Data...Information...Decision Making

Tackling the Sustainable Energy Management Conundrum

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Themes for Today...

• Managing Energy
• How we exploit process data.

• Energy needs a performance data approach.
• But have we got there yet? It's a great case study in the need for effective process data management.
Where are we now?

The Issues in 2012

Energy Efficiency – the Industrial Story so far

Developing a sustainable route forward
The Pressures from Outside

- Energy Costs – Pressure on Operating Costs
- Emissions: the end-customer perception ...the desire for Green Manufacturing (ISO50001 ?)
- EU 2020 targets
  - 20% reduction in primary energy
  - 20% reduction in emissions
  - 20% from Renewables
EU not on track to meet Energy Targets...

- 20% Energy saving objective

Source: Emerson
Legislation (Europe)

- EU Directive on Industrial Emissions (IED)
  - Licence to Operate Philosophy.
  - Encourages Adoption of Best Available Technology
  - Common BAT theme is Systematic Energy Performance Management.

  - Stronger push on Performance Targets and Benchmarking.
  - Mandatory Adoption of Systematic Energy Management.
  - Regular External Energy Auditing for Manufacturing Sites.
• So, Energy Efficiency is back on the Agenda.

• What do we do about it?

• Haven’t we been here before?....
Sustainability –
Why Energy Efficiency can be Difficult....

• How long have we been doing this?
• We have the technical tools. We have the knowledge. It should be Easy!

• BUT.... time and again the benefits disappear. WHY???
Why the Difficulty??

- Energy consumption is a multi-facetted entity:
  - Technology
  - Operations
  - Maintenance
  - Culture and Competencies

- There is no single silver bullet.
- A large element of “Housekeeping”.
- New Energy investments need a broad level of multi-discipline support to deliver the expected returns.
- Temporary focus due to volatile energy prices..then revert to type..

How do they influence energy efficiency?
Its a Control Challenge – at all Levels

- Benchmark
- Set Target
- Measure Performance
- Take Corrective Action
- Review Performance

Automatic Control
+ Supervisory & Management Control

Tools, Techniques, Procedures.
The Way Forward......

A cross-Discipline Performance Management Approach

Driven by Real Time Performance Data as the foundation for Improvement.
The Energy Management Framework

The Framework provides
- A Catalyst for Change
- A Vehicle for Opportunity Development
- Disciplined Target setting & Performance Review
- Drives Corrective Action & Operational Excellence
- Worth >5% of Energy Bill

Framework Model

Structured Management Systems
Control & Monitoring Tools
Real Time Database Systems
Components of The Energy Management Framework

• Database
• Reporting Tools
• KPIs & Energy Drivers
• Applications
• Structured Performance Management
Energy Management Information System

Supply & Demand Information From Business System

Actual Operating Data for Reporting & Planning Purposes

Supply & Demand Information Processed Into Planning Data to Set Equipment Operating Parameters

Site
Area Management
Unit Management
Operation Control
BUT!!!.....

• 1990s........ “Data on your Desktop”
  – Client/ Server systems
  – Easy User Access

• 2000s........ “Data into Information”
  – Advanced Statistics and Tools – PCA/PLS.
  – Integrated Relational and Historian databases.

• 2012.......... “The Power of Data”
  – How do we ensure that we exploit the (potential) benefits from the Data and Information?
  – How do we drive Business decisions?
Have we really got there?

• We have “Information” coming out of everywhere...
• Are advanced techniques really robust and sustainable – for the Boffins.... or for you and I?
• Are we really making better business decisions in a consistent and profitable manner?
• Do we have sustainable data-driven decision making on our manufacturing sites?
Targeting – How Complex???

Production Planning Effects on Energy Targets

Energy/feed

- Annual Business Plan
- Planning Variation
- Seasonal Variance
- Maintenance
- Target Monthly Plan
- Gap to Production Plan
- Operations Efficiency Gap
- Actual

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Structured Performance Management

- Development of Strategy.
- Responsibilities & Accountabilities
- Benchmarking Against External Measures & Best Practice.
- Target Setting (Mgt - Area - Plant - Equipment)
- Monitoring, Checking & Corrective Action.
- Monitoring of Improvement Programmes.
- External certification eg ISO50001
The Integrated Picture

“Plan – Do – Check – Act”

Site Area Management

Unit Management

Equipment Operation

Systematic Management

Energy Data Structure

Energy Applications

Control

Asset Monitoring

Utilities Optimisation

Mgt. Reporting

Energy Mapping
The Energy Management Process

Management Systems

Improvement Programmes

Benchmarking

Industrial Best Practice

Energy Management Process

CO₂ Reduction

Increased Margin

Reduced Environmental Impact

DATA DRIVEN
Winding Up

Energy Efficiency:

• Simple Solutions But Complex Issues.
• Multi-Disciplinary / Multi-Solutions.
• Energy Data drives the process.
• Decision Making Framework.