Implementation of the Energy Management Information System (EMIS)

Jean-Yves St-Onge
Mina Salama
About ArcelorMittal

ArcelorMittal is the world’s leading steel and mining company, with some 232,000 employees in more than 60 countries. ArcelorMittal leads in all major global steel markets, including automotive, construction, household appliances and packaging, with strong R&D and technology, as well as sizable captive supplies of raw materials and outstanding distribution networks.

To contact us:

**ArcelorMittal Long Products Canada**
4000, route des Acieries
Contrecoeur (Quebec) J0L 1C0

Telephone:
450 587-8600 or 1 800 361-2605
ArcelorMittal Long Products Canada

Most important Canadian company in iron ore mining and processing.

Over 1,700 employees.

2 million tons of steel per year.

Iron ore is processed 6 to 11 times before it is finally used.

From ships to skyscrapers steel is truly the fabric of life.
What is Hatch?

• Employee-owned; partners who think like owners
• In business for 6 decades
• Projects in more than 150 countries
• We are well known for our engineering, and have deep roots in technology development and innovation.

• Two additional sectors

- Advisory & technology
- Major project implementation
- Operational performance
What is Hatch Digital?

- Combine our deep understanding of our clients’ technologies, business and operational processes

- Helping transform the metals, energy and infrastructure industries, by solving previously intractable challenges, with Advanced Digital Solutions
Our Business Challenge

Lack of Energy Management

High costs in Gas and Electricity Consumptions
Insufficient knowledge of

When  Where  Why  How
The Solution - EMIS

• A Performance Management tool to

  • Visualize and help understand the consumption of various types of energy and the associated cost

  • Identify and help justify opportunities and capital projects for energy reduction

  • Monitor the impact of energy projects on energy consumption and cost
Components of an EMIS

- Energy Account Centers
- Meters and Inputs
- Data Capture and Integration
- Data Analysis and Reporting
- Management Systems and Practices

Source: Natural Resources Canada’s “Energy Management Information Systems Planning Manual and Tool”
Energy Account Centers (EACs) and Metering
Data Capture and Data Analysis

Energy Data Management

- Totalization
- Conversions
- Aggregations by Day, Week, Month, Quarter, and Year
- Normalisation of Energy Data
- Calculation of Derived / Virtual Metering Points
- Correlations against baselines, targets and thresholds
- Aggregations by Unit, Work Cell and EAC Entities
- Events and Alarms

Interfaces

- Union Gas
- Environment Canada
- IESO
- SAP

Data Collector

- Electrical Consumption Data from Meters
- Natural Gas Consumption Data from Meters
- Steam Gas Consumption from Meters
EMIS Architecture
Implementation of EMIS

• OSIsoft PI was identified as the platform for:

  • Capturing and historizing all metering data
  
  • Provide hierarchical organization for EACs and meters
  
  • Perform analysis/calculations/conversions for metering data
Implementation of EMIS

- Ekhosoft (Third Party OSIsoft partner) was identified as the platform

- Interface with external data sources (Environment Canada, Union Gas)

- Dynamic visualization of energy consumption, energy conservation measures (ECMs), etc.

- Energy Reports
The Merits of PI AF in the EMIS Implementation

• Asset-based templates for efficient development of structures
The Merits of PI AF in the EMIS Implementation

- Dynamics reference to PI Tags (cutting development time)
The Merits of PI AF in the EMIS Implementation

• Various views/hierarchies for asset representation for various groups

  • Asset hierarchy - organizing assets by their type and functionality

  • Process hierarchy – organizing assets (references) according to their association with the process area

  • Additional hierarchies can be added – foundation for the implementation of other initiatives (for instance: Condition-based Maintenance)
Future Opportunities

• Integration of EMIS with Machine Learning and Analytics platforms;
  • Advanced statistical data analysis
  • Pattern recognition and predictive analytics
## PI-AF for Energy Management Information System

### CHALLENGE
Understanding how different forms of energy are consumed (where, when, why and how)

- Connect right data sources to get required data
- Having the right data to under the consumption
- Organize data in the right context

### SOLUTION
Integrated Energy Management Information system

- Collect and historize all energy data into one system
- Develop template-based calculations and analytics
- Visualize consumption of different forms of energy using third Party vendor

### RESULTS
Opportunities for energy saving and improvements

- Better knowledge of energy consumption
- Identify opportunities and initiatives for energy conservation
- Set the foundation for further improvements using PI AF
Questions

Please wait for the **microphone** before asking your questions

State your **name & company**

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Contact Information

Jean-Yves St-Onge
Jean-yves.st-onge@arcelormittal.com
Automation Director
ArcelorMittal

Mina Salama, OSIsoft Certified
Mina.salama@hatch.com
Senior Controls and Automation Engineer
Hatch
Thank You

Merci

Danke

Grazie

Obrigado

Optional: Click to add a takeaway you wish the audience to leave with.