

Custom dosing & mixing machine for new adhesive

In automated product labelling processes, the adhesives used to affix the labels are sometimes prepared just before the label application step. To ensure maximum quality of label adhesive, Suurmond has developed a module that incorporates two dispensing pumps, three flow meters and a static mixer.



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The dosing and mixing module incorporates two dosing pumps and three flow meters.

Adhesives come in many varieties. Some are standard commercial products, ready for use. Other adhesives have multiple components that are mixed either just before, or during the labelling process.

Two-component adhesive

One of Suurmond's customers has developed its own two-component adhesive. This adhesive is composed of a watery component mixed with an additive that ultimately determines the bonding properties of the glue.

These fluids must be dosed and mixed with the greatest of precision. The process therefore requires both automation and fine control. Given the positive experience with a previous machine from Suurmond, this customer asked the company to develop a dosing and mixing module specifically for their new adhesive.

Arrangement

The final design employs two dosing pumps that deliver the two components into the mixing process pipework.

The flow rate is measured and monitored by two independent flow meters. A static mixer is mounted in the same pipe to combine the two components to form a homogeneous fluid.

Reijer van den Bosch, Project Engineer: “The customer also asked that we include a third flow meter to measure the final product in the pipe. This creates an extra monitoring step in the process, enabling detection of any leaks, as well as a check for possible failure of one of the two upstream component flow meters. The mixture, a highly concentrated ‘glue’, is then pumped through the delivery line to where it is used to bond the labels to the actual product container.

Magnetic drive pumps

The system’s dosing pumps are magnetic-drive gear pumps from Gather Industrie, and being hermetically sealed, they are therefore 100% leak-proof. This drive principle makes the pumps ideal for pumping toxic fluids, oxygen-reactive media, or other liquid chemicals that are hazardous to persons and the environment in the event of leakage. The absence of a mechanical shaft seal - the magnetic coupling forms the air/fluid barrier – means there is less wear and tear, and therefore a reduced need for maintenance.

DOSING PUMPS

ADDITIVE DOSING PUMP

- Density: approximately 1 kg/L
- Viscosity: 100-300 mPa
- Suction pressure: 1 bar(a)
- Supply pressure: 11 bar(a)
- Flow rate: 6-217 ml/min
- Speed: approximately 30-1000 rpm

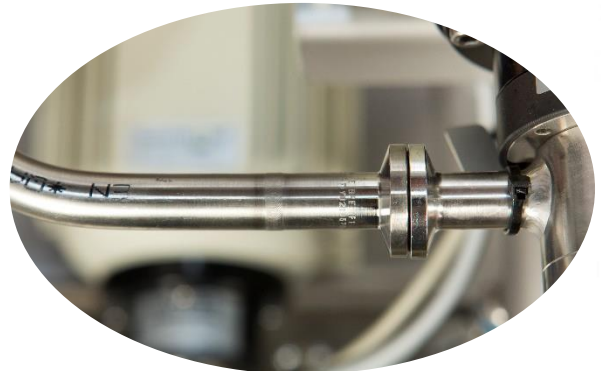
WATER DOSING PUMP

- Density: 1 kg/L
- Viscosity: 1 mPa
- Suction pressure: 1 bar(a)
- Supply pressure: 9 bar(a)
- Flow rate: 14-217 ml/min
- Speed: approximately 1750-2400 rpm

Additional custom requirements for the skid:



Gather dosing pump and HNP-M inline filter are mounted with tri-clamps



Orbital welding for smooth inner and outer surface of the tubing