



APPLICATION NOTE: Positive Displacement Flowmeter Controls Glue Application on Paper Tube Winding Equipment

Paper tube winding is the process of spirally winding and gluing ribbon-like cardboard plies together into a cylinder shape. A gluing system applies glue onto each layer of paper or ply, and the excess is collected and recycled back into the system. It is an efficient way to apply just the right amount of adhesive to the plies without wasting the excess. Once the glue is applied on paper rolls, it is ready for further processing.



A cascading gluing system

The next step is called winding. The plies of glued paper are put on a winding machine and the different plies of paper are wrapped around a metal bar known as a mandrel. Paper tubes are rolled over the mandrel where they acquire their cylindrical shape. The belt in the winding machine pulls the paper rolls and ends in a spirally wound paper tube (*see diagram on following page*). This makes it an efficient process for manufacturing paper tubes. These tubes can range in size and thickness depending on the number of layers wrapped during manufacturing.

Customer Application and Solution

A manufacturer of a wide range of cylindrically-shaped probes, samplers and instruments for the molten metal industry has the in-house ability to create spiral-wound paper tubes to protect their products during shipping and customer storage. A cascading gluing system is used to apply glue to each ply, and the amount of applied glue is critical to ensuring the integrity and strength of the tube. The customer needed an accurate way to measure the flow rate to the cascading system and total amount of glue used. The glue has a high viscosity and low flow rate, which makes reliable measurement challenging.

HIGHLIGHTS

Industry: Industrial
Service: Flow Rate/Total
Fluid: Glue

Application

Report the flow rate of glue to individual winders for proper application rate

Problem

- Need to control the amount of glue to the cascading gluing system
- Need an accurate way to measure viscous glue to report flow rate and totalize usage for each product run

Solution

- DC-I Series positive displacement flowmeter
- BR3000 Series rate/totalizer display

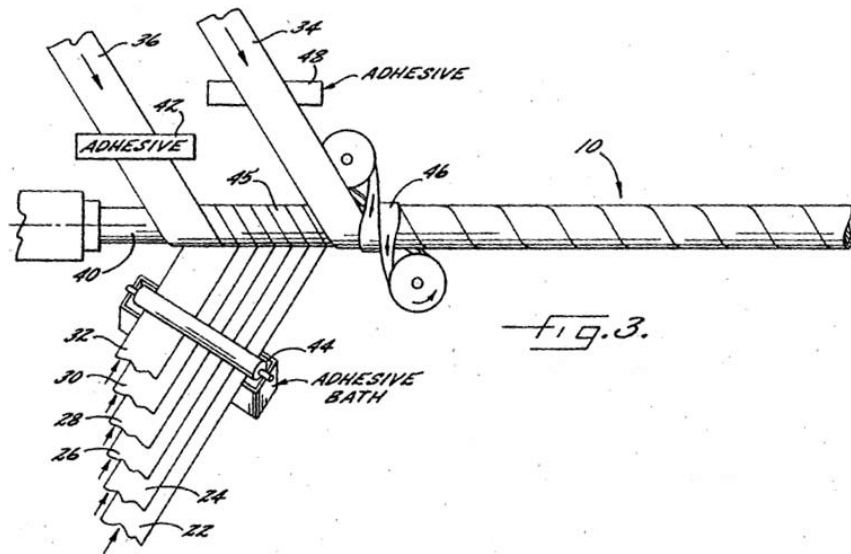


Diagram: Sample schematic of spiral winding system

Flow Technology recommended the DC-I Series positive displacement flowmeter for its robust construction, simple design and ability to provide a wide turn-down (1000:1) at high viscosities. The flexibility of the flowmeter installation, with no straight run requirement, allowed the customer to install the flowmeter in the most convenient location. Pairing the flowmeter with FTI's BR3000 Series rate/totalizer display provided a local display of flow rate and totalization, as well as a 4-20mA output for remote monitoring of the flow rate.