Circulation Pump
MTBF Increase:	£181,000 / year
Savings:	£0,000
Reference N.O:	CH01451



aes seal.com/info