

About GCT:

For over 25 years, GCT has delivered excellence through innovative gas cleaning and energy solutions to reduce environmental footprint and to optimize energy utilization for our clients in the metallurgical industry.

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Featured Quote:

"Our facility has worked with GCT on a broad spectrum of initiatives including slab reheat furnace efficiency improvements, feasibility studies for waste heat to power conversion, an EAF off-gas system optimization project, an integrated steel operations energy footprint optimization study. GCT offers strong competencies in process engineering and technology integration based on their heavy industry experience and orientation. Their work is thorough and thoughtful resulting in practical, financially sound solutions."

Ian Shaw,
Manager, Energy Management
ArcelorMittal Dofasco

01. GCT's Latest Development

At GCT, our business is constantly evolving to adapt to the ever changing metals industry and to better serve our customers. A brief summary of our latest developments include:

- Company expansion with new offices in Chicago, IL and Vancouver, BC
- Collaboration with energy technology companies such as Lanzatech and GTI, as well as Northwestern University and other educational institutions
- Established a partnership with a hydrogen company producing cost-competitive green hydrogen for industrial process heating applications
- Established a pilot testing plant in Dallas, TX for evaluating emerging hydrogen-based technologies
- Rolling out new services, including RPM, a remote process monitoring service

We would be happy to discuss with you how these developments can help improve your plant's operations.

02. Featured: GCT's RPM Service

a) Overview

The metallurgical process industry is required to adhere to ever-stricter environmental standards, and successfully managing operations is becoming an increasingly difficult task. The constant need to make timely decisions to keep the plant operating safely and competitively puts extreme pressures on employees and systems.

GCT's Remote Process Monitoring (RPM) service helps alleviate some of these pressures by continuously monitoring the primary process operations and the associated air pollution control (APC) system operations with the goal to:

- Reduce Energy Costs
- Improve Environmental Compliance — Minimizes environmental incidents
- Improve Plant Safety — Minimizes unplanned shutdowns

The RPM service is customized to fit each plant's needs and address its unique issues.

b) The RPM Methodology

RPM uses information from existing process and APC system instrumentation to identify and diagnose issues through the *RPM Methodology*.

- 1) Live plant data is continuously monitored and compared against an optimal operation envelope
- 2) RPM identifies and flags a potential issue immediately when a key operating parameter falls outside the optimal operating envelope along with preliminary recommendations
- 3) GCT engineers provide a follow-up in-depth review of the issue at fault, establishing the root cause, and further repair or mitigation recommendations



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RPM's List of Modules for a Typical Steelmaking Operation

Benefits of RPM:

- \$0.50 - \$1 per ton in Operating Cost Savings
- Reduction in Unplanned Equipment Downtime
- Continuous Optimization of System Operations
- Maintain Plant Safety and Environmental Compliance Through All Operating Modes

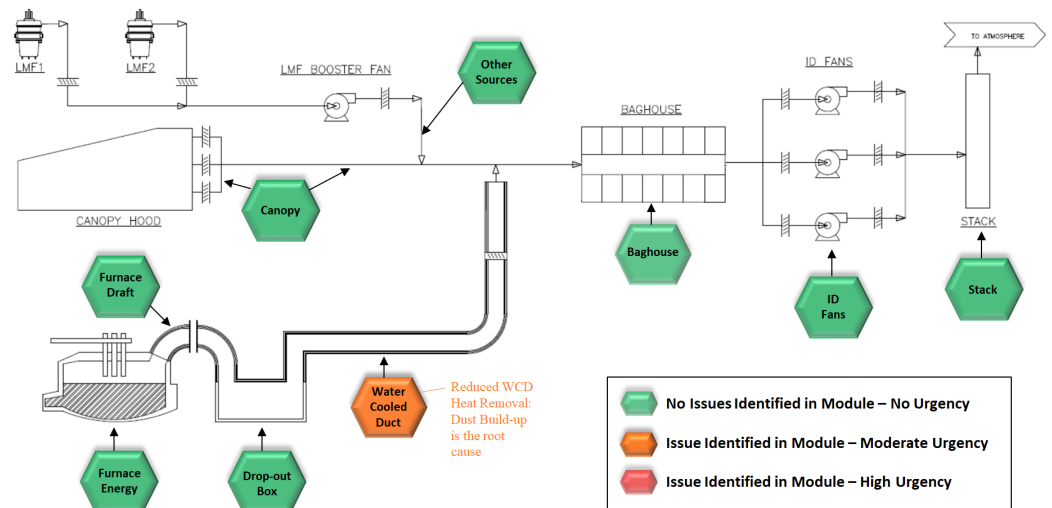
b) The RPM Methodology (cont.)

The *RPM Methodology* allows the identification of problems at their onset before they impact productivity or emissions compliance. It also ensures that the furnace process and APC systems are continuously operating at optimal conditions.

c) The RPM Modular Components

RPM is built modularly to include all the primary process operations and the associated APC systems. Each module's performance is continuously monitored to ensure optimal operation at all times.

Below is an example of a typical steelmaking EAF meltshop with RPM modules shown. When RPM identifies a problem, the specific module changes colors from green to orange or red, depending on the urgency of the problem.



d) What Separates RPM from Other Data Monitoring Services

Most data monitoring systems only provide a simplified visualization and analysis tool primarily designed to help plant operators better understand their data and make decisions based on it. The RPM differentiator is the in-built artificial intelligence that can immediately find the root cause of many common issues and provide immediate operational and maintenance recommendations. In addition, RPM is backed by the ongoing support from experienced GCT engineers who will further analyze the errors to provide continued optimization support.

Furthermore, the RPM service can be accessed remotely through a secure web based interface to monitor the health of the system. As we learned from the COVID-19 global pandemic, remote capabilities can be an extremely valuable tool to keep plants operating safely and efficiently during an emergency.

03. COVID-19 Status

First and foremost, we hope that you and your families are staying safe and healthy during these trying times. We have recently transitioned back to in-office work at some of our locations and are taking every precaution to protect the health and safety of our employees.

We feel that recovery is just around the corner and look forward to assisting you with your projects as business resumes.

