

## Steam Measurement with the ProBar® Flowmeter Proved Successful in a Pulp and Paper Plant

Pulp and paper mills account for 12% of total manufacturing energy use in the U.S. and value of shipments ranking eighth among all U.S. manufacturing industries. The industry continuously searches for new ways of improving the quality of its products while decreasing energy consumption and reducing costs. Environmental concerns, changing market demands and more stringent environmental regulations are among the most important drivers of change in the pulp and paper industry.

The production of paper involves many processes. All paper machines have three basic elements: wet end, press section, and drying section. Drying of pulp or paper is among the largest steam users at any mill. There are a number of steam-heated cylinders used to dry the paper - evaporation rate, steam efficiency and evaporation uniformity are important factors in this stage.

Steam flow to the dryer is supplied to four different zones throughout the plant and needs to be monitored. There are three critical factors in determining the performance of a dryer section, evaporation rate, steam efficiency and evaporation uniformity across the machine. Optimum performance depends on the removal of condensate from the dryer cylinders.

The ProBar® flowmeter provided the following advantages for this critical steam flow measurement:

<b>Customer:</b>	Marcal Paper
<b>Product Line:</b>	ProBar® flowmeter
<b>Application:</b>	Flow measurement used for steam flow efficiency
<b>Details:</b>	
<b>Fluid</b>	Saturated steam
<b>Temperature</b>	385°F ( 196°C)
<b>Pressure</b>	193 psi
<b>Line Size</b>	3-inch Sch 40 (75mm)

- **Simplified Installation.**
- **Highly Accurate Flow Measurement.**
- **Total Overall Savings.**
- **Single-Source Solution.**

Information technology – sensors, computers and control systems offer the potential for higher product quality and lower energy use, in turn reducing costs.

The customer needed to monitor the steam distribution to various departments throughout the plant. Because this was a new application various technologies were reviewed, the ProBar flowmeter was the preferred choice over vortex technology.

When compared with traditional DP flow measurement the ProBar® flowmeter provided the lowest total cost of any precision flowmeter while offering greater value and

performance. While the aerodynamic design of the sensor provides low operating costs it also prevents wear and pluggage that could effect calibration.

The linearity of the Diamond II+ shape is the key to the ProBar® flowmeter's accuracy and turndown capabilities, maintaining a ±0.5% reference accuracy over a 10:1 flow turndown.

In addition to the rewards of one flowmeter package, the ProBar® flowmeter simplified several installation concerns as well, with only four steps required in installation (drill, weld, insert and wire), it reduces the need for additional plumbing. The customer saw the advantages of ProBar® flowmeter technology accompanied with the total overall savings making the ProBar® flowmeter the best flowmeter for their steam measurement.

## Literature References

Literature Type	Publication Number
Value Proof	DS-7805: <i>Why Not Save \$1,291 Per Installation Point, in Steam Measurement in a Pulp and Paper Plant?</i>
Literature	DS-4010 (00813-0100-4761) <i>ProBar® Flowmeter</i>