

SinterCast Tracking Technologies

SinterCast Ladle Tracker® – “Every Ladle, Every Minute”

SinterCast Ladle Tracker provides complete traceability of every ladle; from tapping through to pouring, by measuring the ladle movement and compiling the process information in a single database. Ladle Tracker provides Industry 4.0 traceability of the liquid metal process flow to ensure that every ladle successfully passes each step of the foundry process; to prevent the pouring of out-of-spec iron; and, to identify and eliminate the root cause of process bottlenecks.

Ladle Identification

Ladle Tracker measures and documents the progress of every ladle as it moves through the foundry. Radio Frequency Identification (RFID) tags are affixed to every ladle and RFID reader antennae are installed at key locations throughout the foundry to track and control the ladle movement. 2D optical matrix plates can also be used to identify ladles, particularly in high temperature applications.

Process Control

Antennae located at the pouring car identify the RFID Tag on the ladle. If all steps have been successfully completed and all process parameters are within the specified range, pouring can begin. However, if any parameter is out-of-spec, signal lamps will be illuminated to define control actions, or the pouring car can be automatically locked-out. Automation replaces operator discipline, providing increased control for the foundry and increased confidence for the customer.

Custom Configured Layout

Ladle Tracker is comprised of individual hardware modules that can be configured to suit the layout, process flow, and production volume of any metalcasting facility. The layout is mirrored on the Tracker Control Module to show the ladle flow. All data is saved in a central database that can be fully accessed by the foundry engineers. The database can also include ancillary data such as temperature, weight and chemistry to augment the process control and to enhance Industry 4.0 traceability.

Result Reporting

Summary reports can be independently created on a daily, weekly, monthly or on-demand basis. The Ladle Tracker Summary Report is customised for each foundry to detail the average start time at each tracking position, together with elapsed times for every step in the process, including the locations where ladles fall out of the process. The process flow data provides information that enables the production performance to be measured. Bottlenecks can be identified and eliminated, while process KPIs can be established and measured for each shift.



Figure 1: RFID Ladle Tags affixed to each ladle



Figure 2: Measurement and control at every critical process step



Figure 3: On-line process control and traceability

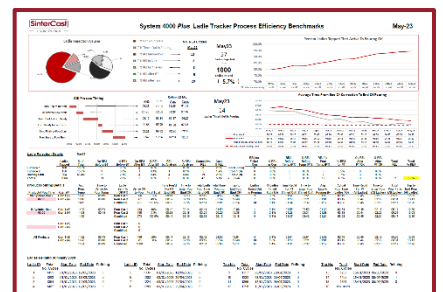


Figure 4: Ladle Tracker Summary Report

The SinterCast Ladle Tracker documents the time of the ladle at every position; ensures that every ladle reports to every step in the process; and ensures that each step is successfully completed within the allocated time. Ladle Tracker also shows the locations where ladles fall out of the process, allowing engineers to identify and eliminate process bottlenecks. The main features and process opportunities of the ladle tracking technology include:

Ladle Tracker Benefits

- Ensure that every ladle reports to every station
- Automatically enforce process control limits for metallurgy, weight, temperature and time
- Automatic lock-out of out-of-spec ladles
- Identify process bottlenecks to implement efficiency improvements
- Quantitatively measure the number of heats and the total contact time with liquid iron to optimise refractory relining cycles
- Set and quantitatively measure process KPIs for each shift
- Single database for all ladle movement and process data
- Remote viewing of real-time process flow and production history on any internet device
- Monthly Process Efficiency reports and on-demand data summary reports



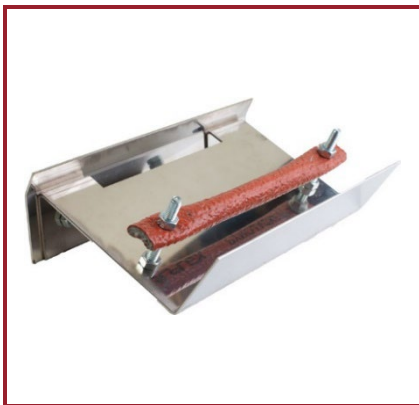
Tracker Computing Module



Tracker Antenna Set



Tracker Signal Lamp



RFID Ladle Tag Holder Set



Tracker Reader Module



Tracker Operator Box Module

More information, more control, more efficiency, more profit
Less scrap, less frustration, less energy, less CO₂