

SinterCast Process Control - System 3000 Plus

The fully automated System 3000 *Plus* provides a flexible, robust and accurate hardware and software platform that enables SinterCast's customers to independently control CGI series production and product development. The System 3000 *Plus* is comprised of individual hardware modules that can be configured to suit the layout, process flow and production volume of any foundry, both for ladle production and pouring furnaces. In addition to the automatic feedforward correction provided by the basic System 3000, the System 3000 *Plus* also provides automatic feedback control of the initial base treatment process.



Figure 1: System 3000 Plus base treatment and correction stations

Based on the automatic input of ladle weight, temperature, and the historical SinterCast results, the System 3000 *Plus* calculates and adds the optimal amount of magnesium and inoculant cored wire in the initial base treatment. Automated base treatment prior to the measure-and-correct process control strategy enables foundries to reduce the variation of the base treatment process, thereby preventing operator error and improving the efficiency and productivity of the CGI series production process. The basic configuration of the System 3000 *Plus* consists of two Sampling Modules to obtain the thermal analysis samples, an Operator Control Module for data display and operator interaction, separate wirefeeders for base treatment and correction, and ancillary hardware for the collection of input data such as ladle weight and temperature. Additional hardware can be added to accommodate each foundry layout and production throughput.

System 3000 *Plus* Specifications

Components	Two Sampling Modules (SAM) Operator Control Module (OCM) Peripheral Input Module (PIM) Power Supply Module Two Complete Wirefeeders: <i>Base Treatment and Correction</i>
Foot-print	1,200 x 800 mm, on pallet
Max Height	1,960 mm
Weight	435 kg (pallet mounted items) 290 kg (Each Complete Wirefeeder)
Power Supply	Power Supply Module: 110–120V, 50–60Hz, 2kW max 220–240V, 50–60Hz, 2kW max Single Phase. To be specified on order Each Wirefeeder Control Cabinet: 380–440V, 4 kW max, Three Phase



Figure 2: Multiple wirefeeders for base treatment and correction

The System 3000 *Plus* features include:

- *Accuracy:* Proven, high resolution SinterCast thermal analysis.
- *Automation:* Automatic base treatment by cored wire, based on automated input of ladle weight, temperature and historical SinterCast analysis results from previous ladles.
- *Process Control:* Automatic wirefeeding for the correction of magnesium and inoculation for each ladle.
- *User - Friendliness:* Display of magnesium, inoculant and carbon equivalent results as histogram run-charts with all information in the local language.
- *Process Database:* Collection of melting and pouring data into a single database, including all System 3000 thermal analysis results and process data for advanced traceability.
- *Consistency:* Re-useable thermocouples used for up to 250 measurements to provide accuracy and traceability.
- *Efficiency Benchmarking:* Production results compiled every month and delivered to each customer with analysis and process improvement input from SinterCast engineers.
- *Independent Control:* Supervisor-level access to process parameters, directly at the Supervisor's desktop computer. Full access to all process parameters.
- *Robust:* Rugged Windows® embedded operating system and hardware proven in the foundry environment.
- *Remote Support:* VPN access by SinterCast for technical support and maintenance.
- *Flexible:* Individually floor-mounted or wall-mounted to suit any foundry layout.
- *Image Analysis:* Microstructure analysis according to the SinterCast rating technique adopted by the international ISO 16112 standard for CGI. The image analysis macro is available for use in Image Pro Plus image analysis software.



Figure 3: System 3000 *Plus*: parallel pouring of SinterCast-CGI cylinder blocks