

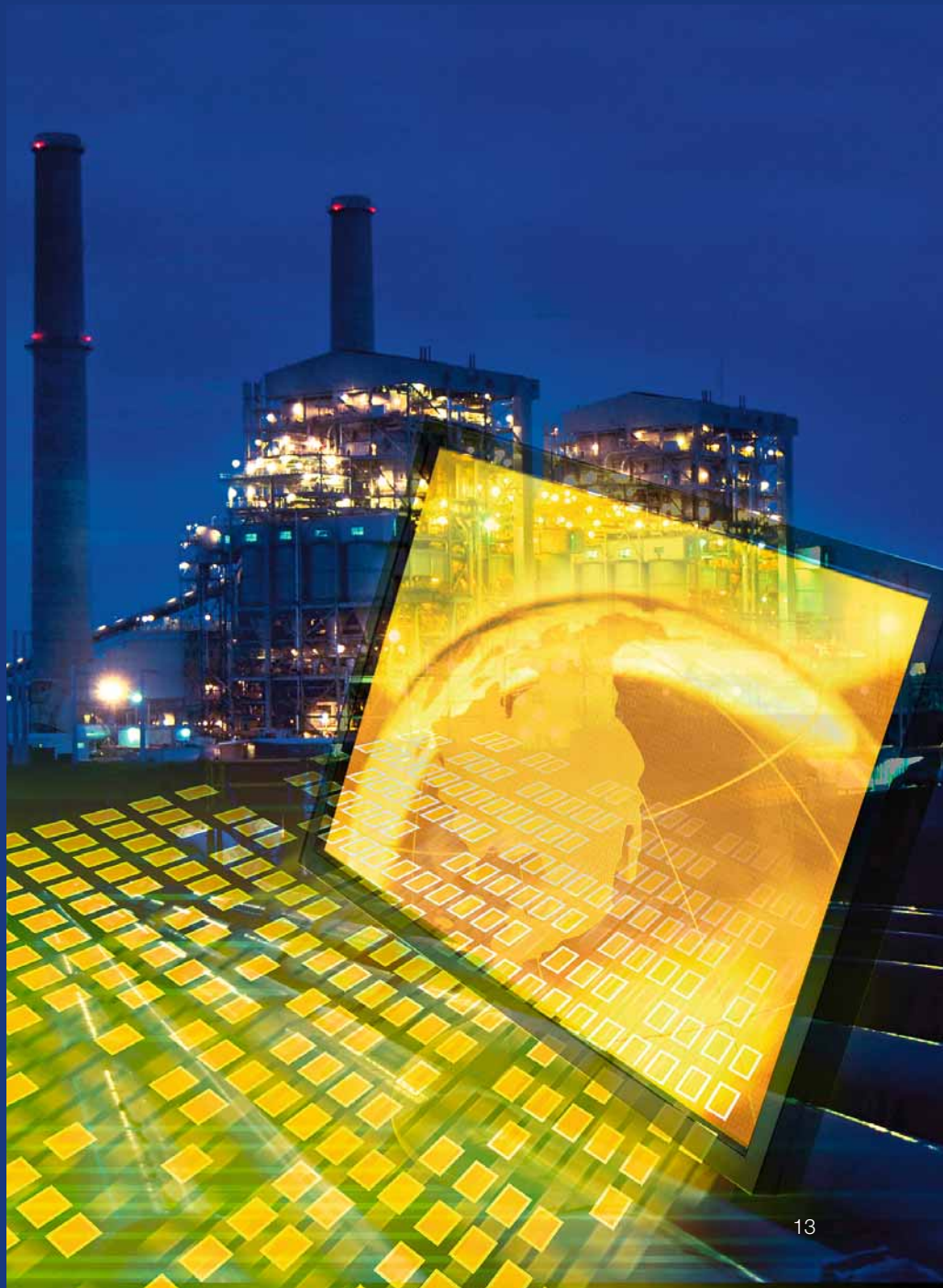
Remote optimization

Increasing profitability and improving organizational efficiency

John Schroeder

Manufacturers face the pressures of global competition more than ever today. They are expected to maximize production output while keeping costs at the minimum. Whereas some plant managers are tempted to reduce maintenance expenditure to gain an immediate improvement in bottom-line profitability, the long-term effects can be the exact opposite. Spending less on maintenance means that plant equipment will suffer, leading to poorer equipment performance and ultimately to reduced productivity and product quality.

A better solution would be to maximize the effectiveness of maintenance and process control organizations. Combining the best of maintenance practices with optimization processes will result in even greater benefits of increased production and improved quality.



Operational excellence

Process industry companies are turning increasingly to their suppliers for remote services that supplement internal and contractor on-site support and improve the effectiveness of their maintenance and process control programs. Remote services allow suppliers like ABB to provide their expertise in a cost-effective and efficient way. Having these services available 24 hours a day, 7 days a week is hugely beneficial to manufacturers, who are facing the dual challenge of a lack of expertise and rapidly advancing technology.

ABB has developed a remote service solution called Remote Diagnostic Services (RDS) that provides its customers with the right person and the right skill-set from its more than 20,000 service personnel worldwide. The solution utilizes state-of-the-art technology to ensure the security of the remote connection as well as the safety of the remote site.

ABB's Remote Diagnostic Services has helped manufacturers to improve the performance of their products and systems by providing troubleshooting and proactive and predictive services. The following examples illustrate how RDS has helped customers to quickly identify and correct problems that have resulted in tangible benefits:

Remote Troubleshooting Service

A paper manufacturer experienced a situation where a paper machine was shut down due to equipment failure. After spending more than

35 hours troubleshooting the problem internally, the company contacted ABB. An ABB expert remote-connected to the system and after 30 minutes identified and corrected the problem, which was caused by a missing machine interlock input. ABB's knowledgeable and fast service prevented greater production losses, thereby saving the customer several hundred thousand dollars.

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Remote Predictive Service

An ABB Continuous Remote Monitoring Service was installed on a control system at a power utility company. Soon after the monitoring began, the CPU (central processing unit) loading on one of the controller modules was found to be exceeding an upper limit. In addition, problems with network communications were identified that were considered to be significant and could cause a system failure in the future. Corrective action recommendations were determined and presented to the customer. After receiving authorization, ABB performed the corrective actions on the control system. ABB then verified that the problems were resolved using the Continuous Remote Monitoring Service. In this case,

downtime would have caused losses of many \$100,000's.

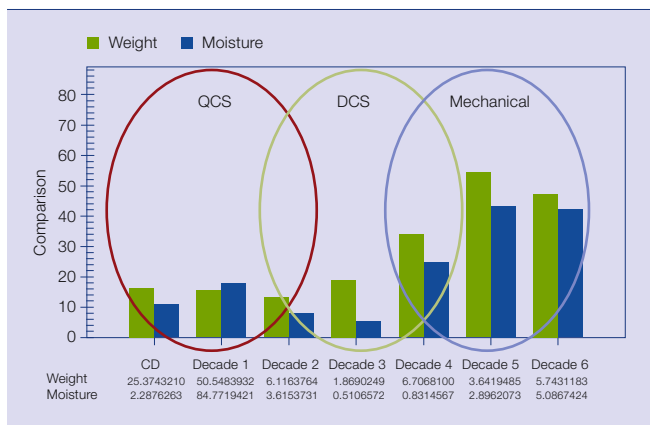
ABB's RDS solution has been well received by customers because of the significant benefits it provides in equipment performance and overall productivity, while at the same time being a very cost-effective approach. ABB provides remote services to all industries that it serves.

Optimizing plant processes by remote
ABB is extending its Remote Diagnostic Services offering by providing Remote Process Optimization Services as well. This advanced solution requires specialized expertise that ABB has access to via its worldwide service network:

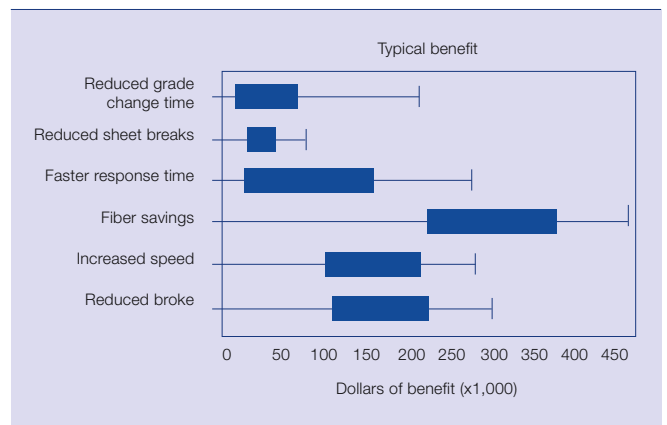
Process expertise is based on detailed knowledge of the production process. There are many barriers to achieving process optimization. These barriers reduce production efficiency and result in lost profits, but their source can be difficult to identify. ABB has world-leading authorities in this field and has developed an approach to identify barriers, implement corrective actions and provide continuous improvement services.

Equipment and system expertise is required to achieve an optimized production process, as the equipment and systems producing the products must be well maintained. ABB is the leading process automation service provider in the world¹⁾ with proven, in-depth service knowledge to ensure that plant equipment and systems

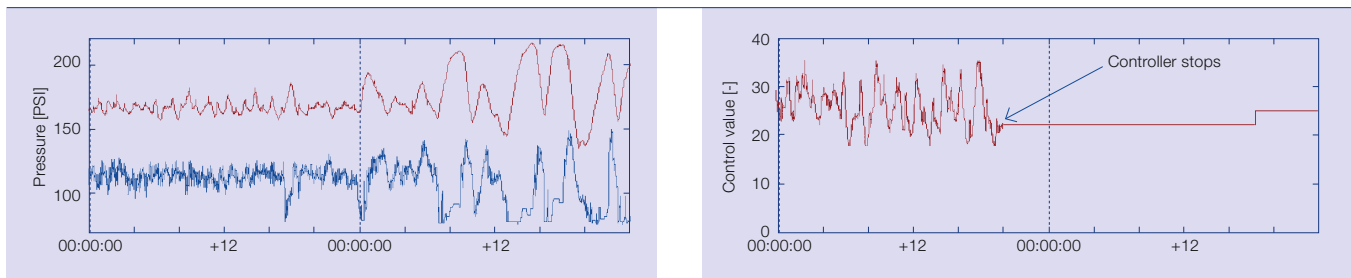
1 Summary of the cyclic energy in the paper sheet over a corresponding frequency band



2 Typical benefits achieved from implementation of ABB Process Optimization Services in pulp and paper



3 When the controller (Active Flowline Control) is switched to manual, the system (oil flow from a well) becomes unstable and oil production decreases.



perform at high levels.

Maintenance expertise is required to detect weaknesses in maintenance programs that can lead to under-performing equipment and reduced plant performance. ABB's maintenance consulting services provide a wide range of value-enhancing services that improve maintenance effectiveness by optimizing management practices. These result in lower unit production costs and reduced operational expenditure.

ABB's Remote Process Optimization Services utilize the RDS infrastructure already in place to effectively make use of ABB experts worldwide. The solution features both an onsite and a remote service element.

It begins with ABB experts visiting the customer site to become familiar with the plant and the unique characteristics of the process. Data is collected so that an initial assessment can be performed and process problems identified. Then a root cause analysis is carried out and recommendations for corrective action are made to the customer. Once the improvement recommendations have been implemented, subsequent periodic audits are performed to ensure that the desired results have been achieved and to allow for continuous improvement. Data for subsequent assessments is gathered automatically with data collection tools or with the assistance of ABB field service personnel. ABB experts remotely analyze the data and provide status reports containing additional corrective action recommenda-

tions to sustain the process improvements achieved and enable future improvements to be made.

Specific solution for pulp and paper
ABB has created a unique customized process optimization service for the pulp and paper industry. The service was developed to overcome the frequent barriers that prevent effective optimization of paper production processes. The solution utilizes both onsite and remote services to provide proven value with the following three-step process:

ABB is the leading process automation service provider in the world, with proven in-depth service knowledge to ensure high-performing plant equipment and systems.

1. ABB Paper Machine Fingerprint provides a set of unbiased surveys that analyze product variability, machine response, fiber and steam stability, and profiling capability. The fingerprint is an industry-specific diagnostic methodology that provides the most comprehensive machine study available. It delivers a complete machine analysis and provides data vital to identifying and achieving higher productivity and improved profitability **1**.
2. Implementation provides the follow-up services to implement the corrective action recommendations determined during the fingerprint phase. This step applies people, processes, and proven troubleshooting techniques to locate and solve problems in the following areas:

- Stock approach system from the high-density storage tank
- Steam pressure system related to paper drying
- Paper machine direction controls
- Paper machine cross-direction controls
- Operator usage of paper machine controls

3. Sustained equipment performance is achieved using ABB automation services such as:

- Remote data analysis of control performance
- Remote data analysis of production efficiency and quality
- Remote monitoring of system and equipment performance
- Onsite consulting services
- Onsite maintenance services

Factbox ABB Remote Diagnostic Services

ABB's Remote Diagnostic Services (RDS) provides predictive and diagnostic capabilities for all aspects of a plant including automation, equipment performance, equipment health, mechanics, electrification, electronics, production and quality.

RDS combines secure remote connectivity with ABB's global technical support network and enables real-time visibility of asset information. Asset specific diagnostic applications perform condition-based monitoring and real-time alarming. The ABB global support network of industry and product experts coupled with immediate availability of critical asset information significantly improves diagnostic and response time.

ABB provides remote services to customers in all regions of the world.

Footnote

¹⁾ ARC Advisory Group, Automation Supplier Provided Services Worldwide Outlook: Market Analysis and Forecast through 2011, 2007.

Operational excellence

This three-step approach provides customers with increased production, reduced maintenance costs and improved return on assets. Typical returns have generated customer agreed upon returns on investment ranging from \$250,000 to \$1,000,000 a year. Payback is frequently within six months. The sustained or continuous improvement phase helps to ensure that benefits will continue to accrue in subsequent years, with further improvements leading to additional profits **2**.

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Specific solution for oil and gas

With most oil and gas fields in the Western world reaching maturity, the industry is facing the difficult challenge of not only maintaining production targets but of increasing them to meet ever-growing demand. ABB has developed Active Flowline Control and Active Well Control to help accomplish this difficult task. The solutions utilize dynamic active feedback control to both stabilize and

increase production in mature oil and gas fields. Instead of manually controlling the production choke in wells with natural flow or manually controlling the input gas pressure in gas-lifted wells, automatic feedback control is implemented to make fast and precise adjustments to optimize overall production **3**.

Since the characteristics of these wells can frequently change, and tuning of the Active Flowline Control and Active Well Control requires a high level of expertise, ABB provides a remote service to enable its control experts to both monitor and adjust the controls as needed to maintain their effectiveness. This remote service allows ABB specialists to provide more frequent monitoring and adjustments than if they had to travel to the site to perform these same tasks. It includes the following steps:

- Periodic audits – An ABB specialist periodically connects to the remote control system to assess the performance of the well or flowline control. Variability and production levels are analyzed to determine if optimum performance is being achieved.
- Control optimization – Based on the results of the audit, the control tuning will be remotely optimized if improvements in overall productivity can be achieved.

An additional benefit of this remote service offering is that it eliminates the high cost of traveling to an offshore oil platform.

ABB's Active Well Control and Active Flowline Control have achieved significant production increases at mature oil and gas fields. ABB's Remote Optimization Service offering, which provides periodic performance audits and control optimization, enables these solutions to continue to operate at optimum levels **4**.

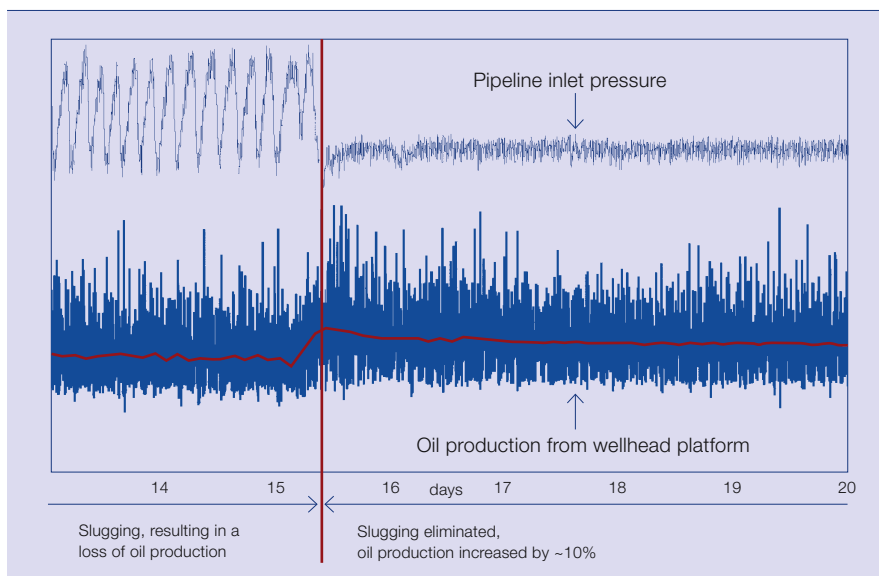
The multiple benefits of remote services

ABB's complete portfolio of remote services provides significant benefits to customers. Many cases have been documented where production downtime has been reduced or prevented altogether as a direct result of ABB Remote Services, resulting in hundreds of thousands or even millions of dollars in savings. In addition, ABB's Remote Process Optimization Services increase overall productivity and improve product quality.

Remote services are also valuable due to the dwindling amount of expertise available for the ever increasing complexity of technology. Experts can support more customers in a timely and cost-effective way.

Finally, today's remote connectivity technology makes remote services both secure and safe. Data security is ensured with state-of-the-art encryption techniques, safety is provided through customer control of remote access, and data integrity is maintained by utilizing existing customer firewall configurations and other security measures.

4 Successful results achieved by Active Flowline Control



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