Sustainability is an essential part of ABB’s business

Feature story: Why the mining industry went gearless?
ABB unveils new foundation to encourage engineering and science talent

ABB has a strong commitment to training and development of employees, customers and other stakeholders.

In line with this commitment to education, I’m pleased to share the news that ABB’s board has approved the establishment of the ABB Jürgen Dormann Foundation for Engineering Education.

As ABB’s immediate past Chairman and CEO, Jürgen Dormann’s contributions were crucial to ABB’s survival, and by establishing this foundation, ABB honours him and creates a legacy to help ensure that we to grow from strength to strength.

The foundation’s aim is to provide financial support to further the education of high-potential graduate students in engineering and the natural sciences, creating the springboard for a rewarding career in engineering and science.

Students will be selected based upon ability, potential and personal means. Crucially, the awards are designed to provide financial help to talented individuals who could not otherwise pursue their studies at university.

It will commence operations in 2008, with the sponsorship of the first intake of students from around the world.

As well as articulating ABB’s appreciation of Mr Dormann’s achievements in an enduring manner, the foundation also reflects ABB Group’s enlightened self-interest by encouraging education in engineering and sciences.

ABB has an ambitious strategy for growth, and this growth requires the recruitment of some 10,000 qualified engineers over the next few years. In the current environment, hiring good engineers is becoming increasingly difficult.

As well as further establishing ABB’s brand and reputation as an employer of choice, I believe that the investment will more than pay back as it will help us to attract, nurture and retain the best talent there is.

John Gaskell
Chief Executive
ABB Australia & New Zealand
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# Insert: Contact us
ABB Australia has long recognised the need for professional project management within its business. Andrew McGlade, Project Director of ABB Australia’s growing team of project managers outlines the company’s approach to delivering first class projects.

ABB Australia’s approach to project management has changed considerably over the past five years with the company striving towards continuous improvement at every stage of the project. ABB believes that professional project managers with mature project processes will contribute to increased customer satisfaction, effective project planning and forecasting, predictable delivery of revenue and profit, improved change management and the development of long term customer relationships.

“What we’re doing differently is undertaking a more unified approach to project management”, says McGlade. “We are also investing more resources into training our project managers with the aim of developing the project management maturity level of our people to ensure continuous improvement is consistent across all projects”.

“We are also stressing project safety management as a deliverable – this is crucial to all stakeholders. In fact, our mantra in a way is ‘if it can’t be done safely, it’s not worth doing!’

“A strong focus is being put on the planning stage of the project. If you fail to plan, then you’re planning to fail”, states McGlade matter-of-factly. “We are continually measuring KPIs throughout the project which allows us to see what is happening all the time. That way, we can deliver on our promises.”

Other initiatives being undertaken include collaboration and working with clients to the same goals and outcomes. ABB has also invested strongly in training and has introduced ABB project management certification. Processes to improve efficiencies have also been put under the spotlight with ‘SAP’ being introduced as an ERP system and ‘Documentum’ as a document management system – both with the aim of improving overall delivery of a project.

According to McGlade, improving project management processes has resulted in projects being performed better overall. “ABB is having less margin slippage and scope creep which obviously allows a more predictable commercial outcome for projects. We are defining scope better for clients which results in improved customer satisfaction which is our ultimate goal.”

The right people with the right experience are a critical component to a successful project. To be recognised as a certified ABB project manager, ABB requires that its project managers not only undertake training but they must also have the experience, proven business performance and business attitude to earn their certification. Assuming all these requirements are met, this will allow application for certification as an ABB projection manager at the appropriate level.

Commenting on the process of matching the project manager’s skills with appropriate projects, McGlade believes project management is all about process and communication. “It has very little to do with what you are building or the technology you are using or deploying – but a lot to do with the way you do things and how you communicate this within the organisation and with the client”, he says.

“We obviously watch the project manager’s track record and ensure we align more experienced people to the larger, more complex projects. ABB has a competencies database which assists in this regard. We also ensure that...
To ensure a continued high level of project management professionalism within ABB, re-certification is required every three years.

Andrew McGlade  
Project Director, ABB Australia

Continuous training is available. Certification only lasts three years and then the project manager must be recertified by their peers.

The key driver behind these changes was the recognition that, while ABB has a long-established track record in the successful delivery of a wide variety of projects, there were times when it fell short of customer expectations.

“This was especially true when project quality and delivery schedules were eroded by inefficiencies on both sides, most often caused by difficulties in communication, definition of scope and a lack of consistency. We have worked hard to put in place the right processes, resources and people to ensure that all our efforts are focused on understanding what customers need, meeting their expectations and knowing how they define success”, McGlade concludes.

We are by no means where we want to be – which is a customer’s first choice in project delivery. We are however putting the building blocks in place to enable us to get there and we will achieve these goals.

ABB recently signed a period supply agreement with Transpower, the asset owner and system operator of New Zealand’s high-voltage electricity transmission grid, to supply and install power transformers throughout the network over five years.

The agreement, with a potential estimated value of NZ $5 million a year, enables Transpower to utilise ABB’s global experience and order quality, cost-effective transformers without the delay of writing specifications, inviting quotations and evaluating tenders.

David Laurie, Transpower’s General Manager National Grid, said that Transpower is looking forward to being able to better meet its own customers’ requirements of reduced lead times and innovative solutions.

Brent Rees, High Voltage, Marketing and Front End Sales Manager, is pleased with the outcome of the negotiations:

“This formal arrangement will focus on continuous improvement opportunities for both ABB and Transpower as part of a collaborative partnership”.

Brent and Peter Silverwood, HV Product Manager, High Voltage Products, worked closely with ABB in Australia and the ABB Bangpoo factory in Thailand to achieve the joint agreement.

ABB helps save Great Barrier Reef

ABB will contribute $45,000 over three years to the Great Barrier Reef Foundation. This foundation has been established to co-ordinate research into protecting the Great Barrier Reef from climate change.

John Gaskell, ABB Australia’s chief executive explains, “ABB has always had a strong commitment to research and development and this campaign will help to fund research into understanding how climate change affects one of the world’s most important natural assets.

The Great Barrier Reef is the largest natural feature on earth, stretching more than 2,300 km along the northeast coast of Australia from the tip of Cape York to just north of Bundaberg.

“The reef is not only important from an environmental perspective as it also contributes to the Australian economy due to the development of associated industries and employment”, says Gaskell. “ABB is proud to be associated with the project.”
ABB wins $14 million iron ore contract in Western Australia

ABB has won a $14 million contract from Worley Parsons to supply drives systems and distribution transformers to Fortescue Metal Group's (FMG) Chichester Range iron ore mine in the Pilbara region of Western Australia.

ABB will supply:
- 3 kiosk distribution transformers (1 MVA)
- 3 distribution transformers (1 MVA)
- 16 distribution transformers (2 MVA)
- 15 converter transformers (5 MVA)
- 114 drive systems (including Frequency Converter ACS800 & Induction Motor)

“The ACS800 frequency converter is arguably the best drive in this power range and it’s proven quality and performance record was key for winning this contract,” said Charles Delaloye, sales manager for drives projects in ABB’s minerals business.

“In addition, ABB’s local and global expertise in the minerals industry instilled confidence into Worley Parsons that they had the right supplier to build the system. ABB, Worley Parsons and FMG undertook a cooperative process to configure, size and select the appropriate equipment, all of which contributed to the successful outcome for all stakeholders.”

The equipment supplied by ABB will be used for the project’s conveyors, crushers, apron feeders and fans. Commissioning of the plant is scheduled for September 2007.

The Chichester Range iron ore project is the largest bedrock iron ore discovery in Australia with 2,400 million tonnes of ore reserves, which will be mined over 20 years. The iron ore is destined for the emerging Chinese and Indian markets and first shipments are scheduled for late 2007 with initial production at 45 tonnes per annum.

ABB to install $13.5 million Hope Downs substation

ABB is undertaking a $13.5 million substation installation for Rio Tinto. The Hope Downs substation will provide power to a new iron ore mine in the Pilbara region of Western Australia.

The project is for the complete turn-key supply of a 220/33 kV substation and 33kV switchgear. This includes primary and secondary design, supply of all primary and secondary products, civil construction, electrical construction and commissioning of the substation as a complete ABB integrated solution.

“As this is a full turn-key solution, ABB will supply all the HV products as well as all protection and control systems. The 220 kV circuit breakers are supplied from Sweden and the 220/33 kV 48 MVA transformer is supplied from our factory in Bangkok Thailand.”, says Rory McDonald, substations business unit manager.

ABB will be responsible for all commissioning, which includes both Factory Acceptance Testing of panels in the factory and the full primary and secondary commissioning on site after all equipment has been installed.

This is the fifth substation installation that ABB has been involved with in the region. The other substation projects include the Yandicoogina rebuild, Paraburdoo, Millstream and Juna Downs substations.

The Hope Downs substation will be operational in September 2007.
ABB wins $3m control system order from Australian Vinyls

ABB’s System 800xA provides customers with a better way to achieve measurable productivity and profitability improvements. It extends the scope of traditional control systems to include all automation functions in a single operations and engineering environment so that plants can run smarter and better at substantial cost savings.

ABB has won a $3 million order to upgrade the control system at Australian Vinyls PVC resins plant located in Laverton, Victoria.

The project will involve upgrading the existing control systems to ABB’s Industrial800xA with Batch Manager and MOD AC460 controllers. The ABB project team will be based at Notting Hill, Victoria. Detailed design engineering commenced in the first half of 2007 with installation and commissioning scheduled for January 2008.

Michael Vandertuin, ABB Sales Manager, Southern Region, says: “This is a very satisfying and significant win for us, as it was secured against extremely strong competition. In a head-to-head battle, ABB was able to demonstrate superior functionality with the industry leading System 800xA.”

“ABB and several others, were invited to present their solutions and capabilities”, explains Nigel Cann, General Manager, Australia Vinyls.

“We selected the ABB system because of its ability to evolve rather than replace the existing system”, says Cann.

Vandertuin adds: “We spent a lot of time developing a full understanding of Australian Vinyls’ production requirements and their overall business goals. We set ourselves the task of developing and presenting a complete upgrade solution that will give them the expansion capacity that they require, along with a totally integrated object-based HMI, utilising the existing controller configuration - this means, use what you have, to get what you want.”

Australian Vinyls evaluation process included visits to several ABB customer sites around the globe. These site visits demonstrated that the ABB solution had many industry leading features, with a proven track record in achieving the required results.

ABB’s System 800xA provides customers with a better way to achieve measurable productivity and profitability improvements. It extends the scope of traditional control systems to include all automation functions in a single operations and engineering environment so that plants can run smarter and better at substantial cost savings.

Since it’s introduction in January 2004, ABB has sold Industrial IT System 800xA to more than 2,580 customers in a wide variety of process industries all over the globe. Customers in a diverse range of industries have used System 800xA to extend their automation system reach and capability to make their operations more efficient and profitable.

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**ABB events**

**ABB Australia** has a number of upcoming key events. For more information and to register online for any of the events listed, please go to [www.abbaustralia.com.au/events](http://www.abbaustralia.com.au/events).

**Automation Solutions Forum 2007**
- Melbourne, Victoria on 26 June
- Sydney, NSW in August 2007
- Brisbane, Queensland in August 2007
- Perth, WA in September 2007

**ABB Customer Roadshows**
- Mount Isa, Queensland on 18/19 July 2007
- Bunbury, WA in 19 July 2007
- Mackay, Queensland on 22/23 August 2007
- Gladstone, Queensland in September 2007

**Energy 21C Conference and Exhibition**
- Sydney Exhibition and Convention Centre
  - 11-14 November 2007

**The Electric Energy Society of Australia Conference**
- Novotel Brighton Beach, Sydney
  - 12-14 September 2007

**Product launches**
- Launch of generator protection IED REG 670 Scheduled for July/August in Sydney, Brisbane, Melbourne and Perth.
ABB to supply motors and drives to Gold Coast desalination plant

What is desalination?

Desalination is a technology that separates dissolved salts and other minerals from seawater or other salty water to provide clean drinking water. Once converted, this water supply will be blended with current drinking water supplies and distributed directly to users.

Desalination technologies already exist and have been used for many years. In Australia, the most common desalination process is reverse osmosis, which involves the removal of salts and other minerals out of the water as it moves through a membrane process (moving through a thin sheet of material) under high pressure. Other processes include thermal distillation, which involves evaporating the salt water and collecting the purified vapour; and electrodialysis, which involves removing salts by separating and collecting their chemical components through electrolysis (using an electric current). The reverse osmosis technology will be used at the Gold Coast desalination plant.

Source: www.goldcoastwater.com.au

ABB has secured key contracts valued at over $5 million to supply motors and drives to the Gold Coast desalination plant. The plant, which is owned by the Queensland State Government and Gold Coast City Council is the largest desalination plant on the eastern seaboard and is located at Tugun on the Gold Coast. It is being built by the GCD Alliance (a consortium of companies) and will provide 125 megalitres of potable water each day to South East Queensland.

ABB’s scope of supply included:

- 4 4800 kW water-cooled 3300 v motors
- 4 1060 kW water-cooled 3300 v motors
- 4 800 kW 11000 v motors
- 4 550 kW 690 v motors
- 8 MV drives

The motors and drives will be used on both the first- and second-pass reverse osmosis pumps, as well as on the ERD booster pumps. Delivery of the first motor is scheduled for September 2007.

According to Cliff Marshall, ABB’s Queensland-based motors and drives sales manager, “the major benefit of desalination is that it can continue to deliver high quality drinking water for consumption even if there is no rain. However, there are also some key challenges associated with desalination, which include the need to minimise energy consumption and ongoing operating costs as well as environmental impacts.

“It is these challenges that the ABB motors and drives planned for installation at the plant have helped address”, explains Marshall. “The ABB motors have an energy efficiency of 97 per cent and will save hundred of thousands of dollars in running costs, not to mention saving many tonnes of carbon dioxide gas from being released into the environment.”

Once operational, the Gold Coast desalination plant will have a significant impact on the availability of water to the region. The average daily supply of 125 million litres of desalinated water represents more than 15 percent of the entire south-east’s current needs and is sufficient to meet the water needs of at least 400,000 people.
**Significant savings thanks to successful shutdown**

The stream 5 shutdown was the latest of the three shuts managed in a staged approach by ABB. The shutdown was completed two days (52 hours) ahead of program, with all performance measures met, and major cost savings estimated at over NZ $1 million.

Significant time and cost savings were achieved on the New Zealand Steel kiln/multihearth furnace stream 5 shutdown, thanks to a coordinated effort from New Zealand Steel, its contractors and ABB in early May.

In order to ensure continuous improvement, a New Zealand Steel team consisting of Gary Toner, Manufacturing Manager – Ironmaking, Bruce Ross, Maintenance Services Manager, Ian Renall, Maintenance Superintendent – Ironmaking, and Ben Ross, Procurement, contracted the services of ABB to lead the management of Ironmaking’s regular stream (kiln and multihearth) shutdowns.

Typically, the iron plant shuts down two of the four streams each year for around 30 days at a time. Each shutdown involves a large part of the shutdown workforce working round-the-clock. During the shutdown, the kiln refractorys are replaced, the accretion build-up is cleaned out and worn rabble arm teeth in the multihearth furnace are replaced.

The stream 5 shutdown was the latest of the three shuts managed in a staged approach by ABB. The shutdown was completed two days (52 hours) ahead of program, with all performance measures met, and major cost savings estimated at over NZ $1 million.

Another success of the shutdown was no lost-time or medically treated injuries over the 60,000 person-hours worked by New Zealand Steel employees, contractors and ABB.

“It is pleasing to see this early success as a result of our vision of engaging a specialist shut management resource to bring some continuity to key roles within our shut structure”, says Ian Renall who has overall responsibility for Ironmaking maintenance.

“The overwhelming support from New Zealand Steel, coupled with the dedication of the whole shutdown team and contractors led us to this success”, says ABB’s Rajan Manickan who managed the stream 5 shutdown.

Renall and Manickan also credit the success of the shutdown to:

- A healthy partnering relationship focus between New Zealand Steel and ABB
- Good preparation as a result of compliance to the leading plan and shutdown start date
- Clearly defined role descriptions and regular pre-shut communications
- Accurate estimate of the refractory scope to avoid any surprises during the shutdown
- Commitment to execute the plan by the coordinators
- Knowledge and dedication of the Ironmaking maintenance technicians and operations isolation leaders
- Implementation of a bar-coding system for monitoring and tracking all issued items from procurement

The stream 5 shutdown was a significant success and is a great example of how comprehensive planning, complemented by disciplined execution, delivered excellent results for New Zealand Steel. Safety, throughput, cost and quality have all been enhanced by this initiative which seeks to realise the benefits in following the Plan, Do, Check, Act (PDCA) model.
Global news

ABB is first manufacturer to gain qualification for new standard in substation automation

ABB has been recognised as a qualified test centre to certify products as compliant with the new global standard for communication in substation automation, IEC 61850.

ABB is the first manufacturer to achieve official Conformance Test Centre status as determined by the UCA International Users Group, an organisation of utilities, vendors and users of communications for utility automation.

The certification authorises ABB’s System Verification and Validation Centre in Baden, Switzerland, to perform IEC 61850 Conformance Testing in accordance with the group’s Quality Assurance Testing Program Procedures.

“We’re very proud to be the first equipment manufacturer and system integrator to earn this important qualification,” says Samir Brikho, global head of ABB’s Power Systems division. “Such recognition re-affirms both our position as a market leader and our commitment to standards like IEC 61850 that will move our industry forward.”

The IEC 61850 standard makes it easier for various substation automation devices such as protection relays and bay controllers, as well as their engineering tools, to exchange data among each other. Recognition as a test centre for products seeking compliance certification depends on meeting the strict procedures, guidelines and requirements laid down by UCA.

“Having a recognised test centre enables us to give customers the assurance that our products are of high quality,” adds Brikho. “This will become more important as the IEC 61850 standard is applied even more widely and the demand for compliant products increases.”
ABB helps develop the world’s first universal train

Bombardier has developed the world’s first universal train that can run without stopping on all three power supply alternatives: diesel, AC and DC power – a breakthrough made possible by unique ABB transformer technology.

For decades rail operators all over the world have dreamed of a train that could run on all three power alternatives and switch effortlessly and efficiently between diesel, AC and DC power.

With the launch by Bombardier of the AGC XBiiBi (which stands for bi-mode and dual voltage) that dream has now been realised, thanks to a unique ABB technology – the roof-mounted traction transformer.

Previously the traction transformer (which powers the train with AC power) and the diesel engine were mutually exclusive because they occupied the same position in the train.

ABB solved the impasse by developing a traction transformer that could be installed on the roof of the train, thereby freeing up space inside for the diesel engine. Crucially, the roof-mounted traction transformer has no impact on the speed, acceleration, performance or seating capacity of the train itself.

The AGC XBiiBi was developed for the French national rail operator SNCF (Société Nationale des Chemins de fer Français), whose extensive network in 21 regions uses all three power alternatives. Of the 29,500 kilometres of track in the SNCF network, 15,800 km are not electrified, 5,800 km are electrified at 1.5 kV DC and 7,900 km at 25 kV AC.

A route like Marseille to Geneva via Grenoble, for instance, is part diesel, part AC and part DC, which means that prior to the AGC XBiiBi, passengers had to change trains whenever the regional power system switched from, say, diesel to AC. With the AGC XBiiBi, a single train can now run the entire route, regardless of power system.

The AGC XBiiBi is based on Bombardier’s AGC (autorail à grande capacité) family of trains, a versatile platform that consists of diesel, diesel/AC and AC/DC variants. Bombardier is currently delivering 612 AGC trains to SNCF. ABB is supplying the traction motors for all 612 trains, the generators for the diesel variants, and the traction transformers for the AC trains.

ABB is the world’s leading supplier of traction transformers with a 50 percent share of the world market, and has strategic alliance contracts with the world’s leading rolling stock manufacturers, including Alstom, Bombardier, Siemens and Stadler Rail.
ABB solutions cut emissions at U.S. and EU ports

ABB is supplying Holland America Line with high voltage shore connections (HVSC) to eliminate the emissions of ships berthed at a leading U.S. port. ABB delivered the world’s first emissions-free HVSC in 2000, an innovation that won the customer a major EU environmental award.

The shore-to-ship power solutions enable three of Holland America Line’s 13 cruise ships to plug into the local power grid and switch off their diesel engines while docked at their home port of Seattle in the United States.

ABB’s high voltage shore connection enables the vessels to cut fuel costs and virtually eliminate greenhouse gas emissions and noise pollution during stopovers at one of the leading ports on the U.S. west coast. For Seattle it means improved air quality and increased revenues for the city’s publicly owned electric utility.

The solution includes 11 kV switchgear, automation hardware and software for the ships’ power management systems, and high voltage and low voltage cables that connect the shore panel to the main switchboard and power management system onboard each vessel.

Cruise ships in particular use vast quantities of power while in port. These giant floating hotels require heating, air conditioning and lighting for around 4,000 guests and crew throughout their stay in port. By using electricity from the grid, rather than generating power from the diesel engines, the reductions in emissions and savings in fuel are substantial.

Port authorities and shipping operators in the United States and Europe are under increasing political pressure to improve air quality in ports, which are often located in sensitive marine environments or large densely populated cities.

According to a report issued in 2005 by the European Union, “ships are fast becoming the biggest source of air pollution in the EU.” Unless more action is taken, the report concludes, ships are set to “emit more than all land sources combined by 2020.”
The Port of Seattle is one of the biggest container ports in the U.S., with 1,400 acres of port marine and airport facilities. The port’s two cruise ship facilities host more than 200 ship calls and 750,000 cruise passengers.

The situation is similar in the United States where cities like Los Angeles, San Francisco and Seattle are taking steps to reduce ship emissions and lower the environmental impact of their ports ahead of expected legislation that could make shore power connections mandatory.

ABB is the world’s leading supplier of marine electrification and automation systems, with a complete scope of supply capability for ports and all types of vessel from cruise ships to container ships, oil and LNG (liquefied natural gas) tankers, ice breakers and semi-submersibles. ABB delivered the world’s first high voltage shore connection in 2000. The installation led to the Swedish port of Gothenburg winning the European Union’s inaugural Clean Marine Award in 2004. The EU calculates that the ABB solution eliminates 80 metric tonnes of nitrogen oxide, 60 tonnes of sulphur dioxide and two tonnes of solid particle emissions at the port each year.

Another project at the Port of Seattle - the Princess Shore Power Project - involving Princess cruise ships uses electric power from shore to significantly reduce engine emissions. The project in 2005 eliminated 35 metric tonnes of turbine engine fuel per ship call, and seasonal reductions of 7.7 tonnes of particulate matter, and 203.5 tonnes of sulphur dioxides emissions, according to the Seattle Port Authority.

ABB’s Internet sites are being revamped to give them a sleeker, more modern appearance and to make surfing easier for users with slower network connections.

The new design was launched on abb.com and all country websites earlier this year and incorporates a number of features to help users find what they are looking for more quickly.

The search window and “toolbox” functions have been moved to a more prominent position and a new “log in” function has been added to provide access to restricted online services and content. Customers will be individually informed as their respective services become available through the log in on www.abb.com.

ABB’s websites had 1.3 million visits in January this year, an increase of 23 per cent compared to one year earlier. The users viewed more than 8 million pages.
ABB developed the gearless mill drive (GMD) in the late 1960s in response to a need of customers in the cement industry to achieve a radical improvement in productivity and processing throughput. The building boom of the 1960s was at its height and the demand for cement insatiable.

At that time throughput capacity had reached its peak – gearbox manufacturers were not able to develop a gear-operated milling system that could increase throughput to the level required by customers.

ABB stepped into the void and developed the world’s first GMD for a Ciment Lambert (now Lafarge) ball mill in France. The GMD was delivered in 1969, had a rating of 6.4 megawatts, and is still in operation to this day. To achieve this rating in a single mill with a gear-operated system was simply not possible; it would have required two ball mills of 3.5 megawatts each.

With this sort of success it was only a matter of time before the same need for increased capacity would be recognised by other industries. Again ABB was the first to answer the call by developing in 1985 the world’s first GMD for a mineral processing application – gold and copper – in Papua New Guinea.

Larger GMDs, shorter delivery times

In 1993 the rating of the world’s largest GMD rose to 11,300 megawatts when ABB won the contract to supply Newmont Mining, the world’s largest gold producer, with a GMD for its principal gold mine in Nevada.

Eleven years later ABB extended the record to 21 megawatts for a massive semi-autogenous (SAG) mill, 12 metres (40 feet) in diameter, at the Collahuasi copper mine in Chile. ABB delivered and commissioned the GMD within months of winning its 50th order – again from Newmont Mining for its gold mine in Nevada – for a 13 megawatt GMD. ABB was the only supplier able to meet the rapid delivery deadline of 11 months.
ABB held Gearless Mill Drives User Meeting in Sydney

ABB Switzerland, in collaboration with ABB Australia, organised a Gearless Mill Drive User Meeting in Sydney, Australia late last year.

GMD end users, potential future partners as well as mill suppliers from various mines and cement plants in Australia, Asia, the USA and South Africa were invited to Australia. The main idea of the convention was to exchange experiences, knowledge and ideas in order to ease and improve the future collaboration.

ABB has installed or won orders for over 50 gearless mill drive units in 18 countries on five continents. The gearless mill drive business is an important market for ABB and it is crucial to maintain an open and good relationship with the users. Customers need to know exactly who from ABB to approach in case of queries and difficulties on site, whereas ABB needs to know where to improve its performance.

End users from eight different companies accepted the invitation to Sydney's Hotel Intercontinental. The meeting agenda covered the following GMD-specific topics: Maintenance and service concepts as well as service options, possibilities and limits. Also on the agenda were issues like new developments, problems experienced with ABB’s GMDs and training.

Operators from various mines have gained, after several years with ABB’s equipment, valuable experiences. ABB respectively, during the same period of time, has gained a lot of new knowledge in the GMD ambit. Now the gearless mill drive users had the chance to talk about their positive as well as negative experiences with ABB equipment and were given answers to their questions.

Eric Gilfillan, Manager Electrical Engineering, Anglo Technical Division, South Africa said: “I was very impressed with the idea and the execution of this meeting. I appreciate the gearless mill drive team’s sincerity regarding not only successes but also failures. I also appreciated getting to know the other users and being able to share information with them. I would like to carry on being part of this network!”

Also the team from ABB could profit by learning directly from the customers about what concerns and problems they have and in particular by having the chance to learn about interesting proposals for future collaboration.

Phillip Gunn, Senior Electrical Engineer, Newcrest Mining (Telfer Gold Mine) commented that “There was good interaction between ABB and the customers. I think the two parties learnt a lot from each other, because in reality problems often do not go back to the supplier. A meeting like this is where the information can come forward, and the sort of discussion we had, is very good.”

Thanks to contributions from both parties a lot of ideas and considerations were exchanged. The conference was highly interactive and resulted in valuable new plans.

The inside story

Since inventing the gearless mill drive in the late 1960s, ABB has accumulated thirty years of experience customising gearless solutions for our clients’ industrial applications. Our state-of-the-art manufacturing facilities in Bilbao, Spain and staff of master engineers and craftsmen in Bilbao and Baden, Switzerland can bring all the benefits of gearless drives to specific operations.

The GMD from ABB is designed and engineered from the bottom up to deliver massive capacity, superior energy efficiency, unmatched availability and global, round-the-clock support to ensure the return on technology investment.

Solid foundation designs

There is no substitute for a strong foundation. To ensure client civil engineers have all the facts, ABB provides detailed information on the requisite stiffness of the foundation as determined by the dimensions, weight, mass and forces exerted on the GMD/SAG mill unit.

Pole mounting

ABB’s pole mounting methodology with eccentric fixing bolt sleeves integrates the centre plates, pole bolts and mill flange as an efficient spring system, so force transfer from pole to mill flange is by friction only. Bolt shear is not an issue with a GMD from ABB.

Cooling System

ABB’s custom-designed cooling system ensures optimal operating conditions within the stator housing for superior efficiency and minimal energy losses. Cooling air (blue) is circulated throughout the stator housing’s front two ducts, flows through the air gap, and returns (red) to the cooler units.
ABB is carrying out a major modernisation of the world’s largest mine hoisting plant to help LKAB boost production at its Kiruna iron ore mine by a massive 25 percent.

Kiruna is the largest underground iron ore mine in the world and is widely recognised as one of the most modern in the industry for its early adoption of innovative, productivity-enhancing technologies.

The mine - in the far north of Sweden, about 145 kilometres north of the Arctic Circle - is also renowned for having the largest hoisting plant in the world. Whereas most mines have one or two mine hoists with a hoisting capacity of up to 10 million tonnes a year, Kiruna has 10 hoists and a hoisting capacity of 26 million tonnes of crushed ore a year. Four of the hoists are located underground.

All 10 mine hoists were supplied by ABB in the 1970s when the main haulage level was moved to a depth of 775 metres. They were modernised by ABB in the 1990s when a new haulage level was developed at 1,045 metres.

With global demand for iron ore and world crude steel production at an all-time high, LKAB is planning to move the main haulage level of the mine to a depth of 1,365 metres and raise production capacity by 25 percent to 33 million tonnes a year.

Key to the success of the expansion are the four underground mine hoists that move the crushed ore via the tower-mounted skip hoists to the surface – quickly, reliably and energy-efficiently – for processing into high-grade pellets.

ABB is upgrading the four underground hoists with new energy-efficient ACS6000SD variable speed drives, 5600 kW synchronous motors and AC800M control systems, and supplying a complete mine hoist at surface level. This will bring the number of mine hoists in operation at Kiruna to 11. Plans to install a fifth underground hoist are underway.

The modernisation will increase the capacity and availability of the mine hoists, enabling LKAB to get more iron ore to the pelletising plant on the surface faster than was previously possible.

ABB has a unique capability in the mining industry as the only supplier of complete mine hoists that can be customised and optimised to the requirements of each customer and installation. ABB has been supplying and modernising mine hoists for 70 years and has an installed base of some 600 mine hoists worldwide.

ABB is also helping LKAB increase production at its Malmberget pelletising facility in northern Sweden. ABB was awarded a $27 million order to supply automation and electrical equipment to enable LKAB to increase production at the plant to four million tonnes of high-grade pellets a year.

ABB’s scope of supply

A Upgrade of 4 underground hoists, each with:
  - Synchronous motor 5600 kW
  - Drive converter ACS 6000 SD
  - Main and auxiliary transformers
  - Hoist control system based on AC800M
  - Rope attachments
  - Additional brake calipers
  - Installation and commissioning

B New hoist on surface, in addition to the present six:
  - New mechanical equipment with brake system
  - Moving the following equipment from the first upgrade underground hoist:
    - Drive converter ACS 6000 SD:
    - DC motor 4300 kW
    - Hoist control system
    - Installation and commissioning

ABB helps boost mine production by 25 percent
For this project ABB supplied:

- The plant’s process control system, consisting of 14 AC 800F controllers, seven operator control and observation units and two engineering stations. Its framework comprises about 16,000 I/O (input/outputs), most of which are decentrally equipped with S800 modules in more than 100 remote I/O housings.
- A Motor Control Centre (MCC) drives the entire building installation, including the layout for external and internal lighting.
- The fire alarm system and the infrastructure for the IT data network.
- Complete engineering, assembly, configuration and commissioning of all facilities.

ABB provided most of the electronics and all of the process control equipment for a German bioethanol plant that will produce clean fuel components and protein feed.

Eleven years after building a sugar factory in Zeitz, Saxony-Anhalt, Germany, Südzucker AG set another milestone by building a bioethanol plant in the region.

The main ingredient used to make bioethanol at the plant is wheat, but Südzucker can also make use of the byproducts that result from its sugar operation, along with other kinds of grain that exist in abundance around Zeitz.

The new plant can produce 260,000 cubic metres of bioethanol per year, which takes about 700,000 tonnes of grain and requires a cultivated area of about 100,000 hectares.

Bioethanol is a readily available, clean fuel used as a fuel additive to make environmentally friendly gasoline for combustion engines. It can be made from fom grain, corn, some tubers, sugar beet, sugar cane or cellulose plants. Bioethanol is basically alcohol, resulting from a process of fermentation, distillation/rectification and dehydration.

Today’s effective gasoline standard allows for up to five percent added bioethanol. The standard also permits as much as 15 percent ethyl tertiary butyl ether (ETBE) – an octane improvement that can be made from ethanol. Both substances are excellent gasoline additives and have superb environmental properties.

The European Union is promoting the use of biofuels and other renewable fuels to help meet the EU’s climate change commitments, and to create environmentally friendly, secure supplies of fuel from renewable energy sources.

Managed by its Leipzig office, ABB has been part of the Südzucker project since late March 2004.

For ABB, it is the first major Profibus-PA installation, and there are about 1,000 Profibus devices at Südzucker. In Zeitz, ABB automation experts used the new visualisation screen and IndustrialIT 800xA Operations to connect to AC 800F controllers.

“We have supplied the bioethanol plant with cutting-edge process technology,” says ABB project manager Jürgen Heinze. “The very short duration of the project presented an additional challenge. In close cooperation with all participating ABB partners, however, we turned this challenge into a success.”

ABB technology installed in Zeitz is also employed at another location: Energy Center 3. ABB supplied Babcock-Hitachi Europe, based in Düsseldorf, with a process control system, instrumentation, MCC and the appertaining data lines.
Developed in collaboration with industry leaders like Dow Chemical, the latest version of ABB’s Extended Automation System 800xA is winning acclaim for its unique engineering capability and unparalleled focus on eliminating process downtime.

Launched in November 2006, Version 5.0 of ABB’s System 800xA extended automation platform is equipped with new engineering functions that let customers make application changes without interrupting production and without incurring downtime - a common and costly occurrence whenever system modifications are made.

New to the platform is Load-Evaluate-GO, a tool developed in collaboration with Dow Chemical Company, as well as Multi-User and Distributed Engineering, a remote collaboration tool for engineers working from different locations on the same project. Both new functions are unique to System 800xA.

Load-Evaluate-GO lets customers add programs, modify configurations and implement software upgrades while production is running, and then simulate and evaluate the impact these changes will have on the production process. Once the application changes have been evaluated, the customer can choose to execute, modify or discard them.

Multi-User and Distributed Engineering lets users move, copy and reuse configuration data from different systems, and make engineering changes in an environment separate from the running process. Engineers in onsite and offsite locations can collaborate on a project and synchronise the results so they can be implemented at will, in a single transaction.

According to ARC Advisory Group, some five percent of production in the process industries - worth $20 billion a year in revenues - is lost to unscheduled downtime. Most of this, says ARC, could be readily avoided through improved automation capabilities like Load-Evaluate-GO and Multi-User and Distributed Engineering.

ABB has sold more than 2,500 System 800xA systems and upgrades since the platform was launched in January 2004. Recent orders and installations include oil and gas platforms and LNG terminals in northern Europe and the Americas, ethylene plants in Asia, and refining and pipeline complexes in Latin America.

What is System 800xA?

System 800xA significantly extends process control and enterprise visibility well beyond the realm of essential process control to include production management, safety, smart instrumentation, smart drives and motor control, information management, asset optimisation, simulation and documentation.

System 800xA integrates these areas so that information can be viewed, accessed and appropriately modified from its single operations environment, allowing greater efficiency of plants or mills and achieving substantial cost savings. Its unique engineering environment manages one set of consistent data, for single-point entry, single-point change, and re-use across the plant to help users extend and repeat their most successful engineering strategies and best practices.

System 800xA Extended Automation was chosen by Control Engineering magazine to receive an Editors’ Choice Award as one of the best products introduced in 2004.
A simple breath test using ABB analyser technology can flag a potentially destructive but readily treatable stomach irritant before it turns into an ulcer, or worse.

An ABB instrument detects the bacteria that can cause gastric or duodenal ulcers, providing effective weaponry against a bug present in about half the world’s population.

Not long ago, people believed ulcers were a matter of stress and lifestyle. ‘Diagnosis,’ meant an invasive scope in the stomach. Now, it is believed that almost all duodenal ulcers and roughly 80 percent of gastric ulcers are triggered by bothersome Helicobacter Pylori bacteria, which lodge in the lining of the stomach and leave it vulnerable to normal gastric acids.

As it turns out, the key to detection is the fact that H. pylori absorbs highly-soluble urea from its host and converts it to carbon dioxide (CO2) and ammonia. A coating of ammonia protects the bug from the corrosive acids of the stomach. But the CO2 it produces marks it for destruction.

The detection tool is based on the ABB infrared gas analyser Uras and works by testing levels of CO2 in the breath of infected people.

Everybody exhales CO2, but people with H. pylori bacteria give off different concentrations of it when they ingest urea.

Thirty-million of Germany’s 80-million people have been infected with the bacteria, and at least one in 20 is expected to get an ulcer as a result.

So there was a big need to be addressed when German analytical technology company Hartman & Braun began a project with partners from a medical university looking for a simple instrument that doctors could use to detect H. pylori in the mid-1990s.

So-called ‘mass spectrometers’ were on the market and capable of measuring the specific CO2 emissions, but they were too expensive for most medical clinics.

Hartmann & Braun, which was bought by ABB in 1998, adapted its Uras analyser to measure breath samples in two steps.

The Uras had a distinguished history in process measurement, but required a retrofit for use in clinics and this was devised with the help of medical instrumentation specialists and ABB sales partners.

The patient simply breathes into a respiratory bag and then takes an inexpensive dose of urea labeled with a carbon isotope, known as 13CO2. Twenty minutes later, the patient breathes into a second bag. A significant difference in the ratio of 13CO2 carbon dioxide versus the naturally occurring 12CO2 signals the presence of the Helicobacter, and treatment can begin.

Sold under names like HeliFAN plus or IRIS, the ABB instrument is now in use all over the world.

Gastroscopy clinics remain the primary market, but there are more than 20 other diagnostic tests that rely on the Uras system, and the instrument is also used in veterinary medicine and biochemical research.

Eforts are underway to adapt the method and associated software for other diagnostic tests, including liver function, amino acid metabolism and poor absorption of fat, and one German project is examining use of the technology in intensive care units under the title “Multi-organ function test”.

Most duodenal and gastric ulcers are triggered by bacteria in the stomach lining, but ABB’s Uras Analyzer can detect their presence with a breath test.
ABB has developed a rugged, research-grade spectrometer – equipment used in a variety of industries to test the physical and chemical properties of samples – that features a long lifespan and the lowest cost on the market.

The MB3000 spectrometer was on show at Automation World 2007, ABB’s annual forum for the automation industry. The configuration of the new instrument emphasises simplicity at low cost while maintaining surprising versatility.

It uses software with a logical and intuitive command system to analyse the properties of compounds and complex mixtures, from the sugar content of food and drink to the chemical composition of forensic and toxicology samples.

“The software was specifically designed to make the instrument as simple to use as possible,” said Henry Buijs, an internationally-renowned expert on applied spectroscopy and developer of the MB3000.

Buijs is a senior ABB engineer and co-founder of the Quebec-based analytical products and systems manufacturer Bomem, now ABB Bomem. “From the point of view of cost, there is a huge advantage to this device,” he said.

The MB3000 is easy to use and can be customised by operators to suit individual working methods and technical requirements.

It’s maintenance free, thanks to a lack of moving parts and a self-calibrating solid-state laser, which has a lifetime well in excess of 10 years. The central component of the device, the interferometer, comes with a lifetime warranty against wear and breakage, providing years of reliable and accurate results. A unique lifetime warranty against deterioration of optical components is also provided with this new spectrometer.

Spectrometers test samples in factories, field locations, educational institutions, and quality-control laboratories.

An infrared signal is passed through the sample or reflected off the sample surface, which alters the signal in a way that is characteristic of the sample’s composition. Data on the emerging signal are interpreted using the mathematical technique of Fourier Transformation to produce a readable spectrum, revealing the chemical composition of the sample.
ABB launches MNS iS – the first integrated system for LV MCC applications

ABB Australia officially launched the MNS iS in March this year. The MNS iS is the first integrated system for low voltage applications which includes comprehensive motor control, monitoring, protection and communication capabilities to higher level control systems.

Gunnar Zank, ABB’s MNS iS regional support manager for the Asia Pacific and the Middle East spoke at the Queensland launch event highlighting the technological and other benefits of the system: “MNS iS provides flexibility for engineers, system integrators and end users by way of configurable control modules which allow ongoing modifications and enhancements”, he stated.

As a masterpiece of the latest technology of ABB, MNS iS breaks through technology barriers and realises safety, reliability and intelligent control at a higher level. It enhances personnel safety and protection by separating the control modules from the power circuits physically and operationally.

MNS iS also enables flexible usage of spare parts as a result of the system standardisation. It makes modifications/enhancement of control and protection functions possible at any time and at any project stage during the complete project life cycle.

Its smart sensor technique, unlike the traditional current and voltage measurement method, has selectable temperature, current and voltage measurement for various protection needs for both the motor and switchgear itself. MNS iS lowers the down time greatly through early warning and prompt maintenance.

To date, nineteen patent applications have been posted for the MNS iS motor control centre. In the global low voltage switchgear market, this is a major technological achievement.

MNS iS snapshot

- One integrated MCC system configurable for all possible customer specifications. It can be provided based on conventional up to sophisticated Intelligent Motor Control System requirements.
- Makes modifications and enhancements of control and protection functions possible at any time and at any project stage during the complete project life cycle. It provides much needed flexibility for engineers, system integrators and end users.
- Secures customer investments as it provides step-up possibilities with future technology developments with the same system.
- Enables flexible usage of spare parts as a result of the system standardisation. Very few standard motor starter variants are needed for a complete plant.
- MNS iS is uniquely safe and simple to operate. Power modules and control devices are physically separated and situated in separate compartments. The installation of power cables is possible without adverse effects on control and communication equipment. On the other hand, all installation jobs in the control compartment can be carried out without the danger of touching live power cables.
ABB announces the release of the new generator protection IED REG 670. The REG 670 IED provides flexible protection for any type of generating station and is capable of protecting a complete generator block, including the generator and the step-up transformer.

It features extensive functionality and several market leading features such as:

- Protection and monitoring solutions for any type of generating station
- Intelligent fault criteria to ensure unrivalled selectivity and sensitivity
- Generator differential protection with typical operate time of 15 mins with maintained security
- Internal/external fault discriminator based on negative sequence differential quantities
- Capability to detect and clear all fault types over 100 percent of the stator winding
- Wide operational frequency range
- Sufficient number of instances in protection functions included
- Large integrated HMI for easy access to all relevant protection information
- Support for both IEC and IEEE (ANSI) standards

The REG 670 IED has up to 24 analog inputs which permit integration of main and back-up protection in one IED. Additional objects, such as transformers can be included in the generator protection scope. The high level of integration simplifies the installation and reduces the life-cycle cost from commissioning to maintenance and spare parts.

It is designed for IEC 61850, which also allows for new opportunities for utilising signaling and tripping schemes in generator protection.

Consulting-Specifying Engineer Magazine (CSE), which produces the Product of the Year program, noted in alerting ABB to the awards, that the “awards program was established to provide the magazine’s print and electronic engineering subscribers with the best, peer-reviewed new products in the major M/E/P engineering system disciplines that CSE regularly covers: Automation & Control, Electrical, Fire Protection, HVAC, Lighting, Motors/Drives, Security & Communications and Power Quality/Reliability.”

The program is a two-step process, according to the editorial team, led by CSE editor Jim Crockett. “First, we had our independent panel of engineering judges score all Product of the Year entrants,” he said. “We then eliminated products that did not score high enough for our finalist criteria. Subscribers and web users then scored each product in each category 1-10, with 10 being the best. The highest totals won.”
ABB has re-launched its Metal Enclosed Capacitor Bank, ABBACUS. The new release provides a standard product range, which provides a more competitive power factor correction solution for electrical distribution utilities and large industrial power users.

The ‘new-look’ ABBACUS power factor correction system is designed for voltages up to 12 kV.

Its modular aspect provides many benefits which suit multiple customer power and protection schemes and expansion of power output to accommodate future plant upgrades.

Its modular aspect provides many benefits including customisation of power and protection schemes and expansion of power output to accommodate future plant upgrades.

It has a compact footprint that results in a significant reduction in the plant space required when compared to conventional capacitor banks. It is also completely re-locatable.

The ABBACUS is factory tested and sub assembled to reduce site downtime and onsite liabilities during installation.

ABB has launched Electronic Position Switches (EPS) as part of the company’s new generation in robot safety.

EPS replaces traditional mechanical position switches, which were subject to problems such as soiling. The electronic solution is much easier to install as there is no need to adjust the mechanical switches because the EPS is already in place in the cabinet.

“With EPS we have a fully electronic solution that is easy to set up and fine tune resulting in a lower total system cost thanks to its increased flexibility, faster commissioning and reduced maintenance. You no longer have some of the inherent problems with switches that age and wear out with time”, says Paul Gekas, ABB Australia’s General Manager, Robotics Division.

The new switches are flexible, robust and maintenance free. Electronic switches also contribute to a more compact robot design. There are also space saving advantages as bulky cables and mechanical switches no longer need to be accommodated.

The new generation of robot safety will be complete when SafeMove* is launched. SafeMove provides a host of powerful tools for monitoring robot motion like stand-still supervision, speed limitation and restrictions with respect to arbitrary geometrical zones.

“With EPS and SafeMove, ABB will enable a new secure and lean cell concept for the market”, says Gekas.

The adage “the higher the fence, the better the safety” is no longer true. The new generation of safety concepts opens up opportunities for new safety thinking within the manufacturing industry.

*SafeMove: New safety concept from ABB that eliminates the need for traditional safety enclosures. SafeMove software encourages new workplace configurations that allow man and machine to work closer together, safely.
Stretch your productivity with ABB drives

ABB drives help improve the performance of your process machinery, giving you higher productivity and efficiency. ABB low voltage AC drives offer unrivalled control accuracy, flux optimisation, 98% efficiency, built-in redundancy and a global service network. This gives you improved process control, higher efficiency, lower production and maintenance costs, extended equipment life and maximum process up-time. Make your move - call ABB.

Visit us at www.abb.com/motors&drives or email us at: drives@au.abb.com.