

Cleaning of cooling channels



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Depending on the source and type of water used for mold temperature control, corrosion and gradual scale deposition on heat conducting surfaces is a problem encountered, to a greater or lesser extent, by the majority of injection molders.

Nevertheless, water is still the most popular cooling medium - the use of alternative types of media is often not economically justified due to their lower cooling efficiency resulting from worse heat conductivity and higher viscosity.

In the case of water based cooling media, achieving long-term process reliability without costly downtimes requires regular maintenance & cleaning of cooling channels.

Capacity to absorb heat is directly proportional to heat conductivity of surfaces taking away the heat.

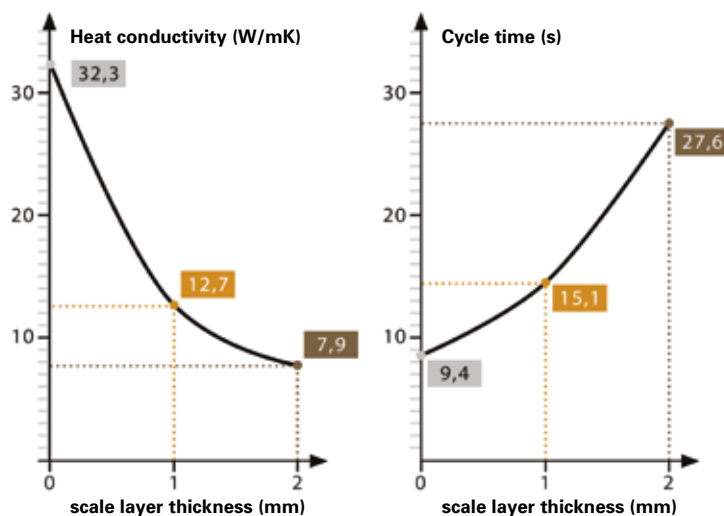


MATERIAL	Calcium carbonate scale	Calcium sulphate scale	Calcium silicate scale	1.2343 steel
heat conductivity W/mK	0,6 - 6	2,3	0,3	24

Due to their low heat conductivity, presence of scale and corrosion products can greatly affect mold cooling efficiency and cause:

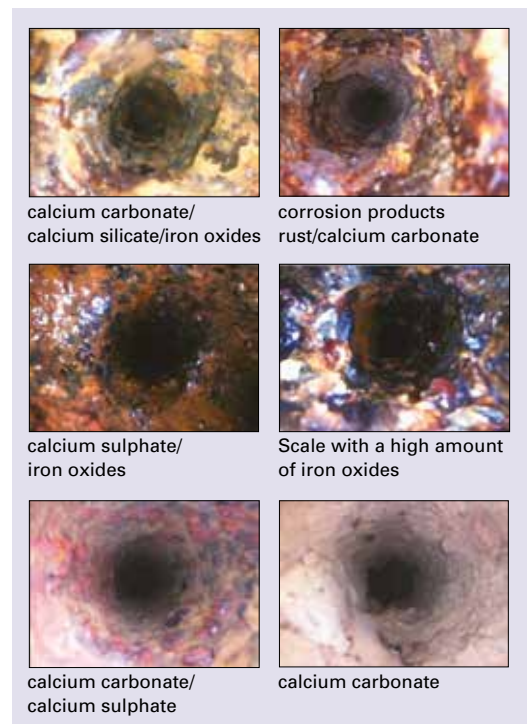
- Drop in production (longer cycle times and scrap rate increase)
- Dimensional issues with parts coming from different cavities
- Adjustment and correction of injection parameters with every production launch

Influence of lime deposition on cooling time

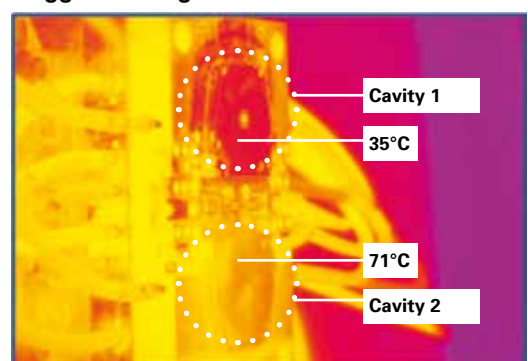


Scale formation depends primarily on water hardness and rises substantially in temperatures above 60°C. Areas with little or zero flow rates are more prone to scale deposition and corrosion issues.

Different scale types



Thermovision picture of a mold with a clogged cooling channel



- Temperature rise in the second cavity
- Unstable injection molding conditions

CA-SERIE - automatic cleaning, diagnostics and conservation of cooling channels

Available in six and two section versions

User friendly interface

Automatic work - operators are only required to connect the mold and de ne the channels to be cleaned

A unique design allowing for independent and efficient cleaning of channels regardless of their length and diameter

Advanced archiving system supporting the correct mold maintenance throughout the whole mold operation time

High pulsation dynamics of cleaning allows for use of less aggressive cleaning media, safe for steel, aluminum, copper and bronze

Intelligent monitoring of the cleaning process - the device recognizes when the desired flow rate values are reached and finishes cleaning before the appointed time

INDUSTRIE 4.0 READY



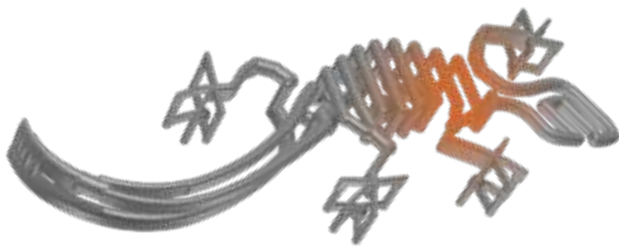
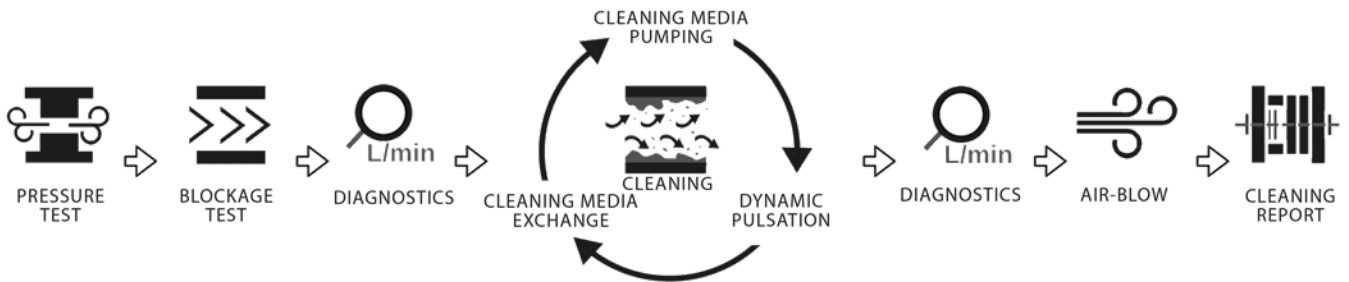
**COOLINGCARE CA-2
automatic**

Technical information	CA-2	CA-6
feed pump efficiency	25 l/min	3 x 25 l/min
diagnostics pump efficiency	70 l/min	70 l/min
no. of pulsators (dynamic cleaning mode)	2	6
cleaning media/diagnostics tanks volume	100 / 55 l	100 / 55 l
supply voltage	400V/50Hz	400V/50Hz
installed power	13A	13A
min./max. working pressure	4-8 bar	4-8 bar
max. compressed air consumption l/min	300 l/min	700 l/min
suction/return filters	✓	✓
material type used for hydraulic installation	✓	✓
tare weight	240 kg	415 kg
dimensions (L x W x H cm)	145x69x107	186x74x112
heater	6 kW	6 kW
PLC controller	10,1"	10,1"
air preparation unit	✓	✓
Manometer	✓	
suitable for channels with diameters up to 16mm	✓	✓
overflow protection / run-dry protection	✓	✓
leakage protection probe	✓ (option)	✓ (option)
cleaning media temperature controller	✓	✓



**COOLINGCARE CA-6
automatic**

Fully automated work algorithm



Range of deposits and corrosion residues



In the thermal image visible blockage of a cooling channel



Thermal image after cleaning the insert

Product-Features

PRESSURE TEST

Leakage verification before and after cleaning

BLOCKAGE TEST

Detection of clogged channels

DIAGNOSTICS

Flow rate measurement of every channel, comparison of the results with the archived data

CLEANING

Patent pending channel cleaning process based on two-way pulsating movement of cleaning medium

NEUTRALIZATION & CONSERVATION

Protection of channels with corrosion inhibitors at the end of the rinsing process

REPORTING

Record of all process parameters in the database, export of cleaning reports to external devices

INDUSTRIE 4.0 - Features

ADVANCED SERVICE AND OPERATIONS

- built-in modem for online machine diagnostics & service
- fully automated algorithm allowing for unmanned work

ADVANCED MANAGEMENT

- text messages informing the operator when the cleaning process is over, or in the case of some unexpected events (failed tightness test, cleaning medium level drop, etc.)

Sample field applications



1. Simultaneous cleaning of two molds
2. Mold cleaning on an injection molding press
3. Channel debris taken out of a return filter after cleaning

Dedicated coolingcare cleaning media

DS1 - Cleaning

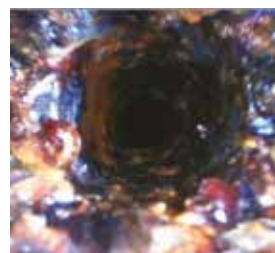
For sediment with high iron oxide content.
Contains corrosion inhibitors.

DS2 - Cleaning

For sediment based on calcium carbonate,
magnesium carbonate and magnesium hydroxide.

Example of a channel before and after cleaning (photos taken with endoscopic camera)

Corrosion tests in accordance with ISO 11463:20110 prove our cleaning media are safe for different grades of tool steel (i.e. 1.2311, 1.2312, 1.2343, 1.2709) aluminum and copper.



Before cleaning



After 4 hours of cleaning

Our performance, your added value:

With little effort, the temperature control channels can be cleaned. In turn the process stability is positively affected. CONTURA recommends regular cleaning to ensure the temperature control performance of the tool inserts.

The advantages are apparent:

- Securing process stability
- Extension of the durability of the tool inserts
- CONTURA Service grants a „shot guarantee“*

*if a cleaning cycle is contractually fixed.

We offer:

Germany-wide sales and customer service, as well as individual advice of the Cooling care devices.

We will carry out the cleaning of your plastic injection molds at your location - or at our company as a service.



SALE



SERVICE

