SYSTEM COOLING™

The exclusive and affordable solution for Injection Molders to monitor flow and temperature circuits within an injection mold.

The efficiency of mold cooling circuits is critical to a stable process and the manufacturer of high quality, dimensionally stable parts. System Cooling can protect your mold and improve quality by quickly identifying cooling issues and alerting the user to common cooling circuit problems, such as:

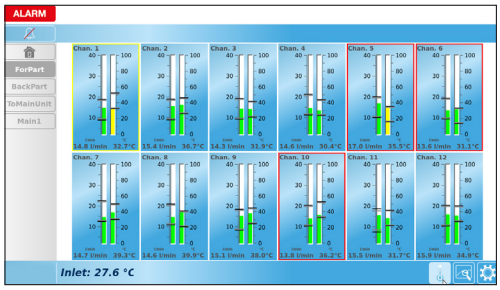
- Flow deviation
- No water flow from the mold heater
- Blocked waterways
- Scale/rust build-up
- Incorrect piping
- Temperature deviation

Touch Screen Controller

Server

Manifold

Interface Module



Molders that run parts with critical tolerances and require consistency of mold cooling can generate reports to support their industry certifications.

SERVER AND TOUCH CONTROL

The System Cooling Server is a compact computer with software installed. The integrated VNC feature allows easy integration on the machine control, laptop or tablet via Ethernet. Using a remotely mounted touch screen, the system will display the flow and temperature for every circuit. The Touch Screen is used to access:

- Set warning and alarm limits for flow and temperature to all monitored zones individually.
- View current temperature, flow, and pressure status graphically or as text.
- Store data and mold setups in the internal memory where they are time and date stamped for ultimate traceability.
- View whether flow is turbulent, transitional, or laminar, and the temperature delta by zone.

Simple Overview
Users can view an overview of cooling circuit status 'at a glance' on a single screen with instant display status alarms should flow/temperature go outside of tolerance.

Historical Data
Historical data is recorded and a performance log for each circuit and manifold is stored on the internal memory, allowing users to track performance and easily identify problems.

Event Log
Alarm errors, warnings, and operator changes are stored with a time and date stamp and can be reviewed at any time.

MANIFOLD

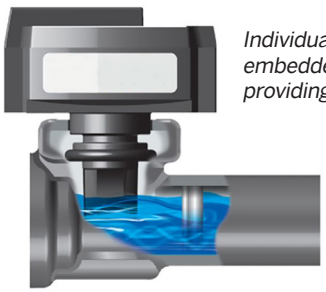
The slim line and compact design has been developed to enable the System Cooling manifold to be mounted into the smallest space possible next to the machine platens, keeping pipe runs to an absolute minimum, improving flow rates to the mold and reducing cycle times. Other notable features include:

- Feed and return ports on both top and bottom of manifold provide flexibility in connection.
- Can be mounted on either the fixed or moving half of the molding machine.
- Supplied with color-coded ball valves.
- Available with 4, 8 or 12 ports as standard.
- Multiple manifolds can be electronically 'daisy-chained' to accommodate the necessary number of flow channels. (Max 8 manifolds/96 zones.)

12-port manifold with staggered, color-coded ball valves for convenient, visual connection.

The System Cooling Manifold is equipped with compact sensors that are capable of reading both flow and temperature:

- Sensors measure based on the Vortex Flow principle.
- It has no moving parts and a large flow path.
- Ideally suited to mold cooling even when using heavily contaminated water.
- Integrated directly into the manifold, keeping size to an absolute minimum.



Individual port sensors are embedded in the manifold providing increased accuracy.

INTERFACE MODULE

System Cooling is equipped with a DIN-Rail mounted interface module (MFIO). This is the hub of the system and allows the manifolds to be easily connected to external devices.

- The interface module facilitates true 'plug and play' operation, allowing multiple manifolds to be monitored.
- Enables simple connection to the touch screen, power supply, alarm signals in/out and machine communications.
- Allows data to be fed into production monitoring systems or other devices using the onboard communication ports.

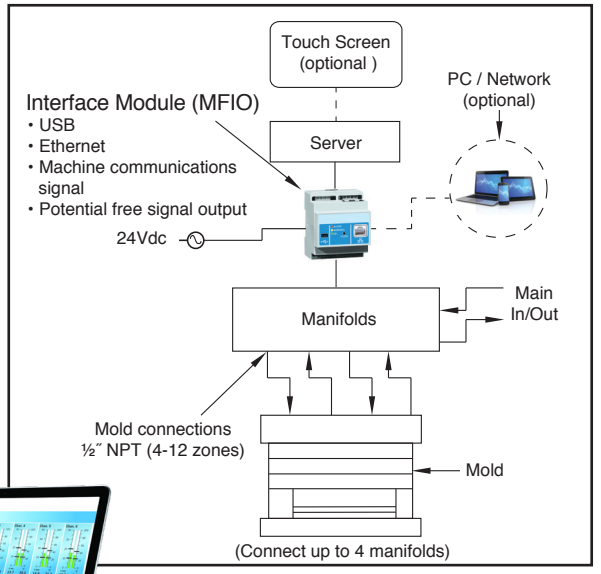
INTEGRATED SOLUTION CAPABILITY

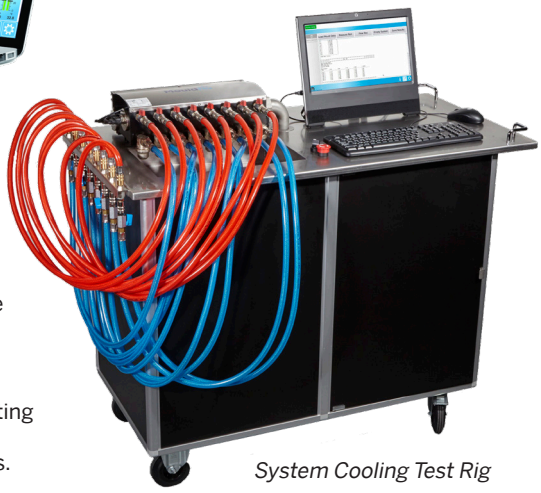
Custom solutions are offered where the electronics are built into the machine control panel and integrated directly into the injection molding machine.

- Eliminate the need for another controller.
- Display all System Cooling screens on an existing display.
- Closed loop design provides safety against starting molds without flow.

The manifold is equipped with network-ready electronics and can be connected to the network/internet via the ethernet connection.

- Monitor flow from any location directly on your smartphone or laptop.
- Configure settings on site or remotely.
- Feed data to an external production monitoring system.





System Cooling Test Rig

PORTABLE TESTING

A Test Rig oriented towards mold maintenance, and a portable cart oriented towards production validation and troubleshooting are offered. The Test Rig is an all-inclusive stand alone unit that is equipped with a water reservoir, pump, 8 zone manifold, and control system. The portable cart is an alternative mounting solution for a complete press side monitoring system.

New Molds

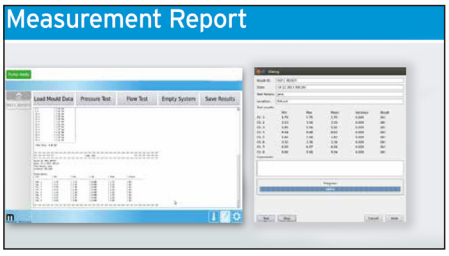
Moldmakers must often supply new molds to the customer complete with a report of operating parameters including data relating to the cooling circuits in the mold. Now moldmakers can easily connect the System Cooling Test Rig to the mold as part of the benchmarking process.

Mold Maintenance

Mold cooling circuits need to be maintained regularly to remove scale and rust to ensure maximum productivity. With the System Cooling Test Rig, cooling channels can be analyzed and tested, and flow and pressure can be precisely controlled to simulate the production setup.

Measurement Report

After maintenance, users can generate fully documented reports from any location, directly on a smartphone or laptop, certifying that all flow and pressure values are regained. Reports include flow - volume/capacity (restriction in the mold) and pressure leak down test results, and can be saved for future comparison.



SYSTEM COOLING SPECIFICATIONS

MANIFOLD	
Manifold feed	1" BSP
Manifold ports	3/8 (-1) or 1/2 (-2) NPT
Number of ports	4/8/12 Standard
Regulation	Color coded ball valves per circuit
Operating pressure (max)	145 PSI / 10 bar
Temperature sensing	Per circuit (return)
Flow sensing	Per circuit (return)
Temperature sensing main inlet	Yes
Power supply	12 - 24 VDC

FLOW SENSOR	
Sensor type	Vortex
Range (flow)	.25-5.25 GPM (1-20 LPM) or .5-10.5 GPM (2-40 LPM)
Accuracy (flow)	1.5% fs
Operating Temperature (max)	200° F / 95° C (Std) 250° F / 120° C (High Temp)
Resolution (temperature)	0.5°C / 0.9°F
Accuracy (temperature)	+/- 1.5% fs
Output signal	Voltage
Response time	< 1 s
Seal	EPDM
Burst pressure	260 PSI (105°F) / 18 bar (40 °C)
Connection	Quick connect - plug and play

SERVER AND TOUCH CONTROL	
Display	15.6" touch screen (optional)
Control	Microprocessor based / computer based
Communication ports	Ethernet / USB
Communication system	ASCII (USB) / HTML / SSH (optional) / VNC (optional)
Protocols	USB Serial / TCP/IP
Storage (log and settings)	Internal / USB
Machine control integration	Yes (optional). Contact Progressive for compatibility.
Remote Access via internet/network	Yes.
Number of zones (flow and temperature)	Max 12 Zones / manifold (expandable)
Number of manifolds	Multiple (plug/play, max 8 per MFIO & Server)
Display units (flow)	Litres / gallons switchable / RAW (optional)
Display units (temperature)	°C / °F switchable / RAW (optional)
Warning limits	10% of alarm limits (optional)
Alarm limits	User definable per zone (optional)
Alarm output	Potential free output warning / alarm
Marker input	Potential free
Idle mode input	Potential free
Power supply	12 - 24 VDC

ORDERING INFORMATION

Manifolds

ZONES	SENSOR SPECIFICATIONS	MAX TEMPERATURE	CATALOG NUMBER
4	.25-5.25 GPM / 1-20 LPM	200° F / 95° C	**SCM-4-1-SS**
		250° F / 120° C	**SCM-4-1-SS-HT**
	.5-10.5 GPM / 2-40 LPM	200° F / 95° C	**SCM-4-2-SS**
		250° F / 120° C	**SCM-4-2-SS-HT**
8	.25-5.25 GPM / 1-20 LPM	200° F / 95° C	**SCM-8-1-SS**
		250° F / 120° C	**SCM-8-1-SS-HT**
	.5-10.5 GPM / 2-40 LPM	200° F / 95° C	**SCM-8-2-SS**
		250° F / 120° C	**SCM-8-2-SS-HT**
12	.25-5.25 GPM / 1-20 LPM	200° F / 95° C	**SCM-12-1-SS**
		250° F / 120° C	**SCM-12-1-SS-HT**
	.5-10.5 GPM / 2-40 LPM	200° F / 95° C	**SCM-12-2-SS**
		250° F / 120° C	**SCM-12-2-SS-HT**

Manifolds require additional hardware to complete a system.
Please contact Customer Service for system information and quotes.
Replacement parts are available.

Test Rig

CATALOG NUMBER	TYPE
SCTR-1	8 Zone Test Rig - .25-4 GPM / 1/15 LPM
SCTR-2	8 Zone Test Rig - .5-10.5 GPM / 2-40 LPM
SCTR-W	Automatic Water Change System
SCTR-CU	Calibration Unit
SCTR-SWPRN	Printer with Router/Software

Cart

CATALOG NUMBER	TYPE
SCP-CART8	Portable Cart for 8-zone Manifolds
SCP-CART12	Portable Cart for 12-zone Manifolds