At your service

Internet technology is about access, information and the management of knowledge. What it does best is bring together communities of interest that would otherwise find it difficult to communicate and interact. ABB was quick to realize that the Internet could help it give customers the very highest standards of service.

For example, ABB has developed a service Web server that enables ABB experts to interact directly with customers in real time to help them maximize the efficiency of their process applications and control systems. The Service Web Server is a dedicated Internet-based solution that allows ABB engineers to view customer systems online and to fine-tune them for optimum performance.

Based on open standards, including OPC, XML, HTTP and HTML, the system is completely Web enabled. It means that ABB experts can respond to customer problems immediately without the need for time-consuming and expensive travel, give customers access to the very best engineers all the time and means that ABB can keep regular tabs on customer equipment as it goes about its business.

This new remote working environment means that the engineers can log onto the customer's operation remotely, and collect data on connected pieces of equipment. By doing this they can perform analysis and diagnose problems

so that there is a constant effort to improve the working of equipment.

Although designed for ABB products, the system can be adapted to some third-party equipment. Because open standards are used throughout, there is no need for the customer to use specialist software.

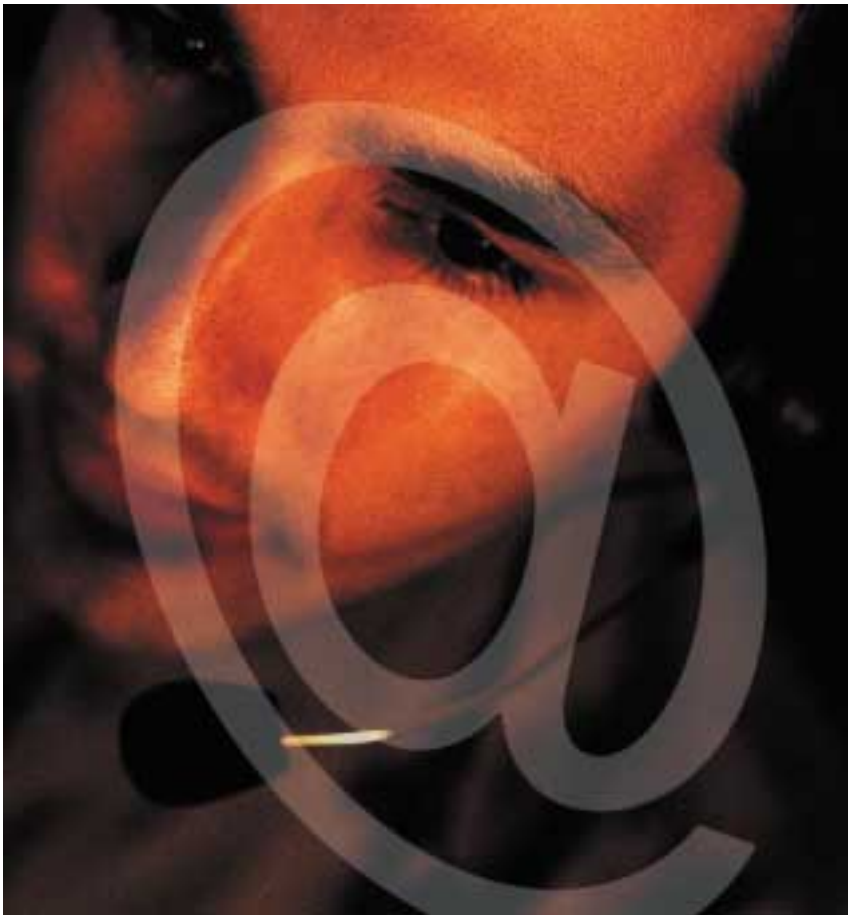
Driven to extremes

ABB has also developed an Internet-enabled tool to help customers in a range of industries analyze and optimize the performance of a key manufacturing component.

Drive systems often lie at the heart of automated manufacturing systems. Understanding how a drive system is performing – from the total system right down to the individual components like gearboxes – is a vital piece of industrial intelligence.

Currently manufacturers are supported in the task of optimizing drive systems by teams of maintenance experts. Often the task of detecting faults and recommending remedies can take months of site visits and inspections.

Now ABB has developed the first ever automated drive dynamics analysis (DDA) tool, based on software developed by ABB programmers, which takes measurements and analyzes data remotely, with all information sent via the Internet.



The system uses modern optimization algorithms and the latest in simulation technology to analyze performance and disturbances, to project the results of fine-tuning or rebuilding the system and to recommend the optimum settings. It has the power to reduce wear and tear, to boost production by reducing down-time and to improve yield and quality.

The DDA tool includes a full copy of the real-life drive system, including all mechanical, control system and process parts. Using this copy, ABB technicians are able to simulate and test all the functions that would be carried out on the real system without risking damage to the equipment or the need to take it out of production.

The most useful aspect of the DDA tool is an artificial expert tuner that acts as a highly efficient virtual engineer. But not only technicians themselves can simulate the drive dynamics.

A built-in tuner can automatically search for the optimum system performance. This uses algorithms and simulation to auto-tune the system – self-searching for optimal settings. Tests have shown that the virtual engineer automatic optimization system achieves better results than human counterparts, in much shorter time.

The system DDA tool can also be set to make production line reports, providing the manufacturer with a constant stream of information about the running of the drive, its efficiency and any defects that occur.

Energy management gets smart

Energy management is becoming increasingly important for industrial and commercial buildings and homes. Minimizing power use saves energy and money, but doing it efficiently requires accurate and timely information about electricity consumption and conditions.

This can be achieved using communications based on the European Installations Bus (EIB) standard, which allows all kinds of different electrical equipment to communicate with each other using a common standardized protocol so that energy can be metered and controlled.

A consortium of European companies in which ABB is a lead partner developed the EIB standard. It is the norm across Europe and is now gathering increasing acceptance in Asia and the United States.

ABB has developed a huge range of products based on the EIB system, the latest of which is the EIB Delta-meter. It is the first EIB electrical energy meter that allows operators to measure, monitor and control electrical energy consumption and manage the energy of a building. It adds to ABB's products in lighting, heating and security, all of which aim to make building management not only more economical but also to make buildings more secure and comfortable.

The Delta-meter is designed for use on industrial and commercial sites as well as in apartment blocks or other domestic complexes where it is necessary to measure electricity use for each dwelling or consumer, so called sub-metering within a building.

The meter includes an EIB communication interface that enables power consumption, instantaneous power and fault information to be read remotely. This avoids the need for manual readings at a series of meter points.

Among the different types of readings that can be made by the new meter is the actual power usage at any time, which means it can be used to manage the power loads. This can be important where electricity utilities make additional charges for exceeding a contracted maximum load level. If a consumer is in danger of exceeding an agreed energy consumption and moving into a penalty tariff, the meter will order the system to shed load.

Central to the new system is a new chip or integrated circuit called the 'alpha-chip', developed by ABB. It lies at the heart of a new technology called DSP – digital signal processing – which measures and filters the voltage and current value.

A microprocessor then processes these measurements, displays the values on a local display of the energy meter, and controls the communication by using the EIB communication interface. The EIB communication interface connects the energy meter to the EIB – a two-wire communication bus – and allows remote reading and parameter setting of the meter.

There are numerous advantages to remote meter reading. With the new system, several energy meters can be read via the EIB communication bus from a central point at any time, day or night. Remote reading is obviously much faster then manual reading.

The system guarantees error-free readings in a digital format which are easy to process for other applications like automatic billing.