

Monitoring

Paper Machine Effluent



Background

M-real Husum in Northern Sweden produces coated and uncoated fine paper on three paper machines. The clean water from the pumps for the vacuum boxes is mixed with fiber containing waste water. The suspended solids (SS) content in this mixed flow can vary significantly. To avoid overloading the waste water treatment (WWT) plant, this flow must be monitored and directed to different destinations, according to the current SS value.

Application

For continuous monitoring of the water flows in the paper production, Cerlics optical sensors have been installed on each paper machine. At low SS readings the flow is going directly to the recipient, but with high readings the flow is routed to the WWT plant. By doing this the WWT plant is not given unnecessary extra load. The flow is switched automatically to the WWT when the SS reading exceeds 50mg/l. As the flow consists of a mixture of residuals from fibers and fillers, a conventional transmission sensor cannot cope with this application. Instead the depolarizing sensor CXP03/25 is used. This sensor can accurately manage to measure these mixtures at low SS levels. To minimize the need for manual cleaning of the sensor, an automatic flushing with clean water is activated from the Cerlic control box BB2. During the flushing the light intensity is recorded to check that the lenses were cleaned. The sensor reading at flushing is output as a separate signal which is used to compensate for gradual deposits build-up. If there is too high a reading at flushing, an alarm is generated. This reduces the demand for regular manual cleaning, but only when it is necessary

Results

With continuous measurement of the SS in the effluent water from the paper machines, unnecessary extra load of the WWT plant is avoided. The trend graph below shows an example when the limit is exceeded and the flow is automatically directed to the WWT (red section).

