Industrial Load Management System
Honeywell Process Solutions—a trusted provider

As a leader in the process industry, Honeywell is uniquely equipped to provide not just the technology, but also the knowledge and expertise to maximize the profitability of your power business.

Over the past several years, Honeywell has emerged as a leading provider of solutions to the electrical utilities for the Transmission and Distribution (T&D) industry. Honeywell offers specific solutions for all Utility SCADA (Supervisory Control and Data Acquisition Systems) and SAS (Substation Automation Systems), Distribution Management System (DMS)

Honeywell has executed projects for leading power corporations in the country covering 400/220 kV transmission substations in several states such as Maharashtra, Gujarat, Goa, Madhya Pradesh & Chattisgarh with a suite of automation solutions. Honeywell has also executed a highly complex Electrical Control System Project for a major steel client covering 31 Substations, five In-House Power House, One External Power unit and One External Grid.

Our Solutions
Honeywell offers solutions that assist the customer in focusing on business growth in the utilities market. Honeywell’s T&D group has evolved from a product supplier to a solution provider such as system design, program management, equipment manufacturing, delivering to sites, installation, on-site commissioning, as well as technical support and services. Our continuous success in substations automation and electrical control system projects in India has brought us precious experience but the most valuable of all, is our ability to bring customers a low-risk and value added solution. In addition, regional based project management and logistic support are included as part of the complete package. This requires us, to work closely with end customer to understand their needs.

The Technology and Equipment
The SCADA System that Honeywell proposes is based on the most proven technology Honeywell’s Expertion System as Graphical User Interface SCADA HMI and Field Equipment Master/RTU of Honeywell all communicating on standard Industry IEC61850 and IEC104 protocol.

Honeywell Project Management
Honeywell has shown its ability for lifecycle support for the projects it has commissioned. Honeywell recognizes the importance of Project management of SCADA/ECS projects as being the single most key element to a successful execution. From our experience the most successful programs for both utility and supplier are those where this partnership is strong and where an environment of trust and cooperation is fostered. Honeywell has devised a program to meet the client’s requirements for the supply, delivery and commissioning of the SCADA System. The program uses a holistic systems approach to planning, scheduling and controlling the project in order to achieve the project objectives in the most cost effective and timely manner possible.

Why Honeywell
In addition to the technology benefit that Honeywell brings, we also offer substantial economic benefits and gains in several areas.

Benefits Include:
• Very low commercial and technical risk as Honeywell has a very long successful and proven record in supplying SCADA equipment within India
• Past experience on Honeywell's solution allows the client to minimize training of staff, which allows the client to reduce considerable time, resources and cost, which results in significant saving
• Honeywell has had a proven track record of performance, thus enabling savings in contract-engineering man-hours in supervising and monitoring progress.
Energize your plant

Your plant is geared to deliver. It matches global standards. You have world-class workforce. Are you as confident about your energy management?

Industrial plants worldwide are gearing up to create competitive differentiation through innovative methods. Globalization, diversification, mergers and acquisitions are continually adding pressure on deliveries. They endeavor to succeed in the market place by containing costs, improving operating efficiencies, and decreasing time-to-market. In adding plant managers are aligning all strategies emphasizing on growth and productivity. In this scenario an efficient energy management system for a steady, reliable and quality power is the most significant ally.

Industrial Load Management System

Industrial Energy Management

Energy use in industrial plant has long been a significant financial consideration. The price fluctuation related to utility deregulation and System Stability has made controlling energy costs critical to profitability. There are numerous opportunities to improve the power usage, reliability and quality in an industrial environment. Nearly every production operation can optimize the usage of power by having an efficient & powerful control system. Power monitoring and control pay dividend in measurable terms.

Advantage Honeywell

Honeywell is committed to managing your plant energy resources in order to deliver reliable and quality power using real-time information technology specifically developed for industrial application through innovative system and specialized engineering services. From product solution and turnkey automation systems to company-wide energy management systems and programs, the broad range of solutions from Honeywell help you stay ahead in your business.

Why Industrial Load Management System?

The big picture of the plant energy management is replete with many gaps. Large complex power network are often difficult to manage and encounter problems due to disturbances. Added to this are considerations like:

- Multiple power sources such as in-house generation (Cogen & Captive Power) & External/State Grid
- Complex distribution network across the plant
- Disturbance from External Grid
- Different electrical operation

Partnering with customers, we access the tools, information and resources for improving energy efficiency programs within plant operations and help identify potential projects, calculate costs and ROI.

Optimization, monitoring & control of electrical energy helps plant managers see the big picture. It makes them dedicate their energies on managing production efficiently, use capital assets judiciously and institutionalize productivity rather than complexity.

Energize your plant
Taking appropriate steps for monitoring and controlling power benefits the industry through reduced power usage, shifting load away during peak demand time, improving the quality of the power and process efficiency. The accrued benefits improve the bottom line by reducing the cost to produce the product. For the plant producing Cogen Power, the sale of excess power to utility generates profits that are even more direct; as long as there is effective coordination in measuring power in both the direction through the inter-tie.

Industrial Load Management System (ILMS) package of Honeywell provides all advanced tools to manage and optimize energy operations. This advance solution is available for mining, metals, cement, chemical, refinery/petrochemical and paper industries and more with an ease of customization as per industry needs.

Valuable Business Benefits
Industrial Load Management provides significant cost savings and increased profits:
• Judicious use of energy by use of sophisticated planning tools for forecast, demand and plan electricity/ energy
• Meets energy needs with minimum costs and enhances resource optimization and production scheduling
• Supports electricity sale and purchase in the open market, timing and pricing of transactions ABT compliance
• Helps avoid peak tariffs & increase System stability with respect to load planning, tie line monitoring and load shedding
• Reduces maintenance downtime by faster restoration leading to increased production
• Enhances awareness of energy generation, use and purchases leading improved cost effectiveness
• Easy to use - all critical energy parameters are automatically evaluated, monitored and reported in real-time

Real-time Acquisition, Monitoring and Control of Electrical System
Powerful & Agile Graphical User Interface

Enhanced performance and usability of Experion™ EPKS differentiates this graphical user interface from other generic offerings. Its features address the specific demands of electrical utility substation automation applications, such as full SCADA functionality, industry standard communications, advanced alarm management and a redundancy option; as well as database connectivity, extended system security and user-friendly configuration tools.

Experion™ EPKS is a powerful and flexible tool that gives operators detailed and timely supervision and control of all substation equipment, including intelligent electronic devices, with clear graphical, alarm and dynamic text displays, plus power quality and digital fault event data. The historical and real-time databases are excellent resources for analyzing events and generating reports critical to making more informed operating and business decisions. With this impressive list of capabilities, the typical bulky and costly mimic panels and dedicated chart recorders used in substation installations can be avoided.

Open Access to Process Information

Real-time, historical and forecast data is managed by real-time database developed specifically for demanding industrial applications. All information, including historical values and forecasts, can be shown on the screen in the same view. Users can move data to their desktop applications by cut and paste operations. Data can also be accessed using standard SQL commands.
Advance Solution for Planning, Coordination & Optimization of Power - Industrial Energy & Load Management System

Load Forecasting
Planning of the energy system operation, based on the forecast need for electricity and heat can be carried out several weeks in advance. Various forecasting methods are available depending on the type of energy consumer. Load forecast can be automatically derived from the production plan.

Economical Power Drawals
It is imperative to optimize the operation of the energy system from both operational and financial perspective. The economic power drawal function ensures that the power consumption at any time is being done in the most economical manner depending on the electrical network conditions. The actual costs of generation as well as the optimum cost of generation subject to the various constraints are computed at periodic intervals. It also suggests the optimum loading for each plant/unit so as to drive the actual cost near to the optimum cost. As the forecasted load may not match with the actual load, the generation/drawl schedule needs to be updated periodically. The computation of economic drawal is scheduled every 15 minutes.

Automatic Generation Control (AGC)
Automatic Generation Control applications allows the operator to perform the following application:
• Load/frequency control
• Area control error calculation
• Interface with interscheduling functions

Apart from above the AGC is a compact all-in-one unit designed for the following applications:
• Automatic mains failure
• Island operation
• Fixed power/base load
• Peak shaving
• Load take over
• Mains power export (fixed power to mains)
• Load sharing
Maximum Demand Control
This is a subset of the economic power drawl function and is exclusively meant for the power drawl control from external grid. Therefore it is necessary to check the excursion of the demand beyond 100% of the contract demand. If the forecasted demand from state grid exceeds 100% MD, then the other generation sources have to contribute more or have to resort to load shed of unimportant loads.

Intelligent & Adaptive Load Shedding
The purpose of the dynamic and fast load shedding feature is to ensure the stability of the electrical network in the event of pre-defined power system disturbances. The dynamic and fast load shedding feature allows the user from master control room to easily define new load shedding schemes and modify/delete existing load shedding schemes. Through the periodic monitoring and analysis of the electrical network, a dynamic and fast load shedding scheme is used to periodically determine the required loads to be shed in the event of pre-defined contingencies.

Power System Analysis
By using simulation in combination with the optimization model, the effects of variations in system parameters can be studied. Such studies include state estimator, automatic generation control, contingencies analysis “what if”, load flow study, off-line fault calculation etc.

Availability Based Tariff (ABT)
ABT monitoring solution is a state-of-the-art solution to enable both generating utility & consumer to monitor the power exported/imported to/from the grid from the perspective of ABT maxims. This is a flexible solution with an extensive set of features that allows a generating station & consumer to effectively monitor different parameters within the ABT regime.
Integrated Power Plant Control System & Electrical Control System

In any industrial plant power system reliability and quality will be of great concern if not monitored & controlled at appropriate time. Hence an integrated power plant control system with electrical control system for real-time data will answer the present need for better coordination & operational decisions.

Why Integrated System
Most of the time the generation and electrical distribution control is done in isolation, with operators of different systems not knowing the demand and generation. Some critical tasks like load scheduling, load forecasting, steam and fuel consumption, optimizing generation versus power purchase, managing power purchase and sale transactions, monitoring and controlling peak loads, energy balance and efficiency becomes difficult if the information of both generation and distribution is not available to the operator. Hence a common control system will become an essential factor for reliability of power plant & electrical distribution network.

Essential features of an Integrated Control System

Integrated control system shall provide all advanced tools which will allow electrical power users and producers to be more reliable and put operators, engineers, and managers in control of operation, maintenance, and planning of the power plant and electrical power system resulting in optimum system utilization, lower costs, and financial stability

Important features of the Integrated Control System

Operations: Shall seamlessly integrate with electrical and process parameters for a reliable system

Maintenance: Shall assess the maintenance need of plant equipment. All this translates to reduction of cost and prevention of unplanned shutdown.

Engineering: Shall have the ability to simulate the real time value to predict the network stability.

Planning: Shall improve production scheduling by having an adaptive planning tool.

Financials: Shall have good accounting feature to know energy usage and fuel cost while providing recommendations to operator on optimizing peak loads and eliminates tariff penalties.

Valuable Business Benefits

An integrated energy management system for power plant with electrical control system of substations has the following benefits

- Energy needs for forecasting electricity and steam demand and planning energy use is known
- Energy needs are met at minimum cost with resource optimization and production scheduling.
- Electricity sales and purchase is supported in the open market, including timing and pricing transactions
- Peak tariff is avoided through load planning, tie line monitoring and load shedding
- Enhanced awareness of energy generation, use and purchase for improved cost effectiveness

A Distributed Control System (DCS) with integrated Electrical Control System (ECS) for power plant and electrical distribution network helps plant managers to manage production efficiently ensuring power system stability and process continuity.

SYSTEM ARCHITECTURE

Power Plant DCS
- Application Control Environment
- Redundant Servers
- SCADA Devices (OPC, Modbus, DeviceNet, many more!)
- Fault Tolerant Ethernet
- Remote Engineering Tools
- Meters
- MTL 8000
- DeviceNet
- Modbus Protocol
- Energy Meters
- Power Plant DCS

Electrical Control System
- Redundant SCADA Servers
- OWS
- Remote Engineering Tools
- SCADA Devices (OPC, Modbus, DeviceNet, many more!)
- Fault Tolerant Ethernet
- Meters
- MTL 8000
- DeviceNet
- Modbus Protocol
- Energy Meters