

OSIsoft®

USERS²⁰¹¹ CONFERENCE



Turning **insight** into **action**.



Using PI SQC and PI Notifications in Manufacturing and the Value of OSIsoft vCampus

Presented by **Michael Loria & Anthony Bakker**
United States Steel Corporation



United States Steel Corporation

- Founded in 1901 by prominent business figures: Andrew Carnegie, J.P. Morgan, Charles Schwab, and Judge Elbert Gary
- Currently the largest integrated steelmaker headquartered in North America
- An OSIsoft customer since the early 1990s
- PI Servers are running at all of our integrated steel mills in the United States, Canada, Slovakia and Serbia

Integrated steel mills produce steel starting with raw materials



Coal

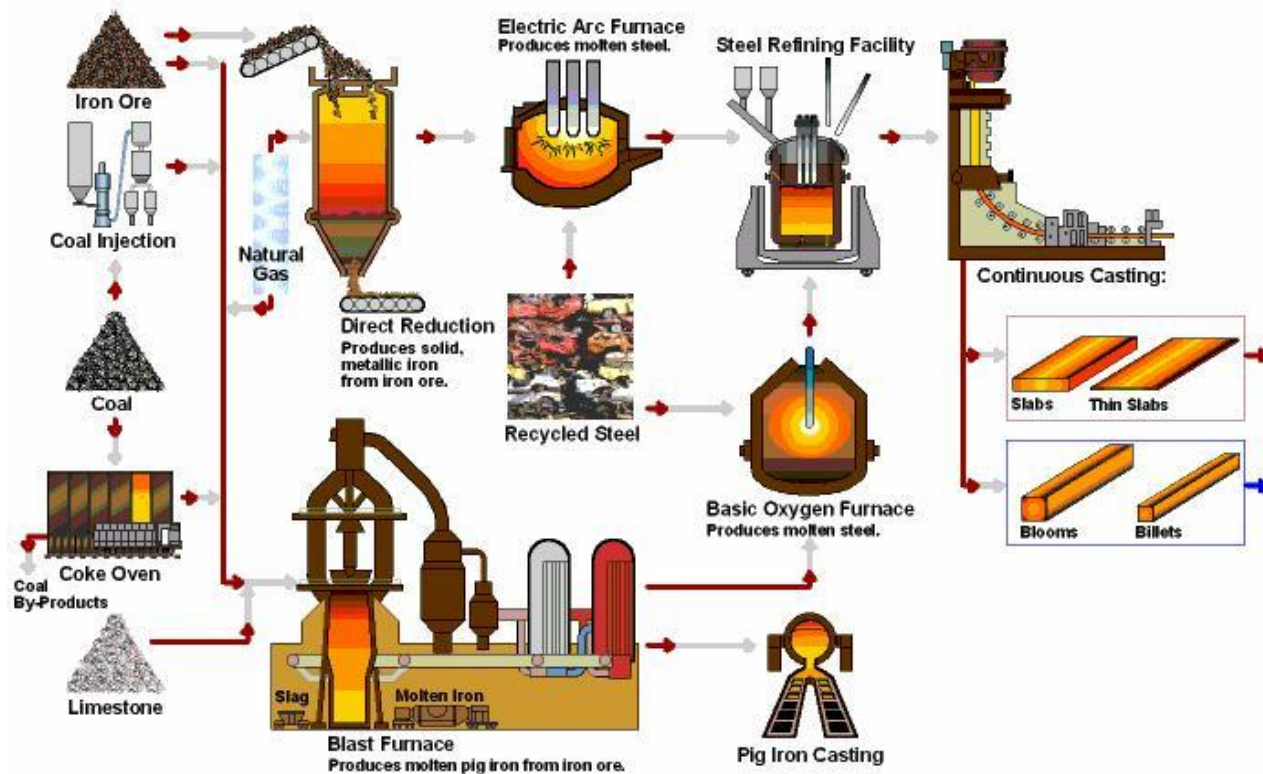


Iron Ore Pellets

Limestone

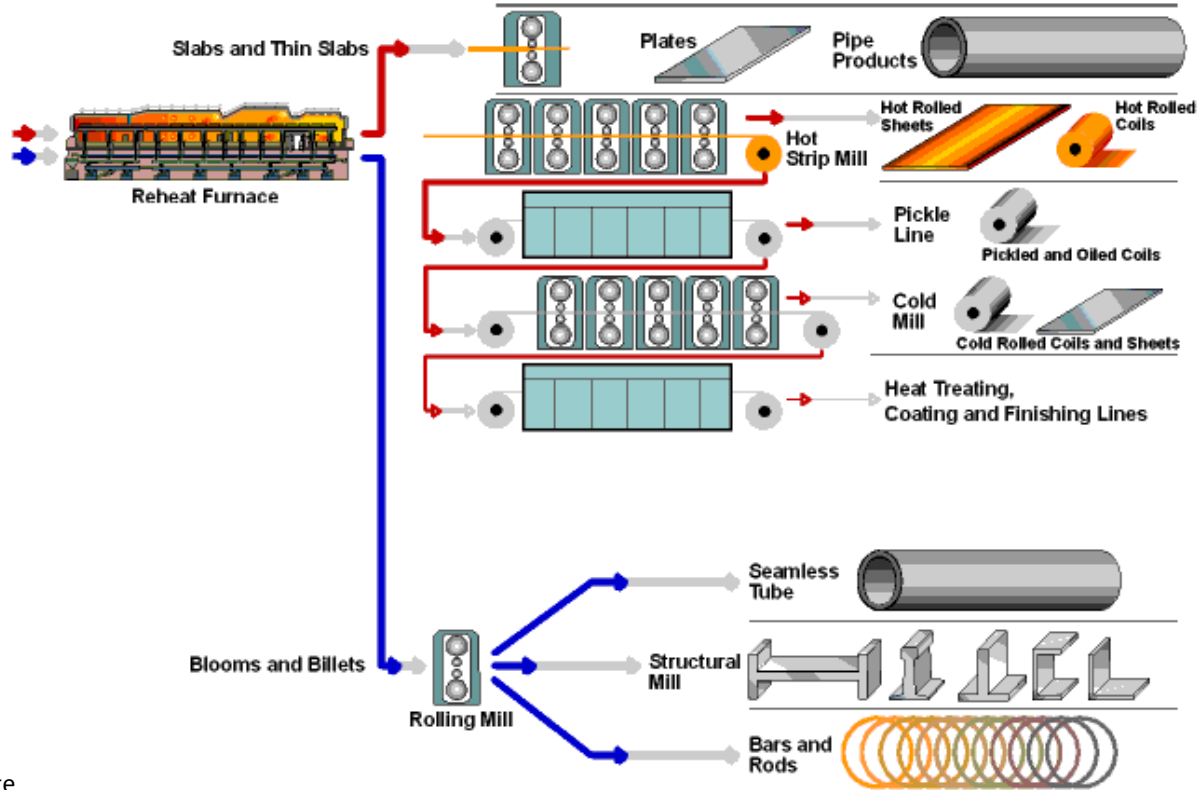


From Raw Materials to Steel Slabs



Graphic courtesy of the
American Iron & Steel Institute

From Steel Slabs to Finished Coils



Graphic courtesy of the
American Iron & Steel Institute

Topics

- General challenges found in manufacturing environments
- Using PI System in the manufacturing environment
- Uses of PI System at United States Steel
- Benefits of OSIsoft vCampus e-Learning Application

General Challenges in Manufacturing

- Everything moves very quickly
- Trying to do more with less
- Complexities of the product mix – i.e. different grades, thicknesses, widths, etc.
- Determining when process variability is “non-random”
- Getting the right information to the right people at the right time

Consistent Data Collection for Process Monitoring

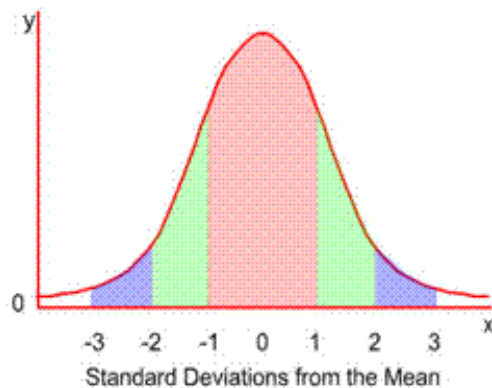
PI System Tools: Performance Equations, Totalizers...

- Use event-driven PI Performance Equations and PI Totalizers to obtain sample values for comparison and process monitoring

Finding the Non-Random Variability

PI Tools: PI Statistical Quality Control (PI SQC)

- PI SQC has many built-in standard process control tests for determining non-random variability



The Right Information to the Right People at the Right Time

PI System Tools: PI Notifications

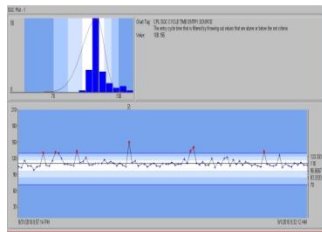
- A very flexible tool for sending out notifications and triggering events
- Very manageable with system explorer

Putting it all together for Outstanding Process Control



Comparing apples and apples. Not apples and oranges

PI Performance equations, PI Totalizers, etc.



Determine when non-random variability exists

PI SQC alarms



Notify when we are unstable

PI Notifications



Find the root cause

PI Client Tools

Weight Scale Integrity

- Keeping a weigh scale honest
- Very large scales are used in rolled steel production
- Scales are used to weigh alloys during the steelmaking process
- Weigh scales have a tendency to drift over time

Solution

- Compare the scale weight to an estimated weight
- Track the difference between estimated and actual in PI SQC
- Alert the proper people when scale is out of tolerance
- Use PI System data history to correct previous weights and better manage future estimated weights

Benefits of this Solution

- Several thousands of dollars in savings.
- Better tracking of product yields, which in turn helps to reduce yield loss

Monitoring Process Section Conditions

- Process data is continuous and needs to be sampled at some consistent interval
- Using PI Totalizers and PI Performance Equations to automatically collect data based on events such as what product is being produced
- Use the grade or some other product attribute to separate the results into different PI SQC alarms
- Use the results to notify the right people at the right time when data is out of tolerance
- Use the PI Client Tools to determine a root cause and resolve the issue

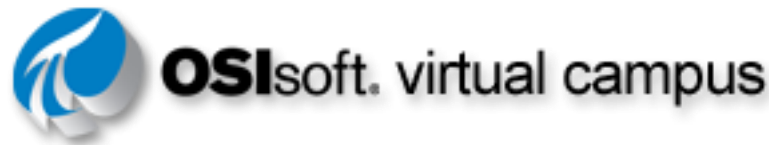
Solution

- Collect data based on event
- Configure the desired tests in PI SQC to trigger data
- Alert the right people at the right time when a process upset has begun or is about to begin
- Use historical PI System data to troubleshoot the root cause of the issue

Benefits of this Solution

- Reduction in diversions
- A higher quality product for our customers

Benefits of vCampus



- Have made 30+ posts to vCampus with multiple responses to every single one
- Running the PI System 2010 Personal Server
- Downloaded the PI AF Builder and PI ACE 2010 pre-releases
- Benefited from many existing posts





Thank you

© Copyright 2011 OSIssoft, LLC.

Turning **insight**
into **action.**