

COMPLETE SYSTEM CONVERSION



Background

Foundry F is a commercial foundry, hand-dipping parts and specializing in food processing, industrial gas turbines, pumps and valves, and marine applications. Typical alloys cast include stainless steels; carbon, low alloy and tool steels; and copper, nickel and cobalt base alloys.

The Problem

Foundry F was experiencing poor surface finish with their existing primary slurry and turned to the specialists at Ransom & Randolph for a solution. After working closely with Foundry F to evaluate and analyze the problem, R&R proposed the implementation of:

- **Primcote® binder** – a high performance, colloidal silica based primary binder developed to optimize ceramic shell slurries while eliminating buckling, lifting and cracking of primary shell coats.

Within a month of converting the primary slurry to Primcote binder, Foundry F requested a proposal for a complete system overhaul from R&R. Foundry F needed a

new system that would meet the following objectives:

- Reduce throughput by cutting coats
- Reduce permeability related gas defects
- Reduce cracking rate
- Establish a cost effective system
 - Eliminate material costs associated with rebuilding the backup slurry every month
- Design a user friendly system (easy to makeup and maintain)

In an effort to customize a precise solution tailored specifically to fit Foundry F's needs, R&R conducted a personalized consultation and audit process.

The Solution

As a direct result of the extensive consultation and audit process; which included all laboratory work and testing necessary to meet Foundry F's objectives; R&R proposed a complete, user friendly system comprised of the following:

Primary Slurry

- **Primcote binder**

Backup Slurry

- **Matrixsol® LP colloidal silica** – a large particle alkaline, aqueous dispersion of colloidal silica.
- **MXC Excel X2 blend** – a concentrate containing polymer, fiber, surfactants and other ingredients; produces a permeable, crack resistant shell.
- **Ranco-Sil™ #2 fused silica** (-120 mesh) – an electrically fused, high purity silica; offers low thermal conductivity, excellent thermal shock resistance and low density. Shells hold their dimensions better, are not prone to hot deformation or bulging and knockout is easier.



RANSOM & RANDOLPH

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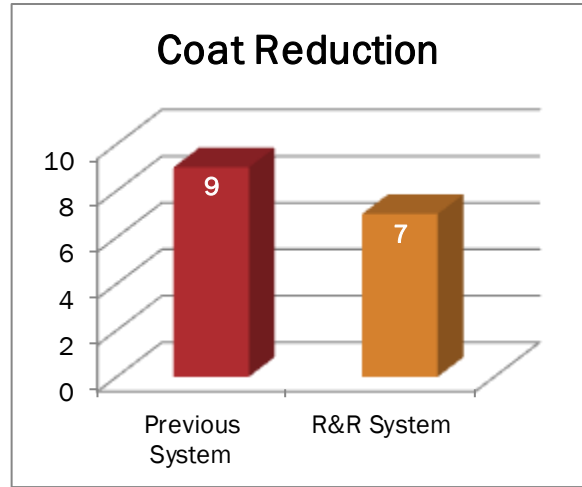
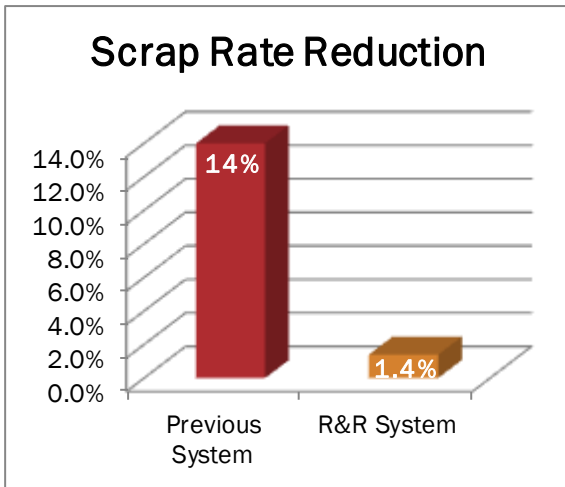
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Results

After partnering with R&R and making the switch from their previous system to R&R's complete system, Foundry F is pleased to realize a reduction in coats and cracking. Through a reduction in permeability related gas defects, Foundry F's scrap rate was reduced from 14% with the previous system to 1.4% with the new R&R system. Foundry F also indicated day-to-day slurry control and maintenance with the new R&R system was easier and less time consuming; eliminating the need to rebuild the backup slurry monthly, an annual material savings of \$19,200 (excluding time and labor savings, not calculated).



Annual Material Savings
\$19,200

In addition to implementing new slurry materials, R&R assisted Foundry F with improving their slurry control testing and tracking methods; allowing for improved ability to detect shell room changes in advance.



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