

CastleSTREAM is the new tool for the evaluation of the flow rate in a cooling channel.

Via a fast simulation of the cooling fluid flow, it allows to understand:

- The feasible flow rate in the channel with a given available pressure
- The required pressure to reach the target flow rate

→ **The setup of any mould cooling system configuration is thus realistic, reliable and robust.**

Flow Rate (l/min)=3
Inlet diameter (mm)=2.98
Inlet velocity (m/s)=7.16
Outlet Diameter (mm)=3.98
Outlet velocity (m/s)=4.02
Pressure DROP (bar)=0.408



RESULTS	
Static pressure [bar]	3.352
Dynamic pressure [bar]	0
Pressure DROP [bar]	3.352

PRESSURE DROP AND FLOW RATE CALCULATOR			
Flow Rate [l/min]	16.00	Pressure [bar]	2.773
Pressure [bar]	2.10	Flow Rate [l/min]	13.923

powered by

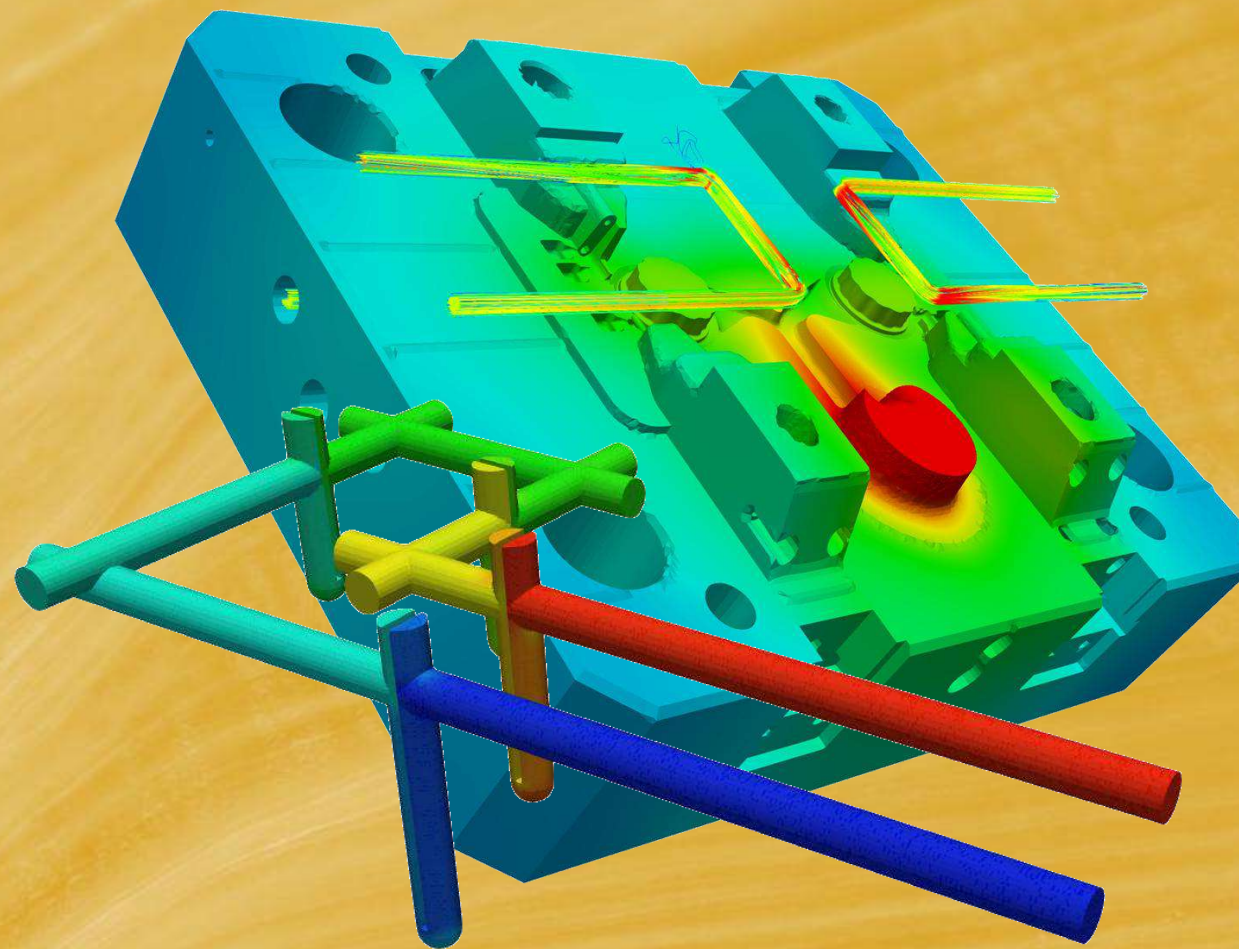
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Developing Expertise

PiQ² srl

25123 Brescia · Via Branzi, 45
T +39 030 6595058 · www.piq2.com · info@piq2.com

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[castle]³THERMO

[castle]³STREAM

CastleTHERMO is the innovative software solution to **simulate the thermal behaviour of the die**: the thermal cycle of the mould can be realistically modelled taking into account both the cooling channels and the release agent spraying effect for a state-of-the-art solidification simulation.

Realistic fluid flow simulation of cooling channels: the fluid displacement inside the cooling channels can be actually simulated as a fluid flow domain.

The thermal exchange between mould and coolings is thus **realistically and automatically calculated** as a function of the flow depending on position and time.

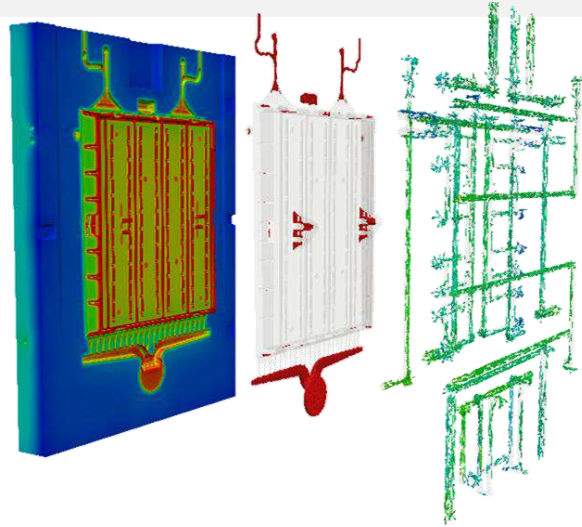
External cooling channel interconnections can be considered.

Complex spraying operations can be considered.

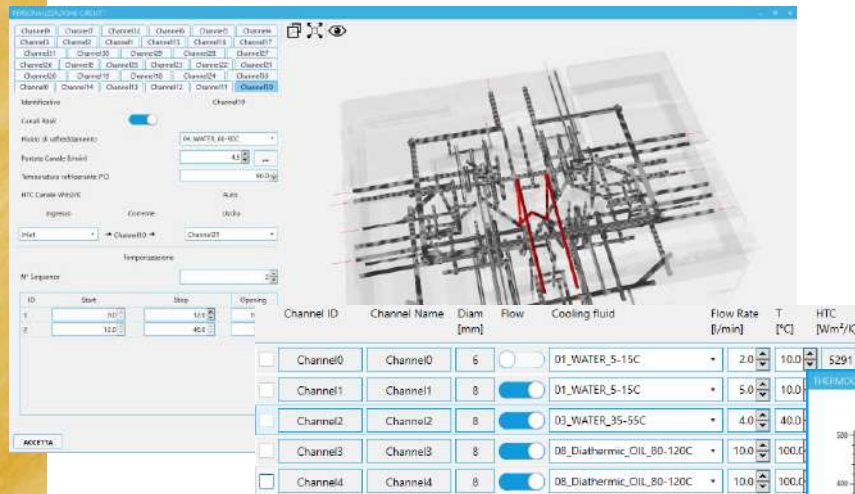
User-friendly interface: simulation can be easily set up in few minutes even for the most complex dies.

CastleTHERMO is a new approach for die castings thermal simulation:

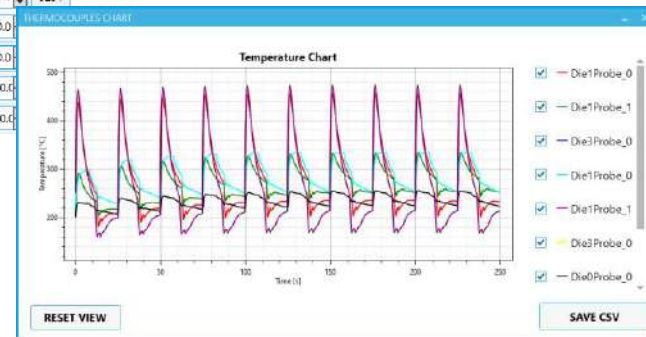
- The full die thermal simulation is finally available for everyone
- The interface is simple and the setup of the simulation is easy and quick
- Cooling circuits can be easily modelled
- The simulation is extremely accurate and takes into account the effective flow of the cooling media inside the channels
- Complex spraying paths and configuration can be considered



Thermal simulation with channel flow



Advanced cooling channels configuration



Probes temperature chart

→ **DATA IMPORT FROM MANY CAD SYSTEM**
(including Step, Parasolid and many others)

→ **COMPLETE 3D CAD MODELLING CAPABILITIES**

→ **EASY PREPARATION AND SETUP FOR THE CALCULATION**

→ **SIMPLE AND ROBUST MESHING WITH CUSTOMIZED LOCAL REFINEMENT**

→ **FAST AND ACCURATE COUPLED ANALYSIS OF CASTING SOLIDIFICATION AND DIE PARTS THERMAL EVOLUTION**

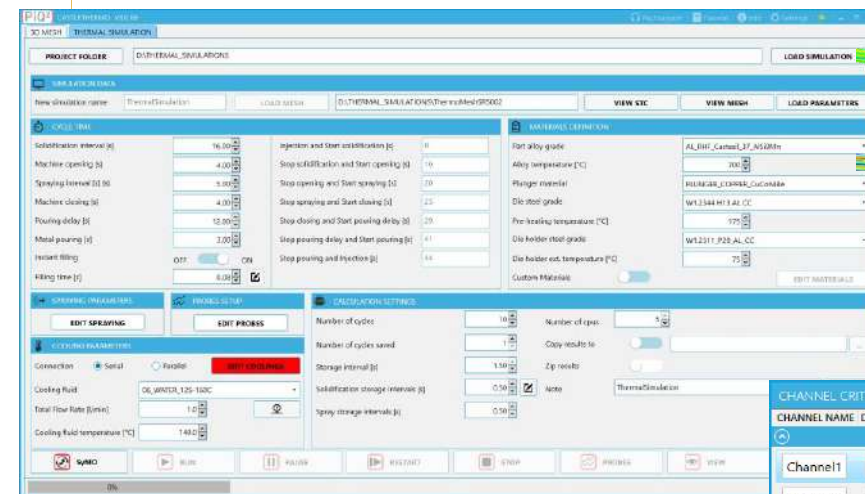
→ **ADVANCED CRITERIA CALCULATION ON CASTING AND MOULDS**

→ **FAST EVALUATION OF PRESSURE DROP IN THE CHANNELS AS A FUNCTION OF FLOW RATE**

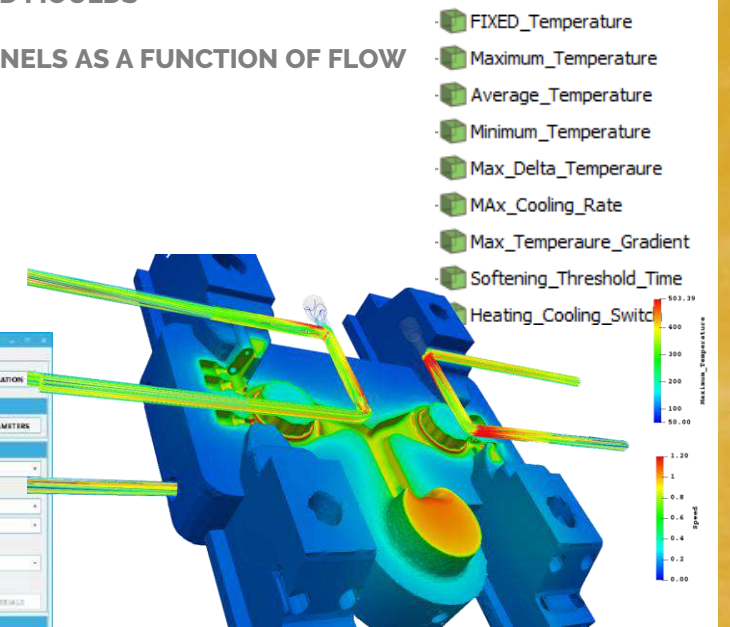
→ **TYPICAL TRAINING DURATION OF A FEW HOURS**

→ **FREE MULTI-CPU CALCULATION AND MESHING**

→ **FREE RESULTS VIEWER**

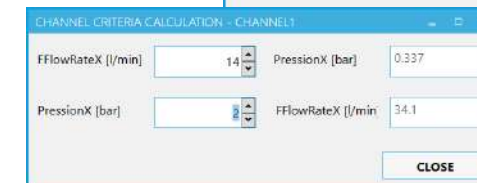


CastleTHERMO user friendly interface



Advanced casting and mould parts criteria

CHANNEL CRITERIA				
CHANNEL NAME	DIAM [MM]	COOLING FLUID	FLOW RATE [L/MIN]	PRESSURE DROP [BAR]
Channel1	8	D1_WATER_5-15C	5	0.043
Channel2	8	D3_WATER_35-55C	4	0.031
Channel3	8	D8_Diathermic_OIL_80-120C	10	0.147
Channel4	8	D8_Diathermic_OIL_80-120C	10	0.149



Fast evaluation of pressure drop in the channels