Grundfos CR pumps: For trouble-free operation

TOPIC:
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LOCATION:
Denmark

COMPANY:
Kappa CorrPack AS

Kappa CorrPack AS develops, manufactures and markets individual, innovative value-adding packaging solutions in corrugated board with preprinted liner (Firstline) in up to 8 colours with or without varnish. The product programme ranges from transport and sales packaging to sophisticated display solutions, primarily in large quantities.

The corrugated board qualities include B-, C-, E- and F-flute that are manufactured on a corrugator of 2.45 m. The production is then converted on die-cutters and gluing machines, and the annual production capacity is approx. 50 million m².

Kappa CorrPack AS is a subsidiary company of Kappa Packaging Danmark AS belonging to the Kappa Packaging group.

Kappa Packaging is one of Europe's leading producers of paper-based packaging with an annual production capacity of 3.7 billion m2 corrugated board and 395,000 tonnes solid board. Kappa Packaging has over 100 production sites in Europe spread over 17 countries and approx. 17,000 employees generating a turnover of 2.5 billion Euros.

The Danish part of the Kappa Packaging Group comprises 13 companies and approx. 1,100 employees.

The Situation

Manufacturing cardboard involves demanding processes, particularly as regards steam. This gave rise to considerable trouble for Kappa CorrPack AS, a major cardboard manufacturer, with several serious system crashes caused by an unreliable pump solution supplied by another manufacturer. This required frequent use of a leaky back-up pump, which was obviously not satisfactory.

Minimising downtime is obviously a key concern for any organisation, and so Grundfos was the natural choice when it became clear that a replacement pump was needed.

The Grundfos Solution

Cardboard manufacturing involves plenty of steam, which is condensed after having been used for a product-treatment process. In the case of Kappa CorrPack AS, the system is called upon to pump this condensate return - condensed at approximately 160°C/8-13 bar - back into the steam boiler, operating at pressures of 14 bar. This is to say that the condensate-return pump used by this client needs to handle pressures of 14 bar plus friction losses. The old pump, made by another manufacturer, used external cooling water to protect the shaft seal against the high temperatures.

This protection was not, however, adequate. Following repeated breakdown episodes, the engineer responsible for day-to-day operation decided to replace the inefficient pump with a Grundfos CR Air-Cooled Top pump, featuring the air-cooled shaft seal that is unique to Grundfos. This pump is capable of handling water of up to 180°C without needing any external cooling water.

In special situations, particularly in connection with start-up, the pump used by Kappa CorrPack AS may operate against lower counter-pressures. This means that the pump is called upon to pump greater volumes than it is intended for. For most pumps, this would entail an increase in the Net Positive Suction Head value, which would in turn lead to cavitation and serious damage to the pump. To prevent this, the Grundfos CR pump is fitted with a special pre-chamber and impeller, ensuring that the NPSH value remains low - irrespective of the flow.

The Outcome

The advantages outlined above - a pump which successfully combines high temperatures and high pressures - resulted in a pump solution which has now provided the client with a whole year of trouble-free operation. Proof positive that Grundfos truly works for clients.