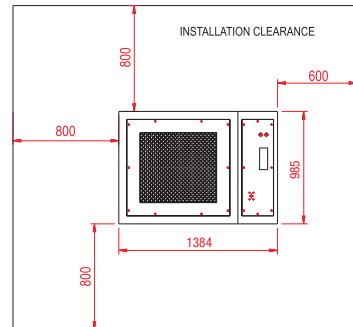
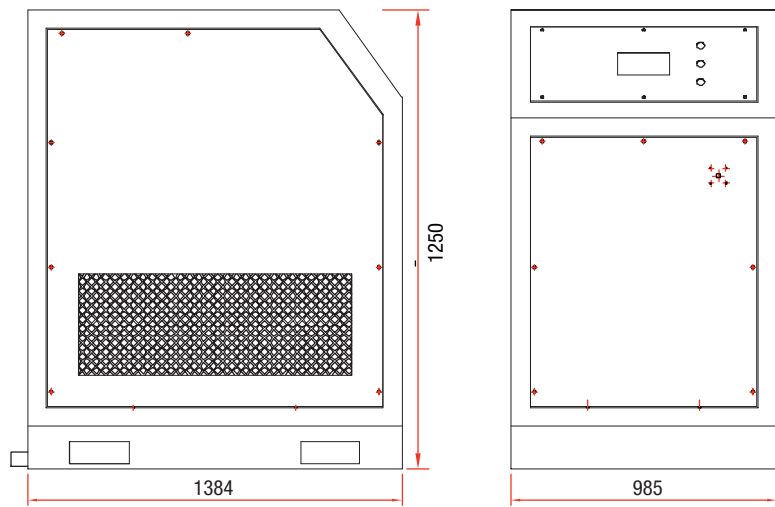


## General Information

SWC 01, 02, 03



## Specifications

Model	Control Valve	Flow Rate Kg/hr	Equivalent Power	Max Steam Temp	Max Pressure
SWC 01	0.5 inches	400	223 KW	180°C	10 Bar
SWC 02	0.75 inches	650	360 KW	180°C	10 Bar
SWC 03	1 inch	1100	640 KW	180°C	10 Bar

## Steam / Water / Air Connections

To be advised

## QUALITY ASSURANCE

Equipment assembly approved by Lloyds Register of Quality Assurance (LRQA) to ISO 9001-2000. Subcontractor Accreditation Number LRQ0963008.

All SWC controllers comply with UK Pressure Equipment Regulation 1999 (in accordance with Pressure Equipment Directive as detailed in Europe Community Directive Number 97/23/EC) and is CE marked where appropriate.

Equipment documentation includes an O & M manual with:-

- Certification of Pressure Test Certificate
- Declaration of Conformity

## CUSTOMER SERVICES - WORLDWIDE AND LOCALLY

GIWW, when necessary supported by Oxford Moulding Technology Limited and equipment subcontractors, are able to offer customers equipment repairs, maintenance and spares services at short notice in all countries where SWC equipment will be installed.



Gas Injection Worldwide Ltd

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Gas Injection Worldwide Ltd

A New Generation of  
Injection Moulding Technology  
from the UK

Rapid Temperature  
Cycling Solutions

RTC™

STEAM HEATING

RTC™

High Gloss

Unblemished · No visible weld lines

SWC

# Rapid Temperature Cycling - RTC™ by Steam Assisted Moulding

**RTC™ promises a new generation of moulding technology with unbelievable improvements, gloss finishes; elimination of visible weld lines, flow lines and splay marks; at lower pressures; longer flow paths and with reduced moulded-in-stress. Gas Injection Worldwide Ltd in collaboration with Oxford Moulding Technology offers complete solutions with heat transfer control equipment and innovative mould construction technology.**

## Why it works

It is well known that if a mould cavity surface temperature is near to the plastic melt temperature the visible quality of the moulding surface can be much improved. In RTC™ the mould is heated by flowing steam through channels located near to the cavity surface, and to cool the mould, steam is replaced with chilled water in the same mould channels.

## How it works

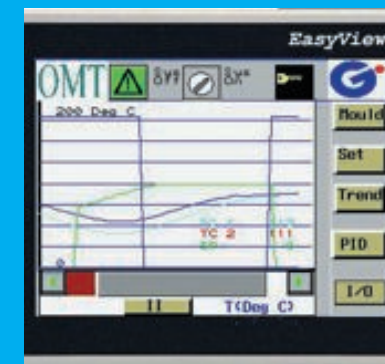
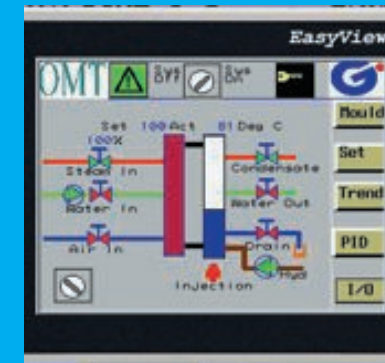
Molten plastic is injected into the mould cavity which is set at a temperature near to the plastic melt temperature. This allows the cavity to be filled with the plastic before it starts to solidify.

Immediately, or just before, the mould is filled with plastic, the remaining steam and condensed water are expelled with compressed air, followed by water, preferably chilled, to cool the mould and plastic.

As soon as the plastic has solidified sufficiently to be self supporting the product is ejected. Hence the description 'Rapid Temperature Cycling' by 'Steam Assisted Moulding'.

## Why Steam

Steam is an effective medium for heating the mould due to the release of latent heat energy when it condenses to water. The higher the steam temperature the more heat is released.



## GIWW's SWC CONTROLLER

The SWC Controller lies at the heart of the RTC™ process. It controls the flow of steam, water and compressed air into the mould. A simple to operate control panel allows timings to be set and monitored in real time. The SWC includes the following features:

All-in-one SWC controllers include:-

- Controlled steam delivery temperature by regulating the steam pressure;
  - from one or more temperature sensing thermocouples positioned adjacent to the mould cavity surface.
  - with a new world beating pneumatically positioned steam pressure regulating valve.
- Water delivery control assisted by an installed water pump at up to 200 litres per minute.
- Control of compressed air to expel steam and condensate after the heating cycle, and to expel water after the cooling cycle before the next moulding.
- Optional inclusion of a vacuum air pump to evacuate the mould cavity to avoid air entrapment during faster than normal plastic injection.
- Each stage of the steam / water cycle is PLC controlled and timed. Settings and monitoring are through a user friendly interface colour touch screen.
- A hand held controller with on-screen user friendly graphics to illustrate real time mould and steam temperatures and pressures.

The SWC controllers are available in 3 steam output capacities; they are mobile on castors and are easily moved from one machine to another.

## OPTIONAL

**A second independently controlled steam circuit** for a large complex mould OR for heating the second half of a mould if different timing and temperatures are needed.

**Three alternative steam output capacities** to match different mould sizes and configurations.

**Mould cavity evacuation systems**

**Recommend and supply of steam delivery systems**

## The difference is plain to see...

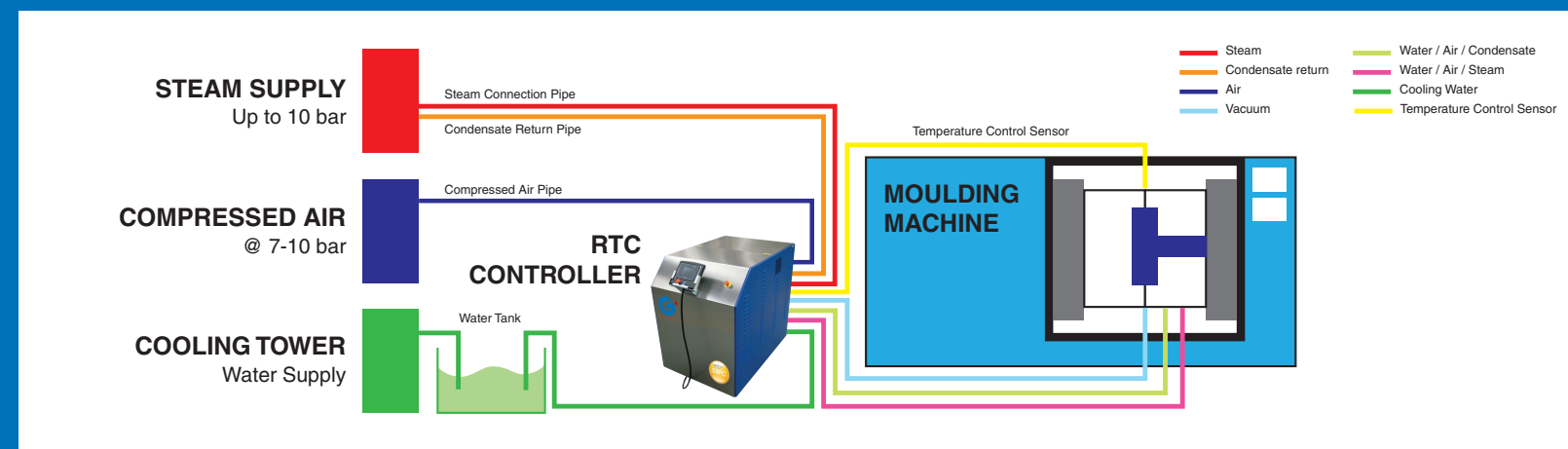


**CONVENTIONALLY MOULDED** – matt ABS at 2mm wall thickness, with normal material temperatures and mould temperatures of 60°C.



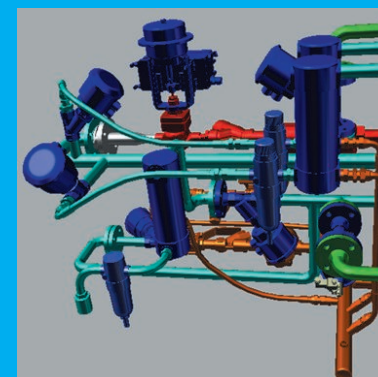
**MOULDED WITH RTC™** – same ABS material, same material temperatures but much reduced injection pressure to give a high gloss finish on the 'A' surface and no visible weld lines.

The SWC Controller has been designed and configured by long established world renowned steam specialists with academic contributions from UK's Oxford and Swansea Universities - all to meet the needs of GIWW customers entering this new injection moulding method of Rapid Temperature Cycling.



## BENEFITS OF RTC™

- Freedom from weld lines normally visible when plastic flows meet i.e. around cored holes or other restrictions.
- Higher gloss surface finishes avoiding need for paint finishing. Normally matt surfaces e.g. in ABS become glossy, and glossy materials e.g. PC ABS have an even higher gloss.
- Longer plastic flow paths enabling reduced thicknesses and fewer plastic feed gates.
- Reduced moulded-in-stress therefore reducing any tendency for after moulding distortion.
- Much reduced plastic injection pressures with lengthened flow paths AND reduced press lock forces and operating costs.
- Resin enriched plastic surfaces and therefore much improved surfaces of glass fibre and other filled materials.
- Prevention of 'splay' and other flow marks even including damp material marks.
- Improved transparency without internal imperfections in clear moulded components.
- Beneficial for most thermo plastics



## APPLICATIONS FOR RTC™

RTC will be beneficial for many moulding applications including:-

- TV and computer cabinets - high gloss no visible weld lines and no painting.
- Automotive - improvement to existing parts and avoiding painting. - transparent parts with no visible weld lines
- White goods - decorative front panels
- Telecoms - high gloss and no visible welds - thin section parts
- Structural parts - glass fibre filled with improved surface finishes