

HAYAT KAGIT OPTIMIZES TISSUE PRODUCTION WITH ROSEMOUNT MAGNETIC FLOW METERS

Application

Pulp stock basis weight measurement supplying a continuous paper machine

Customer

Hayat Kagit in Turkey produces high-quality tissue for industrial, professional, and family use

Challenge

The continuous machine is the heart of paper production, converting the pulp stock (a slurry of wood fiber and water) into final paper product. The paper machine is a continuous process where the pulp stock is applied to a moving wire screen, creating a continuous sheet of wet stock. The wet sheet progresses through a series of steel and felt rollers that remove most of the moisture, then through a series of driers and finishing rollers that deliver the final sheet spooled onto large rolls. The pulp stock flow rate is controlled by the basis weight control loop, where a basis weight valve or pump controls the stock feed based on the flow rate measured by the basis weight magnetic flow meter. The rate the pulp stock is delivered to the paper machine determines the final paper weight which is a critical specification.

Given the criticality of the basis weight flow measurement on the final product, the flow meter must provide a stable yet responsive flow signal which accurately represents the stock flow. The wood fiber in the stock slurry can cause process noise as the particulates strike the electrodes. Further, chemicals are often added at this point in the process that can also increase process noise. The process noise is read along with the flow measurement signal. If the noise level is low compared to the flow measurement, the control loop responds to real changes in flow and is unaffected by the noise. If the noise level is high in respect to the flow

Results

- Reduction of reworked paper by 3%
- Overall equipment efficiency increase by 1%
- 100% reliability over past nine years (15 installed flow meters)

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“With Rosemount Magnetic Flow Meters, we have been capable to switch the coil frequency to 37 Hz and reducing down to zero the flowrate variability, increasing the paper quality and overall plant throughput.”

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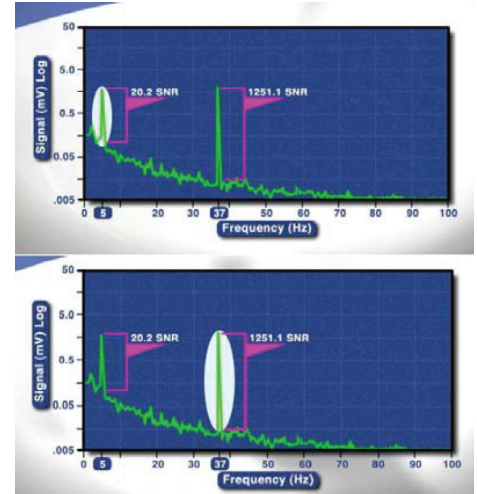
Sabri Çakmak
Electric Maintenance Chief

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signal, the control loop can react to the noise and frequently results in unstable control that can increase paper weight variability. Frequently, excessive damping is used to stabilize the measurement which masks real changes in the flow rate, also increasing variability. This added variability results in higher incidence of out-of-spec product, increased rework, and lower Overall Equipment Efficiency (OEE.) In order to maintain the high level of quality and consistency that customers expect from Hayat Kagit, the mill looked for a magnetic flow meter technology that could effectively measure flow in noisy stock flows, enabling improved loop performance resulting in less paper weight variability, reducing rework, and improving OEE.

Solution

Rosemount magnetic flow meters were selected and installed on 15 critical flows in the mill. All standard Rosemount magnetic flow meters have advanced noise mitigation technologies which can reduce and often eliminate the impact of process noise on the flow signal. In this case, the mill was able to increase the coil-drive frequency from 5 to 37 Hz where the process noise had a minimal impact on the flow signal. The result was a basis weight loop that could respond to actual changes in flow, and not act on process noise. By changing coil frequency, Hayat Kagit has reduced the reworks by 5%, a number that resulted in reduction of Overall Equipment Efficiency to near 1%, mainly due to the increase of throughput allowed by higher quality and minimized rework. Hayat Kagit has experienced 100% flow meter reliability: all 15 mags installed in the most critical flow measurements of the Izmit plant have performed flawlessly during the last nine years of operation, further contributing to increased OEE by reducing maintenance impact upon the production.



Increasing coil drive frequency can increase the signal to noise ratio.



Rosemount 8705 Magnetic Flowmeter installed in the most critical section of continuous machine feeding.

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