About Pfizer Asia Pacific

Pfizer Asia Pacific Pte Ltd is a part of Pfizer Global Supply and is an active pharmaceutical ingredient manufacturer. The plant has been designed with the integration of new technologies and pharmaceutical manufacturing processes. Environmental, health and safety considerations for both staff and the community were also a priority when designing this state of the art facility.

Virtual Metering Technology for Smart Energy Management and Intelligent Analytics of Manufacturing Processes Towards Energy and Water Efficiency

Being a multipurpose batch process plant, it is challenging to monitor energy, water and nitrogen usage in processes and equipment. To reduce cost and downtime of installing physical meters, Pfizer adopted virtual metering instead of installing additional physical meters. Virtual metering uses mathematical models to generate real-time operational data by utilising equipment design data (pump curve, valve sizing etc.) and data from existing automation systems such as DCS, BMS, PMS and PLC. This integrated system has enabled Pfizer to:

- Map energy consumption to batch operation during production and non-production times to optimize total energy usage/costs;
- Provide real-time monitoring and pro-active control to identify abnormalities in usage through advanced analytics;
- Schedule weekly reports and build energy performance indicators offering alerts for investigations;
- Create 3,000 virtual metering devices, avoiding capital investments using hard meters; and
- Foster multi-discipline collaboration and ownership for energy reduction among personnel.

Achievements

The integrated system has enabled Pfizer to eliminate nitrogen wastage, resulting in annual energy savings of 408 MWh or 10% system level improvement at OSP (production building). Intangible benefits of the system include better understanding of process and future saving potential for process optimisation.