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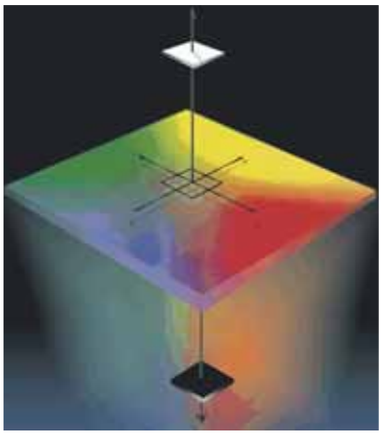
Technology Solutions

Corporate technical magazine of the ABB Group
in South Africa and the sub-Saharan Africa region



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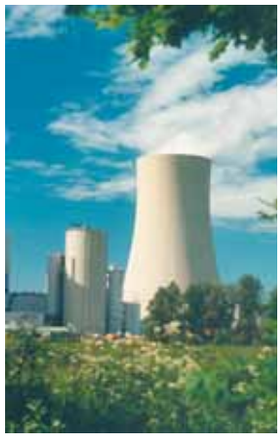
In This Issue



Technology Solutions

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Safety “first” in electrical switchgear

ABB has a long history of innovation in electrical switchgear that can be traced back to the introduction of three-phase transmission in Sweden in 1898. Fifty years ago – in 1957 – ABB’s CALOR-EMAG in Germany developed an internal arc-resistant metal-enclosed switchboard with pressure relief up to 36 kV.

Successive innovations in switchgear protection introduced since the first arc-resistant switchgear in the late 1950s include the most recent Arc Eliminator and REA Arc Protection system.

Switchgear plays a critical role in electricity distribution and leading manufacturers such as ABB have focused much attention on ensuring reliability, performance and safety. Arc faults are not common but early detection and elimination is critical because of the potential for serious damage through severe pressure and heat, serious injury and financial losses from long and expensive downtime.

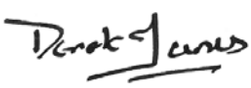
ABB invests much research and development into its medium voltage switchgear technology to eliminate the safety risks associated with arc faults. It also ensures that its latest switchgear achieves the IAC (internal arc classification) requirements of the IEC International Electrotechnical Commission) 62271-200 specification, which includes verification through testing.

In addition to building arc capable switchgear, internal arc protection devices serve to detect their presence. Traditional arc detection devices detect the presence of an arc, and send a trip signal to the circuit breaker to clear the fault as fast as it is practicably possible. ABB’s REA arc Protection System is an IGBT, with solid-state circuits that react instantly (< 2.5ms) to isolate the arc, long before any extensive damage can occur. Continuous self-monitoring of the system and its fibre-optic loops ensures continuous protection in substations.

Further development in arc fault risk elimination has resulted in ABB’s Arc Eliminator, an integrated optical arc detection system, which instantaneously closes a three-phase contactor switch (< 5ms), once an arc is detected. This removes the dangers of pressure rise and burning within the cubicle prior to the event being catastrophic.

Internal arc capable switchgear together with arc detection and elimination devices are important safety features in modern switchgear. Allied to safer equipment is the need for utility and industrial users to have management systems in place to ensure the safe operation of switchgear. This includes formal operating procedures, responsibilities, training and maintenance at pre-determined intervals. Users need to be educated in what they are getting when choosing switchgear manufactured to IEC 62271. Depending on what has been chosen the user may be required to take their own further physical safeguards to fully comply with the rating chosen so as to ensure their safety.

When it comes to electrical switchgear, the saying “An ounce of prevention is worth a pound of cure” holds especially true. Technology developments in power products such as internal arc protection devices and sound electromechanical design are part of a continuous pursuit in helping to make electrical switchgear safer.



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Dance of the robots

A new palletizing system at one Australian brewery adds a quiet, graceful do-si-do to the palletizing line, at the same time offering greater flexibility and savings in maintenance.

Making the beer and getting it to millions of thirsty Aussies is a serious business. And a big one. Australia makes about 2 billion liters of beer a year, and the country consistently ranks in the top 10 of beer consumers in the world in terms of liters drunk per person.

One of the country's largest breweries, and certainly its most modern, is the giant Foster's plant at Yatala near the Gold Coast, Australia's famed surfing and holiday mecca in the southeast corner of the state of Queensland.

The Yatala brewery can make about 540 million liters of beer a year, roughly 25 percent of the nation's output, and some of Australia's most recognized brands of beer are brewed and packaged there.

Cartons packed with bottles full of famous brews such as Victoria Bitter – Australia's No. 1 selling beer – Crown Lager, Carlton Mid and Foster's roll off the plant's four "palletizer" lines at a mind-boggling rate, 24 hours a day, six days a week.

It is in the palletizer area that you can easily see the contrast between the past and the future. The palletizer lines do what their name suggests: They stack the cartons of freshly bottled beer onto pallets, ready for warehousing and eventual distribution by trucks throughout the vast expanses of Queensland and its neighboring state, New South Wales.

The pallets typically hold 70 cartons (seven layers of 10 packs, each containing 24 375ml bottles), which need to be stacked precisely. Only the interlocking pattern of the stack and a small dab of glue on each box create the cohesion to keep everything in place for transport.

Creating that interlocking pattern at speed is a crucial part of what the palletizers do. Three of the palletizers are conventional, employing technology largely unchanged for decades. They use rollers, dividers and rotators to position cartons for their arrival onto the pallets into a pre-ordained tandem, one behind the other, to position the cartons of beer streaming towards them.

Mounted above the conveyor belt they curtsy to each approaching box, looking like water birds dipping their beaks into the lake shallows. Having sensed where their quarry sits, each machine will grab a carton and shove it into position according to the pattern their minders have asked them to build.

Their minders – Kevan Morgan and Geoff Gould – couldn't be happier. Gould is the brewery's site services project manager, and Morgan is the electrical packaging/projects coordinator. Between them they commissioned and now supervise the roboticized palletizer. When they look at their handiwork they see the future.

"Conventional palletizing systems are a thing of the past," says Gould. "They have been around forever, but their days are numbered. This robotic system will become the norm."

"The robots aren't quicker, but they are much simpler and more predictable."

And reliable. Since installation in 2004, the robots, made by ABB, have been in operation for nearly 9,000 hours, stopping only for routine maintenance. When the robot system was trialed, Foster's stipulated the criteria to Foodmach, the company that supplied the robot cell: reliability, flexibility, gentle product handling, low maintenance, low noise, unmanned operation and no time for extended commissioning.

They set a target of 99.5 percent compliance. What they got was 100 percent. Morgan and Gould were impressed, and there were a few skeptics at Foster's who were wary of the new technology who had to bite their tongues. "A lot can go wrong with conventional palletizers," says Morgan, "But the reliability of the robots has caused us no problems. The advantage of not having to maintain high-speed line dividers and carton rotators is a substantial cost benefit."

Maintenance for the two robots costs 4,876 Australian dollars a year and requires about a day of downtime.
Morgan says the other major benefit was that the Robomatrix software allowed an operator to trial different stacking patterns and instruct the robot accordingly. "It is an intuitive system," says Gould. "You can create a virtual stack, and Robomatrix will tell you if you can do it." For Foodmach, a company that specializes in material movement systems for the food and beverage industries, getting Fosterís to sign up for Robomatrix was a coup. "Getting Foster's to embrace that technology was the main issue for us." says Foodmach Queensland representative John Harris.

Having embraced it, Foster's has been toasting its success ever since.

Benefits:

- **The robotic pattern-forming system is flexible, allowing the introduction of new products and palletizing patterns without compromising the pattern-forming function used on existing products.**
- **It also allows simple, repeatable changeovers between products and patterns.**
- **The system realizes substantial savings on maintenance costs, due to the high reliability of the ABB robots.**
- **In the event of one robot faulting, the palletizer can continue production, albeit at a reduced rate, using the other robot.**
- **The system can handle cartons, shrink-wrapped trays or trays with no shrink film, as the packs are situated on the plastic modular pattern-forming belt in a precise position,with minimal clearance between accumulating packs.**
- **The end result is a layer of packs that require little final compression by layer squarers at the stripping zone.**

On Foster's

Foster's is a global brewing and wine-making company, with major markets in Australasia, Europe, Britain and the United States, producing brands such as Foster's and Carlton beers and Beringer and Mildara wines.

Throughout the 20th century, the various entities that would eventually form Foster's Group expanded through acquisition and brand development to become leading beverage companies in their markets, establishing Foster's Lager as one of the world's top-selling beers.

The multi-faceted entity changed its name to Foster's Group in 2006, and employs about 8,000 people worldwide. Read more at www.fosters.com.au.

On Foodmach

Melbourne-based Foodmach was founded in 1972 as a custom "design and build" engineering house. Today, Foodmach provides palletizing, depalletizing, conveying and robotic systems for the Australian food and beverage industry.

Clients include Fosterís, Coca-Cola, Nestlé, Lion Nathan, MasterFoods, Heinz and Kraft.

The company's Robomatrix system is a configurable robotic system, capable of infinitely variable pattern-forming for high-speed palletizing. The robots, in Foster's case IRB 4400s, are capable of rapid and precise movements up to five times faster than their conventional pick-up-and-place rivals. Read more at www.foodmach.com.au.

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Smart buildings key to energy efficiency

Wasteful light from a modern city may look pretty from a distance, but smart buildings are able to limit energy consumption by using lights only when necessary.

Worldwide energy shortages and the global warming phenomenon are highlighting the role new ABB technology can play in optimising energy efficiency in buildings so as to reduce global energy demand and associated financial and environmental costs.

"The average South African home or building is inefficient in terms of energy use," says ABB's Dirk Visser, a BA Low Voltage product manager, Automation Technology Division, Midrand. "On one hand, our buildings have not been designed or constructed intelligently in terms of energy efficiency. Typically, we don't have roof insulation, our doors leak cold air in winter and our homes tend to trap heat in summer. On the other, we leave our appliances plugged in on 'standby' when not in use, our lights burn when they are not needed, pool and pond pumps run continuously. Clearly both energy conscious building design and 'ambient intelligent' buildings can have a major impact on overall energy efficiency and energy use," says Visser.

Worldwide, the cost of energy is expected to increase substantially and South Africa, which has enjoyed low electricity costs in the past, will be no exception. "Supply and demand is not balanced," says Visser. "Energy efficiency in buildings is no longer just a subject for the environmentally aware. Increasingly it's become a global concern driven by the financial realities of building energy costs," he says.

Whether it's the automation of power plants, the streamlining of production processes in industry or the development of energy-efficient variable speed drives, ABB has, for decades, been at the forefront of delivering energy efficiency across the supply chain. "Finding ways to reduce energy consumption is a logical continuation from improving efficiencies in the supply process. With a new range of building automation solutions, ABB has taken automation skills from industry and applied them through a system designed not only to make office or home life more convenient, but also to save energy," Visser says.

The ABB i-bus EIB/KNX building automation system provides considerable energy savings.

An article by Nils Leffler which was published in ABB Review quotes the book True Visions with the definition of "Ambient intelligence" as an "emerging technology that will increasingly make our everyday environment sensitive and responsive to our presence".

"This vision requires technology invisibly embedded in our everyday surroundings, present whenever we need it that will lead to the seamless integration of lighting, sounds, vision, domestic appliances and personal healthcare products to enhance our living experience".

"Lights will be switched on and off, and blinds will be moved up in response to a range of stimuli, including human activity," writes Leffler. "Such automation will provide enhanced comfort and productivity, and will reduce energy consumption. It will also provide better communication and security."

Under the brand of "Smart&Lean", Busch-Jaeger Elektro GmbH, an ABB company, has launched easily programmable touch sensitive display units which combine with a range of motion sensitive switches and alarm units. "These products can be incorporated into networks to control everything from music and lighting to blinds and security alarms," Leffler continues. "The units monitor human activity using infrared motion detectors, and each has a number of operating modes to satisfy the specific needs of its allocated area. These adjustable modes range from fully automated to fully manual. Heating and cooling functions can be integrated into the system alongside lighting controls, with individual thermostat settings being specified via the central display unit. Key to the success of these devices is their ease of use, combined with elegant design and longevity," Leffler writes.
"The payoff of using this system is not just realised in terms of convenience – but critically in terms of energy efficiency," says Visser. "Building managers are now able to reduce energy consumption by installing timed switches or even sensing human presence – so only lighting areas of a building which are in use. Another example would be to automate the use of blinds and ambient light to maximise natural room heating in winter or cooling in summer. Appliances which are not in use can be switched off and the use of swimming pool or fish pond pumps can be optimised - further reducing unnecessary energy wastage," he says.
"Furthermore, the ABB system will enable home, building and office owners to take advantage of any cheaper off-peak energy tariffs which are available," says Visser. In home environment items such as swimming pool pumps could be optimised to run at these off-peak periods – reducing energy costs and helping balance the national electricity load.

"What is critically important is the protocol upon which the ABB system has been developed – ABB i-bus EIB," Visser continues. "It's an open protocol which means that all other manufacturers can easily standardise on a single machine 'language'. Obviously it's critically important that other manufactures who produce household or office appliances such as computers, photocopiers, pumps and air-conditioning systems are able to integrate through a single protocol. Installation of systems which use closed protocols is counter-productive and is going to lead to major integration headaches going forward," he says.
"It's really only a matter of time before energy efficient home and building management systems become a reality both in South Africa and around the world," says Visser. "These systems are not only able to enrich our lives with the convenience of automation, but can play a valuable role in terms of increasing energy efficiency for financial and environmental benefits," Visser concludes.

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Reflecting on colour

Colour control technology for papermakers

For a papermaker, getting the colour of paper right is an important element of quality assurance. Customers expect envelopes to match their writing paper, and expect the paper they buy today to match the envelopes they bought months or even years ago. Different grades of paper manufactured with different machine settings can be required to have identical colours.

Reproducing colour is no simple task and would not be possible if it were not for advanced colour-control algorithms and highly sensitive instruments. But it is not just sensitivity and reproducibility that these instruments must tolerate; they must perform under harsh conditions such as high moisture levels and thermal and mechanical shocks.

In papermaking, even a blank sheet of paper has a tale to tell.

Television sales outlets normally have a broad selection of different types of TV sets on display and one cannot fail to be amazed at the brilliance of the colours displayed on the screens. But, taking one step back and looking at the whole row of TVs on display, a subtle, and sometimes not so subtle, difference in colour between identical TVs becomes clear.

To add to the complication, colour is not absolute – perception of colour is influenced by an individual's biology (some are colour-afflicted or colour-blind) as well as other effects. Perceived colour, then, is a product of a light source output, an object's reflectance, and an observer's optical sensitivity.

Control of colour critical

If achieving colour consistency in this high-technology TV, built specifically for the purpose of true colour reproduction is so difficult, then achieving it in a very humble and apparently low-technology product such as paper is very challenging indeed.

In paper manufacture, control of colour – often actually whiteness – is critical. The continuous shift in the colour of the dye in paper produced over a period of hours may be imperceptible to the human observer, but the difference in colour can become very obvious when two sheets, one from the start and one from the end of the production run, are placed side-by-side. It would be unfortunate if these were to wind up as adjacent pages in a book. Paper appearance properties such as colour, brightness, whiteness,

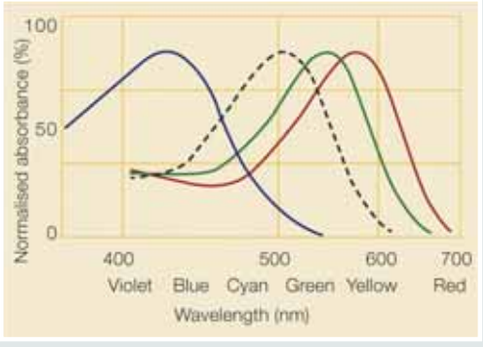
opacity, and gloss have increasingly become the differentiating quality parameters in paper products. Manufacturers, then, go to great lengths to control the colour of their product – and ABB provides them with the technology to do so, with advanced on-line colour sensors and software to control the addition of colourants to the process.

Quantifying colour appearance

Colour is perceived via red, green and blue eye stimuli (tristimulus) 1. The description of colour is not intuitive and is therefore subject to a rigorous scientific CIE 1) standard: L*, a*, b*. There are many ways to quantify colour appearance, but L*, a*, b* is one of the more universal schemes.

1 Colour perception

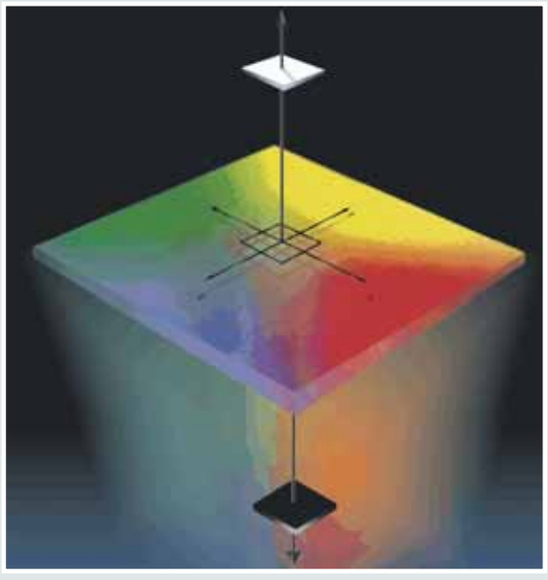
a Spectral absorption in the three types of cone cells of the human retina, and rod cells (dashed line)



The retina of the human eye has three types of colour-sensitive cells (known as cone cells). Each of these cell types is sensitive to a different range of wavelengths. These ranges peak at approximately 440, 544 and 580 nm (for blue, green and red light respectively). There is a considerable overlap a between the ranges, rendering the retina responsive to all frequencies between 400 and 700 nm.

An individual cone cell only reacts to the intensity of the stimulation. It can neither resolve the exact wavelength of the stimulating light, nor can it differentiate between monochromatic light (of a single wavelength) and polychromatic light (with a combination of different wavelengths). This represents a significant difference between colour vision and hearing. In the latter case, humans can differentiate between wavelengths with considerable accuracy and the trained ear can even resolve the individual notes of a musical chord.

b Representation of the L* a* b* colour space. Along the L* axis, lightness varies from black to white



Despite this, humans can distinguish a broad range of colours. This is due to the cortex (the area of the brain concerned with vision) combining the signals from the three types of cone cells and interpreting every combination as a different hue.

In contrast to this perceived colour system, the L*, a*, b* colour-space represents the real colour of an object. L* maps the lightness and a* and b* the magenta-green and yellow-blue variability respectively b.

(Figure 1a is taken from the Wikipedia encyclopedia and is subject to the GNU Free Documentation Licence.)

The three parameters in the model represent the lightness of the colour (L*, L*=0 yields black and L*=100 indicates white), its position between magenta and green (a*, negative values indicate green while positive values indicate magenta) and its position between yellow and blue (b*, negative values indicate blue and positive values indicate yellow).

When light hits a surface, it can be reflected, absorbed or scattered. Smooth surfaces reflect and rough surfaces cause diffuse scattering. A surface that diffusely reflects all wavelengths equally is perceived as white, while a surface that absorbs all wavelengths equally is perceived as black. Besides this diffuse reflection, specular reflection can also occur (as in a mirror). A good mirror reflects all wavelengths equally, but is not perceived as white because of its smoothness. Similarly, a black object can reflect light if it has a smooth finish.

This, then, is the arena for the on-line colour control produced by the ABB Quality Control Centre of Excellence, part of the Paper business unit, based in Dundalk, Ireland.

This unit specialises in the on-line measurement of paper properties and implementing complex control schemes to optimise these properties automatically. Colour measurement is a popular on-line control, utilised on 40 percent of all quality control systems sold.

The scanning platform.

Modern instrument design

The colour instruments used in quality control laboratories have become extremely sophisticated over the past 15 years. Nearly all high-quality instruments measure reflectance spectra of samples presented to the sensor. This generally requires a stable source of visible radiation and a complex optical system to gather reflected energy. Laboratory colour instruments are operated by technicians: They test the calibration, select the type of colour co-ordinates required, align samples and collect colorimetric data. These technicians perform this task every hour or so in a benign laboratory environment with few vibrations or shocks to the instrument, or, indeed, the technicians.

ABB's clients expect similar precision, reliability and ease of use from ABB's on-line instruments. These must operate without a technician for 24 hours a day, 365 days a year at temperatures of 60 °C and 100 percent humidity. Sometimes the instrument package vanishes into a cloud of water vapour as it traverses the sheet. Every few hours, the instrument spends some minutes off-sheet, in a suddenly 15 °C cooler environment, for test and calibration. In addition, shock of up to 4 gravities along any axis is common and vibration equivalent to 2 gravities between 5 to 500 Hz must be tolerated.

From the "any axis" shock point of view this is similar to dropping the laboratory technician onto a tiled floor from a height of about 390 mm onto his head – and still expecting quality measurements!
ABB – rising to the challenge

Rising to these challenges, ABB metrology experts have succeeded in finding ways to deploy the measurement principles in environments too harsh for constant human habitation.
The instruments must not only survive, they must operate continuously and provide data that rival laboratory instruments in accuracy and precision.

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Process quality monitoring and information management improve the return on power plant assets

Abstract

Motivated to reduce operations and maintenance costs and to improve availability of power plants, the plant staff as well as the utility headquarters need detailed knowledge of current and historical Process Quality of their plants. In addition to this, environmental issues related to CO_2 or NOx emissions offer additional incentives to improve fuel efficiency and reduce greenhouse gases.

An alternative to cost-intensive construction of new power plants is to improve the quality of energy conversion in existing power plants. Even if the efficiency of the process cannot be ramped up arbitrarily by changing the way a plant operates, an attempt can be made to come as close as possible to the operational optimum. The implementation of modern Plant Information Management Systems (PIMS) and Process Quality Monitoring within a plant fleet allows personnel to achieve sustainable improvements in their operations and get more out of their assets.

1 Introduction

Recent trends in the energy industry have transformed utilities from cost centers into profit centers. Whereas the justification of their budget was mainly based on engineering criteria related to Operation and Maintenance (O&M), they have become increasingly more focused on getting more out of their assets, i.e. increasing the Return On Asset (ROA).

The primary task of plant asset management is to reduce costs by identifying performance problems, improving predictive maintenance and extending asset lifecycles. This requires, in first instance, information management systems which are able to collect process data in real-time from a variety of control systems and provide efficient data analysis and reporting tools, on plant level as well as across the enterprise. In parallel, these systems need to be equipped with decision-support tools for monitoring the condition and performance of plant assets and for optimizing plant operation.

2 Information management

The most detailed picture of the plant is available in the data repositories of the automation system. Any data required is available there in the form of recorded time sequences, or in form of online readings of control and instrumentation equipment. The amount of data however, is too large to be intuitively processed by operators or plant managers. The missing link between the plant data and decision support is a suite of applications that take the data from the automation system, and create information that is useful to the user.

Information management systems such as ABB's PGIM (Power Generation Information Manager) have interfaces to a multitude of different automation systems, support client-server architectures, alarm management, reporting in Excel, charting and Web-based thin client access (Fig. 1). The system also serves as a software platform for more advanced applications such as plant asset monitoring, diagnosis, optimization, predictive maintenance, as well as interfaces to ERP and Computerized Maintenance Management Systems (CMMS).

Information management systems are the backbone of asset management and make important information available throughout the enterprise, in real-time. This is illustrated in the following example of Process Quality monitoring.

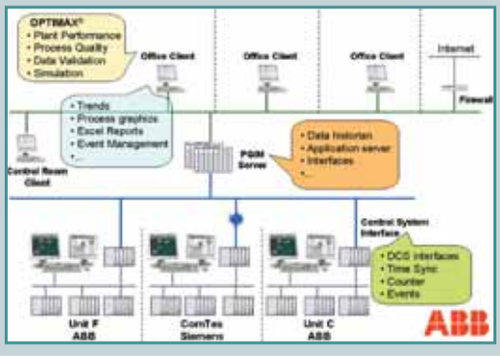

Fig. 1

3 Process quality monitoring

The quality of plant operation is characterized as Process Quality and is defined as the relationship between the currently achieved and the achievable efficiency.

Figure 2 shows how Process Quality values are determined. The actual performance figures are calculated on the left side based

on the process values, which are first validated through the OPTIMAX® PowerCycle data validation tool. This ensures accurate actual performance values and allows substitution of values in case of totally inaccurate or faulty process signals. The expected

efficiency values are also based on the validated process values but, in contrast to the actual performance, the expected values are determined by the PowerCycle simulation model, which accurately simulates optimal plant behavior at current operating and ambient conditions.

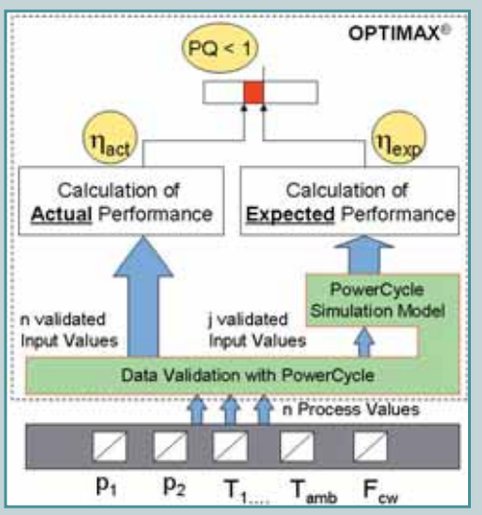

Fig. 2

As a result, Process Quality values are provided which are comparable across a fleet of different plants. A quality value PQ<1 identifies inefficient operation, PQ=1 stands for ideal operation, whereas numbers PQ>1 indicate operational improvements. These results are valid at different load levels because the model takes load and ambient conditions into account. The following example shows that the additional benefit of this approach was also driven by the requirement to have comparable operational key parameters of the main generating units, based on standard methods.

4 Customer benefits

Different OPTIMAX® applications such as PlantPerformance, Process Quality monitoring, Simulation and Data Validation (PowerCycle) have been installed at the Scholven coal-fired power plant's Unit F in Germany. The solution consists of one server PC and several client workplaces. PGIM is used as information management system for storage of analog and binary process values, as well as calculation results and reconciled values. The real-time process values are collected from different control systems (Siemens Teleperm, ABB 800xA).

Calculation results in form of trends, process graphics and reports can be viewed from the various clients located in the main control room and in the administration building. Customized overview graphics are provided to operators and supervisors in order to quickly access and evaluate Process Quality information (Fig. 3).

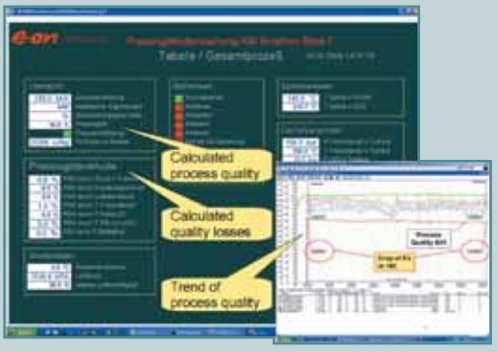

Fig. 3

A green indicator in the center of the overview graphic shows the current operating state of the unit as “normal operation, shutting down, shut down, startup, operation until steady state”. Main process parameters are displayed on the right side. The left side shows the current load, the total Process Quality and the influence of deviations of main process parameters on the total Process Quality. Client workplaces in the office can be used to modify the PowerCycle model for Simulation, Data Validation, or offline What-if studies (Fig. 4).

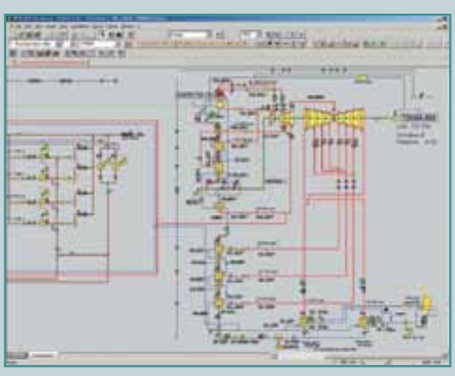

Fig. 4

5 Operating experience

Former decisions whether the unit is in good or bad state, depended on operator experience. With implementation of the model-based Process Quality monitoring system the operator has access to calculated values which help to identify suboptimal states much more easily. Besides plant operators, the O&M staff has their own use and advantages in using the available data and information provided by this solution, as illustrated by a few typical examples:

- Unit operators mostly use process graphics to keep track of the process. If they found implausible values they analyzed the process by using Process Quality trends. In this way, deviations in flue gas air preheater outlet temperatures and superheater Process Quality were discovered. These were subject to further investigation.

- During the daily plant staff meetings, reports generated by the monitoring system, providing selective measured or calculated values, improve the analysis of the last day. Using reports help create a common base for discussion during those meetings. In former times the recorder chart strips were accessible to only one staff member.

Such reports contain, for example:

- Time stamps and time durations of unit startup and/or shutdown.

- Accumulated combusted fuels and energy generation.

- Time stamps and values of selective violated limits, e.g. boiler outlet temperatures.

- Trends of important values, e.g. the load or Process Quality values.

In addition to the implementation of Process Quality monitoring, the boiler setpoint controller was improved. Because data of the new controller are stored by the PGIM system, the I&C technicians used the full capacity of the OPTIMAX® monitoring system with the information management features of PGIM to improve the controller.

6 Summary

Diagnosis and optimization techniques are central components of asset management for today's power plants. Decisions are driven by the actual condition and performance of assets. Objectives such as operating requirements, financial targets and regulations are among the crucial tasks for plant managers. Process Quality values are essential indicators for different plant areas and for performance figures expected from these plant areas. The main objective is to identify sub-optimal conditions, and to determine the consequences in terms of losses and unnecessary energy consumption. These indicators support decision-making, because the result of inefficient operation can easily be expressed as direct cost. Furthermore, the results are extremely useful for predictive maintenance, as equipment degradation is recognized early.

The backbone for such monitoring and optimization solutions is a powerful information management system. The increasing customer demand highlights both the growing interest and benefit of this approach.

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Projects & News

ABB helps Eskom upgrade power supply

ABB has won a R81 million order from Eskom's Transmission Division for SVC upgrades at three 400 kV substations; Poseidon (1 x SVC), Perseus (2 x SVC), and Hydra (2 x SVC).

The order includes the design, manufacture, delivery, erection and commissioning of SVC control infrastructure at the three critical substations in Eskom's north western and southern power grids. Five outdated systems installed in the early eighties by AEG will be replaced with ABB's current Flexible AC Transmission Systems (FACTS) SVC technology.

This order will be executed by a consortium of ABB organisations in Sweden and South Africa.

“We are delighted to supply the SVC technology to Eskom Transmission which highlights the combination of our global strengths with our high engineering and project management capabilities. This is a critical project for Eskom and we are pleased to partner with them to strengthen and upgrade the South African grid," said Carlos Pone, Country Manager, ABB in South Africa.

ABB SVC's make use of the MACH 2 control and protection platform which is highly standardized and modularized in order to ensure quality and reliability. The benefits of the MACH 2 platform to Eskom is increased built-in functionality as well as possibilities for optional features to reduce equipment, maintenance and operational costs. The same control platform is used on the Series Capacitors that ABB has already installed for Eskom,and will be used in the Apollo Convertor Station Refurbishment project.

"Our approach for this vital project was to secure a cost effective solution that derives the maximum technical benefit from the re-usable equipment in the present SVC's and ABB's solution provided just that," says Sarel van Zyl, Eskom's Project Manager.

The contract was signed in June 2007 and the project will be completed at the end of 2008. Installation is scheduled to begin in May 2008.

OHB circuit breaker passes stringent international pollution-endurance test

ABB India’s Global Focused Feeder Factory (GFFF) for medium voltage outdoor circuit breakers in Nashik has achieved a significant milestone.

The 36/ 40.5 kV SF6 Outdoor Live Tank Circuit Breaker, type OHB, manufactured for the international market has passed a stringent pollution-endurance test at an independent testing facility in South Africa. The test was performed at Koeberg Insulator Pollution Test Station (KIPTS), located 27 km north of Cape Town and run by the ESKOM Electric Utility.

KIPTS is characterised by dry summers, strong winds, seasonal rainfall, high exposure to UV radiation, extremely heavy levels of marine and industrial pollution (eg salt) which makes it an ideal location for environmental testing.

Premier natural aging test site

KIPTS is recognised as the premier natural aging test site and the harshest real-world test environment worldwide. Products are exposed to extreme environmental conditions such as heavy pollution, mist, wind, rain, salts and dew. Qualifying the KIPTS test is also a pre-condition for supplying equipment to South Africa’s largest electrical utility, Eskom.

The OHB circuit breaker from GFFF, Nashik passed the KIPTS test for heavy to very heavy pollution (one year cycle) and light to medium pollution (winter cycle), which makes it acceptable for application in normal to heavily polluted environmental conditions.

Built to Adapt

World first! A videographic recorder capable of working with anyone, anywhere.

Whatever the environment, nothing adapts better to it than the new SM500F from ABB. It's the world's first field mount videographic recorder (pipe, panel, wall), rapidly processing and clearly displaying the vital data your operations depend on.

Its unique enclosure, with an overall depth of just 90mm, provides unsurpassed protection. So you don't have to waste costs, time, effort and space building one. From furnaces and cold storage facilities to effluent and HVAC monitoring, the SM500F delivers maximum performance with minimum hassle and high return on investment with low cost of ownership.

So wherever and whenever adaptability counts, you can count on the new SM500F.

SM500F built to survive

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