Feasibility Studies with the Aim of Developing Joint Crediting Mechanism FY2014

Study for Potential Energy-Saving from Manufacturing Process of Primary Material Industry in Indonesia by Applying Advanced Process Control

New Energy and Industrial Technology Development Organization (NEDO) Azbil Corporation
NEDO's Feasibility Studies with the Aim of Developing a Joint Crediting Mechanism

Indonesia/Energy Efficiency

Study for Potential Energy-Saving from Manufacturing Process of Primary Material Industry in Indonesia by Applying Advanced Process Control

Implementing Agency: Azbil Corp.

This technology can be applied to existing manufacturing automation systems of factories in various industries and is a high return-on-investment (ROI) technology, since it works on simple computer systems, without high-performance hardware or other expensive equipments. A great amount of CO\textsubscript{2} reduction is possible in various industries across Indonesia, such as caustic soda, VCM, Cement, and more.

Summary

Advanced process control technology is one of the “RENKEI” control, which is a Japanese leading-edge technology. By using this optimization technology, energy consumption per unit production will be decreased. Without any change of manufacturing facility hardware, this technology will realize a great amount of CO\textsubscript{2} reduction. Through this survey, the potential CO\textsubscript{2} reduction from vinyl inductor and cement industry by this control will be investigated.

Survey Items

1) Conduct a questionnaire survey to estimate the potential CO\textsubscript{2} reduction by the control
2) Conduct a detailed feasibility study to check the difference from the same type of plants in Japan
3) Examine an approach to compensate the lack for measurement (quality and quantity)
4) Develop a draft for MRV and have it reviewed by TPE
5) Assessment of financial issues

Partner/Site

1) Questionnaire Survey
   Indonesian companies (around 10 companies, cement and VCM)
2) Feasibility Study

Estimated Reduction Amount

40-80 ktCO\textsubscript{2}/y (one company)

To calculate reference emission, energy consumption per unit production (before project) and production quantity (after project) are multiplied.

Energy Consumption for manufacturing process can be measured. Moreover, by using the CO\textsubscript{2} emissions factor, the amount of CO\textsubscript{2} emissions will be calculated.
Our advanced process control (APC) which consists of multi variables model predictive control, regulatory advanced control and soft sensors are applied to the process plant of raw material industry such as vinyl industry, olefin industry, and cement industry in Indonesia.

This technology will provide good ROI, since it only requires advanced process control software and computer servers while no additional expensive hardware is necessary. It takes only about six months to implement the system to the targeted plant.

**Technology Outline**

**Advanced Process Control for Manufacturing Process**

- **SORTIA-LQPTM**
  - Multi Unit Real Time Optimizer
- **SORTIA-MPC™**
  - Multivariable Model Predictive Control with Optimizer
  - Advanced Regulatory Control
  - Soft Sensor
- **Processes**

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