

# i-TEMP

Innovative, Intelligent, Industrial



*Next Generation Temperature Control Units  
Water and Oil*

Heating capacity 9kW - 72kW

Cooling capacity 4kW - 600kW



**ics cool energy**



# Introduction

## ICS Cool Energy: Specialising in Temperature Control to Keep your Processes Running

ICS Cool Energy is an established temperature control solutions provider and has been working with the industrial and HVAC sectors for the past 25 years. Providing manufacturing, sales, hire and service, ICS Cool Energy can assist in maintaining the overall production of a business's day-to-day operations through its extensive knowledge and experience in the temperature control industry.

TCUs (temperature control units) make up a large part of ICS Cool Energy's product portfolio offering powerful temperature regulation, direct cooling and modular design thanks to their reliable range of water and oil heaters. Offering temperatures of up to **350°C** with capacities ranging from **9kW** to **72kW** and complete tailor-made solutions, their collection of TCUs cater for a wide variety of process applications.

All ICS Cool Energy's temperature control units are manufactured to **ISO 9001** and **ISO 14001** accreditations providing customers with a high level of performance and quality. Furthermore, ICS Cool Energy is one of the few companies in the UK to provide a fully fitted test rig which offers customers complete reassurance that their product meets all performance ratings.

Based in Southampton, UK ICS Cool Energy's facility provides standard units which are in stock, ready and available for delivery offering additional servicing, local support and spare parts.



# Contents

|  |              |
|--|--------------|
| Introduction   | page 2       |
| Product Overview   | page 4       |
| Experience Counts  | page 5       |
| Taking Control   | page 6       |
| Control Features   | page 7       |
| Temperature control units with direct and indirect cooling (ci & cd range)             | page 8 - 9   |
| Powerful temperature control units in modular designs (wi range)                       | page 10 - 11 |
| Modular temperature control units with direct cooling (wd range)                       | page 12 - 13 |
| Reliable water temperature control units for high temperatures (wh range)              | page 14 - 15 |
| Heat Transfer fluid - temperature control units for highest demands (to, tt, th range) | page 16 - 17 |
| Designed to meet your needs  | page 18 - 19 |



# PRODUCT OVERVIEW



## ICS Cool Energy temperature control units for water, using indirect cooling

Values in () optional

| Type              | Medium | Temperature range (°C) | Cooling  | Heating capacity (kW) | Max. cooling capacity (kW) | Pump capacity max. (l/min / bar) |
|-------------------|--------|------------------------|----------|-----------------------|----------------------------|----------------------------------|
| i-Temp ci 90e     | water  | 95                     | indirect | 9                     | 23 - 42                    | 60 / 3.8 (6.0)                   |
| i-Temp ci 90t 9   | water  | 95                     | indirect | 9                     | 23 - 42                    | 60 / 3.8 (6.0)                   |
| i-Temp ci 90t 18  | water  | 95                     | indirect | 18                    | 50                         | 75 / 5.5                         |
| i-Temp ci 90t 27  | water  | 95                     | indirect | 27                    | 250                        | 150 / 5.0                        |
| i-Temp ci 90t 36  | water  | 95                     | indirect | 36                    | 250                        | 150 / 5.0                        |
| i-Temp ci 140e    | water  | 140                    | indirect | 9                     | 40                         | 60 / 5.5                         |
| i-Temp ci 140t 9  | water  | 140                    | indirect | 9                     | 40                         | 60 / 5.5                         |
| i-Temp ci 140t 18 | water  | 140                    | indirect | 12 / 18               | 40                         | 60 / 5.5                         |
| i-Temp ci 160e    | water  | 160                    | indirect | 9                     | 40                         | 60 / 5.5                         |
| i-Temp ci 160t    | water  | 160                    | indirect | 9                     | 40                         | 60 / 5.5                         |
| i-Temp wi 100     | water  | 140/150                | indirect | 9 - 54                | 100                        | 70 / 4.7                         |
| i-Temp wi 150     | water  | 95/140/150/160         | indirect | 9 - 72                | 200                        | 200 / 5.1                        |
| i-Temp wi 250     | water  | 95/140/150/160         | indirect | 9 - 72                | 270                        | 230 / 5.5                        |
| i-Temp wi 400     | water  | 95/140/150             | indirect | 9 - 72                | 460                        | 420 / 3.6                        |
| i-Temp wi 500     | water  | 95/140/150             | indirect | 9 - 72                | 600                        | 500 / 4.2                        |
| i-Temp wh 60      | water  | 200                    | indirect | 9 - 27                | 32 - 64                    | 60 / 5.0                         |
| i-Temp wh 90      | water  | 200                    | indirect | 9 - 36                | 40 - 80                    | 80 / 5.0                         |
| i-Temp wh 120     | water  | 200                    | indirect | 18 - 54               | 48 - 96                    | 120 / 5.0                        |

## ICS Cool Energy temperature control units for water, with direct cooling

| Type           | Medium | Temperature range (°C) | Cooling | Heating capacity (kW) | Max. cooling capacity (kW) | Pump capacity max. (l/min / bar) |
|----------------|--------|------------------------|---------|-----------------------|----------------------------|----------------------------------|
| i-Temp cd 90e  | water  | 95                     | direct  | 6 - 9                 | 52                         | 60 / 3.8 (6.0)                   |
| i-Temp cd 90t  | water  | 95                     | direct  | 6 - 18                | 140                        | 70 / 4.7                         |
| i-Temp cd 120t | water  | 120                    | direct  | 6 - 18                | 195                        | 70 / 4.7                         |
| i-Temp cd 140e | water  | 140                    | direct  | 6                     | 32                         | 30 / 5.4                         |
| i-Temp wd 60   | water  | 140                    | direct  | 6                     | 47                         | 45 / 6.0                         |
| i-Temp wd 100  | water  | 140/150                | direct  | 9 - 54                | 100                        | 70 / 4.7                         |
| i-Temp wd 150  | water  | 140/150                | direct  | 9 - 72                | 200                        | 200 / 5.1                        |
| i-Temp wd 250  | water  | 140/150                | direct  | 9 - 72                | 270                        | 230 / 5.5                        |
| i-Temp wd 400  | water  | 140/150                | direct  | 9 - 72                | 460                        | 420 / 4.2                        |
| i-Temp wd 500  | water  | 140/150                | direct  | 9 - 72                | 600                        | 500 / 4.2                        |

## ICS Cool Energy temperature control units for heat transfer oil

Values in () optional

| Type          | Medium | Temperature range (°C) | Cooling  | Heating capacity (kW) | Max. cooling capacity (kW) | Pump capacity max. (l/min / bar) |
|---------------|--------|------------------------|----------|-----------------------|----------------------------|----------------------------------|
| i-Temp to 50  | oil    | 180                    | indirect | 8                     | 40                         | 90 / 6.2                         |
| i-Temp tt 50  | oil    | 300                    | indirect | 4 - 8                 | 15 - 30                    | 60 / 6.0                         |
| i-Temp tt 60  | oil    | 300                    | indirect | 9 - 18                | 82 - 200                   | 60 / 6.0                         |
| i-Temp tt 100 | oil    | 300                    | indirect | 9 - 36                | 82 - 275                   | 100 / 8.0                        |
| i-Temp tt 140 | oil    | 300                    | indirect | 12 - 54               | 82 - 450                   | 160 (200) / 7.0 (5.6)            |
| i-Temp th 60  | oil    | 350                    | indirect | 3 - 6                 | 82 - 110                   | 60 / 6.0                         |
| i-Temp th 100 | oil    | 350                    | indirect | 6 - 12                | 82 - 200                   | 100 / 8.0                        |
| i-Temp th 140 | oil    | 350                    | indirect | 9 - 27                | 82 - 200                   | 160 / 7.0                        |

Subject to technical modification without notice!



## The Food Industry

### *Requirement:*

- To provide precise temperature control equipment to a large project-led engineering company specialising in the manufacture of mixers, pressure vessels, jacketed vessels, blenders, dispensers and clean room equipment.

### *Solution:*

- A custom-built 5kW temperature control units to provide accurate temperature control working through a closed circuit that maintains the temperature of the jacketed vessel's contents within a very tight tolerance.



## The Rubber Industry

### *Requirement:*

- To provide a packaged, multi-zone temperature control solution for the manufacturer of tyres overseas.

### *Solution:*

- Twelve compact, bespoke built temperature control units were built with multi-zone capabilities offering 9kW to 96kW capacities.
- They provided a more cost effective and practical solution whilst interfacing with the customer's main control panel using Profibus.
- Featuring non-ferrous internal parts and self-cleaning solenoid valves, maintenance and cleaning needs were reduced.



## C8 Controllers

ICS Cool Energy units are available with C8 basic and C8 advanced controllers to manage process temperatures and ensure maximum productivity with no downtime.

The C8 basic controller is featured on our range of 'e' units; all other units are available with the C8 advanced controller.



## C8 Advanced Controllers

The C8 advanced controller has been developed for our temperature control units to provide innovative technological temperature analysis.

Design development has been re-evaluated in order to provide the users with a more advanced system which is easy to navigate and can analyse processes in great detail; ensuring every aspect of the temperature and control is working to maximum productivity.



# CONTROL FEATURES

i-TEMP

● = Standard / ○ = Option / – = not available/ Values in () optional

| FEATURES  | C8 BASIC       | C8 ADVANCED    |
|---|----------------|----------------|
| Full colour touch screen display  | –              | ●              |
| Selectable languages  | –              | ●              |
| Multiple units can be operated only via one display   | –              | ●              |
| Logbook for alarms  | –              | ●              |
| Ramp programme  | –              | ●              |
| Remote probe (FE-CuNi or PT100)   | ○              | ○              |
| Flow monitoring   | –              | ● <sup>1</sup> |
| Trending  | –              | ●              |
| 7 Day timer   | ○              | ●              |
| Return temperature indication   | –              | ● <sup>1</sup> |
| Integrated operating and service information  | –              | ●              |
| Service due alarm   | –              | ●              |
| Security codes  | ●              | ●              |
| Temperature limit values  | ●              | ●              |
| Ethernet interface  | –              | ●              |
| Optional interfaces analog 0-10 V, 0/4-20mA, serial RS232, RS 422, RS 485, TTY, Can Bus, Profibus, Profinet, Varan Bus and Euromap 66 | ● <sup>2</sup> | ● <sup>2</sup> |

1) standard on t models, optional on wi, wd, wh, to, tt & th

2) Various interfaces for injection moulding machines available such as Arburg, Engel, and Krauss Maffei.

# TEMPERATURE CONTROLLERS WITH DIRECT AND INDIRECT COOLING

i-TEMP

## i-Temp ci and cd models

ICS Cool Energy temperature control units, models i-Temp ci and cd are heating and cooling units built for performance. Using the latest technology they are built with maximum energy savings in mind.

i-Temp ci models are water units with indirect cooling, for usage with open tank up to 95°C and as a closed system up to 160°C.

i-Temp cd models are designed as water units with direct cooling, for usage up to 140°C.

There are two variants, one as a low cost entry model (version e) and one as an advanced unit with touchscreen, (version t).

Unit features include:

- Self optimising C8 advanced controller with high control accuracy (version t)
- Touch screen for log in, control and monitoring of process parameters (version t)
- Measuring, indication and monitoring of flow rate (version t)
- Return temperature indication (version t)



## Temperature controllers water indirect 95°C, 120°C, 140°C and 160°C

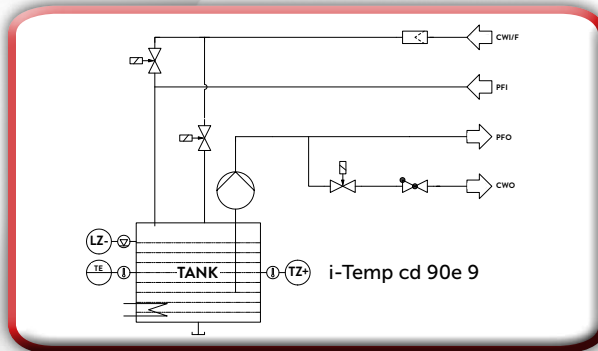
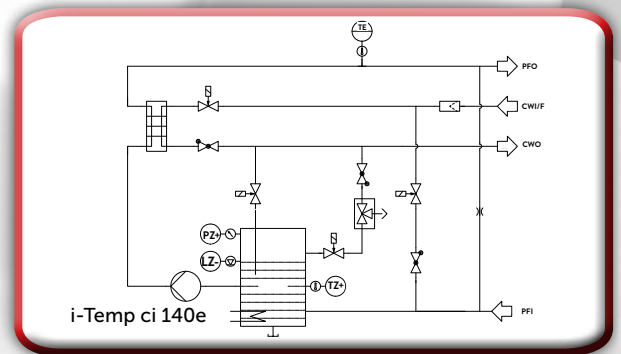
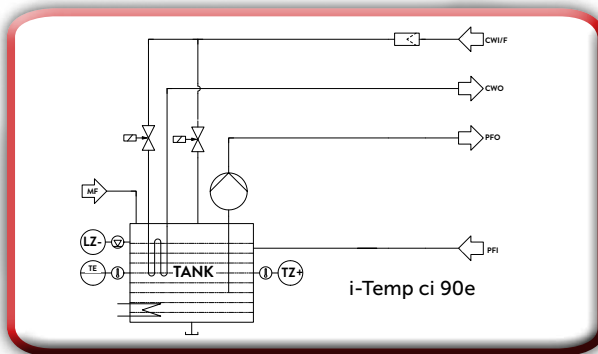
| Model i-Temp                    |   | i-Temp ci 90e   | i-Temp ci 140e  | i-Temp ci 160e  | i-Temp ci 90t 9 | i-Temp ci 90t 18 |
|---------------------------------|---|-----------------|-----------------|-----------------|-----------------|------------------|
| Technical Data                  | Fluid   | water           | water           | water           | water           | water            |
|                                 | Temperature max. (°C)   | 95              | 140             | 160             | 95              | 95               |
|                                 | Pump capacity max. (l/min/bar)                                | 60/3.8 (6.0)    | 60/5.5          | 60/5.5          | 60/3.8 (6.0)    | 75/5.5           |
|                                 | Heating capacity (kW)   | 9               | 9               | 9               | 9               | 18               |
|                                 | Cooling   | indirect        | indirect        | indirect        | indirect        | indirect         |
|                                 | Cooling capacity (kW) <sup>1</sup>                            | 23 (42)         | 40              | 40              | 23 (42)         | 50               |
|                                 | Weight (kg)   | 44              | 50              | 50              | 46              | 95               |
|                                 | Process circuit supply and return connections                 | G½"             | G½"             | G½"             | G½"             | G¾"              |
|                                 | Cooling water supply and return connections                   | G¼"             | G¼"             | G¼"             | G¼"             | G½"              |
|                                 | Dimensions in mm (L x W x H)                                  | 680 x 250 x 595 | 680 x 250 x 595 | 680 x 250 x 595 | 680 x 250 x 595 | 955 x 400 x 740  |
| Standard specifications/options | Touchscreen with colour display                               | —               | —               | —               | ●               | ●                |
|                                 | Digital display   | ●               | ●               | ●               | —               | —                |
|                                 | Robust fully galvanised steel housing, painted in two colours | ●               | ●               | ●               | ●               | ●                |
|                                 | Automatic fill  | ●               | ●               | ●               | ●               | ●                |
|                                 | Strainer in cooling water inlet                               | ●               | ●               | ●               | ●               | ●                |
|                                 | Durable rubber coated castors                                 | ●               | ●               | ●               | ●               | ●                |
|                                 | All contact parts made of non-corrosive materials             | ●               | ●               | ●               | ●               | ●                |
|                                 | Continuous heater control                                     | ●               | ●               | ●               | ●               | ●                |
|                                 | Audible alarm   | ●               | ●               | ●               | ●               | ●                |
|                                 | Separate fill line  | ●               | —               | —               | ●               | ●                |
|                                 | Leak stopper  | ●               | ● <sup>2</sup>  | ● <sup>2</sup>  | ●               | ●                |
|                                 | Mould draining  | ●               | O <sup>3</sup>  | O <sup>3</sup>  | ●               | ●                |
|                                 | Constant cooling  | —               | —               | —               | —               | —                |
|                                 | Magnetic coupled stainless steel pump                         | —               | O               | ●               | —               | —                |
|                                 | Integrated top up-pump  | —               | —               | ●               | —               | —                |
|                                 | Measuring, indication and monitoring of flow rate             | —               | —               | —               | ●               | ●                |
|                                 | Return temperature indication                                 | —               | —               | —               | ●               | ●                |

1) at 15°C cooling water temperature and 90°C resp. 130°C circuit water temperature

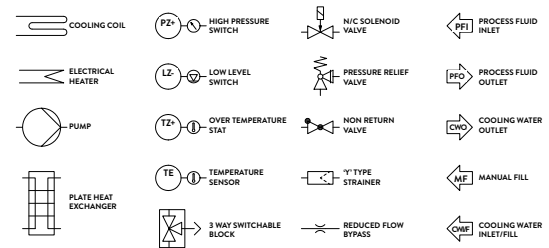
2) not in combination with mould drain function

3) not in combination with leak stopper





#### SYMBOL INDEX



● = Standard / ○ = Option / – = not available/ Values in () optional

| i-Temp ci 90t 27 | i-Temp ci 90t 36 | i-Temp ci 140t  | i-Temp ci 140t 18 | i-Temp ci 160t  | i-Temp cd 90e   | i-Temp cd 140e  | i-Temp cd 90t   | i-Temp cd 120t  |
|------------------|------------------|-----------------|-------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| water            | water            | water           | water             | water           | water           | water           | water           | water           |
| 95               | 95               | 140             | 140               | 140             | 95              | 140             | 95              | 120             |
| 170/4.7          | 170/4.7          | 60/5.5          | 60/5.5            | 60/5.5          | 60/3.8 (6.0)    | 30/5.4          | 70/4.7          | 70/4.7          |
| 27               | 36               | 9               | 12/18             | 9               | 6-9             | 6               | 6-18            | 6-18            |
| indirect         | indirect         | indirect        | indirect          | indirect        | direct          | direct          | direct          | direct          |
| 250              | 250              | 40              | 40                | 40              | 52              | 32              | 140             | 195             |
| 100              | 100              | 50              | 95                | 50              | 44              | 35              | 50              | 50              |
| G1"              | G1"              | G½"             | G¾"               | G½"             | G½"             | G¾"             | G¾"             | G¾"             |
| G¾"              | G¾"              | G¾"             | G½"               | G¾"             | G¾"             | G½"             | G½"             | G½"             |
| 955 x 400 x 740  | 955 x 400 x 740  | 680 x 250 x 595 | 955 x 400 x 740   | 680 x 250 x 595 | 680 x 250 x 595 | 480 x 250 x 546 | 955 x 400 x 740 | 955 x 400 x 740 |
| ●                | ●                | ●               | ●                 | ●               | –               | –               | ●               | ●               |
| –                | –                | –               | –                 | –               | ●               | ●               | –               | –               |
| ●                | ●                | ●               | ●                 | ●               | ●               | ●               | ●               | ●               |
| ●                | ●                | ●               | ●                 | ●               | ●               | ●               | ●               | ●               |
| ●                | ●                | ●               | ●                 | ●               | ●               | ●               | ●               | ●               |
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| ●                | ●                | ○ <sub>3</sub>  | ○                 | ○ <sub>3</sub>  | ●               | ● <sub>2</sub>  | ○ <sub>3</sub>  | ○ <sub>3</sub>  |
| –                | –                | –               | –                 | –               | –               | ●               | ●               | ●               |
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# POWERFUL TEMPERATURE CONTROLLERS IN MODULAR DESIGNS



## i-Temp wi collection

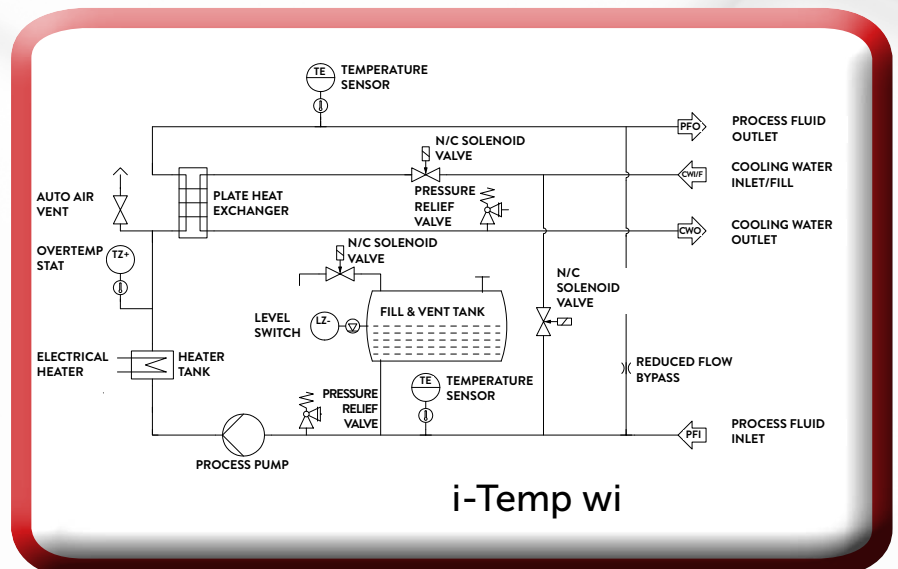
The i-Temp wi collection has been developed to offer a large performance range by means of modular design with various combinations of heating and cooling elements which cater for a wide variety of applications. Providing complete reliability, highly accurate control, ease of handling and a favourable cost/performance ratio, these versatile heaters offer any industrial process application a consistent yet flexible temperature control solution.

The i-Temp wi units are designed as water heaters with indirect cooling for usage with open tank up to 95°C and as a closed system up to 160°C.

Furthermore all units feature intelligent controllers as standard offering accurate temperature measurement, indication and monitoring.

Unit features include:

- Self optimising C8 advanced controller with high control accuracy
- Simultaneous display of set and actual values
- Measuring, indication and monitoring of the flow rate (optional)
- Integrated operating and service information
- Storage and recall of process parameters with memory card
- Solid State Relays – energy saving control
- Continuous monitoring of process parameters
- Optional connection for external probe (PT100 or Fe-CuNi)
- Optional interfaces at front panel (analogue 0-10v, 0/4-20mA; serial RS 232, RS 422, RS 485, TTY, Can Bus, Profibus, Profinet, Devicenet, and Euromap 66)
- Splash proof electrics



## Temperature control units water indirect 95°C, 140°C, 150°C and 160°C

● = Standard / ○ = Option / – = not available/ Values in () optional

|                        | Model i-Temp   | i-Temp<br>wi 100 | i-Temp<br>wi 150           | i-Temp<br>wi 250           | i-Temp<br>wi 400           | i-Temp<br>wi 500           |
|------------------------|--|------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| Technical data         | Fluid  | water            | water                      | water                      | water                      | water                      |
|                        | Temperature max. (°C)                                      | 140              | 140 (95, 150, 160)         |                            | 140 (95, 150)              |                            |
|                        | Pump capacity max. (l/min/bar)                             | 7.0/4.7          | 200/5.1                    | 230/5.5                    | 420/3.6                    | 500/4.2                    |
|                        | Heating capacity, selectable (kW)                          | 9/18/27/36/45/54 | 9/18/27/36/45/<br>54/63/72 | 9/18/27/36/45/<br>54/63/72 | 9/18/27/36/45/<br>54/63/72 | 9/18/27/36/45/<br>54/63/72 |
|                        | Cooling  | indirect         | indirect                   | indirect                   | indirect                   | indirect                   |
|                        | Cooling capacity (kW) <sup>1</sup>                         | 100              | 200                        | 270                        | 460                        | 600                        |
|                        | Process circuit supply and return connections <sup>2</sup> | G1"              | G1½"                       | G1½"                       | DN 50                      | DN 65                      |
|                        | Housing length L (mm) <sup>3</sup>                         | 990 (1120/1465)  | 990 (1120/1465)            | 990 (1120/1465)            | 1465                       | 1465                       |
|                        | Housing width W (mm) <sup>3</sup>                          | 430 (510/570)    | 430 (510/570/695)          | 430 (510/570/695)          | 570 (695)                  | 570 (695)                  |
|                        | Housing height H (mm) <sup>3</sup>                         | 935 (1275)       | 935 (1035/1275)            | 935 (1035/1275)            | 1275                       | 1275                       |
| Standard specification | Weight min. depending on the specification (Kg)            | 80               | 120                        | 150                        | 200                        | 200 - 500                  |
|                        | Control of cooling with solenoid valve                     | ●                | ●                          | ●                          | ●                          | ●                          |
|                        | Automatic fill   | ●                | ●                          | ●                          | ●                          | ●                          |
|                        | Automatic venting and pressure relief                      | ●                | ●                          | ●                          | ●                          | ●                          |
|                        | Electronic level control with dry-running protection       | ●                | ●                          | ●                          | ●                          | ●                          |
|                        | Safety thermostat  | ●                | ●                          | ●                          | ●                          | ●                          |
|                        | Adjustable point limits                                    | ●                | ●                          | ●                          | ●                          | ●                          |
|                        | Ramp function for temperature alteration                   | ●                | ●                          | ●                          | ●                          | ●                          |
|                        | Cooling down to safety temperature when switching off      | ●                | ●                          | ●                          | ●                          | ●                          |
|                        | Strainer in cooling water inlet                            | ●                | ●                          | ●                          | ●                          | ●                          |
| options                | Continuous heater control with switch cabinet fan          | ●                | ●                          | ●                          | ●                          | ●                          |
|                        | Acoustic alarm   | ○                | ○                          | ○                          | ○                          | ○                          |
|                        | Digital flow rate indication and monitoring                | ○                | ○                          | ○                          | ○                          | ○                          |
|                        | Separate fill line   | ○                | ○                          | ○                          | ○                          | ○                          |
|                        | Pressurised air valve for mould draining                   | ○                | ○                          | ○                          | ○                          | ○                          |
|                        | Return temperature indication                              | ○                | ○                          | ○                          | ○                          | ○                          |
|                        | Connection for external Fe-CuNi or Pt 100                  | ○                | ○                          | ○                          | ○                          | ○                          |
|                        | Interface for central machine control                      | ○                | ○                          | ○                          | ○                          | ○                          |
|                        | Strainer in return line circulation medium                 | ○                | ○                          | ○                          | ○                          | ○                          |
|                        | Control of cooling with motor valve                        | ○                | ○                          | ○                          | ○                          | ○                          |
|                        | Additional expansion tank for large external volumes       | ○                | ○                          | ○                          | ○                          | ○                          |

1) at 15°C cooling water temperature and 130°C circulation medium temperature

2) depending on cooling water amount

3) depending on built in heating and cooling capacities as well as the size of the expansion tank



# MODULAR TEMPERATURE CONTROLLERS WITH DIRECT COOLING



## i-Temp wd collection

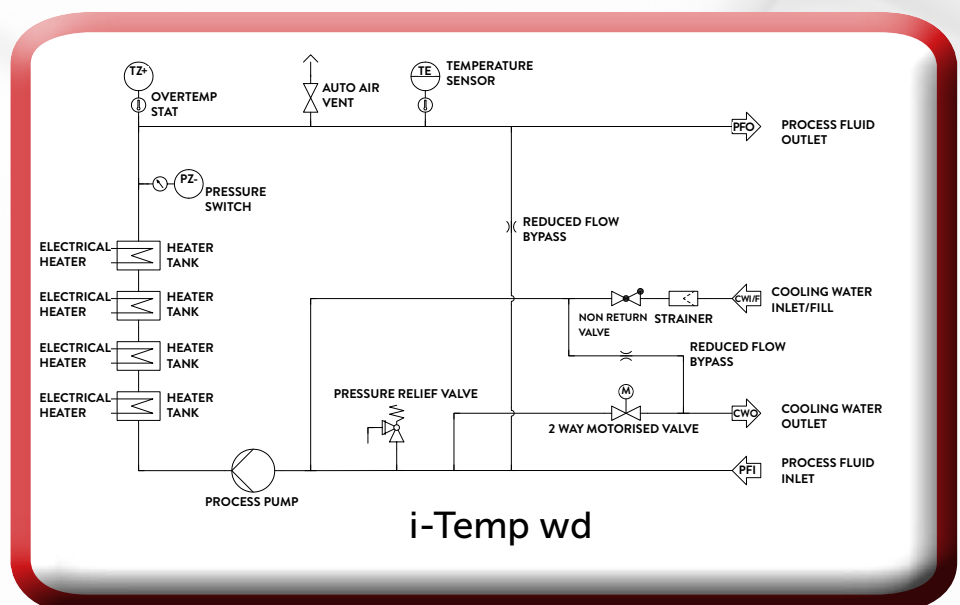
The i-Temp wd series offers both heating and cooling and is set-up and ready for connection to the process with direct cooling, specifically designed for operation with water as the circulation fluid. Direct cooling comes as an advantage when a high cooling capacity is required directly at low temperature differences between cooling water and the circulation medium. In this case the cooling water will be fed without temperature loss into the circulation circuit. Water circuits are designed as a closed system which allows pressurised heating of up to 150°C. Depending on the operating condition, the heat will either be removed from the application by cooling or transferred to the application by heating.

Heat transfer occurs by the circulation of water which is transferred through to the application by an efficient pump. A special sensor monitor is featured as standard within the i-Temp wd which measures the current temperature and the intelligent microprocessor controller compares the measured value with the adjusted set value which switches the heating and cooling accordingly. Furthermore a trouble-free operation is guaranteed thanks to a comprehensive safety system.

For applications which require something a little different, units can be tailor-made to fit specific site requirements.

Unit features include:

- Self optimising C8 advanced controller with high control accuracy
- Simultaneous display of set and actual values
- Measuring, indication and monitoring of the flow rate (optional)
- Integrated operating and service information
- Storage and recall of process parameters with memory card
- Solid State Relays – energy saving control
- Continuous monitoring of process parameters
- Optional connection for external probe (PT100 or Fe-CuNi)
- Optional interfaces at front panel (analogue 0-10v, 0/4-20mA; serial RS 232, RS 422, RS 485, TTY, Can Bus, Profibus, Profinet, Devicenet, and Euromap 66).
- Splash proof electrics



## Direct water temperature controllers 140°C and 150°C

● = Standard / ○ = Option / – = not available/ Values in () optional

|                        | Model i-Temp   | i-Temp<br>wd 60 | i-Temp<br>wd 100                             | i-Temp<br>wd 150                     | i-Temp<br>wd 250                     | i-Temp<br>wd 400       | i-Temp<br>wd 500       |
|------------------------|--|-----------------|--|--------------------------------------|--------------------------------------|------------------------|------------------------|
| Technical data         | Fluid  | water           | water  | water                                | water                                | water                  | water                  |
|                        | Temperature max. (°C)                                    | 140             | 140 (150)                                    | 140 (150)                            | 140 (150)                            | 140 (150)              | 140 (150)              |
|                        | Type of operating pump                                   | peripheral pump | multi stage stainless steel centrifugal pump | two-stage stainless centrifugal pump | two-stage stainless centrifugal pump | centrifugal pump       | centrifugal pump       |
|                        | Pump capacity max. (l/min/bar)                           | 45/6.0          | 90/6.0                                       | 200/5.1                              | 230/5.5                              | 420/3.6                | 500/4.2                |
|                        | Heating capacity, selectable (kW)                        | 6               | 9/18/27/36/45/54                             | 9/18/27/36/45/54/63/72               | 9/18/27/36/45/54/63/72               | 9/18/27/36/45/54/63/72 | 9/18/27/36/45/54/63/72 |
|                        | Cooling  | direct          | direct                                       | direct                               | direct                               | direct                 | direct                 |
|                        | Cooling capacity max. (kW) <sup>1</sup>                  | 47              | 100  | 200                                  | 270                                  | 460                    | 600                    |
|                        | Process supply and return connections                    | G¾"             | G1"  | G1¼"                                 | G1½"                                 | DN 50                  | DN 65                  |
|                        | Cooling water supply and return connections <sup>2</sup> | G½"             | G1½", ¾"                                     | G½", ¾", 1", 1¼"                     | G½", ¾", 1", 1¼"                     | G¾", 1", 1¼", 1½", 2"  | G¾", 1", 1¼", 1½", 2"  |
|                        | Housing length L (mm) <sup>3</sup>                       | 210             | 990 (1120/1465)                              | 990 (1120/1465)                      | 990 (1120/1465)                      | 1465                   | 1465                   |
|                        | Housing width W (mm) <sup>3</sup>                        | 450             | 430 (510/570)                                | 430 (510/570/695)                    | 430 (510/570/695)                    | 570 (695)              | 570 (695)              |
|                        | Housing height H (mm) <sup>3</sup>                       | 520             | 735 (935/1275)                               | 735 (935/1275)                       | 735 (935/1275)                       | 1275                   | 1275                   |
| Standard specification | Weight min. depending on the specification (kg)          | 35              | 120  | 150                                  | 160                                  | 200                    | 250                    |
|                        | Control of cooling with motor valve                      | ●               | ●  | ●                                    | ●                                    | ●                      | ●                      |
|                        | Control of cooling with solenoid valve                   | ●               | ○  | ○                                    | ○                                    | ○                      | ○                      |
|                        | Automatic fill   | ●               | ●  | ●                                    | ●                                    | ●                      | ●                      |
|                        | Automatic venting  | ●               | ●  | ●                                    | ●                                    | ●                      | ●                      |
|                        | Electronic level control with dry-running protection     | ●               | ●  | ●                                    | ●                                    | ●                      | ●                      |
|                        | Safety thermostat  | ●               | ●  | ●                                    | ●                                    | ●                      | ●                      |
|                        | Adjustable point limits                                  | ●               | ●  | ●                                    | ●                                    | ●                      | ●                      |
|                        | Ramp function for temperature alteration                 | ●               | ●  | ●                                    | ●                                    | ●                      | ●                      |
|                        | Cooling down to safety temperature when switching off    | ●               | ●  | ●                                    | ●                                    | ●                      | ●                      |
|                        | Strainer in cooling water inlet                          | ●               | ●  | ●                                    | ●                                    | ●                      | ●                      |
|                        | Continuous heater control                                | ●               | ●  | ●                                    | ●                                    | ●                      | ●                      |
| options                | Acoustic alarm   | ○               | ○  | ○                                    | ○                                    | ○                      | ○                      |
|                        | Digital flow rate indication and monitoring              | ○               | ○  | ○                                    | ○                                    | ○                      | ○                      |
|                        | Pressurised air valve for mould draining                 | ○               | ○  | ○                                    | ○                                    | ○                      | ○                      |
|                        | Return temperature indication                            | ○               | ○  | ○                                    | ○                                    | ○                      | ○                      |
|                        | Interface for central machine control                    | ○               | ○  | ○                                    | ○                                    | ○                      | ○                      |
|                        | Connection for external Fe-CuNi or Pt 100                | ○               | ○  | ○                                    | ○                                    | ○                      | ○                      |
|                        | Strainer in return line circulation medium               | ○               | ○  | ○                                    | ○                                    | ○                      | ○                      |

1) at 15°C cooling water temperature and 130°C circulation medium temperature

2) depending on cooling water amount

3) depending on built in heating and cooling capacities as well as the kind of cooling control

# RELIABLE WATER TEMPERATURE CONTROLLERS FOR HIGH TEMPERATURES



## i-Temp wh collection

The i-Temp wh water heaters have an advantage over oil heat transfer units especially if large amounts of heat needs to be extracted from small cooling surfaces. Particularly for injection moulding and some extrusion processes it is advantageous as it uses pressurised hot water instead of oil because the heat transfer capability is more effective, typically by a factor of three.

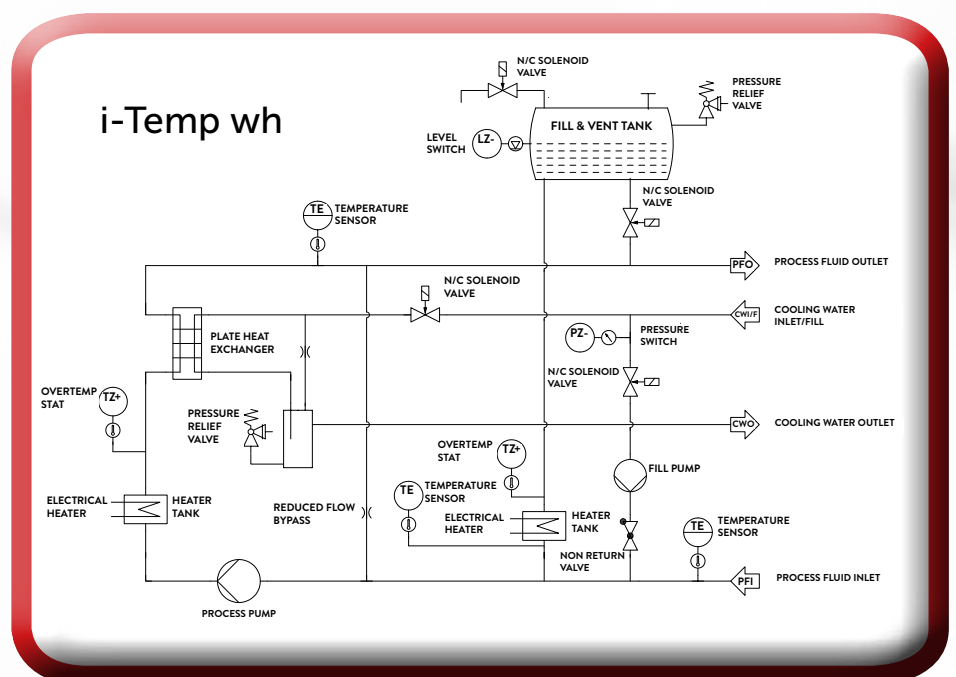
Pump flow rates and the surface area of tooling in contact with the product can also be reduced accordingly at the design stage if it is known that water is to be used, this leads to a more efficient system in terms of power and fluid cost.

The use of water as a fluid of heat transfer has a further advantage with the amount of liquid which is circulated by the pump and is reduced by a factor of two compared to three with the transfer of heat using oil.

The i-Temp wh range is specifically designed for special applications requiring temperatures in the range of 200°C.

Unit features include:

- Magnetically coupled pumps
- Return flow temperature monitoring
- Built-in condensing unit to prevent steam hammer
- Level monitoring via a built-in high pressure makeup filling unit
- Ramp function for temperature changes, perfect for plastics processing
- The modular construction of the heating and cooling sections allows a unit to be designed for any type of application





## Temperature controllers water up to 200°C

● = Standard / ○ = Option / – = not available/ Values in () optional

|                        | Model i-Temp  | i-Temp<br>wh 60 | i-Temp<br>wh 100 | i-Temp<br>wh 150 |
|------------------------|---|-----------------|------------------|------------------|
| Technical data         | Fluid   | water           | water            | water            |
|                        | Temperature max. (°C)   | 200             | 200              | 200              |
|                        | Pump capacity max. (l/min/bar)                                    | 60/5.0          | 80/5.0           | 120/5.0          |
|                        | Heating capacity (kW)   | 9 (18/27)       | 18 (9/27/36)     | 27 (18/36/45/54) |
|                        | Cooling   | indirect        | indirect         | indirect         |
|                        | Cooling capacity max. (kW) <sup>1</sup>                           | 32 (64)         | 40 (80)          | 48 (96)          |
|                        | Process supply and return connections                             | DN 25           | DN 32            | DN 32            |
|                        | Cooling water supply and return connections                       | G½"             | G½"              | G½"              |
|                        | Housing length L (mm) <sup>2</sup>                                | 1320            | 1320             | 1320 (1465)      |
|                        | Housing width W (mm) <sup>2</sup>                                 | 500             | 570              | 570              |
|                        | Housing height H (mm) <sup>2</sup>                                | 1275            | 1275             | 1275 (1515)      |
| Standard specification | Weight min. depending on the specification (kg)                   | 95              | 105              | 120              |
|                        | Sealless pump with magnetic coupling                              | ●               | ●                | ●                |
|                        | Temperature controlled pressure overlay                           | ●               | ●                | ●                |
|                        | Condensing unit to prevent steam impacts in cooling medium return | ●               | ●                | ●                |
|                        | Return temperature indication                                     | ●               | ●                | ●                |
|                        | Return flow temperature monitoring and limiting                   | ●               | ●                | ●                |
|                        | Built-in high-pressure makeup feed unit                           | ●               | ●                | ●                |
|                        | Automatic venting and pressure relief                             | ●               | ●                | ●                |
|                        | Electronic level control with dry-running protection              | ●               | ●                | ●                |
|                        | Safety thermostat   | ●               | ●                | ●                |
|                        | Adjustable point limits   | ●               | ●                | ●                |
|                        | Ramp function for temperature alteration                          | ●               | ●                | ●                |
|                        | Cooling down to safety temperature when switching off             | ●               | ●                | ●                |
|                        | Strainer in return line circulation medium                        | ●               | ●                | ●                |
|                        | Continuous heater control with switch cabinet fan                 | ●               | ●                | ●                |
| options                | Acoustic alarm  | ○               | ○                | ○                |
|                        | Connection for external probe (Fe-CuNi or Pt 100)                 | ○               | ○                | ○                |
|                        | Interface for central machine control                             | ○               | ○                | ○                |
|                        | Separate fill line  | ○               | ○                | ○                |
|                        | Strainer in return line process fluid                             | ○               | ○                | ○                |
|                        | Control of cooling with motor valve                               | ○               | ○                | ○                |
|                        | Additional expansion tank for large external volumes              | ○               | ○                | ○                |

1) at 15°C cooling water temperature and 150°C circulation medium temperature

2) depending on built in heating and cooling capacities as well as the size of the expansion tank

# HEATER TRANSFER OIL - TEMPERATURE CONTROLLERS FOR HIGHEST DEMANDS

i-TEMP

## i-Temp to/tt/th

This collection of units featuring oil heat transfer are used for circulating temperatures of up to 350°C. Thermal oil has a low oxidation stability when it comes into direct contact with ambient air which is found in other manufacturer's heater units which feature submersible pump and tank.

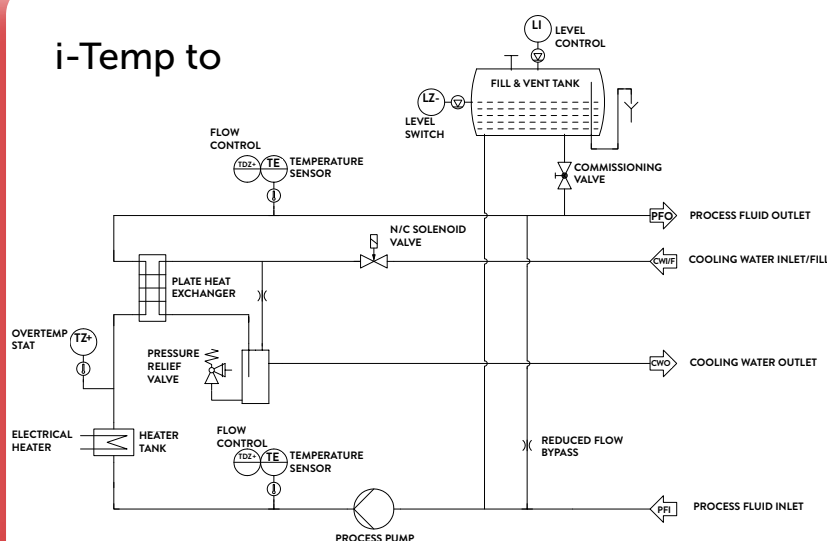
This absorption of air can cause the oil's viscosity to increase and the pump flow rate to decrease. This can cause premature oil degradation and carbon deposits due to the decreased flow rate and increased oil film temperature on the heating elements. The result of this is reduced performance and early machine failure and increased maintenance costs.



Designed specifically for applications requiring high temperatures, the to/tt and th series uses low watts/cm<sup>2</sup> heating elements resulting in low film temperatures at normal flow rates, flow monitoring is built into the system which sets off an alarm if the flow rate becomes too low.

The i-Temp tt/th units feature a layer of cold oil within the expansion vessel which can also be equipped with a nitrogen supply device upon request.

## i-Temp to



## Temperature controllers thermal oil

### Model i-Temp

|                        |  |
|------------------------|--|
| Technical data         | Fluid  |
|                        | Temperature max. (°C)                                    |
|                        | Pump capacity max. (l/min/bar)                           |
|                        | Heating capacity max (kW)                                |
|                        | Cooling  |
|                        | Cooling capacity max. (kW) <sup>1</sup>                  |
|                        | Mould circuit supply and return connections              |
|                        | Cooling water supply and return connections <sup>2</sup> |
|                        | Housing length L (mm) <sup>3</sup>                       |
|                        | Housing width W (mm) <sup>3</sup>                        |
| Standard specification | Housing height H (mm) <sup>3</sup>                       |
|                        | Weight min., depending on the specification (kg)         |
|                        | Control of cooling with solenoid valve                   |
|                        | Sealless pump with mag drive                             |
|                        | Oil seal in expansion tank                               |
|                        | Difference temperature control with switch-off function  |
|                        | Electronic level control with dry running protection     |
|                        | Safety thermostat  |
|                        | Adjustable points limits                                 |
|                        | Ramp function for temperature alteration                 |
|                        | Cooling down to safe temperature when switching off      |
|                        | Strainer in return line process fluid                    |
|                        | Galvanised steel, painted in RAL 3020/7035               |
|                        | Continuous heater control with switch cabinet fan        |
|                        | Return temperature indication                            |
| options                | Flow control with switch-off function                    |
|                        | Filter group in suction pipe                             |
|                        | Bellows type valve in UV, UR                             |
|                        | Acoustic alarm   |
|                        | Connection for external (Fe-CuNi or Pt 100)              |
| options                | Interface for central machine control                    |
|                        | Strainer in return line process fluid                    |
|                        | Cooling Bypass with 3-way motor valve                    |
|                        | Connection for nitrogen blanket at expansion tank        |

<sup>1</sup>) at 15°C cooling water temperature and 200°C circulation medium temperature

180°C, 300°C and 350°C

● = Standard / ○ = Option / – = not available/ Values in () optional

| i-Temp<br>to 50 | i-Temp<br>tt 50 | i-Temp<br>tt 60 | i-Temp<br>tt 100       | i-Temp<br>tt 140           | i-Temp<br>th 60 | i-Temp<br>th 100 | i-Temp<br>th 140 |
|-----------------|-----------------|-----------------|------------------------|----------------------------|-----------------|------------------|------------------|
| thermal oil     | thermal oil     | thermal oil     | thermal oil            | thermal oil                | thermal oil     | thermal oil      | thermal oil      |
| 180             | 300             | 300             | 300                    | 300                        | 350             | 350              | 350              |
| 90/6.2          | 60/6.0          | 60/6.0          | 100/8.0                | 150/7.0<br>(200/5.6)       | 60/6.0          | 100/8.0          | 150/7.0          |
| 8               | 4/6/8           | 9/13.5/18       | 9/12/18/27/36          | 12/18/27/36/45/54          | 3/6             | 6/9/12           | 9/18/27          |
| water indirect  | water indirect  | water indirect  | water indirect         | water indirect             | water indirect  | water indirect   | water indirect   |
| 40              | 15/30           | 82/110/200      | 82/110/200/<br>250/275 | 82/110/200/<br>250/275/450 | 82/110          | 82/110/200       | 82/110/200       |
| G¾"             | G¾"             | DN 25           | DN 25                  | DN 32                      | DN 25           | DN 25            | DN 32            |
| G½"             | G½"             | G½", ¾"         | G½", ¾", 1"            | G½", ¾", 1", 1¼"           | G½"             | G½", ¾"          | G½", ¾"          |
| 1036            | 850             | 1320            | 1320                   | 1320                       | 1320            | 1320             | 1320             |
| 295             | 295             | 500             | 570                    | 570                        | 500             | 570              | 570              |
| 725             | 725             | 1275            | 1275                   | 1275                       | 1275            | 1275             | 1275             |
| 75              | 75              | 210             | 310                    | 410                        | 210             | 310              | 410              |
| ●               | ●               | ●               | ●                      | ●                          | ●               | ●                | ●                |
| –               | ●               | ●               | ●                      | ●                          | ●               | ●                | ●                |
| ●               | ●               | ●               | ●                      | ●                          | ●               | ●                | ●                |
| ●               | ●               | ●               | ●                      | ●                          | ●               | ●                | ●                |
| ●               | ●               | ●               | ●                      | ●                          | ●               | ●                | ●                |
| ●               | ●               | ●               | ●                      | ●                          | ●               | ●                | ●                |
| ●               | ●               | ●               | ●                      | ●                          | ●               | ●                | ●                |
| ●               | ●               | ●               | ●                      | ●                          | ●               | ●                | ●                |
| ●               | ●               | ●               | ●                      | ●                          | ●               | ●                | ●                |
| ●               | ●               | ●               | ●                      | ●                          | ●               | ●                | ●                |
| ●               | ●               | ●               | ●                      | ●                          | ●               | ●                | ●                |
| ●               | ●               | ●               | ●                      | ●                          | ●               | ●                | ●                |
| ●               | ●               | ●               | ●                      | ●                          | ●               | ●                | ●                |
| ●               | ●               | ●               | ●                      | ●                          | ●               | ●                | ●                |
| –               | –               | ○               | ○                      | ○                          | ○               | ○                | ○                |
| –               | –               | ○               | ○                      | ○                          | ○               | ○                | ○                |
| ○               | ○               | ○               | ○                      | ○                          | ○               | ○                | ○                |
| ○               | ○               | ○               | ○                      | ○                          | ○               | ○                | ○                |
| ○               | ○               | ○               | ○                      | ○                          | ○               | ○                | ○                |
| ○               | ○               | ○               | ○                      | ○                          | ○               | ○                | ○                |
| ○               | ○               | ○               | ○                      | ○                          | ○               | ○                | ○                |
| –               | –               | ○               | ○                      | ○                          | ○               | ○                | ○                |
| –               | –               | ○               | ○                      | ○                          | ○               | ○                | ○                |

2) depending on cooling water amount

3) depending on built in heating and cooling capacities



ICS Cool Energy has carried out numerous projects for a variety of applications around the world. Dealing with customer specific systems our engineering team have the ability to adapt units to tailor temperature control any site application need with a keen price/performance ratio.

Working closely with a wide variety of industries, ICS Cool Energy have extensive knowledge and experience in industrial process applications including plastics moulding, rubber extrusion, food processing, chemical and pharmaceutical practices.



## Plastics Processing

The i-Temp range is perfect for plastics moulding processes as units offer accurate temperature management ensuring continuous productivity. With temperatures available up to 350°C, moulding processes are kept consistent and reliable to produce a high quality end product.

## Chemical and Pharmaceutical

ICS Cool Energy understand precision is key within laboratories and clean rooms which is why the i-Temp range have the ability to extent capabilities to cater for unique sit requirements. Understanding the regulated and controlled levels within the pharmaceutical industry has aided ICS Cool Energy to develop the high level of expertise for their customers which is apparent from each project undertaken.

## Rubber Extrusion

Many rubber extrusion processes require separate temperature controlled zones in order manage various parts of the production process. The i-Temp range can be tailored to cater for this need with bespoke built products offering zoned heating. Furthermore, with connectivity to a site's building management system, process can accurately be managed.

## Food Processing

Having worked closely with food and beverage manufacturers, ICS Cool Energy have developed food safe equipment with specialist capabilities including jacketed vessels, stainless steel units (IP65 rated) and specialist diagnostics. The ICS Cool Energy advanced controllers offer special recipe control for the user to analyse process productivity in real time to ensure food safety standards and high quality food products.

## OEM Manufacturing

ICS Cool Energy is a preferred partner of many machine manufacturers and processors providing solutions for temperature control and compact integrated systems. These are ideal for integration into the OEM's machinery and equipment is configured to meet the customer's application requirements. Temperature control technology is integrated as system component into machinery for plastics, food and pharmaceutical processing in plant engineering applications.





# Contact

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