

# Digitemp

Single- and Multi-zone IRTC boxes

Single- and Multi-zone IRTC\* boxes with integrated digital controllers for cooling and heating vibrator and fountain rollers in offset printing units.



#### Small and Compact

Outside measurements of 60x68x40 cm (24"x27"x16") with one or more independent temperature circuits per box

#### Modular installation

Horizontal or vertical configurations for minimal footprint and space requirement

#### Powerful

Improved temperature stability with large heat exchanger and powerful in-line heaters

#### Accurate

Integrated distributed digital controllers for immediate and accurate reaction from IR and PT 100 sensors

#### User friendly

Menu operated by remote colour touch screen

#### Environmental friendly

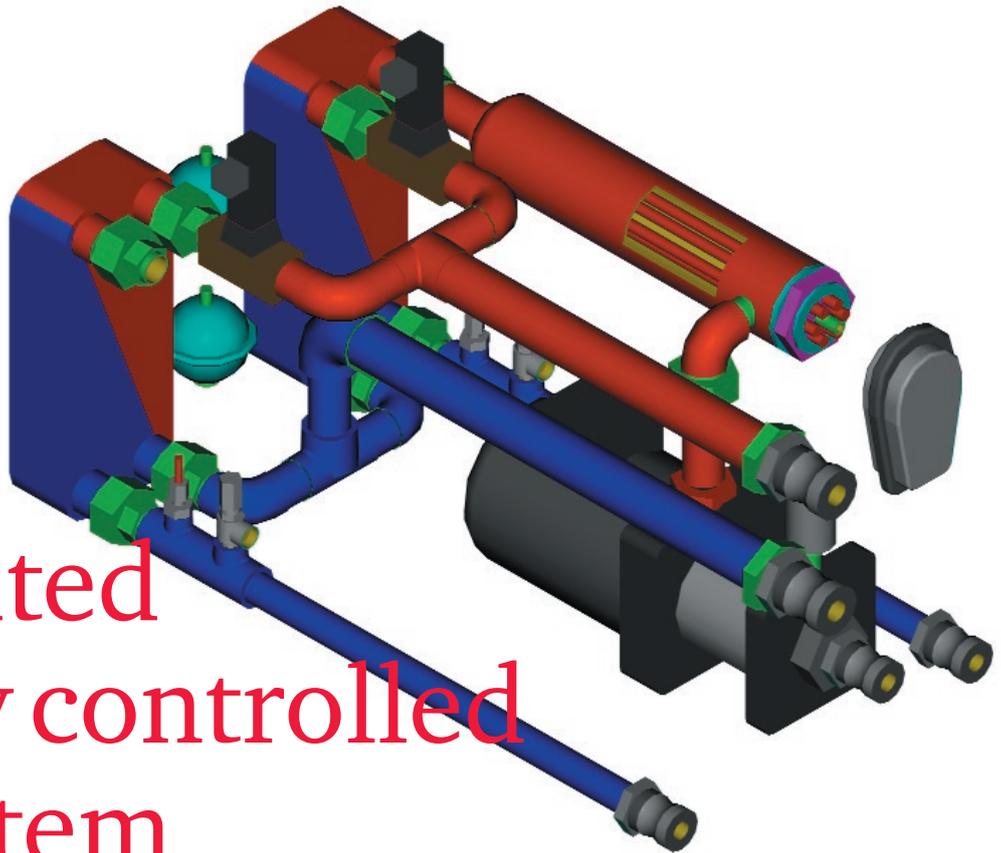
Improved cooling efficiency through the use of normal water

#### No contamination of press rollers

Sealed temperature circuits between press and IRTC boxes eliminates outside contamination of the water through the press rollers

#### Easy installation and service

Quick clamp fittings on water tubes and quick plugs on wires facilitates installation



# Distributed digitally controlled IRTC system

**Digitemp IRTC boxes maintain** a uniform temperature in one or more offset printing units (multi- or single-zone control) with an accurate digital temperature control of the closed water circuit to the vibrator and/or fountain rollers. A PT 100 sensor in the water circuit or an optional IR sensor on the plate surface transmits the temperature readings to the digital temperature controller, which immediately computes all information about variations in the heat generation into appropriate heating or cooling. No remote controllers and central PLCs slow down the reaction time.

Digitemp IRTC boxes are compact 68x68x40cm (24"x27"x16") and modular with one or more circuits per box. Multi-zone boxes are installed next to each other (under the catwalk if possible) or on top of each other in an IRTC tower with the market's smallest footprint.

A Digitemp multi-zone system (independent control of each unit in a multi-color press) has a 3 kW electrical in-line heater and a 12 kW plate heat exchanger (cooled by an external cooler ( $\Delta T=4.0C^{\circ}/7.2F^{\circ}$ ) in each temperature circuit. This is sufficient to cool a 64"

(110x162 cm) printing unit at 13,000 iph in waterless offset. The single-zone system (central control of all units in a multi-color press) has a 9 kW in-line heater and a 48 kW plate heat exchanger, sufficient to cool an 8-color 64" press at 13,000 iph or a 12-color 41" (72x105 cm) press at 16,000 iph in wet offset. (Multi-zone systems are ideal for both wet and waterless offset, while single-zone systems are not recommended for waterless offset).

All Digitemp boxes have sturdy frames of eloxided light alloy with side and top plates of polished stainless steel. All electrical parts are installed in a closed stainless steel cabinet. Pumps, plate heat exchangers and the electrical cabinet are installed on a light alloy bottom plate, which is easily taken out of the frame for service even if several boxes are installed on top of each other.

The modular concept makes it possible to control the temperature of an unlimited number of printing units, as long as the remote cooler has sufficient cooling capacity. (With this concept several presses with Digitemp IRTC boxes can be cooled from the same central

cooling source). Aquacool Compacts have maximum capacities of 36 kWatt, while Aquacool Jumbos have capacities up to 145 kWatt. This corresponds to the requirement of 6 6-color 41" presses.

All Digitemp IRTC boxes are operated from a touch screen close to the delivery or the remote press control console. The installation of the Digitemp system is easy. The water tubes have quick clamps, and each box has only one power cord, one communication cable and one IR cable per circuit. Boxes in multi-zone systems are installed in a sequence with only one communication cable and one power cord to the touch screen.



*The remote touch screen controls one or more Digitemp IRTC boxes*



# Special Digitemp features



## Compact electronic controls

All electrical parts and the digital controller are in a compact stainless steel cabinet on the Digitemp platform. This is a very compact design, which makes installation easy. A PT-100 sensor in each water circuit and an optional IR sensor on each plate surface constantly feed the digital controller with actual temperature information. This concept gives the fastest and most accurate temperature adjustment, because all temperature adjustments are done locally without any external communication slowing down processing. The only communication from the local IRTC box to the touch screen is the actual temperature readings and eventual deviations from the set points. The only information from the touch screen to the IRTC box is changes in set points.

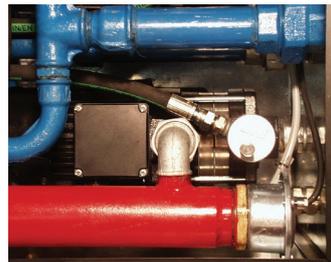


## 3 independent temperature set points

The digital controller has 3 independent temperature set points: A) idling (water temperature), B) printing (water temperature) and C) printing (plate surface temperature). This unique feature is designed to match the heat generation in offset presses and maintain a consistent temperature – and printing quality – during both make-ready and printing. In impression-off the ink rollers are separated without roller friction and heat generation. In impression-on the friction of the ink rollers generates heat,

and the water must be colder to keep the same roller surface temperature. (The heat generation in a printing unit is proportional to a mix of the printing speed, type of ink and ink coverage, so it fluctuates from job to job. This is the reason, why multi-zone systems are such a good idea).

A consistent plate surface temperature during increasing heat generation can only be obtained by reducing the water temperature. This can only be done automatically with IR sensors measuring directly on the plate surface. Maintaining a constant water temperature during an increase in heat generation will increase the plate surface temperature. By a single touch on the screen, the operator can choose if a PT 100 or IR sensor shall control the Digitemp temperature circuit.



## Closed, small water circuit

The Digitemp plate heat exchanger, in-line heater and pump together with the tubes and rollers in the printing unit create a closed circuit, where a minimal amount of water circulates. No tanks are used and there is no connection to the outside cooler. The small amount of water (about 15 liters/4 gallons) is the key to quick reactions to temperature changes, which is the key to a uniform plate surface temperature. Because of the closed water circuit, the water running through the rollers is never in contact with the water from the cooler or exposed to the outside air. This creates a closed cooling circuit under pressure (3 bars/42 psi) with a higher cooling capacity and a longer lifetime without contamination. Each circuit has its own expansion box, air bleeding valve and pressure valve.

## Strong circulation pump with constant, high flow speed

A powerful Grundfos pump circulates all the water in a closed temperature circuit with a constant, high flow speed in less than 20 seconds. This gives the fastest reaction to variations in heat generation. The constant and fast circulation also secures a minimal temperature difference across the rollers (and sheets), because the difference between the roller inlet and outlet temperatures ( $\Delta T$ ) is minimal in opposition to systems, which adjust the cooling capacity by adjusting the flow of cold water to each unit.



## Heat exchanger with modulating proportional valve

An accurate modulating, proportional solenoid valve adjusts the exact amount of cooling water into the plate heat exchanger. This sophisticated valve constantly bleeds more or less cooling water carefully into the heat exchanger based on a signal from the digital controller. Its quick, but soft open/close function also prevents water chocks in the heat exchanger. (Having a total separation between the press and the external cooling circuit efficiently eliminates any water shocks in the press and its sensitive rotary joints). A large heat exchanger and a modulating, proportional cooling valve gives a high cooling capacity and a quick reaction to changes in heat generation, and at the same time a more accurate response to even minimal variations in heat generation.



## Quick tube and wire fittings

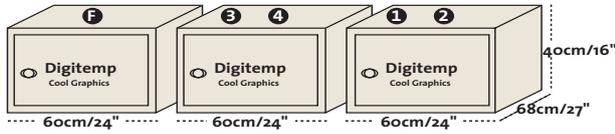
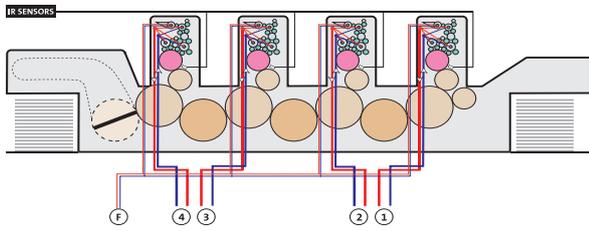
All tubes are fitted with quick clamps. Each Digitemp has only one power cord and one communication cable with quick plugs. The optional IR sensors are plugged directly into the box. Installation is done in a fragment of time. With the automatic air bleeding valves, the closed water circuit between press and heat exchanger is automatically cleaned for air.



## Easy touch screen operation

Digitemp is controlled via a touch screen with 5 different menus:

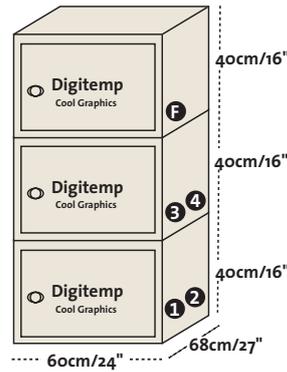
- 1 The overall press condition. Show the actual water temperatures for vibrator and/or fountain rollers and the plate surface temperatures in all units. Visual indication of deviations from set points. Set points are not shown, and adjustments cannot be made.
- 2 The actual water temperatures and set points for all units during idling. Set point adjustments are possible.
- 3 The actual water temperatures and set points for all units during printing. Set point adjustments are possible.
- 4 The actual plate surface temperatures and set points for all printing units. Set point adjustments are possible.
- 5 All actual temperatures and set points for one specific printing unit. Set point adjustments are possible.



Horizontal installation

1, 2, 3, 4: Vibrator Rollers

F: Fountain Rollers



Vertical installation

## Digitemp technical specifications

### Technical specifications per circuit

### Multi-zone boxes

### Single-zone boxes

|  |                    |                    |              |
|--|--------------------|--------------------|--------------|
| Cooling by a plate heat exchanger and heating by in-line heating element.        | yes                | yes                |              |
| Cooling adjustment by digital controlled modulating proportional solenoid valve. | yes                | yes                |              |
| Digital controllers integrated in temperizer box                                 | yes                | yes                |              |
| Communication between temperizer boxes with a single communication cord:         | yes                | yes                |              |
| Waterless offset Cooling capacity ( $\Delta T=2,0C/3,6F^{\circ}$ )               | kWatt/BTU          | 6/20,490           | 24/81,960    |
| Wet offset Cooling capacity ( $\Delta T=4,0C/7,2F^{\circ}$ )                     | kWatt/BTU          | 12/40,980          | 48/163,920   |
| Heating Capacity   | kWatt/BTU          | 3/10,245           | 9/30,735     |
| Noise level:   |                    | <30dB              | <30dB        |
| Pump Type  | Grundfos           | CH 2-30            | CH 12-30     |
| Pump Capacity  | Liters/GallonsHour | 3,500/925          | 15,000/3,965 |
| Pump pressure  | Bars/psi           | 3/42               | 3/42         |
| Circulation media  |                    | Water              | Water        |
| Rust prohibitor:   |                    | Glycol             | Glycol       |
| Quick clamps to press  |                    | 3/4"               | 5/4"         |
| Quick clamps to cooler   |                    | 5/4"               | 5/4"         |
| Power source   | Volts              | 3x400/3x220        | 3x400/3x220  |
| Power source   | Hz                 | 50/60              | 50/60        |
| Power consumption:   | kWatt/HP           | 10/14 (2 circuits) | 12/16        |
| Load connection  | Amps               | 16 (2 circuits)    | 16           |
| Front  | cm/inches          | 60/24              | 60/24        |
| Depth  | cm/inches          | 68/27              | 68/27        |
| Height without wheels  | cm/inches          | 40/16              | 40/16        |
| Weight   | kg/pounds          | 60/132             | 50/110       |



Cool Graphics is a Danish company, which develops and manufactures dampening water premixers, ink roller temperature control systems and other ancillary equipment for offset presses to improve press performance, productivity and impact on the environment.

Cool Graphics markets and services its products in Europe through Roysse Europe ApS, which is a joint venture between Roysse Manufacturing Company and Cool Graphics ApS. In the USA Cool Graphics' products are marketed and serviced through Roysse Manufacturing Company in Dallas, Texas, USA. In Japan and the Far East, Cosmotech Co. Ltd. represents both Roysse Manufacturing Company and Cool Graphics.

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Roysse's dampening water circulators (DWC) with individual and central tank configurations. Available with Classic supply pumps with return suction or with the new Clearwater technology with pre-filtration tanks



CG-Combi combination systems with Roysse's DWCs and Cool Graphics IRTC systems. Available in small (S), medium (M) and large (L) sizes with Classic or Clearwater pumping/filtration configurations. Available for most sheet- and web fed presses.



Roysse coater circulators for 1) water based coatings 2) UV coatings 3) water based & UV coatings



Aquacool Compact and Jumbo central water coolers



Eco- and Digimix premixer systems use accurate doser pumps and a premixer tank to prepare highly consistent dampening water.