

Optimized and plant-wide energy management in integrated steelworks

Efficient Energy Use Pays Off

In the steel industry, energy-related costs to convert raw materials to final steel products typically account for approximately one quarter of total production costs. For most producers, however, there is normally an enormous potential to reduce the energy consumption and thus the related costs by applying innovative plant-wide energy-management systems. Siemens VAI helps producers to optimize their energy efficiency with the additional advantages of improved environmental compatibility and a fast payback on investment.

The Siemens VAI Energy Management System is characterized by flexibly combinable energy-management modules in different automation levels to meet individual customer requirements (Figure 1). It can be easily integrated into existing automation environments such as basic automation, process automation, production planning and enterprise resource planning (ERP). All areas related to energy management are part of this solution package, including the entire energy topology (media, energy suppliers, energy-storage facilities, consumers and supply contracts, etc.) and the respective production facilities from raw-material processing up to finished-product manufacturing. The system provides increased transparency of the overall cost structure, and ensures an optimized utilization and distribution of energy throughout a steelworks. Reduced load peaks, minimized flaring losses and maximum utilization of periods with low tariff rates are key factors for major cost savings.

Supervisory control and data-acquisition level (SCADA)

Centralized control is provided for all media (e.g., fuels, technical gases, water, steam, electrical power) at this automation level. Specific functions for data collection, recording, alarming, trending, logging and the control of the energy consumption of all relevant loads or load groups are available. A main objective >>



Optimized and individually tailored energy-management modules ideally meet the requirements of producers to improve energy efficiency and reduce costs.

>> is to reduce and avoid load peaks which, of course, reduces costs. “Load shedding” is implemented on the basis of sophisticated load-switching strategies.

Energy Data Management Level

This module acquires and stores data from the relevant computing and measuring (or SCADA) systems through flexible communication interfaces. It creates

the basis for transparency in energy management by making visible both the energy input and related expenditures. Energy cost control, energy cost allocation to cost centers as well as steps to reduce the CO₂ load and environmental impact are facilitated and become traceable through continuous documentation. The system is based on a modern client-server configuration. Oracle servers can be used for the data-

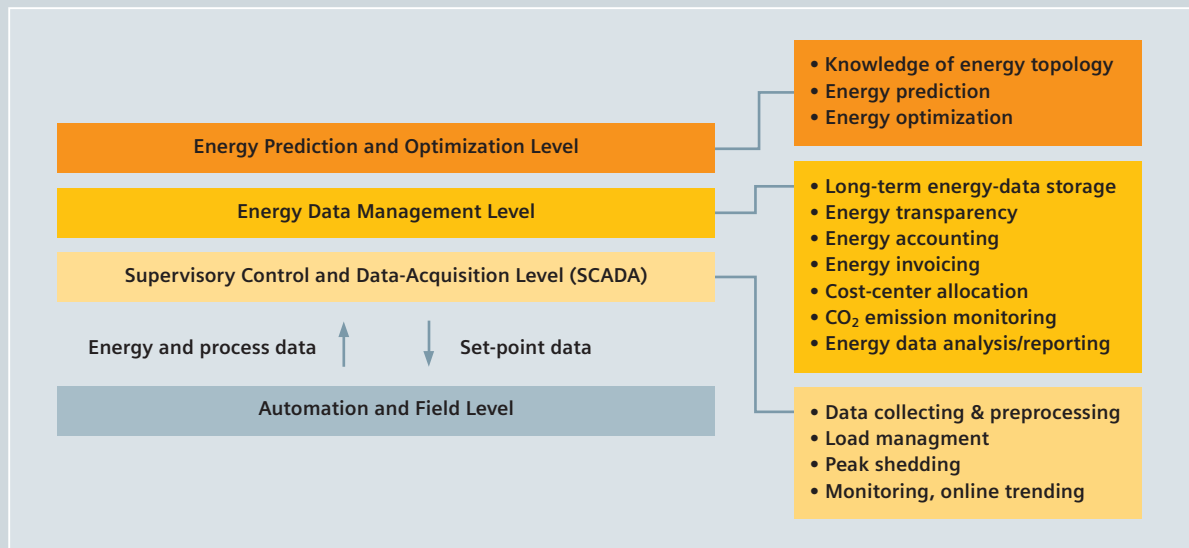


Fig. 1: Hierarchical structure of the Siemens VAI energy-management system

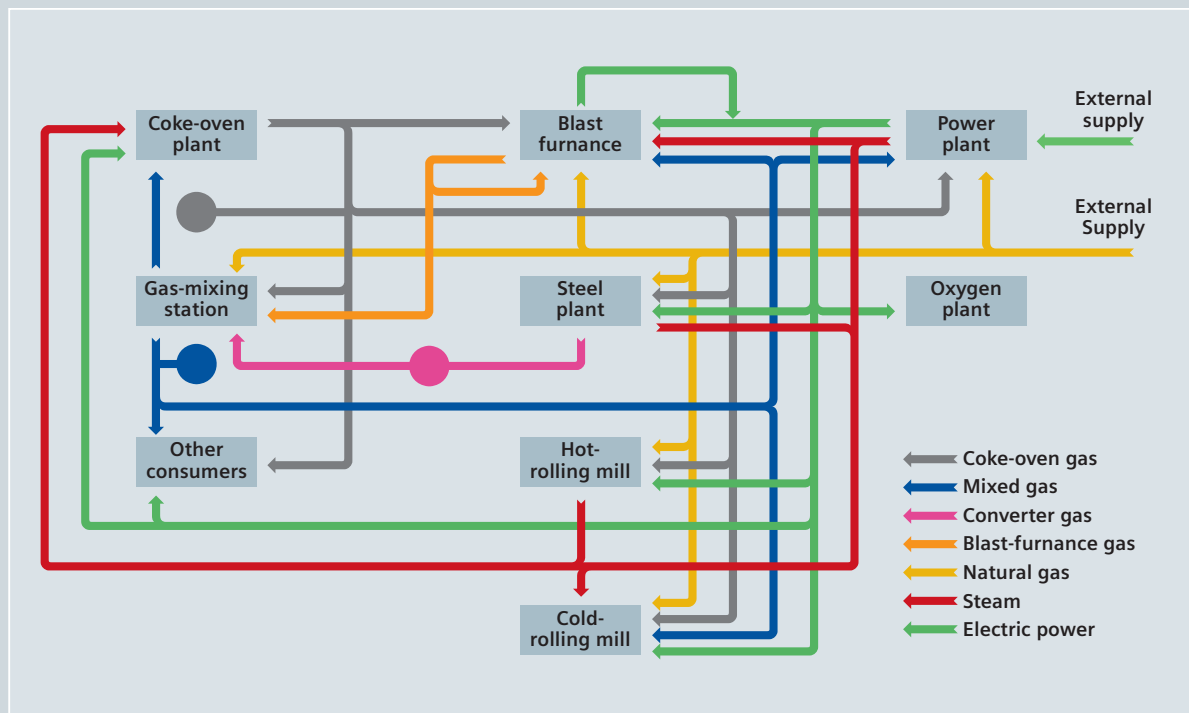


Fig. 2: Typical energy network within an iron and steel works