





# Welcome to a world of **thermal solutions** !



WattMobil



ThermalPower



QuickCheck



FlowMaster

Guillaume LEVACHER  
President

## Who are we ?

Lethiguel is a French company specializing in providing thermal technologies, solutions and services for the global light-metal casting industry. The family business was founded by my living father Michel Levacher in 1976, initially distributing furnaces and machine tools for the French metal casting industries.

Throughout our company's history, we have shown dedication and commitment to our customers, carefully listening to their needs while looking closely at the evolution of the industry. We believe that our capacity to adapt to changes, our long-term approach and our appetite for innovation has enabled us to grow from a local actor to a global group, exporting today 85% of our sales.

Our team is multicultural: we have over 14 nationalities and speak 13 different languages; this great asset allows us to promote a very open-minded approach in driving our globalized business.

With our HQ based in France, and international offices in Germany, Japan and Canada, we serve our customers globally with a strong local presence.





# Summary

## Heating solutions

- 8** Thermal Power ® heater
- 10** L-Type Thermal Power ® heater
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- 14** Quickcheck ®
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# Heating solutions

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# Thermal Power ® heater



## Advantages of immersion heater

Heating efficiency >99%

30 to 40 Watts per cm<sup>2</sup>

Power up to 50kW

Energy savings up to 50% compared to traditional heating methods\*

Temperature regulation +/-2°C (+/- 36°F)

Fast and smooth heating

Quick installation, easy maintenance

*\*Gas burner, SiC heater, heating lid, heating rods*

Powerful Savings. Are you holding molten metal in casthouse, foundry or recycling plants? With TP® heater, be prepared to save energy and time while improving your metal quality and increasing your productivity. The TP® heater is an electrical heating system, specially designed to hold and raise non-ferrous metals. It is intended to be immersed into liquid metal. The thermal power is directly brought to the heart of molten metal through conduction.

## Extensions range

Four types of extensions available in our immersion heating product range. Possibility to attach a Quick-Type multipin connector to any cabled extension.

Each type of extension can be elbow shaped, as an option:



Terminal Box Type



Cabled Type



Quick Connector Type

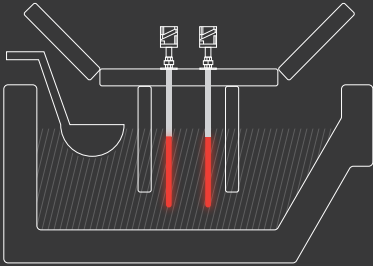


Cabled Type + Elbow option

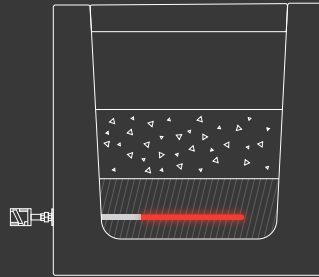


## Main applications

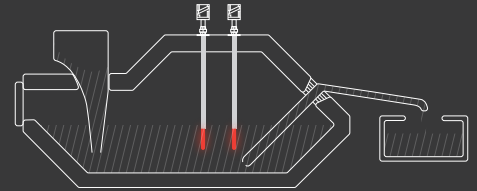
1 Holding furnace



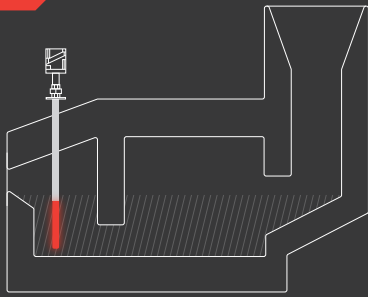
2 Filtering box



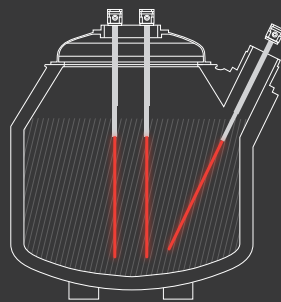
3 Dosing furnace



4 Melting furnace



5 Transport ladle



I-Type 55 in 300kg holding/melting furnace



# L-Type Thermal Power ® heater



## Advantages of L-type immersion heater

Heating efficiency >99%

Suitable for shallow metal levels

Energy savings up to 50% compared to traditional heating methods\*

Temperature regulation  $\pm 2^{\circ}\text{C}$  ( $\pm 36^{\circ}\text{F}$ )

Fast and smooth heating

Quick installation, easy maintenance

The L-Type Thermal Power® heater is quick to install, and delivers best metallurgical quality by regulating the flow temperature with a  $\pm 2^{\circ}\text{C}$  accuracy. It is specifically designed for shallow bath levels.

## Extensions range

Four types of extensions available in our immersion heating product range. Possibility to attach a Quick-Type multipin connector to any cabled extension.

Each type of extension can be elbow shaped, as an option:



Terminal Box Type



Cabled Type



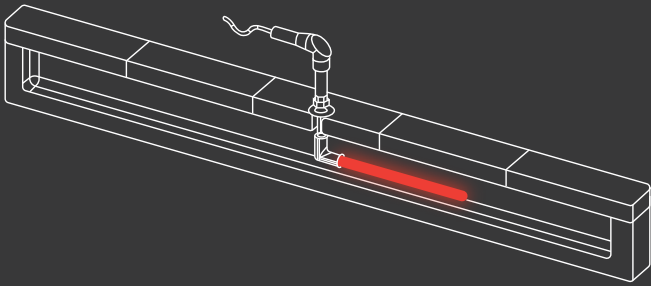
Quick Connector Type



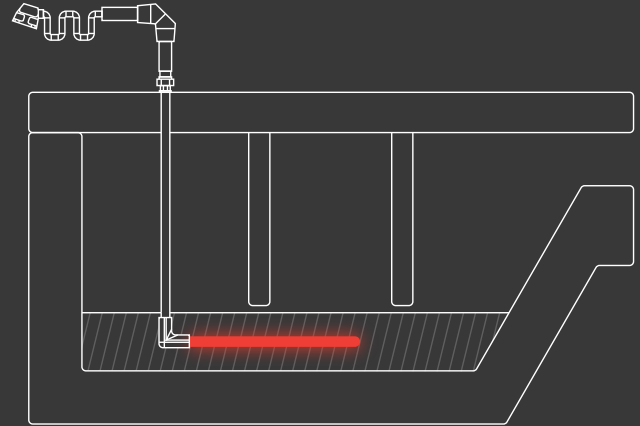
Cabled Type + Elbow option

## Main applications

### 1 L-Type in transfer launder



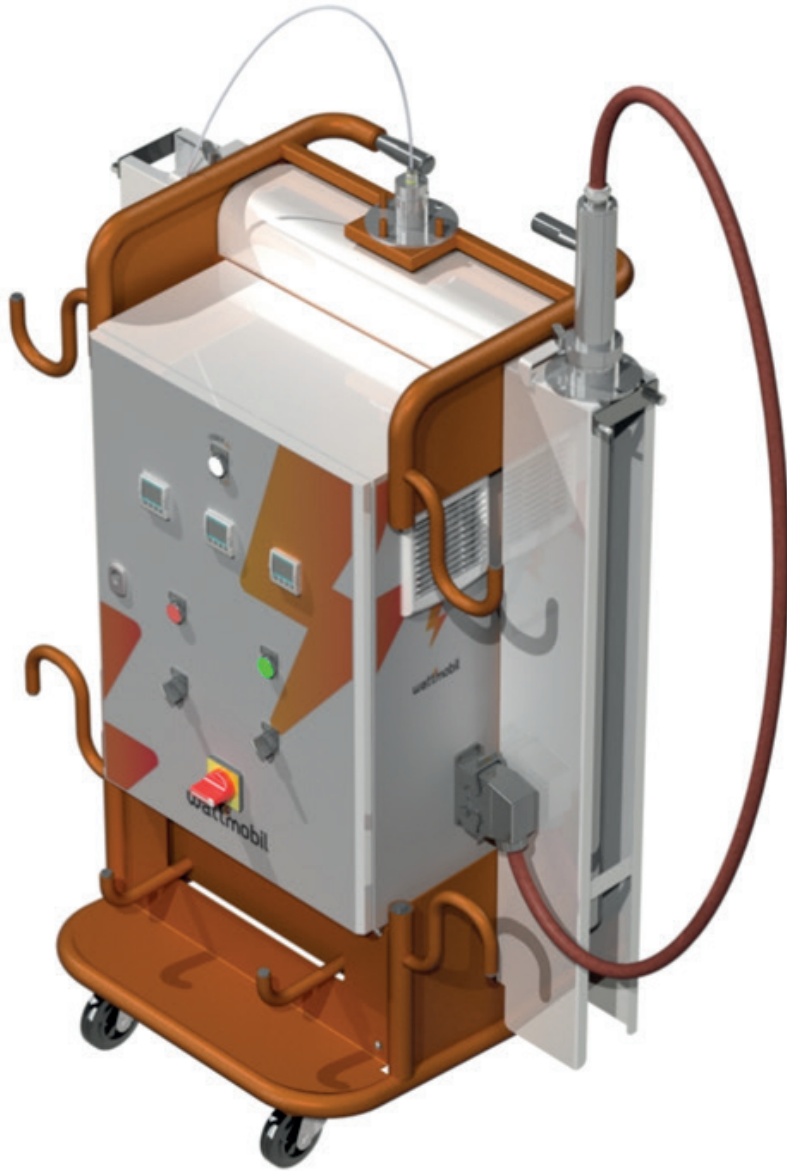
### 2 L-Type in holding Furnace



Using an immersed heating system is the most efficient way to precisely monitor and manage the aluminium bath temperature, and therefore take control over your metal quality, your productivity, and your energy savings.



# WattMobil®



**Watt Mobil® is designed to help in the following situations:**

- Furnace maintenance
- T° rising and monitoring
- Furnace breakdown
- Degassing time
- Weakened furnace performance

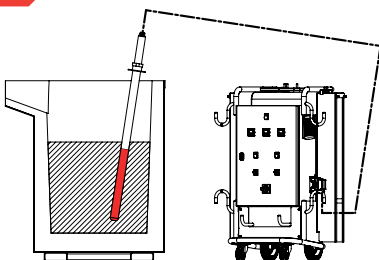
Designed according to foundry required standards, the WattMobil® is the perfect concentrate of an electrical high efficiency heating rod, or immersion heater, and a dolly with an integrated electric control cabinet.

Forwarding the power straight in the heart of molten metal, a WattMobil® ensures both efficient maintaining and rising of the temperature, using 99% of Immersion heater power dissipation.

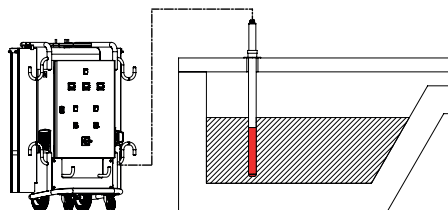
Continuous use allows relief of furnace heating roof, thus helping to notably save energy, reduce oxydation of the bath and eliminate the accumulation of corundum.

## Main applications

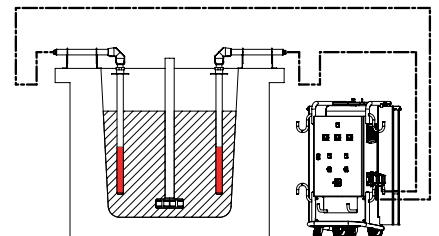
**1** Transport Ladle



**2** Furnace Maintenance



**3** Degassing Time



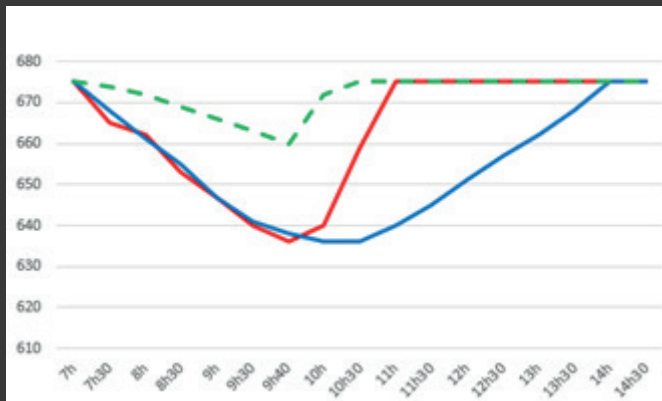
# Case study

## Current issue:

A furnace maintenance for aluminum in high pressure diecasting foundry. The furnace undergoes on a heating vault's maintenance. Once the maintenance is completed, it takes 4h to heat up to the casting temperature (675°C)

## Furnace's info:

- Furnace capacity: 1500kg
- Casting Temperature: 675°C
- Furnace's type: Heating Rods



- With WattMobil, started at 9.40am
- Without WattMobil
- With WattMobil, started from the beginning



The WattMobil is available with I-Type 55, 850 or 1050mm under flange.

## Lethiguel Solution:

**WattMobil with a Thermal Power Heater of 14kW**  
The heater was started at 9.40am from 636°C

## Results:

It took 1 hour 20 mins to reach casting temperature and restart production.  
Compared to existing solution, the WattMobil reduced the maintenance time by 2 hours and 40 mins

## Suggestions:

By using the heater while performing the maintenance, we could reduce the temperature drop and restart the production sooner.



# Quickcheck®



## Product advantages :

Instant T° measuring response. Even at start-up

Internal K-Type Thermocouple removable

One or two measuring points in one device

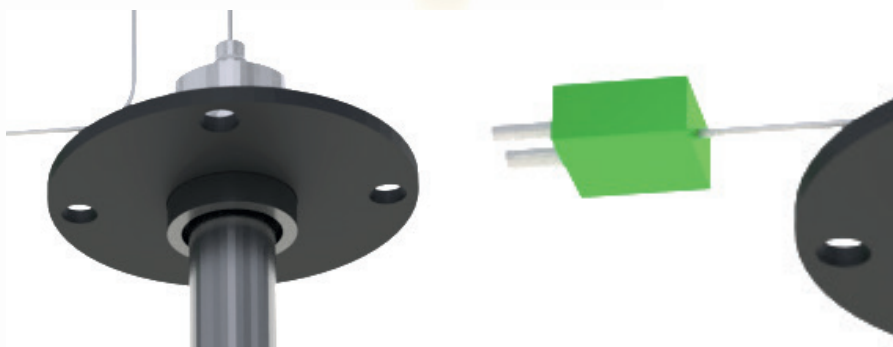
Long-life thermocouple: we guarantee the sheath for 12 months (observed lifetime of over 2.5 years)

Length under flange available from 650mm to 1300mm

Non wetting SN sheath

## Long life thermocouple with instant response

Extremely high temperature is required to be maintained for the melting, refining and alloying of aluminum, so it requires the application of Quickcheck technology. Accurate and instant measurement of temperature in furnaces are needed for process control to improve product quality and production efficiency. Thermocouples are required for use in molten aluminum baths, especially where there are rapid temperature fluctuations. A quick check thermocouple prevents from temperature drop in the molten aluminum bath and greatly contributes to energy savings.



Quickcheck® is the perfect add on to Thermal Power® heater applications like Alclean furnaces, Twiga heating stations and WattMobil solutions.

# Air Thermal Power ® heater



## Product advantages :

Wide range of power: 2-20 kW

High maximum temperature:  
950°C

Smooth and fast pre-heating:  
no overheating

Suitable for any extensions

Available in any power supply  
specifications

Compatibility with AI Clean range,  
Twiga and WattMobil

Air Thermal Power heaters are Lethiguel's solution ladle for furnace pre-heating. Based on years of experience in conductive electrical heating elements for the aluminum industry, we designed this powerful air heater for a quick pre-heating of all containers.



Make sure your transport ladles and holding furnaces are ready for action in no time with the Air Thermal Power heater!

# CERAL<sup>®</sup>

## Silicon Nitride Products for demanding operating conditions

### MELT HIGH METALLURGICAL QUALITY PARTS

Silicon nitride ceramic will help you cast higher quality parts.

### SAVE MONEY AND TIME

No need to adapt Silicon Nitride equipment to alloy thanks to SN's inertness property.

### REDUCE HANDLING WEIGHT

SN ceramic tubes are lighter than iron tubes, making handling easier and safer for operators.





# Ceral

High standard SN products around the Globe with following characteristics

| Item                                   | Material | Unit                         | Silicon Nitride            | Silicon Nitride            |
|--|----------|------------------------------|----------------------------|----------------------------|
| CERAL                                  |          |                              | <i>Ceral-N</i>             | <i>Ceral-S</i>             |
| <i>Bulk density</i>                    |          | <i>g/cm<sup>3</sup></i>      | <i>3.2</i>                 | <i>3.2</i>                 |
| <i>Water absorption</i>                |          | <i>%</i>                     | <i>0</i>                   | <i>0</i>                   |
| <i>Flexural strength</i>               |          | <i>MPa</i>                   | <i>750</i>                 | <i>1050</i>                |
| <i>Young modulus</i>                   |          | <i>Gpa</i>                   | <i>280</i>                 | <i>290</i>                 |
| <i>Fracture toughness</i>              |          | <i>MPa - m<sup>1/2</sup></i> | <i>6.5</i>                 | <i>7</i>                   |
| <i>Poisson's ratio</i>                 |          | <i>-</i>                     | <i>0.28</i>                | <i>0.28</i>                |
| <i>Vickers hardness</i>                |          | <i>Gpa</i>                   | <i>15</i>                  | <i>15</i>                  |
| <i>Coefficient of linear expansion</i> |          | <i>x10<sup>-6</sup>°C</i>    | <i>3.4</i>                 | <i>3.5</i>                 |
| <i>Thermal conductivity</i>            |          | <i>W/(m - k)</i>             | <i>28</i>                  | <i>32</i>                  |
| <i>Specific heat</i>                   |          | <i>J/(g - k)</i>             | <i>0.65</i>                | <i>0.65</i>                |
| <i>Volume resistivity</i>              |          | <i>Ω - cm</i>                | <i>&gt;10<sup>14</sup></i> | <i>&gt;10<sup>14</sup></i> |
| <i>Thermal shock resistance Δ*</i>     |          | <i>°C</i>                    | <i>800</i>                 | <i>900</i>                 |
| <i>Maximum operation temperature</i>   |          | <i>°C</i>                    | <i>1150</i>                | <i>1150</i>                |

## Proper use instructions

Store in dry atmosphere before use.

Preheat before heating the cold furnace.

Gradually heat up/ cool down material - avoid abrupt cooling and heating.

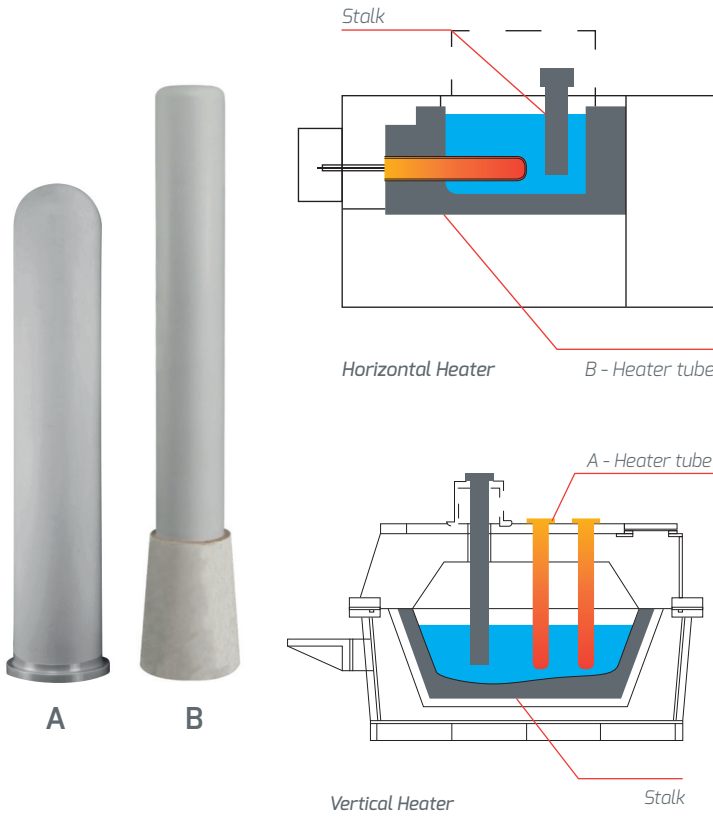
Handle with care.

Keep under regular maintenance in order to enhance lifetime.

**CERAL offers a whole range of technologies & designs upon specific demand, and provides relevant usage instructions.**

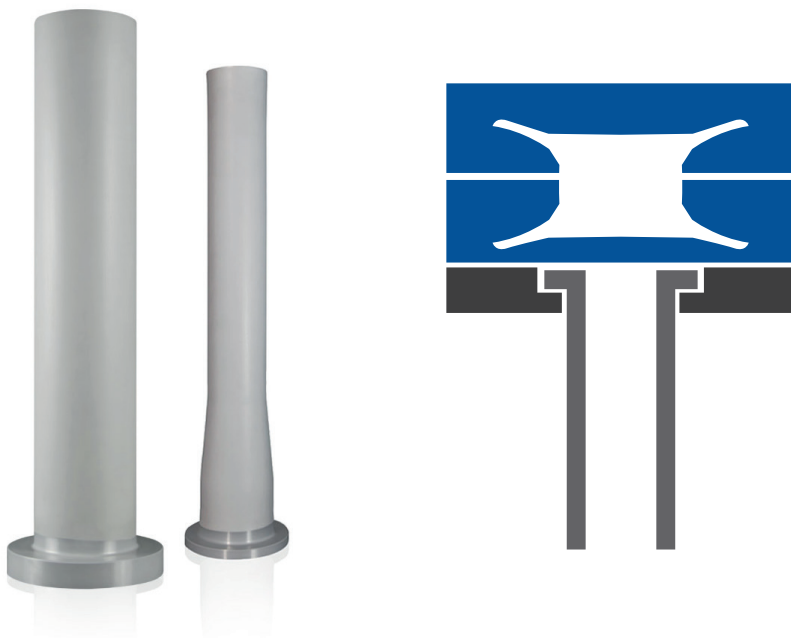
# Ceral

## Protection tube



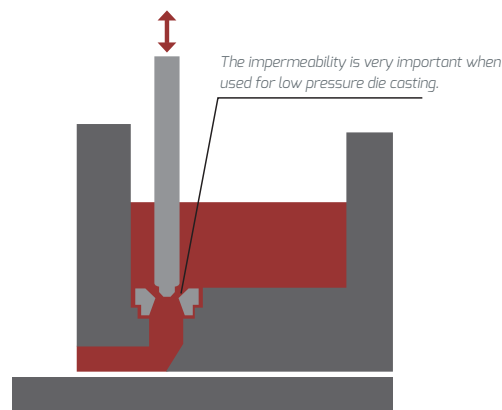
CERAL silicon nitride ceramic has the best thermal conductivity when used for aluminium melting applications. Even though there can be a temperature difference between the tube and the aluminium solution in some harsh environments, the heater protection tube will work stably. Regarding its lifetime, it can be used for many years with correct operation environment and regular maintenance.

## Stalk for low pressure die casting



CERAL silicon nitride ceramic stalk has an excellent corrosion resistance for LPDC applications. It has remarkable heat-retaining properties, so that the heat loss is reduced to a minimum. The stalk can be used for many years if kept under regular maintenance. CERAL offers a whole range of technologies & designs upon specific demand, and provides relevant usage instructions.

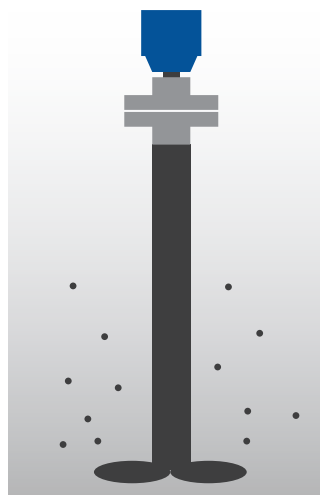
## Stopper pipe



CERAL silicon nitride ceramic has high density and abrasion resistance; it is the most suitable material for low-pressure die-casting. The stopper pipe has the most favorable properties: toughness, non-wetting with excellent design precision. The stopper pipe can be used for many years if kept under regular maintenance.

**Non-wetting property is very important when used in low-pressure die casting applications.**

## Degassing pipe and rotor



CERAL silicon nitride ceramic has high density and abrasion resistance, it is the most suitable material used for degassing pipe and rotor shaft.

CERAL silicon nitride rotor shaft shows an exceptional corrosion and oxidation resistance compared with other products. It ensures high hydrogen removal efficiency. The rotor shaft can be used for many years if kept under regular maintenance.

**The efficiency of degassing varies according to the rotor shape and other conditions. We sell the most suitable rotor according to one's environment.**

# Al Clean



On demand  
and 100% customizable



## Product advantages :

3 furnace sizes Al Clean 6500,  
Al Clean 3500 and  
Al Clean 1500

Low energy consumption,  
High heating speed

High aluminium quality

Integrated degassing

Advanced monitoring for  
preventive maintenance

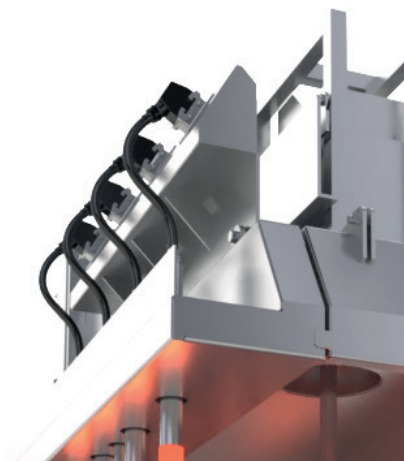
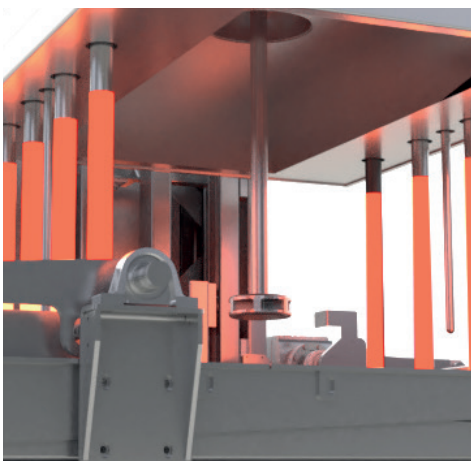
Easy maintenance

Al Clean is Lethiguel aluminium holding furnace line. Designed to optimize aluminium quality and energy consumption, Al Clean uses the most efficient heating system on the market to combine a very low average energy consumption and a high heating speed. Mounted with Lethiguel ThermalPower® immersion heaters, Al Clean optimizes aluminum quality.

As a result of years of field experience, Al Clean's design reduces operation time and allows a very efficient preventive maintenance.

Al Clean is the asset for holding aluminum in HPDC or gravity die casting. It combines energy saving and high heating power.

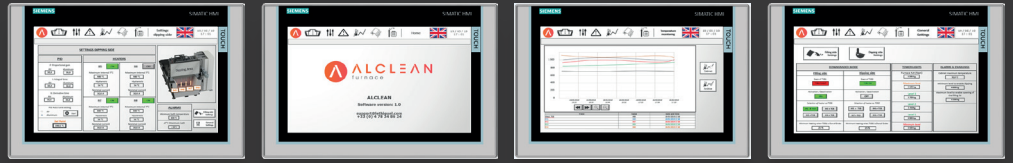
**Increase quality and efficiency with Al Clean!**





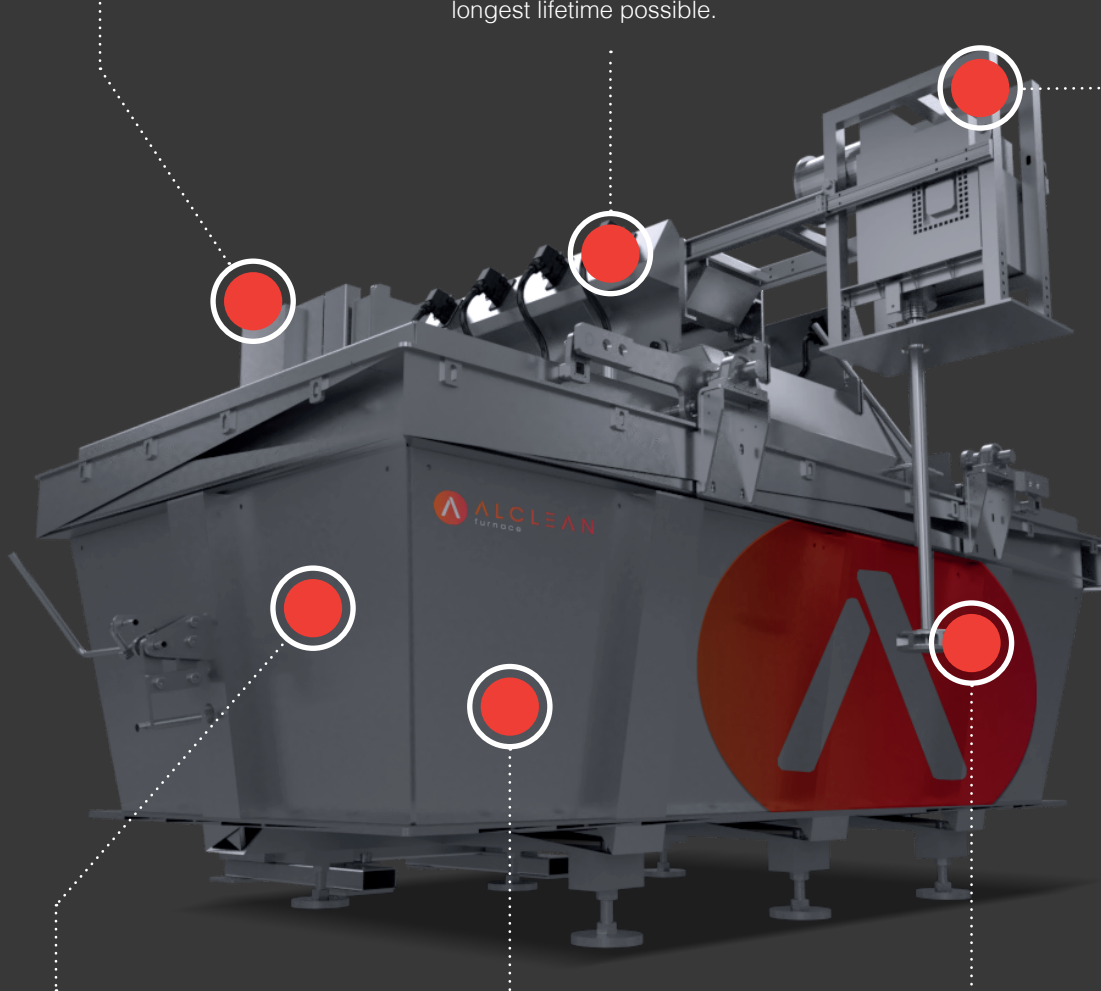
# Al Clean

Smart regulation, deep monitoring, easy handle and intuitive usability with Siemens Comfort TP1200. Monitored data exportable on USB flash drive.



Customized Thermal Power Heaters ® based on power needs, metal temperature and power supply to ensure maximum heating power and longest lifetime possible.

Easy maintenance with a user friendly position for rotor changes and repairs. Safety and ergonomic position for a quick maintenance.

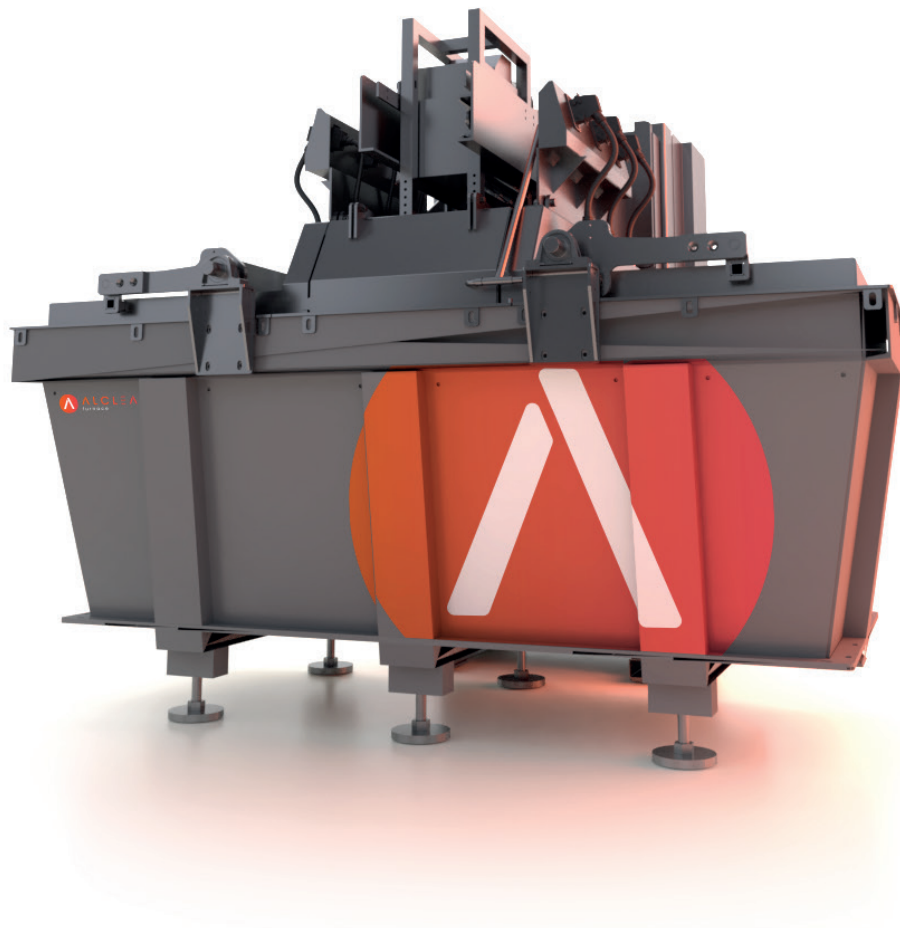


Ergonomic design for operation, cleaning, and sampling with a user dedicated side giving easy access to heaters, thermocouples, and all aluminum baths.

High quality refractory and insulation material for a low wall temperature (<math><55^{\circ}\text{C}</math>) and low convection power loss.

Integrated degassing: All in one solution for an optimized casting process.

| Model              | 6500   | 3500                         | 1500       |
|--------------------|--|------------------------------|------------|
| Industry           | Gravity die casting  | Gravity die casting and HPDC | HPDC       |
| Metal              | Non ferrous (Aluminum, Zinc, ...)  |                              |            |
| Weight             | 6500kg   | 3500kg                       | 1500kg     |
| Power supply       | 60V to 600V - Mono / Tri   |                              |            |
| Heating power      | Up to 145 kW   | Up to 95 kW                  | Up to 60kW |
| Metal temperature  | Up to 780°C  |                              |            |
| Monitoring         | Furnace temperature / Heater temperature / Heater lifetime / Heating cycles / Energy consumption |                              |            |
| Usability          | Siemens PLC / TP 1200 Comfort HMI  |                              |            |
| Degassing (Option) | Rotor / Nitrogen   | Rotor / Nitrogen             | NA         |
| Availability       | Available  | Available                    | On demand  |



# Customized furnaces

## Technical specifications :

**Capacity:** 6500Kg

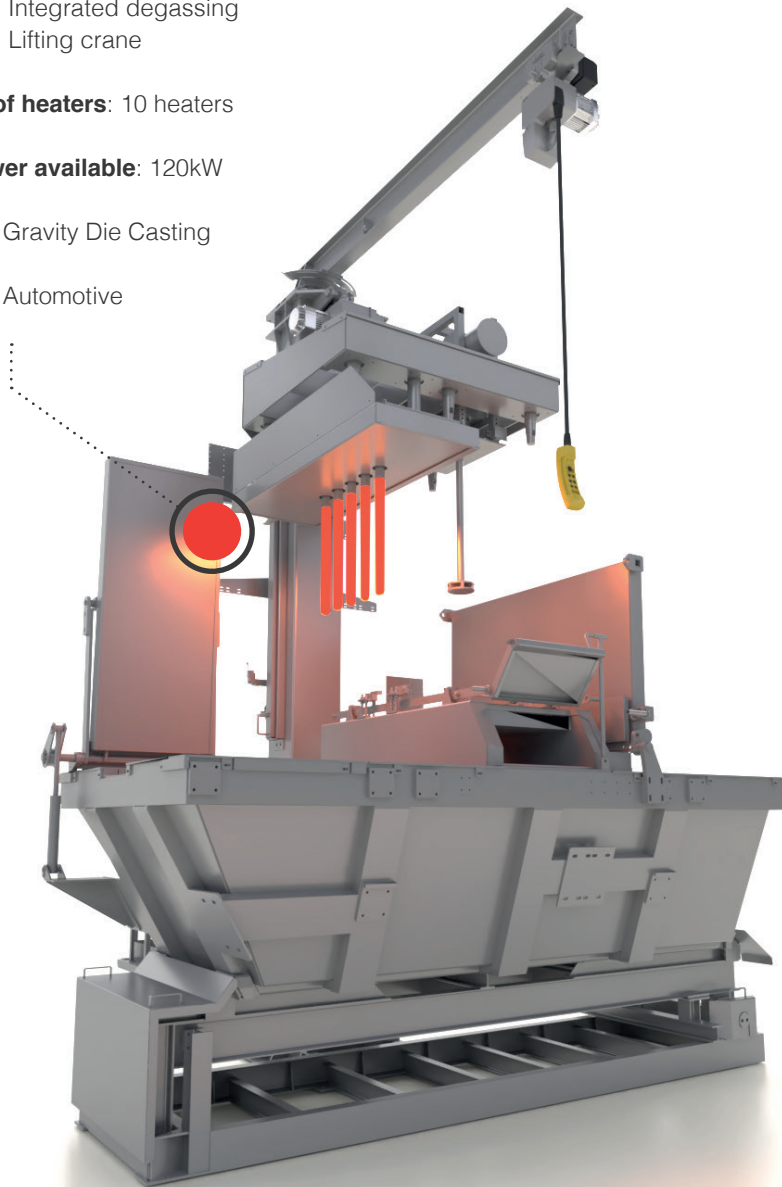
**Features:** Integrated degassing  
Lifting crane

**Number of heaters:** 10 heaters

**Total power available:** 120kW

**Casting :** Gravity Die Casting

**Industry:** Automotive



## For :

High pressure die casting,

Low pressure die casting,

Gravity die casting

## Quality, efficiency, precision

Lethiguel designs and sells fully-customized furnaces, built around immersion heating technology, with or without an embedded degassing system. The useful capacity, thermal performances and immersion heater positioning are specifically designed for each customer.

Thanks to Lethiguel's savoir-faire, our immersion heating furnaces help reduce energy consumption and improve metal quality. Using heaters in a furnace boosts temperature rising while avoiding oxides. When used with a degassing system, immersion heaters ensure an optimum metal quality and density.



Lethiguel delivers not only a furnace, but a turnkey solution that can be instantly integrated in your casting process.



Field illustrations:



### Technical specifications :

**Capacity:** 3800Kg

**Features:** Lifting hoist

**Number of heaters:** 5 heaters

**Total power available:** 75kW

**Casting :** High Pressure Die Casting

**Industry:** Automotive

In the past few years, more and more customers have been seduced by our core heating system, the Thermal Power Heater ®. Working together with our clients we co-designed customized furnaces in order to meet very specific technical specifications from industries that require increased quality and low energy consumption.

Our engineering team is always available to design the best solution based on your unique technical specifications.

**Our team  
is yours,  
challenge us!**

# Twiga



## Product advantages :

- Ladle size from 300kg up to 5T
- 2kW to 60kW heating power
- Degassing available
- Advanced monitoring available
- Compact design: only 1,80m in low position

Twiga is the newest Lethiguel aluminium heating station. Designed to optimize the working space and energy consumption, Twiga can adapt to any kind of transport ladle and can be offered with degassing system thanks to an adaptive cover holder. Mounted with Lethiguel ThermalPower® immersion heaters, Twiga allows a high heating speed and low heat loss.



Twiga is the answer to process optimization using heating station. It combines energy saving and high heating power.

# Save time, space and energy with Twiga!



# Twiga

## Key Benefits

### Save space and energy

Based on years of field experience, it is designed to optimize the working space, thanks to a compact geometry (only 1,80m in heating position), and energy consumption, with a smart regulation system providing just the necessary power.

### Boost your Twiga using Thermal Power heaters ®

Mounted with Lethiguel Thermal Power® immersion heaters, Twiga allows a high heating speed and low heat loss with a temperature raise based on your process needs (up to 150°C/hour). The smart regulation system is specifically designed to use 100% of Thermal Power Heaters ® potential, while providing them with a controlled environment for long lifetime.

### A customized standard solution

Twiga can be adapted to any kind of transport ladle and be mounted for degassing thanks to an adaptive cover holder and customized cover to implement customized immersion heaters.

### The quickest way to use degassing

Using Twiga mounted with our degassing system and heating solution is the best way to ensure both aluminum quality management and temperature control.

### Smart, Accurate, Efficient!

Quick heat raise  
Heating power up to 75kW

No metal quality loss  
No overheat with Thermal Power Heater ®

>98% heat efficiency  
Heating only the aluminum with Thermal Power Heater ®

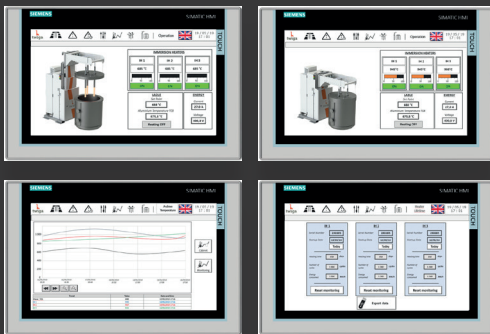
+/- 1°C temperature control  
Smart heat regulation

Compact design  
Only 1,80m high in heating position

## Technical Features

|                             |  |
|-----------------------------|--|
| Metal (Aluminum, Zinc, ...) | Non ferrous (Aluminum, Zinc, ...)  |
| Ladle size                  | Up to Ø 2000mm wide and 2000mm high  |
| Power supply                | From 300kg to 5000kg of metal  |
| Heating power               | 60V to 600V - Mono / Tri   |
| Metal temperature           | Up to 75 kW  |
| Configuration               | Up to 780°C  |
| Monitoring                  | 1, 2 or 3 Thermal Power Heaters ®<br>Degassing system available (with 2 heaters max)           |
| Usability                   | Ladle temperature / Heater temperature / Heater lifetime / Heating cycles / Energy consumption |
| Degassing (Option)          | Siemens PLC / TP 1200 Comfort HMI  |
|                             | Rotor / Nitrogen   |

# Overview



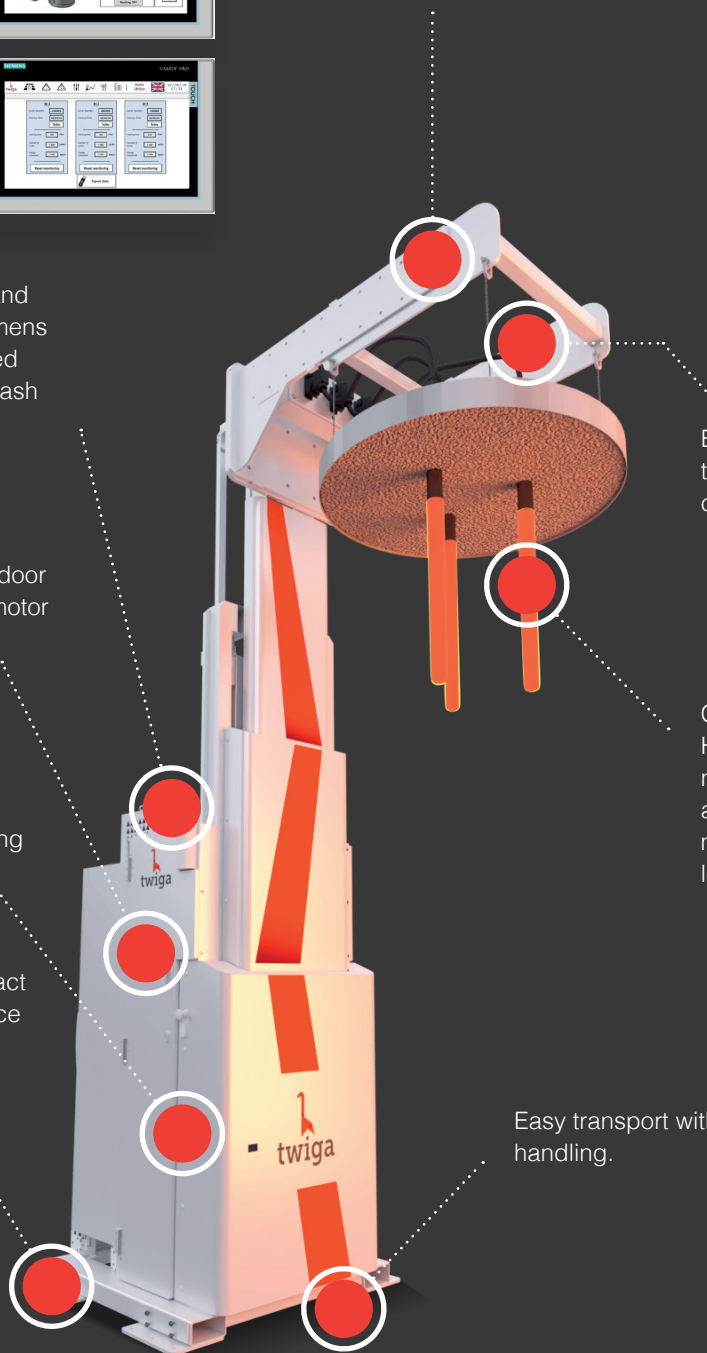
Adjustable cover holder suitable with wide range of ladle (Up to 5000kg). Customized cover fitted to the ladle to ensure thermal sealing and minimum heat loss.

Smart regulation, deep monitoring, easy handle and intuitive usability with Siemens Comfort TP1200. Monitored data exportable on USB flash drive.

Easy maintenance with a door access to lifting system, motor and sensors in the back.

Safety features with ladle detection sensor for heating control.

Easy fit thanks to a compact geometry with a floor space of 1600 x 1200 mm<sup>2</sup> and minimum height of 1,80m.



Easy access to heaters, thermocouple and electrical connections.

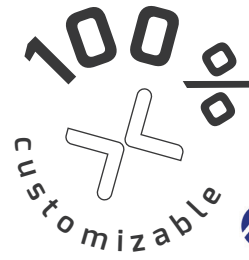
Customized Thermal Power Heaters<sup>®</sup> based on power needs, metal temperature and power supply to ensure maximum heating power and longest lifetime possible.

Easy transport with forklift handling.

Twiga is designed to be optimized by using Lethiguel heating solutions:

- Thermal Power Heaters<sup>®</sup>** for an optimum heating power in metal
- Quickcheck<sup>®</sup> thermocouple** for a reliable measurement and regulation control
- Air Thermal Power Heater<sup>®</sup>** for an efficient ladle pre-heating process in the air

# Al Serve



Liquid metal transfer with a sealed ladle offers an important safety during transits (no splashes) and drastically brings down the oxide and dross formation.



Potential metal savings range from 6 to 9 kg per ton (estimation based on field evaluations in European foundries)



Filling of transfer ladle generates an average of 5.2 kg/Ton of oxides with standard pouring system, down to 0.9 kg/Ton with Al Serve vacuuming system.

## Vacuum filling and pressure dosing system for molten aluminium

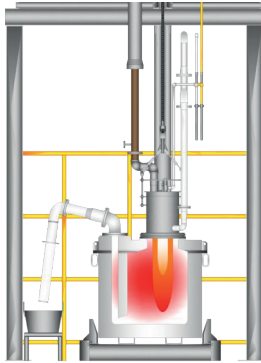
The Al Serve System was developed by HOEI METAL Co., Ltd and is distributed on selected markets by Lethiguel. This system, incorporating a transport ladle, enables in-plant transportation of liquid aluminium and holding furnace refilling operations.

### Overview of the pressure dosing system

Molten aluminium is transferred from a melting furnace into a dedicated pressurizing transport ladle and then to any die casting machine without any contact with air.

Pressure dosing system can be embedded on forklift or not, several configurations are available to arrange the right solution in the right place, for the right application.

## 4 STEPS

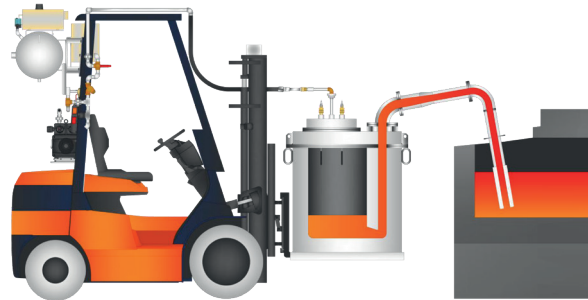


### *Preheating of ladle*

The ladle is pre-heated before use. Caution: in general, when pre-heating is neglected, thermal issues can occur! Lethiguel and Hoei have conducted tests to determine the perfect sintering process for Al Serve.

### *Filling molten aluminium from a melting furnace to a ladle*

Molten aluminium from the melting furnace is drafted through a pipe by decompressing the inside of the transport ladle. This transfer is automatically stopped by detecting the level of molten metal in the transport ladle.



### *Transfer of molten aluminium from the transport ladle to a die casting machine*

By pressurizing the inside of the transport ladle with compressed air, molten aluminium is discharged through a pipe. The applying pressure is controlled depending on the weight of molten metal inside the pot. Again, the low limit of molten metal inside the transport ladle is detected with a measuring device. Alternatively, the process can be automatically stopped with an alarm when the die casting machine reaches full capacity.

### *Pressure dosing of molten aluminium's assets*

- Safer system than a conventional tilted ladle: no lifting up high and no rotation needed.
- Reduced amount of oxide inclusions as the metal's exposition to air is minimized.
- Scrap drastically reduced (5kg/ton)
- Easy operation that does not require skilled labour
- Both filing and dosing operations are processed with one device which improves efficiency and productivity.



# Peripherals for heating solutions

## Heater Cleaner

The heater cleaner is a cleaning tool for immersion heaters. It is designed to fit the Thermal Power Heater range and assist operators in performing a proper cleaning of the heater. The better the cleaning the longer the life span.

**Ref. TOOL-HEATERCL-00**



## Bath Cleaner

The bath cleaner is a cleaning tool for the aluminum bath. It is designed to help remove dross and oxidation from the surface of your furnace or transport ladle.

**Ref. TOOL-BATHCL-00**



## Wall Cleaner

The wall cleaner is a cleaning tool for the refractory wall of any furnace or transport ladle. Thanks to a handy design it helps removing dross deposit from refractory walls.

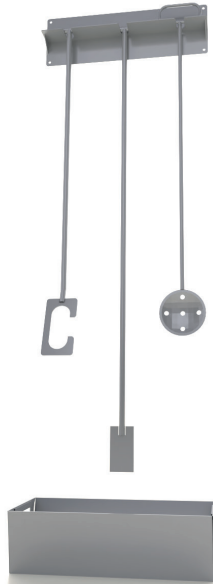
**Ref. TOOL-WALLCL-00**



## Clean Kit

As life span of production tools including immersion heaters and quality directly depend on cleaning, the Clean Kit is a "must have" to make sure you keep getting the best out of your equipment.

**ref. TOOL-CLEANKIT-00**



## Heater Trolley



The Heater Trolley is a furnace peripheral for immersion heaters, thermocouples and air heaters. It is compatible with the Thermal Power Heater range and Quickcheck. Its handy design eases the handling of heaters by helping operators and maintenance workers move new and used heaters all around the foundry.

**Ref. DESTP-00**



## Electrical cabinet



We recommend this type of specific regulation as it optimizes our products' performances with following advantages:

Enhanced lifespan compared to non-specific regulation

UL and/or C€ norm compliance

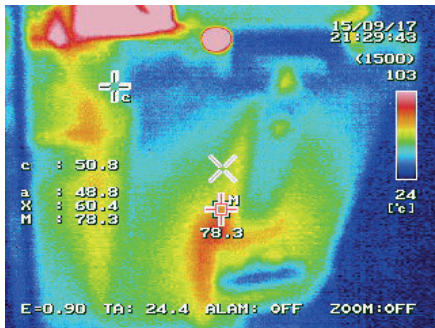
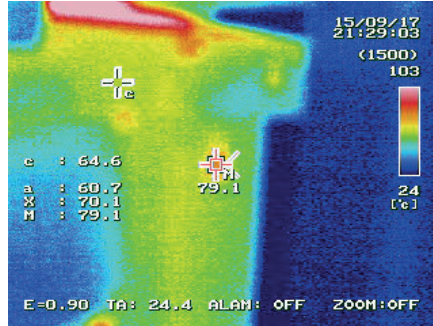
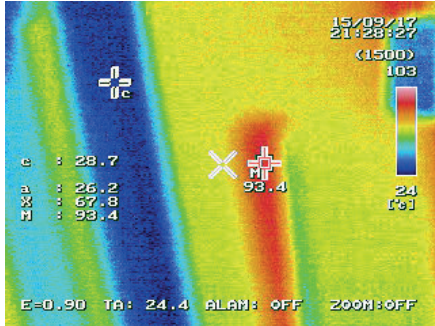
Optimal regulation in scr or ssr type

Tailor-made compact product

Electrical regulation for our immersion heating systems can be bought solo, or part of a global solution. Accuracy of regulation is a critical factor of success for immersion heating technology, and our panels are designed and built specially for our products.



# Engineering solutions



Our engineering office works side by side with our customers to develop the best solution for the right application. Every solution offered is based on deep analysis of client's need, and it is carefully optimized to deliver higher value. With Lethiguel, you can save energy and time while improving your metal quality and productivity. We have been offering turnkey solutions that can be instantly integrated in your casting process.

We have done numerous researches like Thermal energy analysis, power need analysis, implementation analysis, IH designer and power.

Quality Thermal Solutions  
**Lethiguel**  
Europe

Is the lid open ?  Yes

Heating speed ? 25 °C/hour

Application information

Customer:  Date: 12/06/2019

Application:  Offer:

**Results**

|                  |          |                              |
|------------------|----------|------------------------------|
| Convection power | 5.15 kW  |                              |
| Radiation power  | 24.26 kW | <b>TOTAL Power: 80.23 kW</b> |
| Thermal inertia  | 10.82 kW |                              |
| Heating power    | 40 kW    |                              |

**Power need configuration**

**Losses**

- Convection
- Radiation
- Inertia
- Heat



# Our team is yours

we work every day  
to maintain a high  
efficiency in  
follow up service

Being able to stay close to our customer and providing high value support has always been our main priority. This is why we have set up several affiliates around the world (United States, Germany, Japan, and China). Each affiliate can count on the full support of experienced technicians and engineers to better guide our customers.

Thanks to years of experience, our after-sales service team is ready to bring support wherever needed and make sure that the solutions we provide are always valued at their highest potential.

Because customer's satisfaction is our first KPI, we work every day to maintain a high efficiency in follow up service.

Every client's needs are carefully analyzed by our sales team on the field and studied by our engineering department so that we are always able to propose the integrated solution that can best meet customer's expectations.







# Cooling solutions

- 38** Principal scheme and benefits
- 42** SpotCool Classic
- 43** SpotCool Evolution
- 44** SpotCool Performance
- 45** Range overview
- 46** FlowMaster System
- 50** Corepins
- 51** Manifolds
- 52** Connection pack SC / Connection pack for manifolds
- 52** Water Quality (Water Softener, Water check / Mini Water Check)
- 54** Jet Cooler
- 55** Our team is yours

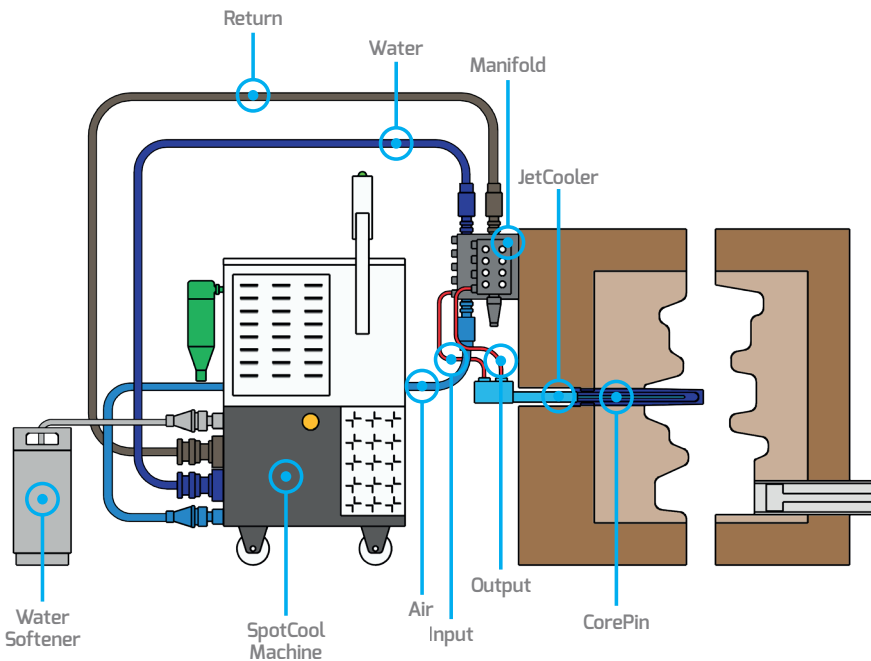
# Principal scheme and benefits

## Operation

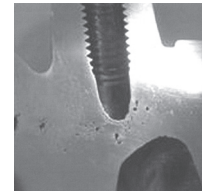
A hydraulic unit ensures the circulation of pressurized cooling water (from 3 to 20 bars) for a given period of time in the circuits of small diameter injectors ( $\varnothing$  from 1,2 to 2,8 mm) inserted in the specific core pins.

At the end of the cooling period, a pneumatic distributor injects air in the injector's circuits and purges it. In this way, the cycle can be carried out in full safety without presence of water inside the circuits.

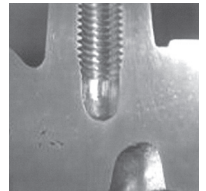
The cooling cycle is synchronized by adjustable temporizations with the die casting machine.



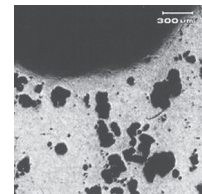
Jet Cooling is a technology that is dedicated to handling hotspots. Thanks to high pressure capacity and sequential cooling, it enables leveling the die temperature and removing any hot area by reaching core pins and inserts, preventing porosity and shrinkage problems.



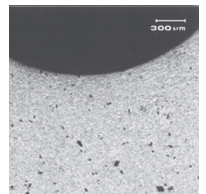
Casting without use of jet cooling technology : porosity occurs near thread



Casting when using jet cooling technology: decreased porosity



Chill zone without use of jet cooling technology



Chill zone with use of jet cooling technology for 10 seconds

In 2004, Lethiguel acted as a pioneer when the company decided to design and sell the first closed-loop jet cooling machine, equipped with its now-famous core-pin breakage control. At that time, jet cooling was a very confidential technology, however already strongly established in eastern-Asia foundries.

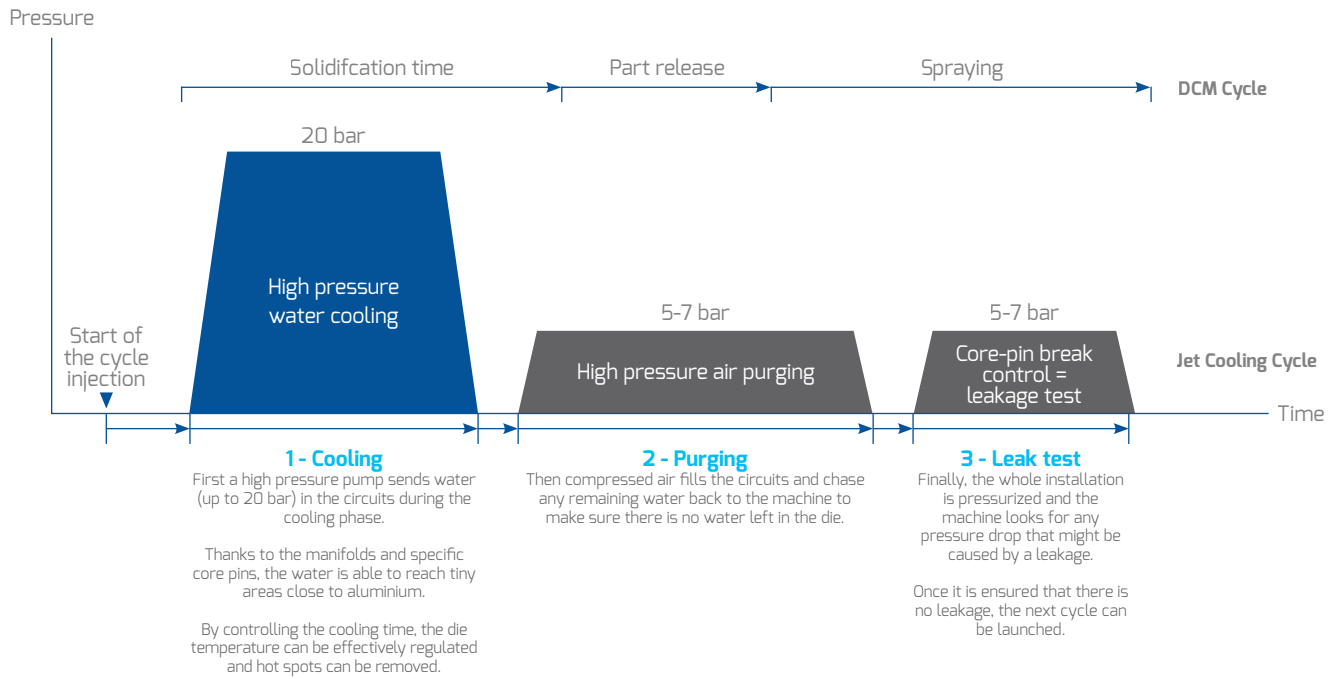
Lethiguel foresaw this high-added value system would soon have to become a standard in worldwide HPDC foundries. Why?

- Structural growth of automotive market
- Quick evolution of HPDC processes
- Shift of complex parts towards HPDC
- Increased expectations in terms of quality
- Increased pressure of competitiveness

## LETHIGUEL INVENTOR AND LEADING EDGE OF CLOSED-LOOP JET COOLING

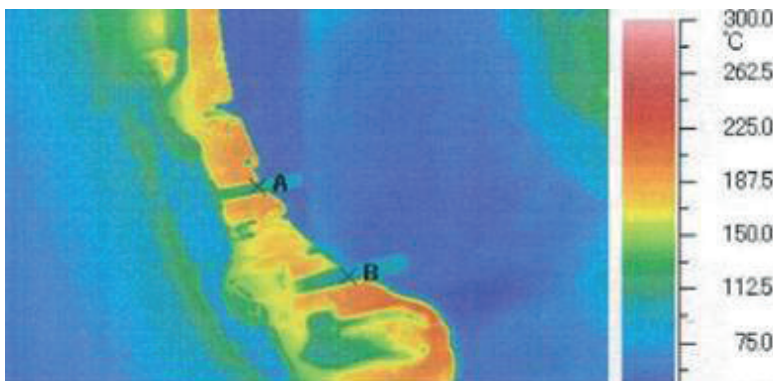
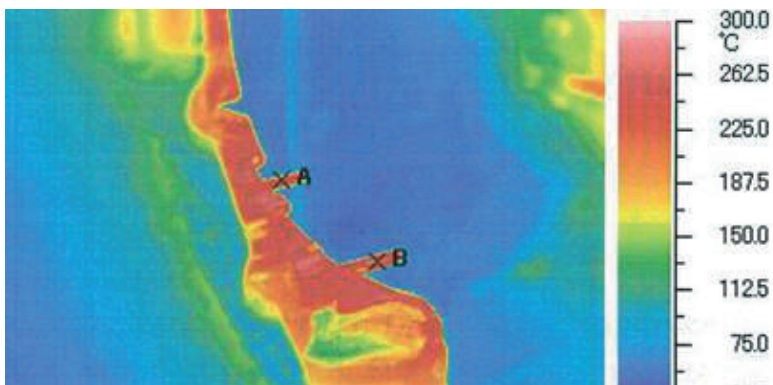
**Lethiguel's understanding of the market leads to the development of a new range of machines in 2018:**

- Cooling down more hot spots
- Ensuring better quality and meeting higher standards
- Improving in-depth expertise of die thermal process
- 100% adapted to foundries requirements



## Case study: Cooling hot spots of a crank case

The use of thermal cameras allow us to point out the efficiency of the cooling on the core pins A and B. These pictures are taken before the spray-cooling phase. The consequence is a 150°C saving on the core pins. Furthermore, all the zone around the core pins equipped with jet cooling also benefits from the cooling impact, this impact being of 70°C. In this case, the cooling times lasts 10 to 15 seconds.



### Jet Cooling technology allows

- Complex castings geometry
- Drastic cost reduction

### Benefits

The thermal fatigue of non-ferrous metal die-casting dies becomes more severe at higher operating service temperatures, reducing die life significantly. Consequently, to extend die life, die design has to address efficient cooling methods. Jet cooling can be used to solve most of thermal related issues in non-ferrous die-casting.

- + Decreased cycle time
- + Scrap reduction
- + Porosity and shrinkage reduction
- + Enhanced durability of die elements

# SpotCool












# SpotCool Classic

# SpotCool \_Classic



## Advantages of SpotCool Classic

-  4 circuits
-  30L/min
-  Average of 20 core pins
-  Screen size 7"
-  3 Measurement points

SpotCool Classic is the reference in terms of field expertise, with 10 years of customer experience and feedback. It is robust, it is reliable, and it is very competitive. This machine offers a basic and efficient level of equipment, and is ideal for a punctual or specific need not exceeding 20 core pins. It features our famous core-pin breakage control, it measures HP pump outlet pressure and water T°, and is compatible with our range of accessories.

**SpotCool Classic, the icon!**

SpotCool Classic

## Réglages



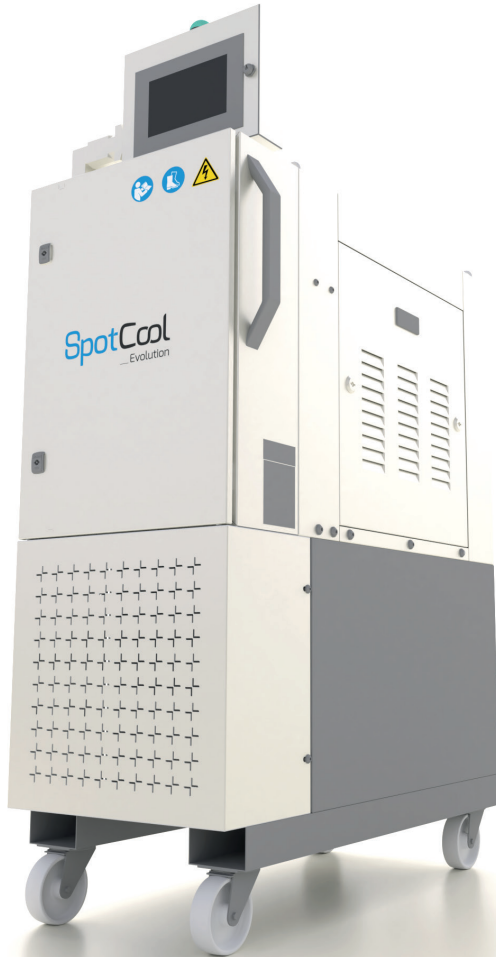

| Circuit 1 | Circuit 2 | Circuit 3 | Circuit 4 |                          |
|-----------|-----------|-----------|-----------|--------------------------|
| 456       | 456       | 456       | 456       | Retard départ cycle      |
| 456       | 456       | 456       | 456       | Circulation eau          |
| 456       | 456       | 456       | 456       | Retard soufflage         |
| 456       | 456       | 456       | 456       | Soufflage                |
| 456       | 456       | 456       | 456       | Retard test fuite        |
| 456       | 456       | 456       | 456       | Temps montée en pression |
| 456       | 456       | 456       | 456       | Durée de contrôle        |

Autres réglages









# SpotCool Evolution

## SpotCool \_ Evolution



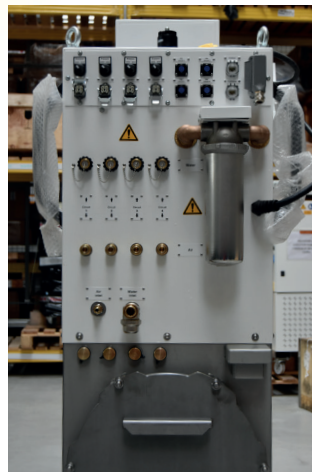
### Advantages of SpotCool Evolution

-  4 circuits
-  48L/min
-  Average of 32 core pins
-  Screen size 9"
-  15 Measurement points

SpotCool Evolution is Lethiguel's answer to market and technology's latest transformations. This machine integrates the very essence of innovation in M2M (machine-to-machine) communication, with DCM data transmission of eight measuring points, including flow-rate and pressure for each circuit, supply air and HP pump inlet pressure, water conductivity, filter inlet/outlet pressure.

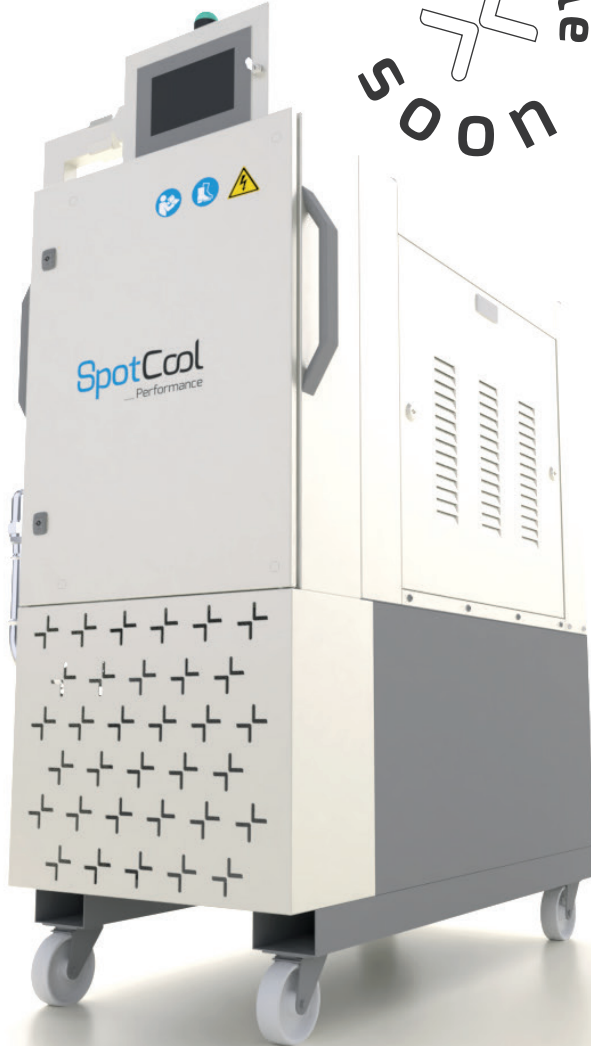
Through analysis of this information brings on machine learning, leading the SpotCool Evolution to safety optimization as well as clever understanding and management of productivity/quality balance.

**SpotCool Evolution:  
the smart!**








# SpotCool Performance

Available  
SOON



## SpotCool — Performance

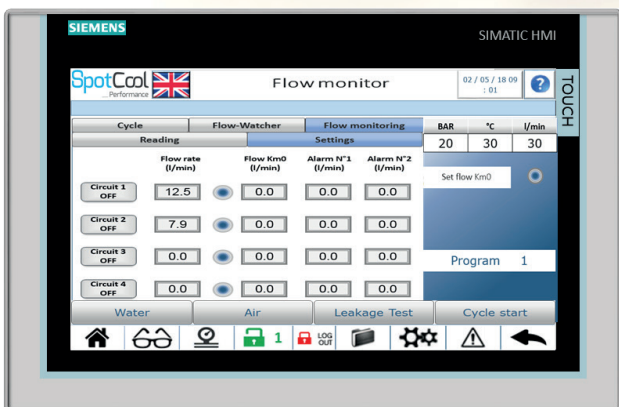
### Advantages of SpotCool Performance

-  8 circuits
-  100L/min
-  Average of 64 core pins
-  Screen size 9"
-  23 Measurement points

Never seen before! SpotCool Performance features eight circuits, allowing to potentially cool down 64 pins. This machine was specially designed for big dies, structural and/or complex parts. The DCM installation will benefit from a great flexibility in terms of core pins distribution. The number of manifolds allows an appreciable precision in the cooling circuits' partition, as well as a better distribution of cooling power.

- Drastic reduction of scrap level
  - Quality of parts enhanced
- SpotCool Performance integrates every single feature of SpotCool Evolution in terms of communications and measuring points while offering double the capacity of pin cooling.

**SpotCool Performance:  
the champion**



# Range overview

**SpotCool**  
— Classic

**SpotCool**  
— Evolution

**SpotCool**  
— Performance

|                                  |   |  |  |
|----------------------------------|---|--|--|
| Frequency                        | 50 or 60 Hz                               |  |  |
| Power                            | AC380-480V 3phase                         |  |  |
| Max Power Consumption            | 2,5 kW                                    | 3,7 kW   | 5,5 kW   |
| Cooling Circuits                 | 4 independant circuits                    | 4 independant circuits                           | 8 independant circuits                           |
| Available Flow Rate              | 30L/min                                   | 48L/min  | 100L/min   |
| Cooling control                  | high pressure intermittent cooling        |  |  |
| Cooling water Discharge Pressure | 20 bar                                    |  |  |
| Average Number of Core Pins      | 20*                                       | 32*  | 64*  |
| Water tank                       | 60L                                       | 120L   | 200L   |
| Water Filling                    | Automatic water filling                   | Automatic water filling + manual water inlet     | Automatic water filling + manual water inlet     |
| Water source conductivity        | 20µs/cm                                   |  |  |
| Integrated filters               | Pump                                      |  |  |
| Air consumption                  | Max 500NL/min                             |  |  |
| Supplied Air Pressure            | 5-7 bar                                   |  |  |
| Air Purge Pressure               | 5-7 bar                                   |  |  |
| Connections location             | All connections to the side               | All connections at the rear                      | All connections at the rear                      |
| Water supply connection Ø        | 3/4" external                             |  |  |
| Water discharge connection Ø     | M22 x 1,5 x 1/4" IG & M22 x 1,5 x 1/2" AG |  |  |
| Water cooling connection Ø       | 3/8" external                             |  |  |
| Return                           | NW 13 x 3/4" butterfly bolt               |  |  |
| Air supply connection Ø          | 1/2" internal                             |  |  |
| Air discharge connection Ø       | Quick connector NW 7,2 male 3/8" IG       |  |  |
| Start signal                     | Contact point signal                      |  |  |
| Operation method                 | Touch screen                              |  |  |
| Control pannel                   | Mitsubishi*                               |  |  |
| Screen dimensions                | 7" screen                                 | 9" screen  | 9" screen  |
| Software                         | Classic software                          | New software                                     | New software                                     |
| Measurements points              | HP Pump outlet pressure                   |  |  |
|                                  | HP Pump inlet pressure                    |  |  |
|                                  | Water temperature                         |  |  |
|                                  |   | Flow-rate for each circuit                       | Flow-rate for each circuit                       |
|                                  |   | Pressure for each circuit                        | Pressure for each circuit                        |
|                                  |   | Supply air pressure                              | Supply air pressure                              |
|                                  | Filter inlet and outlet pressure          | Filter inlet and outlet pressure                 |  |
|                                  | Water conductivity                        | Water conductivity                               |  |
| Design                           | Classic Design                            | New Design                                       | New Design                                       |
| Handling                         |   | Easy handling (strong wheels, handles, eyebolts) | Easy handling (strong wheels, handles, eyebolts) |
| Weight                           | 170kg                                     | 280kg  | 320kg  |
| Dimensions                       | 1000 depth *650 width *1300 height mm     | 1230 depth * 640 width *1730 height mm           | 1300 depth * 740 width *1850 height mm           |
| Features                         | Inverter                                  |  |  |
|                                  | Lamp                                      |  |  |
|                                  | Circuit selection on screen               |  |  |
|                                  |   | Opening for washing the tank                     | Opening for washing the tank                     |
|                                  |   | Detection of filter fouling                      | Detection of filter fouling                      |
|                                  |   | Electrical socket (230V)                         | Electrical socket (230V)                         |
|                                  | Auto/Manual switch                        | Auto/Manual switch                               |  |

# FlowMaster System

## FlowMaster system will help you move from preventive to predictive maintenance



The good performance of a Jet Cooling system greatly depends on the flow rate of water, which is injected in the small diameter cooling channels. Managing and ensuring the right amount of water flow, for every cooling position, allows to continuously maintain an optimal cooling effect, and therefore enhance the level of productivity and castings' quality. Thanks to its long experience in Jet Cooling technology, Lethiguel has specifically developed a FlowMaster system to enable the Jet Cooling users to precisely monitor the flow condition, in real-time, and for every cooling position. In this way, preventive maintenance becomes easier and highly predictive, thereby saving valuable resources for the die-casters, and allowing high productivity.

### Operation and utility



#### Goal

Detect the fooling/clogging of the pipes



#### Why

Anticipate/plan the maintenance



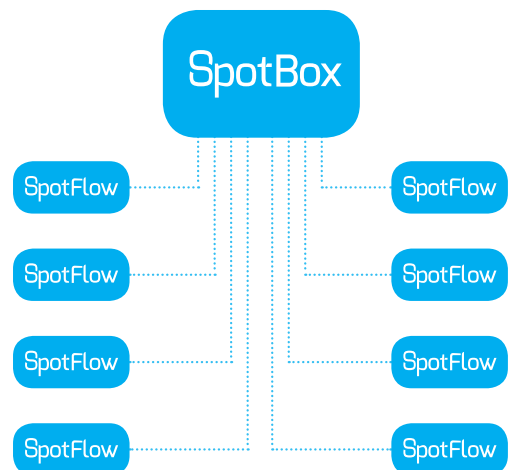
#### How

By measuring the flow drops

## Principal scheme of FlowMaster solution

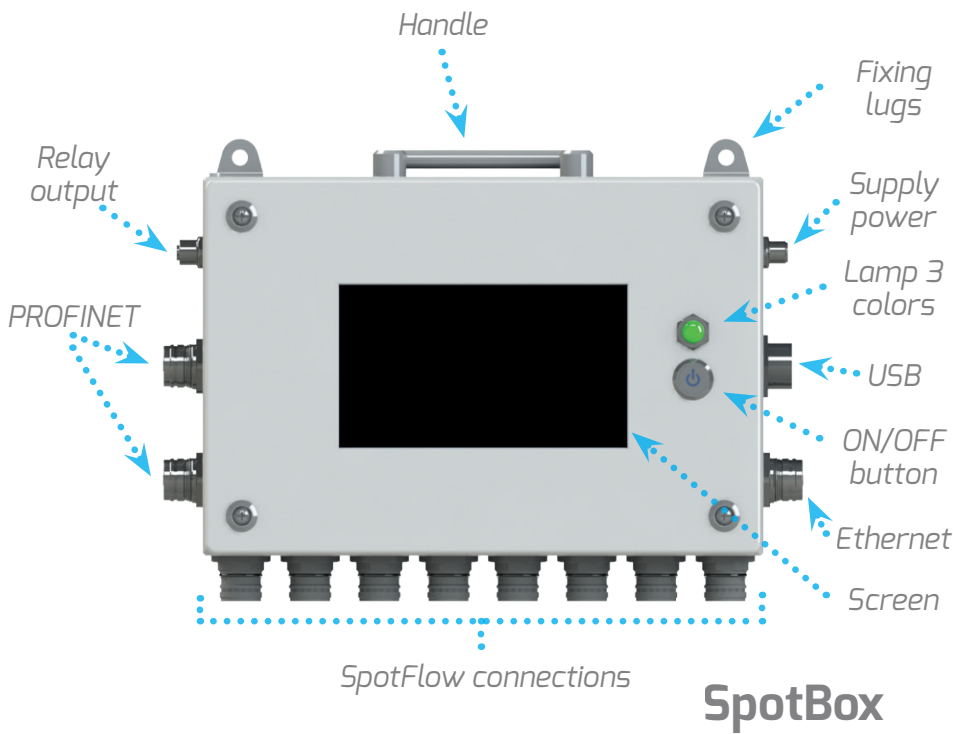
### SpotBox monitoring system

Remote control screen displaying flow measuring in real-time  
Connectable to 8 Spot Flows, which allows water flow monitoring for a maximum of 64 positions.



### SpotFlow measuring system

8 flow sensing devices embedded in a foundry-proof casing, allowing measurement of water flows ranging from 0,5L to 10L per minute, in 8 independent Jet Cooling circuits.



### SpotBox specifications:

Specific program allowing real-time water flow monitoring, with visual graphics and precise volume measurement

Possible to set up a "0 Km" nominal value, for every independent position, in order to define the optimal flow setpoint

Possible to program 2 different sets of alarms, for every position (either in Liter/minute, or as a % of a nominal value)

Possible to save up to 99 different flow patterns, for the 64 independent positions (enabling to save preset values corresponding to different dies or parts).

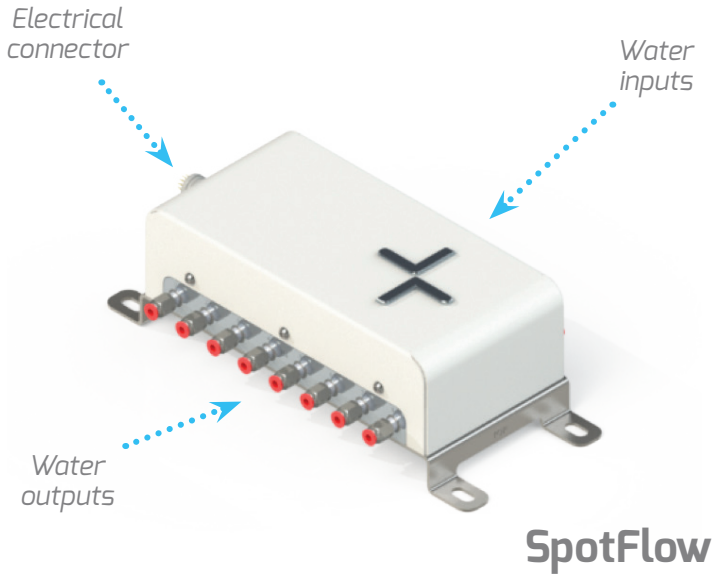
\*Note: the profinet interface is currently available on a Siemens configuration.

The FlowMaster system can be used as a stand-alone product.

SpotCool Evolution and SpotCool Performance can be connected to the FlowMaster via a Profinet\* interphase.

**FlowMaster : the future**

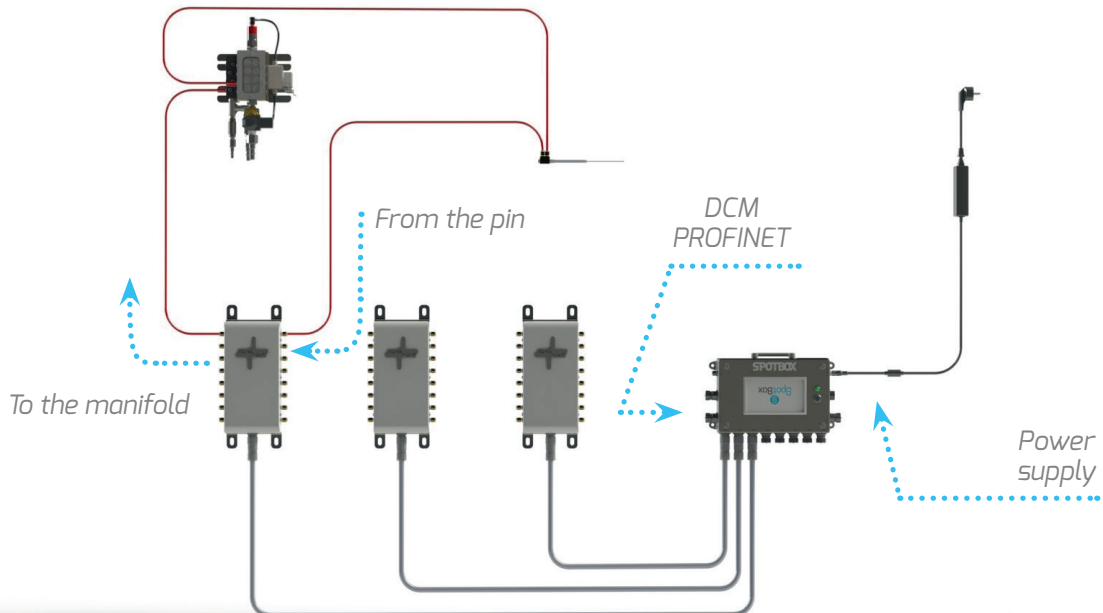
# FlowMaster System



## Technical features

| SpotFlow Features      |       |            |
|------------------------|-------|------------|
| Main                   |       |            |
| Number of measurements | /     | Up to 64   |
| Fluid                  | /     | Water      |
| Flow-rate              | l/min | 0,5-10     |
| Maximum pressure       | bar   | 12         |
| Fluid temperature      | °C    | -40 to 125 |
| Sound pressure level   | dB(A) | <70        |
| Supply voltage         | VDC   | 24         |

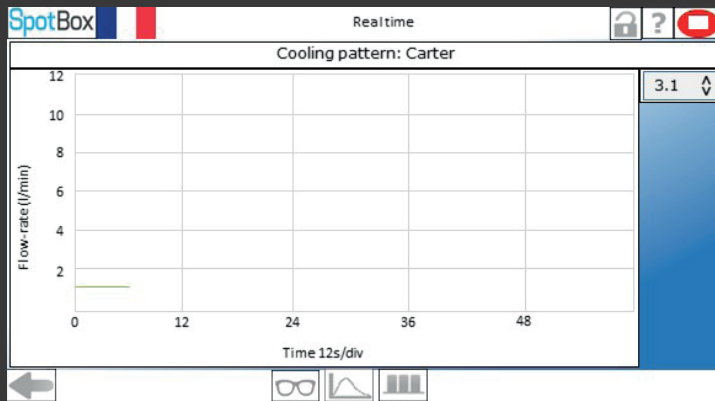
| Component | Function  |
|-----------|---|
| SpotFlow  | Measure the flow (up to 8 sensors) and send the signal to the SpotBox   |
| SpotBox   | Monitoring of the signal from the SpotFlow<br>Signal analysis and fooling correlation<br>Alarms<br>Communication with other devices (PROFINET) (Optional) |





# Screens

## Real-time Monitoring



- Instant signal is shown, position per position
- Time scale can be adjusted

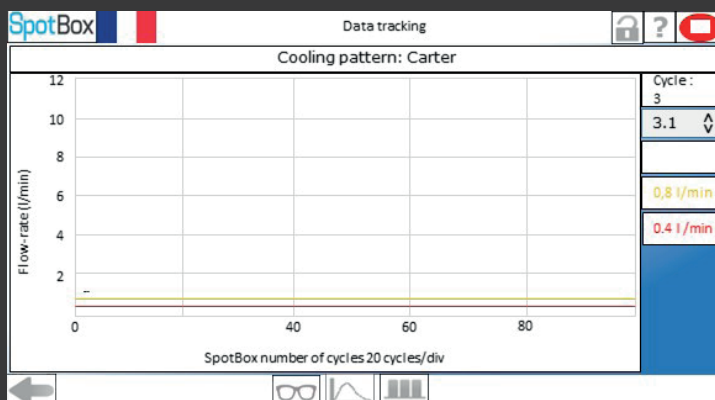
## Status Monitoring

SpotBox States (l/min)

|   | SPF 1     | SPF 2     | SPF 3     | SPF 4 | SPF 5 | SPF 6 | SPF 7 | SPF 8 |
|---|-----------|-----------|-----------|-------|-------|-------|-------|-------|
| 1 | 2,3   2,3 | 1,7   1,7 | 1,3   1,3 |       |       |       |       |       |
| 2 | 0,5   2,3 | 1,7   1,7 | 1,4   1,4 |       |       |       |       |       |
| 3 |           | 1,7   1,7 | 3,1   3,1 |       |       |       |       |       |
| 4 | 2,1   2,3 | 1,7   1,7 | 1,4   1,4 |       |       |       |       |       |
| 5 | 2,3   2,3 | 1,7   1,7 | 2,6   2,6 |       |       |       |       |       |
| 6 |           | 1,2   1,7 | 2,2   2,2 |       |       |       |       |       |
| 7 |           | 1,7   1,7 | 1,2   1,2 |       |       |       |       |       |
| 8 | 2,3   2,3 | 1,7   1,7 | 2,3   2,3 |       |       |       |       |       |

- The left value is the nominal flow-rate from the previous cycle
- The right value is the initial flow-rate (Km0)
- 2 levels of alarm corresponding to a % of optimal flow available. The values get orange when the alarm 1 is reached ; red for alarm 2

## Data follow-up Monitoring



- For each position, one Flow value is reported on the diagram
- The 2 alarm threshold are displayed

# Corepins

As jet cooling's effectiveness relies on its ability to reach the die's hot spots, core pins must be properly designed and manufactured. Lethiguel provides state of the art core pins, with a large panel of surface treatment that will ensure the best lifespan possible.



|                      | Surface Treatment   |
|----------------------|---|
| Gas nitrided (Gray)  | - Hardened surface of steel<br>- General duty<br>- Low cost   |
| «Cascoat» TiN (gold) | - PCVD process, oxidation temperature 500°C<br>- Protection against soldering and erosion<br>- Mid Cost               |
| TD-VC (Gray)         | - Thermal diffusion process<br>- Vanadium carbide coating<br>- Mid Cost   |
| PCVD-TiAlN (Black)   | - Oxidation temperature 700°C<br>- Best protection against soldering and erosion<br>- Higher cost                     |
| P20 (Violet)         | - Better anti-oxidation property, temperature over 700°C<br>- Multi layer film and good adhesiveness<br>- Higher Cost |

| Designation  | Treatment method     | Chemistry                                      | Treatment temperature (°C) | Heat resistance temperature (°C) | Coating hardness (HV) | Coating thickness (µm) | Wear resistance | Heat resistance | Seize resistance | Erosion resistance | Corrosion resistance | Adhesion | Mold releasability | Fatigue resistance | Oil film retention capability | Deformation |
|--------------|----------------------|--|----------------------------|----------------------------------|-----------------------|------------------------|-----------------|-----------------|------------------|--------------------|----------------------|----------|--------------------|--------------------|-------------------------------|-------------|
| Cascoat      | PCVD                 | TiN  | 550                        | 600                              | 2000~2400             | 2~4                    | ✓               |                 | ✓                | ✓                  |                      | ✓        |                    |                    |                               |             |
| TiAlN        | PCVD                 | TiAlN  | 550                        | 800                              | 2300~3000             | 2~4                    | ✓               | ✓               | ✓                | ✓                  |                      | ✓        |                    |                    |                               |             |
| TiAlSiCNO    | PCVD                 | TiAlSiCNO                                      | 550                        | 900                              | 2300~5000             | 5                      | ✓               | ✓               | ✓                | ✓                  |                      | ✓        | ✓                  |                    |                               |             |
| CrN          | PVD                  | CrN  | 500                        | 700                              | 1800~2200             | 2~3                    | ✓               | ✓               |                  |                    | ✓                    |          |                    |                    |                               |             |
| TiN          | PVD                  | TiN  | 550                        | 550                              | 1800~2200             | 2~4                    | ✓               |                 |                  |                    |                      |          |                    |                    |                               |             |
| TiAlN        | PVD                  | TiAlN  | 550                        | 800                              | 2800~3300             | 2~4                    | ✓               | ✓               |                  |                    |                      |          |                    |                    |                               |             |
| LUMENA       | PVD                  | TiAlN  | 500                        | 900                              | 3400                  | 10                     | ✓               | ✓               | ✓                | ✓                  |                      |          |                    |                    |                               |             |
| ALCRONA      | PVD                  | AlCrN  | 500                        | 1100                             | 3200                  | 6                      | ✓               | ✓               |                  |                    |                      |          |                    |                    |                               |             |
| SX-H         | PVD                  | TiSiN  | 500                        | 1300                             | 3600                  | 3,5~4,5                | ✓               | ✓               |                  |                    |                      |          |                    |                    |                               |             |
| TD           | Carbide coating      | VC   | 1000                       | 500                              | 3200                  | 10                     | ✓               |                 | ✓                |                    | ✓                    | ✓        |                    |                    |                               | ✓           |
| Gas nitrided | Gas nitrocarburizing | Nitriding compound                             | 550                        | 500                              | 800~1200              | -                      |                 |                 |                  |                    |                      |          |                    | ✓                  |                               |             |
| Sursulf      | Sulphoni-triding     | Sulphoni-triding compound + Nitriding compound | 565                        | 500                              | 800~1200              | -                      | ✓               |                 | ✓                |                    |                      |          |                    | ✓                  | ✓                             |             |

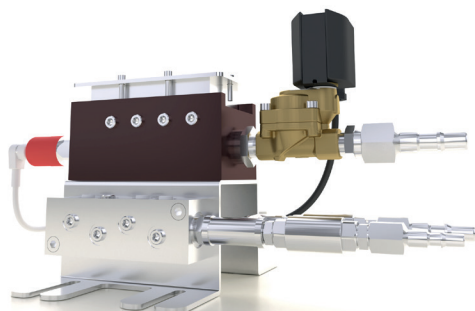
## Alpha pin

Alpha pin (or long-life pin) can be used as replacement for pins which are breakable due to casting shrinkage. It is effective for dispersing concentrated stress on the stepped part of the pin. Tests have shown an average double life span compared to standard core pin, which means time lost for pin replacement is reduced, and trouble occurring when a pin breaks in the die is also minimized.



**AHRETTY TECHNO SERVICE CORPORATION**

# Manifolds

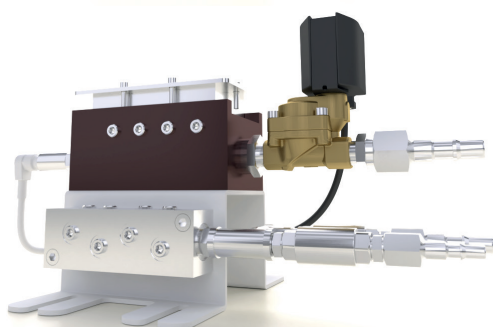


## Manifold\_pressure switch

Ref: RP8-SC-1.1-R0 - [1 piece](#)  
8 entries, Core Pin Breakage, Visual Control

Ref: RP8-SC-1.0-P41 - [1 piece](#)  
8 entries, Core Pin Breakage, No Visual Control, with Ø4 couplers

Ref: RP8-SC-1.1-P61S - [1 piece](#)  
8 entries, Core Pin Breakage, Visual Control, with Ø6 couplers

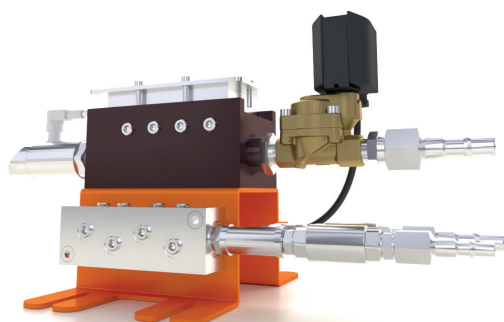


## Manifold\_pressure sensor

Ref: RP8-SC-2.1-R0 - [1 piece](#)  
8 entries, Core Pin Breakage, Visual Control

Ref: RP8-SC-2.0-P41 - [1 piece](#)  
8 entries, Core Pin Breakage, No Visual Control, with Ø4 couplers

Ref: RP8-SC-2.1-P61S - [1 piece](#)  
8 entries, Core Pin Breakage, Visual Control, with Ø6 couplers



## Manifold\_pressure switch with visual display

Ref: RP8-SC-3.1-R0 - [1 piece](#)  
8 entries, Core Pin Breakage, Visual Control

Ref: RP8-SC-3.0-P41 - [1 piece](#)  
8 entries, Core Pin Breakage, No Visual Control, with Ø4 couplers

Ref: RP8-SC-3.1-P61S - [1 piece](#)  
8 entries, Core Pin Breakage, Visual Control, with Ø6 couplers

## Pressure monitor

Ref: RP-P3-M12 - [1 piece](#)  
Pressure Switch, 3 bar, G1/4" M12 connector

Ref: RP-2130150 - [1 piece](#)  
LED cable for Pressure Switch M12

Ref: RP-CAPT-PR - [1 piece](#)  
Pressure sensor, 0-100 bars, G1/4" M12 connector

Ref: RP-CAPT-PR2 - [1 piece](#)  
Pressure sensor with display, 1-10 bars, G1/4" M12 connector

Ref: RP-CAPT-CABLE - [1 piece](#)  
Cable with femelle connector for Pressure Sensor M12

## Couplers

Ref: AH-CO-P6-01MOF - [10 pieces](#)  
Tube coupler, steel ring, for Ø6 fluorine tube

Ref: AH-CO-P4-01MOF - [10 pieces](#)  
Tube coupler, steel ring, for Ø4 fluorine tube

Ref: AH-CO-P6-01MLOF - [10 pieces](#)  
Tube coupler, steel ring, L-shape, for Ø6 fluorine

Ref: AH-CO-P4-01MLOF - [10 pieces](#)  
Tube coupler, steel ring, L-shape, for Ø4 fluorine

## Solenoid Valve

Ref: RP-EV\_2 - [1 piece](#)  
Solenoid valve, piston, for manifold

# Connection pack SpotCool and connection pack for manifolds



## Features:

Quick connectors

Ø6 – Ø8 – Ø11

The connection pack is part of the SpotCool manifold solution. It is composed with quick connectors used for water, air and return.

**Ref. SC-RP-CPM-WARE**

# Water Quality

## SpotCool

— Water Softener



## Features:

CE certified

From 1500l up to 15000l filtering capacity

Output water conductivity range 0 - 20µS/cm

Easy change of the resin

The SpotCool Water Softener is a Water treatment cartridge able to deliver a pure water stream. It is a perfect fit with SpotCool installation as it delivers low conductivity water optimizing efficiency and life time of jet cooling equipment. Thanks to a wide range, SpotCool Water Softener can adapt to any type of jet cooling or regular cooling device.

**Make sure the SpotCool installation is always using the best water quality!**

# Water Quality

## SpotCool \_\_Mini Water Check



### Features:

- CE certified
- Mounted with battery AAA
- Suitable with all SpotCool conductivity sensors
- Mounted on SpotCool Water Softener
- Easy check with 3 level LEDs

The SpotCool Mini Water Check is a fixed measurement device mounted on the Water Softener. Thanks to a regular LED flash, it shows in the easiest way possible the water quality delivered by the SpotCool Water Softener. No power supply needed as AAA batteries are integrated for a more flexible solution.

**Make sure your SpotCool installation is filled up with the best water quality without a single operation, just have a look!**

## SpotCool \_\_Water Check



### Features:

- CE certified
- Mounted with battery AAA
- Suitable with all SpotCool conductivity sensors

The SpotCool Water Check is a mobile measurement box able to connect to former and newest water conductivity sensor. Thanks to 3 AAA batteries it allows a quick check on all SpotCool Water Softener in the foundry.

**Make sure your SpotCool machine comes with the best water quality in a single device!**

# Jet Cooler



## JC-KRM

Ref: JCKRM-06-L760-E250-J510-M1.8 - 1 piece  
Jet Cooler with revolving head



## JC-HSR

Ref: JCHSR-06-L760-E250-J510-M1.8 - 1 piece  
Jet Cooler with isolating revolving head  
Allows replacement of needle without removing jet cooler from die!

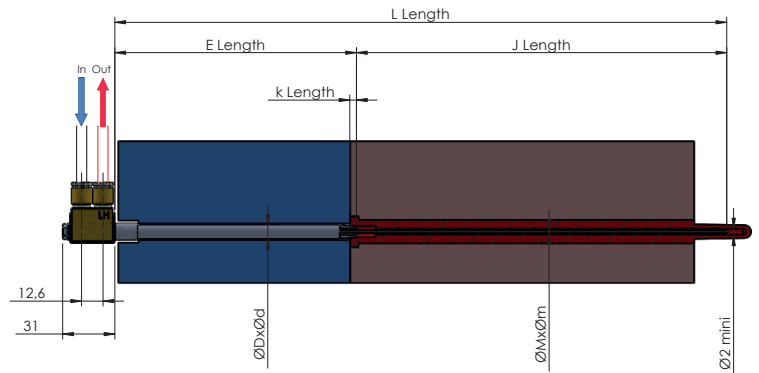
## Couplers

Ref: AH-CO-P4-01MOF - 1 piece  
Coupler for Ø4 fluorine tube

Ref: AH-CO-P6-01MS-OF - 1 piece  
Coupler for Ø6 fluorine tube

## O-ring

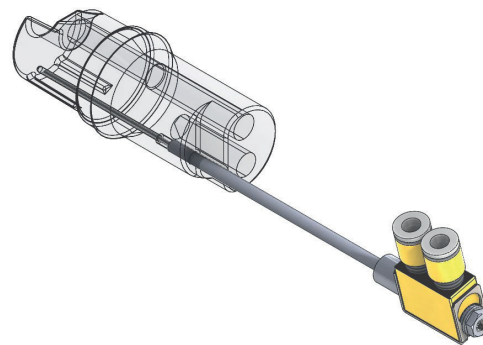
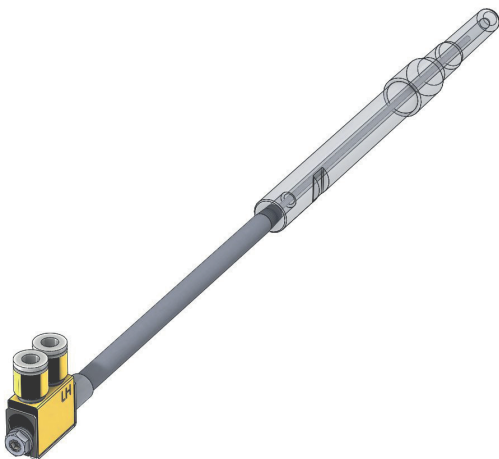
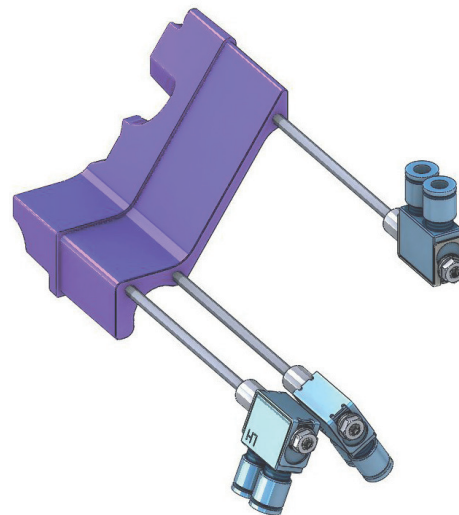
Ref: AH-CO-P7 - 100 pieces  
O-ring for Jet Cooler



## Isolated revolving jet cooler

New JC-HST and JC-HSR allow to pull out the tube to flexible direction, due to respective rotating heads. These JC can be attached to a die with connecting tubes, and because the base of the head comes in a semicircular shape, installation pitch is narrowed. Both types are available in Ø4, 6, 8 and 10mm, and maximum length of 1000mm.





Being the first company to ever have imported Jet Cooling technology in the European market, Lethiguel has built a strong know-how regarding thermal processes in non-ferrous die-casting, and has been offering turnkey solutions for over forty years now.

Our engineering office works side by side with our customers to develop the right solution for the right application. As historical inventor of closed circuit jet cooling, we use our great understanding of the cooling process to improve and optimize any casting application. Being a close partner of Ahresty Techno Service Corporation, our manufacturing team has been trained in Japan, to ensure that we meet with the quality requirement any Jet Cooling application requires.

**Our team is yours,  
challenge us!**

BO  
W





# BECAUSE WE CARE

## Corporate

We value the human being, as we believe it is at heart of any company.

We value relationships, as we believe new concepts emerge from people sharing their views

We value proximity, as we believe you can still be close even from afar.

Because we want to follow our customers' growth and support them through their challenges, we recently established our new operational Headquarters in the area of Lyon, France. This move has enabled us to double the production capacity, allowing us to pursue our own growth with passion and serenity.

Our corporate philosophy and core values can be summarized in one word: care.

Commitment, Adaptation, Respect and Efficiency: these four principles apply to our way of working within our company, and to our way of interacting with our business environment.

# Introduction



## Commitment

# C

When we began our research for the place where we would settle down, a very important promise was made to our teams: Lethiguel committed to finding the new facility within a distance of 15km maximum from the current HQ in Lozanne, France.

We did not find the perfect building right away, but a piece of land and a facility builder specializing in industrial premises.

Since June the first of 2019, our headquarters are located in Lentilly, precisely 6.3km away from our old offices!

This building is not like any other building: it has been designed with the perspective of promoting the cultures we work with. Wherever you come from, you will feel home at some point, and appreciate the multiple winks to cultural diversity that have been spread around. As an example, our main stairs are a tribute to the Selaron Steps of Rio de Janeiro, Brazil!

# A



Adaptation

# Introduction



## Respect

Mutual respect is essential in all meanings, as it helps to feel safe and express views and opinions. Respect of rules and equipment is also our guideline, but not only. With this new building, we had the opportunity to propose down-to-earth solutions to reduce our environmental footprint. Instead of having a standard chemical treatment of rainwater as sanitization option, we invested in a sustainable water retention pond with natural filtration. This is one of our contributions, we want to have many more in the future!

## Efficiency

# E



Efficiency comes out in many forms. As for Lethiguel's HQ, we are in the process of optimizing our operating efficiency. First, we have carried out an internal audit of our workflows, then we have brainstormed with every single people in our teams to pass on opinions and criticisms about the workplace. This project resulted in a very well thought through interior design and workshop layouts, that combine the teams expectations' and the supply chain physical flows to an unprecedented degree!

# Numbers that matter



**125 000**

The average number of kilometers traveled per month by the sales team



**1**

The number of round-trip from the Earth to the Moon flown by an export Sales Engineer in 18 months



**80**

The number of training hours that are necessary to acquire adequate skills for jet cooler manufacturing



**21**

The number of flags ready to be hoisted to welcome our customers and suppliers



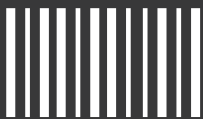
**142**

The average number of time zones crossed every year by a Sales Engineer



**48**

The number in tons of goods handled by the Logistics Service in a year



**825**

The number in meters of ceramic sheaths in a year in order to manufacture our very own Immersion Heaters



**14**

The number of nationalities represented in Iethiguel's group



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