

# Simpson Hartley®

## On-Line Control & Automation

Modern foundries worldwide demand continuous improvements in casting quality and process productivity as well as continuous reductions in process variability and costs. To achieve these goals, we have installed nearly 800 Simpson Hartley brand mixer group control & automation systems all over the world, in all types and sizes of foundries and on nearly all types of mixers.

Description	Application	Features	Upgrades
A complete green sand mixer group control and automation system.	Automation and control of mix preparation and machine function for any make and model of green sand mixer.	<ul style="list-style-type: none"> <li>Rugged design is easy to operate and maintain</li> <li>Complete automation of all mixer group functions</li> <li>Control of compactability to +/- 3 points in 90%+ of tests</li> <li>Data acquisition and reporting</li> </ul>	<ul style="list-style-type: none"> <li>New Hartley 2502-L1</li> <li>Compactability Controller</li> <li>mbNET Mini with VPN</li> </ul>

Simpson Hartley Technical Data				
Model	2502-L1	2552-B1	2552-C1	
Application	Batch Continuous	■ ■	■ ■ ■	
Measurements	Return Sand Conductivity Return Sand Temperature Batch Weight Compactability Green Strength Prepared Sand Moisture	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■
Capabilities	Mixer Group Automation Determine Available Bond Calculate Bond Addition Auto Tuning	■ ■ ■ ■	■ ■ ■ ■	■ ■ ■ ■
Features	Conductivity Sensors Temperature Sensors Operator Interface Data Collection Ethernet Compatable VPN Connectivity Remote Input/Output Water Addition Group	2 probes/3 points 3 probe/3 points 9" color ■ ■ ■ ■ ■ ■	2 probes/3 points 3 probes/3 points 10" color ■ ■ ■ ■ ■ ■	2 probes/1 point* 1 probe/1 point 10" color ■ ■ ■ ■ ■ ■
Control Cabinet	Deep (in) Width (in) Height (in) Weight (lbs)	10 36 42 210	10 36 72 400	10 36 72 400
Hartley Tester	Deep (in) Width (in) Height (in) Weight (lbs)	36 56 41 450	43 56 41 500	43 56 41 500

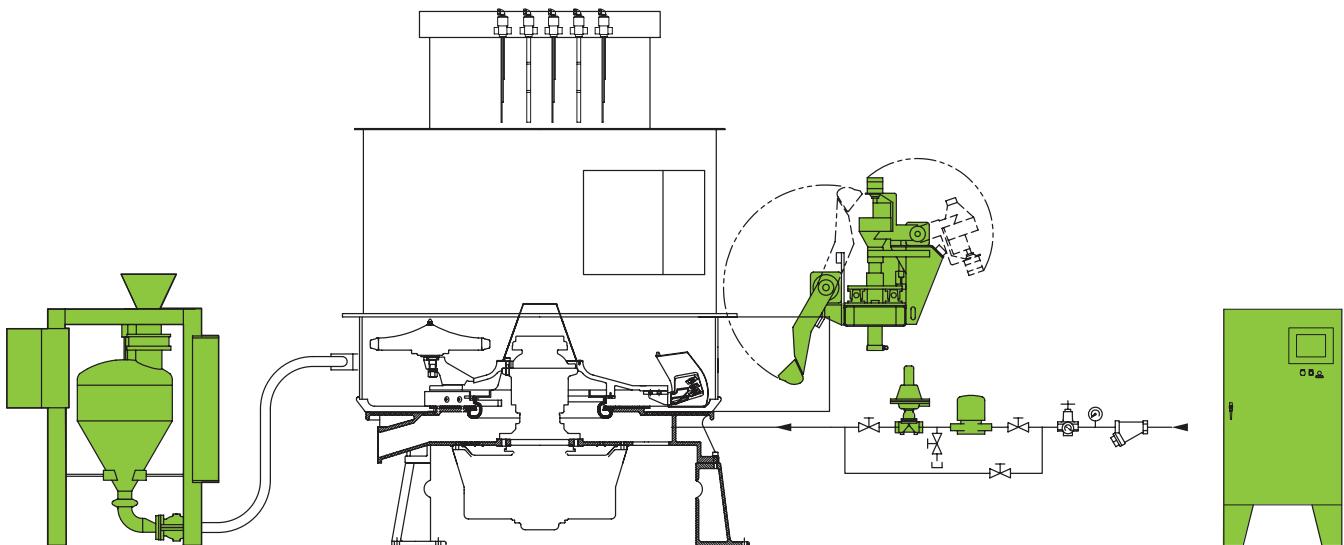
\*For model 2552-C1, the one zone is continuously fed into the system. All figures are approximate and subject to change depending upon your application.

## On-Line Control

1 Measurements of the return sand temperature, moisture and actual batch weight are taken in the batch hopper prior to dosing to the mixer.



2 On discharge, the Hartley tester obtains a sample of the sand and conducts tests on the compactability, green strength (model 2552 only) and moisture. The results are compared to the desired targets and the process control logic is adjusted accordingly.



3 The data from each test (available for display or can be exported to a data system) on all model testers includes: time of day, test number, return sand temperature, return sand conductivity, target compactability, actual compactability, target water addition, actual water addition, maximum muller drive motor amperage, target bond weight, actual bond weight and compactability deviation. The model 2552 additionally provides green compression strength, available bond percentage and the available bond average (last five tests).

4 Once the process inputs have been measured, the Hartley Controller calculates the required water addition to be added through a water injection system consisting of a positive displacement pulse flow meter and diaphragm valve to maintain a targeted compactability. The model 2552 additionally calculates the needed bond addition automatically. Weight based bond additions are added to the muller with the 90Mk2 for the 2552-B1 and Bond Addition System for the 2552-C1. The 2502-L1 adds bond based on a set weight determined by the foundry.



5 The control system is based on a high-performance, industrial programmable logic controller and has a touchscreen operator interface. The touchscreen provides display of, and the ability to adjust, all important parameters as well as diagnostic messages.