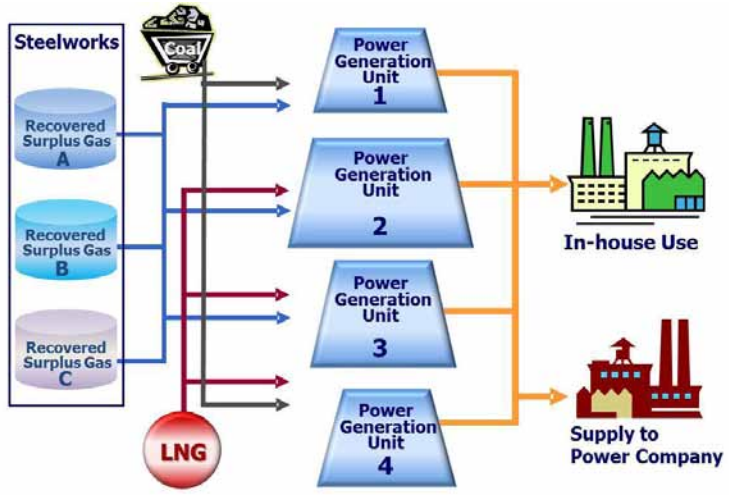
RENKEI Control in:

Private Power Supplier in Steelworks

- Demand and Supply RENKEI Control -

■Overview

A power generation facility uses purchased coal and LNG as well as recovered surplus gas as energy sources for steelworks production. The generated power is used in-house or is supplied to the power company as a pre-determined condition. The control system enables optimum supply of power in response to the demand behavior — hence the name "Demand and Supply RENKEI Control."



■Operational constraints

- Prioritizing the use of recovered surplus gas, in order to determine the best balance of demand and power generation output by identifying the most economical use of coal and LNG in response to the amount of surplus gas recovered.
- There are 4 power generation units with different sizes and time of installation, and each performs differently against the load patterns.

■Steps for reaching a RENKEI control solution

Convert to inverter-duty motors → **Put all power gen. units under unified control** → **Automated operation using a DCS** → **Optimally energy-efficient operation: RENKEI control**

■Overview of optimization concept

- Optimum Distribution Command: determines the best output distribution of fuel, electricity, and steam in response to demand while satisfying the constraints imposed upon each power generation unit.
- Collects and consolidates all operation data that is useful for the optimization algorithm.

■Summary of benefits

- Optimum operation control of boilers in response to demand information can be applied at most plants using boilers.
- Complicated computation run by engineers on old-style computers is replaced by RENKEI control, which utilizes the latest information and communications technology, provides a centralized monitoring environment, and extends the use of existing facilities. This allows your organization to reduce management costs, maintain its existing knowledge base, and make better use of human resources.
- RENKEI control brings a wide range of positive effects, including cost reduction, increased productivity, a safer working environment, etc., resulting in a shorter-than-expected payback period.

■Who can benefit

Business: power producer / Capacity: total output 900,000 kW / System: customized software

Reference: *RENKEI Control Guidebook* (JEITA/GIPC, 2012)

Renkei in Japanese means "cooperation, coordination or harmonization."
"**RENKEI** control" pursues energy efficiency optimization in which two or more elements interact with one another to provide the most efficient and effective results.