

Visual MESA Real Time Energy Management System

Refining References

In general, refineries exhibit a very good potential for real time monitoring and optimization using Visual MESA Energy Management System.

Based on our extensive experience, overall benefit in the range of **2% to 5%** of the total energy cost can be achieved. Expected project **payback is always less than one year**.

Visual MESA was successfully applied to more than 50 Refineries worldwide, several of them with capacity, steam, fuels and power generation networks of different complexity but all with energy cost savings.

Several published references reported Visual MESA application success:

1. Kuwait National Petroleum Company (KNPC), Mina Al-Ahmadi (MAA), Mina Abdullah (MAB) and Shuaiba (SHU) Refineries, Kuwait

4.4 MM USD per year and CO₂ emission reduction of 27,600 tons per year were reported for MAA Refinery. In addition, What-If case example with 2 MM USD per year of potential savings is presented.

24.8 klb/h of steam excess reduction example are reported for MAB Refinery.

SHU Refinery reported also very good results.

- Real Time Online Energy Management, M. Ershaid, C. Ruiz, D. Ruiz, N. Visuara, D. Periyasami, Petroleum Technology Quarterly (PTQ) 2014 Q2, 93-101.
- Real Time Online Energy Management at KNPC Refineries, M. Ershaid, A. Al-Tarkeet, J. Al-Mutairi, S. Al-Anezi, C. Ruiz, D. Ruiz, S. Cúneo, D. Periyasamy, Society of Petroleum Engineers (SPE) Kuwait Oil and Gas Show and Conference, Mishref, Kuwait, October 2013.
- Online Energy Management System Implementation in KNPC Mina Al-Ahmadi Refinery, M. Ershaid, A. Al-Tarkeet, D. Periyasamy, N. Visuara, C. Ruiz, S. Cúneo, Middle East Process Engineering (MEPEC), Bahrain, September 2013.

2. YPF SA, Complejo Industrial Ensenada, Argentina (Refinery and Petrochemical)

YPF Complejo Industrial Ensenada that is composed by a Petrochemical (Aromatics, Olefins, Polybutenes, Maleic Anhidride) and a Refinery (180 Kbpd of capacity). Visual MESA real time energy management system provided consistent benefits to both sites since its inception in 2005.

- Manejo de Energía en Línea y en Tiempo Real en la Refinería y el Complejo Petroquímico de YPF Ensenada, S., A. Aguilar, S. Cuneo, E. Benvenuto, C. Ruiz, Latin American Refinery Technology Conference, Cancun, Mexico, April 2014.

3. SARAS SpA, Italy (IGCC and Refinery)

Examples presented shown up to 4% of energy cost reduction.

- Making the Most of it, D. Ruiz and F. Serralunga (Soteica), G.L. Diana, P. Floris and F. Mallica (SARAS SpA, Italy), Hydrocarbon Engineering, pages 23-28, January 2013.

4. BP Lingen, Germany (Refinery)

5% energy cost reduction was reported due to Visual MESA online optimization.

- Industrial Energy Management with Visual MESA at BP Lingen refinery, Availability Department - BP Lingen refinery, Soteica. European Refining Technology Conference (ERTC) Annual Meeting, Vienna, Austria, November 2012.

5. Raffineria de Milazzo, Italy (Refinery)

Savings in the order of 4% on total energy cost were reported.

- Implementation of an Online model for energy costs reduction in a southern Europe refinery, Diego Ruiz, European Refining Technology Conference (ERTC) Energy Efficiency Meeting, Amsterdam, Netherlands, 2012.

6. LOTOS Gdansk, Poland (Refinery)

Examples of 2-3% energy costs reduction are shown.

- Energy Management: A Polish Case Study, J. Majchrowicz, M. Herra (Grupa LOTOS), F. Serralunga and D. Ruiz (Soteica), Hydrocarbon Engineering, September 2011, pages 41-45.

7. ENAP Aconcagua Refinery, Chile (Refinery)

Energy related key performance indicators calculated in the real-time Visual MESA model are presented.

- Online real-time optimisation helps identify energy gaps, Marcelo Galleguillos, Michel Maffet, Marcos Kihn, Ruben Monje and Carlos Ruiz. Petroleum Technology Quarterly (PTQ), Q4, 101-109, October 2010.

8. Exxon Mobil, Baytown Refining/Chemical Complex, TX, USA (Refinery, Petrochemical, Olefins, Cogeneration)

- Energy Real-Time Optimizer Baytown Refining/Chemical Complex, M. Lorenz, Industrial Energy Technology Conference (IETC), New Orleans, May 2009.

9. REPSOL Cartagena Refinery, Spain

Energy cost savings between 2 and 3% by using Visual MESA for what-if planning are presented.

- Real Time Energy Management at Repsol Cartagena Refinery, Fernán Serralunga, Diego Ruiz, Carlos Ruiz, Process Department REPSOL Cartagena Refinery, European Refining Technology Conference (ERTC) Asset Maximisation, Prague, Czech Republic, May 2009.

10. TOTAL Feyzin Refinery, France

An example of savings of 7 ton/h of high pressure steam is shown.

- Site Wide Energy Cost Reduction at TOTAL Feyzin Refinery, Departament Procédés - Energie, Logistique, Utilités (TOTAL Raffinerie de Feyzin - France), Jorge Mamprin, Diego Ruiz, Carlos A. Ruiz, European Refining Technology Conference (ERTC) 12th Annual Meeting, Barcelona, Spain, November 2007.

11. REPSOL Puertollano Refinery, Spain

Energy savings in the order of 5% are reported. Trend with data extracted from the Plant historian during a week is presented as an example.

- The Use of an On-line Model for Energy Site Wide Costs Minimization, José Manuel García Casas, Marcos Kihn, Diego Ruiz Massa, Carlos A. Ruiz, European Refining Technology Conference (ERTC) Asset Maximisation, Roma, Italy, May 2007.

12. REPSOL La Coruña Refinery, Spain

Energy cost savings in the order of 3% are reported. Trend with data extracted from the Plant historian during a week is presented as an example.

- Online Energy Management, S. Benedicto Calpe, B. Garrote Pazos, D. Ruiz Massa, J. Mamprin, C. Ruiz García, Petroleum Technology Quarterly (PTQ), Q1, 131-138, January 2007.

13. Exxon Mobil, Research & Engineering Center, USA

- Energy System Real Time Optimization, D. Uzturk, H. Franklin, J. Righi, X. van Mechelen, A. Georgiou (ExxonMobil Research and Engineering), NPRA Meeting, Q&A Technology Forum, 2006.

14. REPSOL Tarragona Refinery, Spain

Savings of more than 2 MM Euro per year are reported. Historical data trend for the energy cost, 3 months of operation, before and after the implementation of Visual MESA is shown.

- Reducing Refinery Energy Costs, D. Ruiz, C. Ruiz, D. Nelson, G. Roseme, M. Lázaro M, M. Sartaguda P., Petroleum Technology Quarterly (PTQ), Q1, 103-105, January 2006.

- Energy Costs Reduction By Using An On Line Utilities Optimization Tool, Diego Ruiz Massa, Carlos Ruiz García, David Nelson, Gary Roseme, Manuel Lázaro Meléndez, María Sartaguda Pardos, European Refining Technology Conference (ERTC) Computing, London, UK, June 2004.

15. REPSOL Petronor Refinery, Bilbao, Spain

Energy cost savings in the order of 5% are reported. Trend with data extracted from the Plant historian during a day is presented as an example.

- Auditing and Control of Energy Costs in a Large Refinery by Using an On Line Tool, Jorge A. Mamprin, Diego Ruiz Massa, Carlos A. Ruiz, Petróleos de Norte S.A. (Petronor), European Refining Technology Conference (ERTC) Asset Maximisation, Budapest, Hungary, May 2005.