

Energy Management & Optimization Using Visual MESA

Customers that Operates Power/Steam Cogeneration Systems with References

Updated September 10, 2014

Industrial facilities where power and steam is produced (i.e., Cogeneration) 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 many industrial facilities worldwide, several of them operating steam and power generation networks of different complexity and capacity but all with energy cost savings.

Several published references reported Visual MESA application success:

Thermal Energy Company (TECO), Houston, TX USA (District Heating and Cooling)

1. **Multi-Period Optimization of District Energy Supply, Development of Day-Ahead Scheduling to Supplement Real-Time Optimization at TECO**, J. Garcia, J. Ruiz, T. Reitmeier, International District Energy Association (IDEA) Annual Conference, Miami, USA, June 2013.
2. **Utilization of Visual Mesa, Sequential Quadratic Programming, Modeling Software to Economically Optimize Energy Plant Operations**, Dan Dennis, Thermal Energy Corporation, International District Energy Association (IDEA) Annual Conference, Indianapolis, USA, June 2010.

REPSOL Química Tarragona, Spain (Petrochemical)

3. **Improving Margins through Energy Optimization: Energy Efficiency Improvements at Repsol Química Tarragona plant as a result of implementing a Real Time Optimization System**, D. Alonso, G. Morrón, J. P. Ruiz, A. Bolívar, D. Ruiz, Global Refining Summit, Barcelona, Spain, May 2013.

Presentation video, Daniel Alonso (REPSOL Química Tarragona) and Diego Ruiz (Soteica Visual MESA)

CEPSA Química San Roque, Spain (Chemical)

Note: International Petroleum Investment Company (IPC) owns 100% of CEPSA since August 2011

4. **Empowering Operators to Drive Sustainable Savings**, T. Reitmeier, Industrial Energy Technology Conference (IETC), New Orleans, May 2013.
5. **Online Energy Costs Optimizer at Petrochemical Plant**, Marcos Kihn, Diego Ruiz, Carlos Ruiz, Antonio García Nogales, Hydrocarbon Engineering, May 2008, Pages 119-123.
6. **Reducción de Costes Energéticos en Un Complejo Petroquímico**, Marcos Kihn, Diego Ruiz, Carlos Ruiz, Antonio García Nogales, Revista Ingeniería Química, España, Nro. 471, 2-6, Mayo 2009.

SARAS SpA, Italy (IGCC and Refinery)

7. **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.

BP Lingen, Germany (Refinery)

8. **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.

Raffineria de Milazzo, Italy (Refinery)

9. **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.

LOTOS Gdansk, Poland (Refinery)

10. **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.

Air Liquide, Bayport Plant, TX, USA (Air Plant and Cogeneration)

11. **Closing The Loop With Visual MESA. The Transition of Air Liquide's Real-Time Utility Optimizer to Closed Loop at the Bayport, Texas Facility**, M. Reid, T. Reitmeier, Industrial Energy Technology Conference (IETC), New Orleans, May 2011.

Usacucar, Brazil (Sugar and Alcohol)

12. **Industrial Experience on the Implementation of Real Time On Line Energy Management Systems in Sugar and Alcohol Industry**, Douglas C. Mariani, Marcos A. Kihn, Carlos A. Ruiz, 10th International Symposium on Process Systems Engineering - PSE2009, Salvador de Bahia, Brazil, Elsevier, August 2009.

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

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

REPSOL Cartagena Refinery, Spain

14. **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.

Air Liquide, Bayport Plant, TX, USA (Air Plant and Cogeneration)

15. **Finding Benefits by Modeling and Optimizing Steam and Power Systems**, M. Reid, C. Harper, C. Hayes, Industrial Energy Technology Conference (IETC), New Orleans, May 2008.

TOTAL Feyzin Refinery, France

16. **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.

REPSOL Puertollano Refinery, Spain

17. **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.

INEOS Chocolate Bayou, TX, USA (Olefins Plant)

18. **Finding Benefits by Modeling and Optimizing Steam and Power Systems**, Bennie Jones and David Nelson, Industrial Energy Technology Conference (IETC), New Orleans, May 2007.

REPSOL La Coruña Refinery, Spain

19. **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.

Exxon Mobil, Research & Engineering Center, USA

20. **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.

REPSOL Tarragona Refinery, Spain (Refinery plus Olefins, including Cogeneration)

21. **Reducción de costes energéticos usando una herramienta de optimización en línea**, D. Ruiz Massa, C. Ruiz García, David Nelson, Gary Roseme, M. Lázaro Meléndez, M. Sartaguda Pardos; Ingeniería Química, Spain, 108-113, May 2006.
22. **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.
23. **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.

REPSOL Petronor Refinery, Spain

24. **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.