

The consumer, chemical and petroleum industries demand a huge diversity of products. And the nature of the business means these have to be of the very highest quality. From intelligent control systems through the best analytical devices available to fast and secure data transfer schemes. Not to mention reliable service. ABB is a very active provider of all these products. On top of that, our Industrial^{IT} architecture provides a simplifying and cost-saving way forward for these industries.

As well as detailing some of the newest ABB technology in these areas, this issue looks at how ABB's Industrial IT and new IEC standards for communications systems and networks in substations go hand in hand. Also: a novel boiler start-up technique and a unique method for verifying HVDC thyristor valve design at punishing voltage and current stresses far above those encountered in day-to-day service.



Automation solutions that add value for our customers



In today's competitive business environment it is essential that industries innovate in order to survive. This often means finding new solutions to long-standing challenges, such as cutting costs, increasing plant efficiency, caring for the environment, or improving reliability and quality.

ABB, with its strong focus on Automation and Power Technologies as core businesses, is a leading supplier of automation equipment and solutions to a wide range of industries, among them petroleum, chemical, pulp and paper, metals and minerals, and power utilities.

The main objective of our R&D is to create the kind of technology-based innovation that adds value to our customers' business just as it supports the growth of our own. Therefore, R&D planning starts with understanding our customers' needs and having knowledge of the relevant existing and emerging technologies – wireless communication, control and optimization,

microelectronics, software, sensors, power technology devices and systems, to mention but a few. On top of this comes our thorough understanding of the customer-specific processes, acquired through years of close cooperation with industry. This is the key to success.

In this issue of *ABB Review* we are pleased to present some of our most recent R&D achievements in a number of areas:

With Optimize^{IT} Model Predictive Boiler Start-up Control, we can optimize the start up of steam generators for large power plants in real time. The value for our customers comes from the 20% less time required to ramp up the process compared with conventional control methods.

With our Industrial IT we have optimized the gasoline blending process in one of Sweden's most modern refineries. The customer benefits from a 30% saving in time needed for blending and better utilization of assets. In short, money saved.

Within the same industry, we also apply Industrial IT to speed up petroleum distribution in Spain. This has resulted in better utilization of the distribution infrastructure, for more efficient logistics and higher safety.

And we are applying our knowledge to preventive maintenance, interpreting data in the chemical and petrochemical industry – for example at a UK polymer production site – to reduce plant downtime. Risk based inspection can save as

much as 80% of present-day inspection costs, while the average time between inspections can be increased by 40%.

These advanced and complex technology-based innovations are made possible by a flexible and multi-skilled R&D organization – a global network of 'brain power' within which experts inside and outside ABB can interact with each other. A number of world-class universities around the globe are part of this network. Two achievements it has helped to bring about are presented in this issue of *ABB Review*:

Together with MIT we are developing a long-term perspective of the future of electrical power switching. For example, we have investigated the application of MEMS (Micro Electromechanical Systems) in this area. A 240 V, 2 A relay has already been realized.

Our cooperation with the Federal Institute of Technology (ETH) in Switzerland has also borne fruit – this time by helping to optimize energy management in industrial processes.

We hope you enjoy your walk through the exciting and fascinating world of ABB technology, with innovative solutions developed to add value for our customers today and shape the future of our industry tomorrow.

Markus Bayegan
Chief technology officer