Flosense; the new affordable, flexible flow monitoring system designed for accurate measuring and monitoring of flow, temperature and pressure variations in cooling circuits

Flosense is designed to be installed in various locations within the cooling circuit including the main water supply, the mould heater, critical cooling channels or distribution manifolds.

Quick to install and easy to set-up, Flosense is a critical component in any injection moulding configuration and should form part of any setup where cost control and quality are key considerations.

Using these values, Flosense provides an indication of the stability of the process and checks the efficiency, identifying wasted energy and variations in pressure which could indicate leaks or blocked waterways.

Flosense is designed to be installed in various locations within the cooling circuit including the main water supply, the mould heater, critical cooling channels or distribution manifolds.

Pressure loss is caused by hoses, fittings and valves and will affect the productivity.

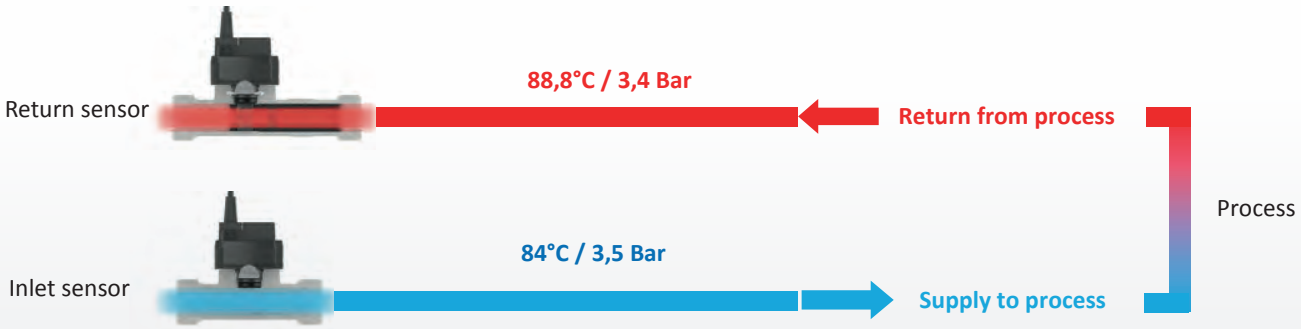
Difference between inlet pressure and return pressure is measured as Delta P.

Variation in Delta P could indicate pump failure, blocked waterway, leaks etc.

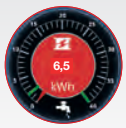
As the cooling water passes through the mould it transfers heat from the steel into the cooling water. The more turbulent the flow the more efficient this process of cooling.

Difference between inlet temperature and return temperature is measured as Delta T.

Sudden variation in Delta T may be caused by a faulty heater/ cooler, blocked channel, scale build up etc.



Flosense, provides visibility of key cooling circuit metrics, improves efficiency, enhances productivity and profitability.



Energy Transfer Indicator
Heat is transfered from the mould through the water channels, Flosense calculates the heat transfer as energy units BTU or kWh. This feature illustrates the effeciency of the process.

Turbolent Flow Indicator
Often regarded as a key indicator in the efficiency of a mould cooling circuit, Flosense is fitted with a turbulent flow indicator. The unit will indicate laminar, transitional and turbulent flow as well as monitoring the Reynolds number, based on flow diameter and percentage glycol in the system.

Improving the flow from laminar to turbulent can increase the heat transfer efficiency by up to 500%.

Flosense, provides features and interfaces to monitor, analyse and verify data, essential for your productivity and quality.

Alarm Output
With programmable alarm limits on flow, temperature and pressure any variation in the values being monitored will trigger an on-screen alarm. An external alarm output signal can be connected to auxiliary equipment which could be a visual or audible beacon, the mould heater or the injection moulding machine.

Even in a 'hose burst' situation the unit will identify a sudden loss of pressure and the unit can either be connected to an alarm or could be used to automatically shut down the mould heater.

DATA RECORDING
Data is recorded and stored in the internal memory enough to display data for the previous 30 days.

Flow, Temperature and Pressure are logged and may be viewed in the graphing screen.

The last 30 days of data is recorded and stored on the internal memory.

Data Export
It is also possible to download the data to a laptop using the integrated USB port for further analysis.

The data is stored as text file and can be analysed using excel or other analysing software.

MULTI ZONE MONITORING

Upgrade your moulding machine with a new digital flow monitor to improve your productivity

Digital flow monitors will give you many advantages such as:

- Digital monitoring of Flow, Temperature and Pressure
- Alarm Output
- Higher flow capacity
- Higher temperature range
- Data storage and export
- Faster Mould changeovers
- OPC-UA / Euromap interface

Flosense 2.0

Manifolds - Retrofit Style

Page 96

Flosense 3.0

All in One Flow Regulator Style
Integrated Control Screen

Page 97

Flosense 4.0

Compact Dual Line Manifolds
Integrated Sensors and Valves

Page 98

Touch Screen

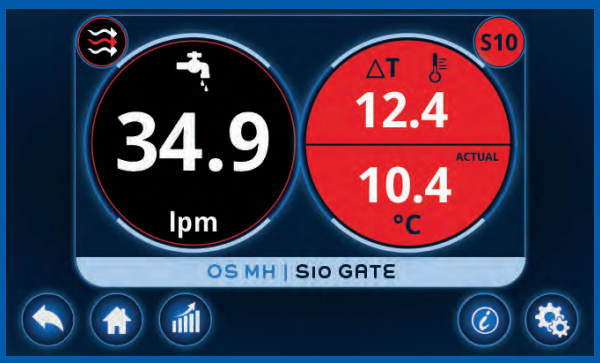
Touch Screen mounted to the Manifolds.

Equipped with power, alarm, USB and Ethernet connections.

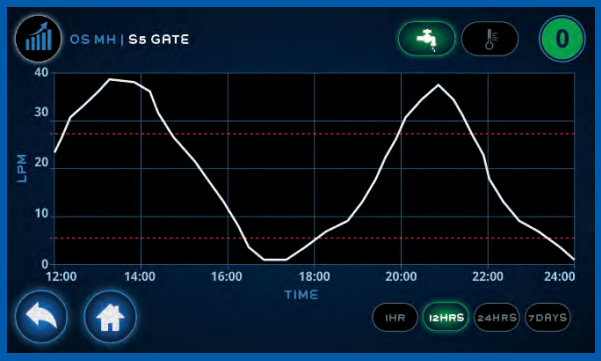
Display	
Type	Touch
Size	7,1"
Voltage	12-24 Volt.
Data	USB + Ethernet
Communications	OPC UA
Internal memory	Up to 30 days data (FIFO)

Part No.	Size	Manifold Inputs	Power Connection	Alarm Output	Interface
FS-7100	7.1"	4	12V	Yes	OPC-UA

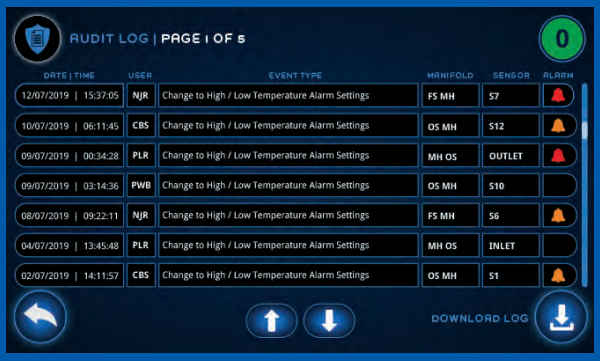
The main screen will show all circuits with information about flow and temperature. The main inlet and outlet will also show including pressure.



By clicking on a specific circuit you will see detailed information, including delta T (heat transfer) of the specific channel. Also, turbulent flow indicator is included.



Data i stored in the internal memory and can be displayed in graphical view for each circuit. Data can also be exported for external use.



The system is equipped with Audit Log to keep track of all events including user ID tracer.

flosense®

IQ CONCEPT

COMING SOON
Contact us for more information!

1. Monitoring Flow/Temp/Pressure
2. Pump / Temp. control OPC-UA
3. Pressure/ Flow control
4. Manuel Flow rate control

Mould

Flosense IQ Manifold
(up to 4 units)

IQ Temperature Control
(up to 4 units)

flow temperature pressure

FLOSENSE IQ
The Flosense IQ software continuously adjusts the speed of the pump in the temperature control units (TCU) to be aligned with the demand to reach optimal thermal properties. The ideal benchmark is the Delta-T (Temp out – Temp in) and if the Delta-T is too high or low, then the flow rate will be changed (pump speed) to optimize the heat transfer rate.

ENERGY REDUCTION
Trials show that energy consumption can be reduced by up to **85%** by using IQ controls in connection with TCU's with variable speed pump instead of using standard TCU's without pump control.

HOW IT WORKS
Flosense IQ monitor **(1)** the temperature and flow rates in each single circuit (up to 48) of the manifolds and calculates the demand for cooling water. This information is transferred to the temperature control unit **(2)**, which adjust the pump speed to the required demand **(3)**.

FINE REGULATION
Individual fine regulating valves **(4)** on the manifold allow the operator to adjust the individual flowrate on each circuit. This is typically required if Delta-T or flow rate vary significantly between circuits on same distribution manifold. The result is a perfectly balanced thermal process with minimum use of energy.

Mouldpro ApS | Baltorpbakken 10 | DK-2750 Ballerup | Tel. +45 7020 3151 | sales@mouldpro.com | **www.mouldpro.com**