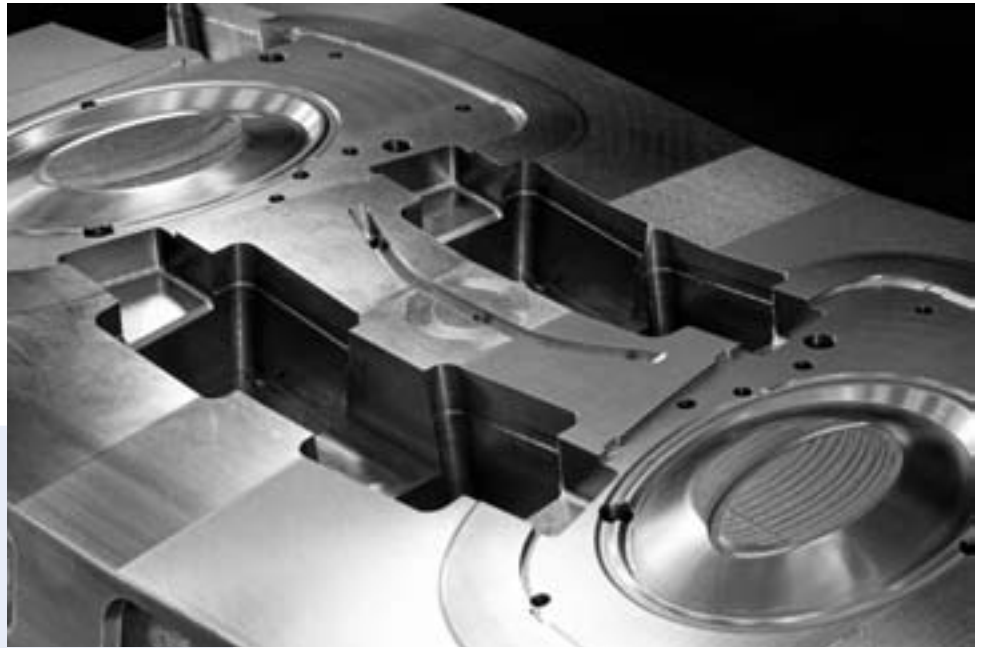


## Pro-16 Application Note

### Taking control of temperature in investment castings



#### **Application**

Investment Castings

#### **The Challenge**

To provide a precise level of temperature control for each of the different stages during the investment casting process whilst also meeting the high I/O and communication demands for limit alarms and integration to SCADA systems for process monitoring and control.

#### **The Solution**

The Pro-16 temperature controller offers sophisticated functionality for precise temperature control as well as including up to 6 outputs and RS 485 communications.

Pro-16 – A temperature controller that provides precision temperature control, reliability and flexibility for investment casting or lost wax furnaces.



### Investment Casting

The investment casting, or lost wax, process is a tried and tested manufacturing technique. It can be used for the production of parts that often have highly complex geometries, with narrow sections – under 1.0mm in thickness – and tolerances that are better than plus or minus 0.1mm.

### The challenge

Investment casting, is however, a demanding procedure in terms both of its complicated process stages and the relative cost of producing each part.

Precise control of temperature, especially of the pattern wax or plastic, firing process, metal and the ceramic mould, is key to the process to ensure that the mechanical characteristics of parts are within specification, to avoid problems associated with grain size, inclusions and porosity as well as to ensure that the optimum metallurgical properties are created for each cast component.

Modern vacuum precision casting furnaces normally use sophisticated SCADA systems to bring all equipment into one control system for monitoring and reporting purposes. Due to the delicate nature of a

process such as investment casting, where extremely high temperatures are needed to melt pre-alloyed metal, there is also a requirement for alarms to be used for safety and to protect the quality of the product.

### Why choose a Pro-16 controller?

The Pro-16 offers up to 6 relay outputs which can be used for alarms, with multiple limits able to be assigned for each individual relay output. This facilitates up to 3 limits which can be set to one alarm output allowing for different notifications to be set for each limit depending on the importance such as a flashing light, an audible alarm or the safety circuit to be disabled or enabled to de-energise the



circuit and prevent the process from ruin.

Offering single loop control and a built-in programmer with up to 16 segments and up to 16 profiles, the Pro-16 temperature controller has been developed to offer furnace manufacturers a powerful, precise and reliable method of temperature control.

For simple, fast commissioning there is BlueControl configuration and simulation software available, enabling OEMs to setup the correct operating parameters and carry out a full off-line simulation in a virtual environment before uploading



the final program and cloning to each temperature controller.

Pro-16 temperature controllers provide a powerful level of temperature control is a small, compact 1/16 DIN unit, making them easy to fit into existing furnaces.

The high number of I/O provided meets the needs of investment casting applications for limit alarms, and with RS 485 communications available, Pro-16 temperature controllers can be easily integrated into SCADA systems for overall process monitoring.

“ The Pro-16 offers up to 6 relay outputs which can be used for alarms, with multiple limits able to be assigned for each individual relay output. ”

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For more details on the complete product range from West Control Solutions please contact your local distributor or visit [www.West-CS.co.uk](http://www.West-CS.co.uk).