

Marking sheet steel – Paint application

Marking heavy steel plates after straightening

Steel slabs are rolled into heavy plates of various sizes and qualities, e.g. for use in shipbuilding, offshore construction, or pipe manufacturing.

After straightening, the sheets are marked with a code to ensure they are correctly loaded into the rolling mill and the components can be correctly identified by the customer. A marking head applies the paint – which is mixed and stored in 20-liter containers – to the sheet.

Daily temperature changes in the rolling mill hall and the loss of solvent affect the viscosity of the paint. However, this must remain within a narrow range to prevent the typeface of the mark from changing – or even become illegible – due to excessive running or drying time. Since it is not feasible to control the temperature of the paint, the viscosity is adjusted by adding solvent or paint.

Until now, the viscosity was measured 2 to 3 times daily using a DIN flow cup. In a 3-shift operation, the results are often very different, e.g. because measurements during the night shift are taken at a lower temperature and the paint is already considerably warmer by the end of the morning shift.

Now, a ViscoScope® process viscometer can continuously measure the paint viscosity and display the trend. This trend enables the operator to adjust the viscosity to the optimum level throughout the day.

Installation

The sensor is installed in the feed line (½") to the marking head in a flow through cell without dead space. The flow through cell is installed at an angle of 45° to prevent sump formation. The inflow is at the top, a vent valve prevents air bubbles forming, and the lower outflow is channeled to the marking head using a hose above the level of the flow through cell. This ensures the flow through cell is always filled.

ViscoScope® Viscometer configuration

- ✓ Sensor: VA-100C-LT with Varivent® fitting DN50 – 1.4404/316L
- ✓ Calibration range: 0 – 500 mPa.s x g/cm³
- ✓ Flow chamber: Varivent® housing type L - DN50; In- and outflow DN50 with reducers to ½" ; Sensor connection Varivent®
- ✓ Transmitter: VS-D250 with 2 analog outputs (viscosity + processtemperature), mounted into a control cabinet, connected to the process control system

Process conditions

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| ✓ Temperature: 10 – 35°C (variations of 10°C are common) | ✓ Hazardous area: none |
| ✓ Pressure: up to 2 bar | ✓ Flow rate: 0,1 m / sec with interruptions up to 5 minutes |
| ✓ Process connection: host ½" (partly electrical heated) | ✓ Pump: membrane pump |



**VA-100C-LT with Varivent®
Fitting DN50 – 1.4404/316L**




**VS-D250
with 2 analog outputs**



Benefits

- ✓ Consistent application of paint (clear typeface, no confusion between 5 + 6 or 3 + 8)
- ✓ Shorter adjustment time
- ✓ No overdosing of paint or solvent
- ✓ Process documentation: The trend line enables the customer to set the optimum viscosity manually and save a considerable quantity of paint and solvent. The customer is now planning to introduce automatic metering as a next step.

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