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VISUAL MESA™

ENERGY MANAGEMENT SYSTEM

TECHNICAL DATASHEET

Energy costs are a very large and necessary part of the operating expense of industrial facilities such as refineries, petrochemical and chemical plants, pulp and paper mills, biofuels facilities, district heating / cooling systems and industrial gas plants.

Trade-offs between the electrical and steam system have become especially significant since the advent of electrical deregulation in some markets. The operational complexity is compounded with the introduction of emissions constraints due to ever-tightening environmental regulations. This presents a challenging scenario for management of steam, electrical, water, hydrogen, fuel, and other utilities.

Significant cost savings can be achieved by using an optimization program that is able to leverage the flexibility inherent in the site's energy systems in order to recommend lowest cost utility operation. Visual MESA was developed to do just this.

What Visual MESA does

- Manages energy cost using real-time and historical data via an intuitive, user-friendly interface
- Allows operators and engineers to have detailed coverage in four distinct areas:
 - **Monitoring:** Monitors the sitewide utilities systems (i.e. steam, electric, boiler feedwater, condensate, chilled water, hydrogen and fuel systems). Assists in the management of the utilities systems by monitoring all variables, calculates and historizes energy-related key performance indicators for the individual units and the plant as a whole, and provides warnings of important changes.
 - **Optimization:** Optimizes the utilities systems to operate at minimum cost within equipment and emission constraints.
 - **"What If?" planning:** Predicts how the utilities systems will respond to proposed changes such as a new plant, plant expansions, change of process, shutdowns, etc. using current, historical, or user-defined data.
 - **Auditing, Accounting and Data Validation:** Audits the system with continuously validated data. Mass Balance closure of the utilities is determined at every location where enough instrumentation is available.
- Successfully bridges the gap between utility and process operators.
- Delivers an excellent ROI with simple payback on investment achieved within 6 months.
- Offers a proven and validated software solution to industrial facilities with dynamic steam generation and usage, cogeneration, heating/cooling capacity and other site-wide utility systems.

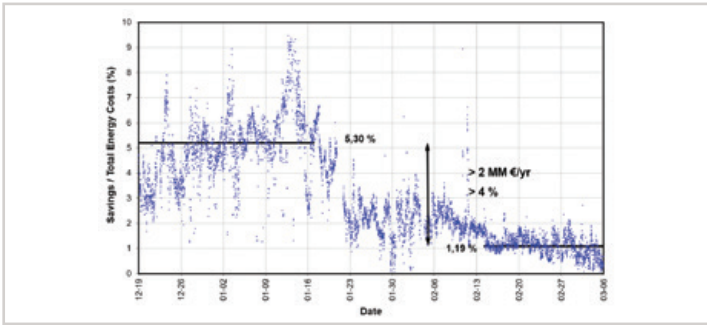


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Reduce energy costs and sustain the savings

This chart shows the reduction in lost opportunity costs at a medium-complexity refinery with an integrated Olefins unit in addition. This customer has subscribed to our Sustainability Program which ensures that their model is “evergreen”, or consistently made current, and that Visual MESA is available and running as a service 24x7x365 in order to provide the customer with recommendations for the lowest cost, reliable utility operation.

- **Month 1:** Visual MESA is executed on-line and a baseline recorded but no optimization actions are taken.
- **Month 2:** Visual MESA optimization recommendations are gradually implemented by operations as staff are familiarized with its functionality.
- **Month 3:** Visual MESA optimization recommendations are implemented on a consistent basis, ensuring maximum sustained cost savings.

Technical characteristics

- Built-in and customizable MS-Excel-based reports
- Non-linear models
- Field-proven SQP and mixed integer optimization routines
- Energy contract modeling capabilities
- Closed loop optimization capabilities
- Runs continuously connected to online data and operates with any data historian via OPC
- GUI for simulation, optimization and steam accounting and “drag-and-drop” model building tools
- Solutions that are easily accessed and shared with any PC on the plant network via MS-Visio drawings, MS-Excel reports and HTML web pages
- Ability for multiple users to open and develop different models (both offline and online) in addition to the one acting as “Watchdog” which is running unattended as a service

Open and closed loop optimization

Visual MESA has mathematical models and mixed-integer, non-linear, optimization routines (SQP) built-in to identify how the utilities systems (steam, fuel, hydrogen, condensate, chilled water and electric power) can be run at the minimum cost while meeting required plant demands and other critical constraints.

An online Visual MESA model usually runs unattended as a service in “Watchdog” mode. Visual MESA can operate in open loop providing recommendations for the operators to take action, or it can be deployed in closed loop, where Visual MESA acts directly on the set points of the manipulated variables.

Find out more: Used by many of the world’s leading refining and petrochemical companies, Visual MESA provides sustained energy savings. For more information or to discuss how we can help you please contact us now.

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