A generation company in an electricity market, typically an Independent Power Producer (IPP), needs application support for its Generation Management. This is the core of the business and the functions are used for optimization of the generation assets while minimizing costs.

The generation company offers generation capacity at a certain price one day in advance to the power market operators, or sign bilateral contract with a customer. The trading place will, based on the bids, determine which generator should produce which amount of energy and will issue the information to selected bidders. The assigned schedules will then be optimized by the generators and distributed over the available units. The final schedules are sent to the AGC/EDC function of the SCADA system and used as base points in the real-time control.

Generation Management solutions cover Energy Trading and Forecasting functions with interfaces to Scheduling and Optimization of operation of the assets for short and medium term generation of thermal, hydro and heat power (in combination with co-generation) as well as hydro-thermal coordination.

Generation Management further involves specific control functions, like Automatic Generation Control and Hydro-Chain Control as well as functions for keeping balances over specified time periods according to commitments as well as reserve functions keeping the reserve margins to desired levels.

A Generation Management System naturally also include interfaces to plant control systems, e.g. using an OPC-interface and a Utility Data Warehouse as a common data storage of operation schedules and results.

The SPIDER Generation Management System, GMS, provides a full set of advanced power system functions, all field proven packages reflecting many years of experience under a wide variety of conditions.

User Benefits

ABB offerings for Generation Management provide:

- Matching the trading on a market and generation control
- Improved quality of supply
- Improved utilization of production resources
- Optimal allocation of resources
- Maintaining generation reserves
The Generation Scheduling and Control consist of a number of modular functions as illustrated below. They can be grouped as follows:

- **Generation Scheduling**
  - Short-term to long-term planning
  - Cost optimization
  - Exchange with interconnected utilities

- **Generation Control**
  - Reserve calculations
  - Production optimization
  - Keeping of interchange agreements
  - Maintenance of quality of power delivered

### Generation Scheduling

**SLF** - Short-term Load Forecast forecasts the system load with a variable time step and time horizon. Normally the time step is one hour and the time horizon one week.

**TE** - Transaction Evaluation evaluates the cost or savings associated with selling energy to or buying it from a neighbouring utility. The following established modes of evaluation are provided:

- Mode A evaluates transactions with fixed commitment schedules.
- Mode B evaluates transactions by re-commitment of units.
- Mode C evaluates the incremental cost of buying or selling blocks of energy.

### Generation Control

**AGC** - Automatic Generation Control consists of a number of functions for managing of on-line production resources. Operation with Multiple Control Areas is supported by the AGC package.

**EDC** - Economic Dispatch Calculation determines the optimal economical generation pattern for the production units. An advanced option with a look-ahead capability can be added to the EDC that recognizes the tracking nature of the EDC problem. This reduces the number and degree of regulating reversals.

**LFC** - Load Frequency Control is a closed loop control function that controls the frequency, scheduled generation and power interchange with interconnected utilities by regulation of generation. Interchange and Generation Schedules from external and internal planning tools are used by the LFC.

**GRC** - Generation Reserve Calculation reports on the active power reserves in the network, regulating, spinning and operating.

**PC** - Production Costing calculates unit and system hourly and daily costs for the actual generation and the economically dispatched generation.