

ABB High Power Rectifier Engineering Capabilities

Knowledge is power. Power is our expertise.



ABB



Our world-leading position in High Power Rectifiers has not been achieved through products and solutions alone. It comes also from our commitment to support them with nothing less than total quality. Our total quality program ensures we never compromise on quality – or safety. We design flexibly, but never to the limits. Then we deliver the solution on time, and integrate it seamlessly into your entire plant. Our system consultation is not just competent, but world-class. We integrate customers and suppliers as partners, and treat the know-how of our employees as success factor No. 1. And whatever it takes, we never leave our customers without a solution.

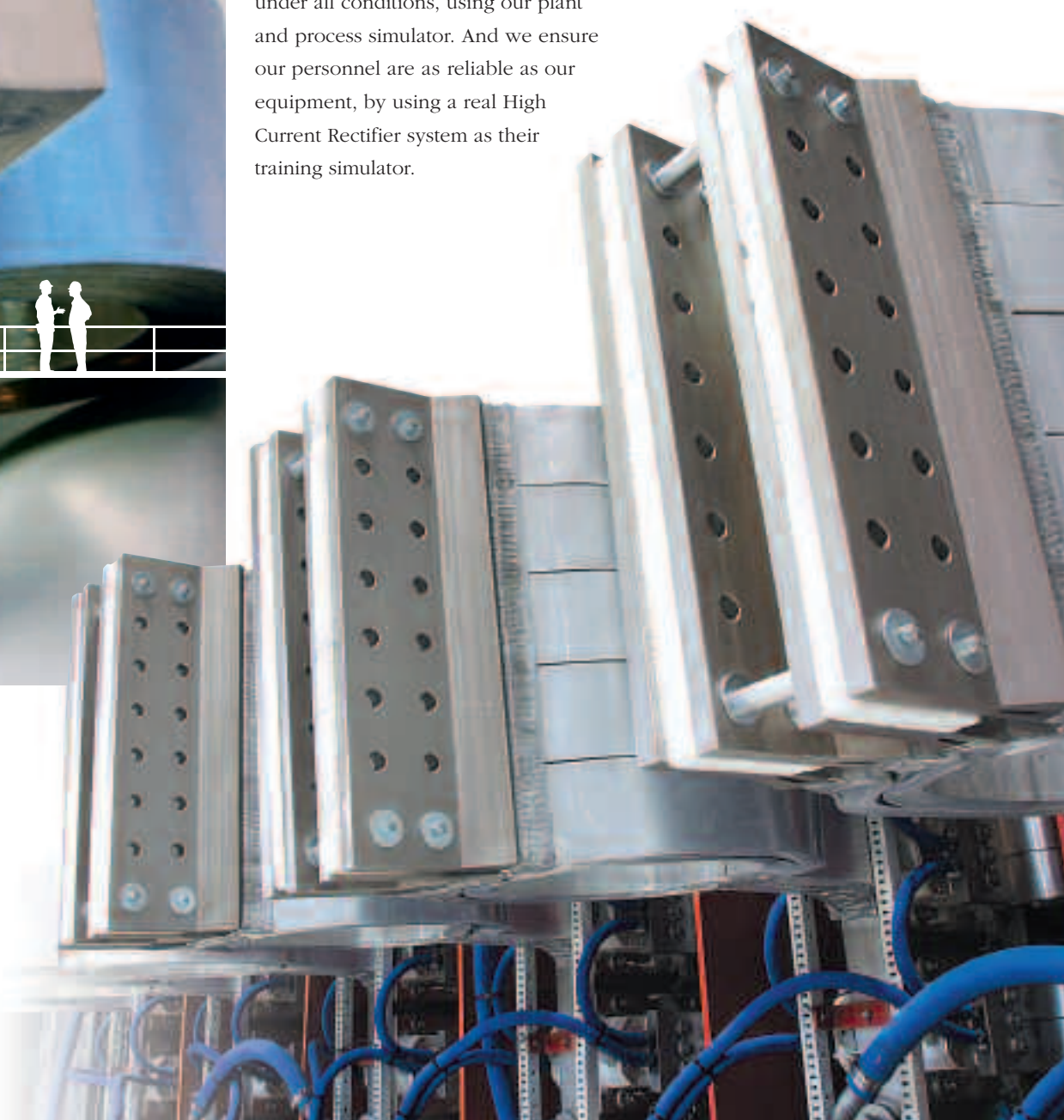
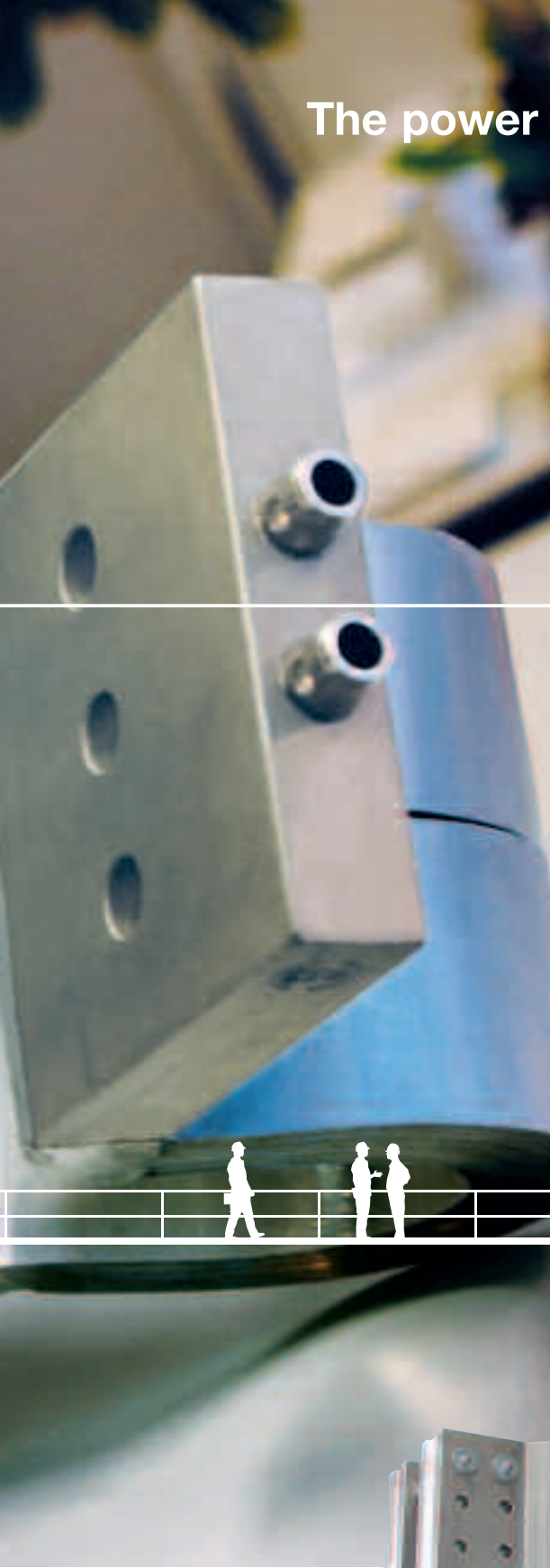
The power of quality

The power of innovation

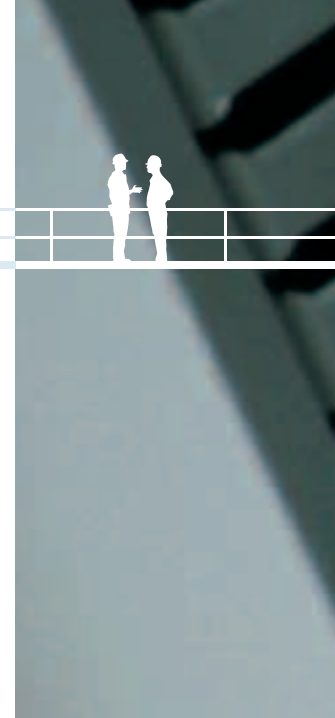
We lead the field in quality as well as in innovation.

Our continuous high current rectifier and control platform development has for example resulted in the 4" Thyristor with integrated explosion plasma protection, the Medium Current Rectifier (MCR), the AC 800 Power Electronic Controller (PEC) and the Fibre Optic High Current DC Sensor.

To help us develop even more new and effective solutions, we invest heavily in new design and simulation tools. We test our control equipment under all conditions, using our plant and process simulator. And we ensure our personnel are as reliable as our equipment, by using a real High Current Rectifier system as their training simulator.



Expertise and excellence



The ABB Power Electronics Centre of Excellence encompasses three separate locations in Switzerland, and a total of 1,295 employees.

Aided by its close co-operation with universities, our Centre of Excellence drives the innovation which lies at the heart of our engineering capabilities, enabling us to offer cutting-edge solutions to our customers.

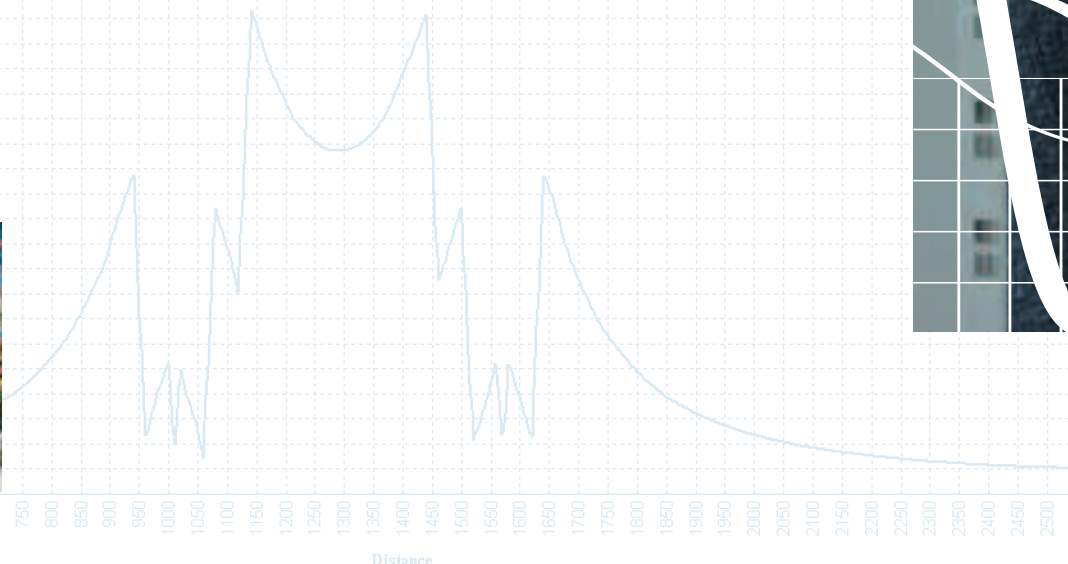
Together with our global infrastructure – stretching from Canada to Brazil and India to Australia – we have the resources to give our customers the service and support they need: delivered on the ground by our local engineering centres, offering on-the-spot responsiveness and local knowledge and understanding.

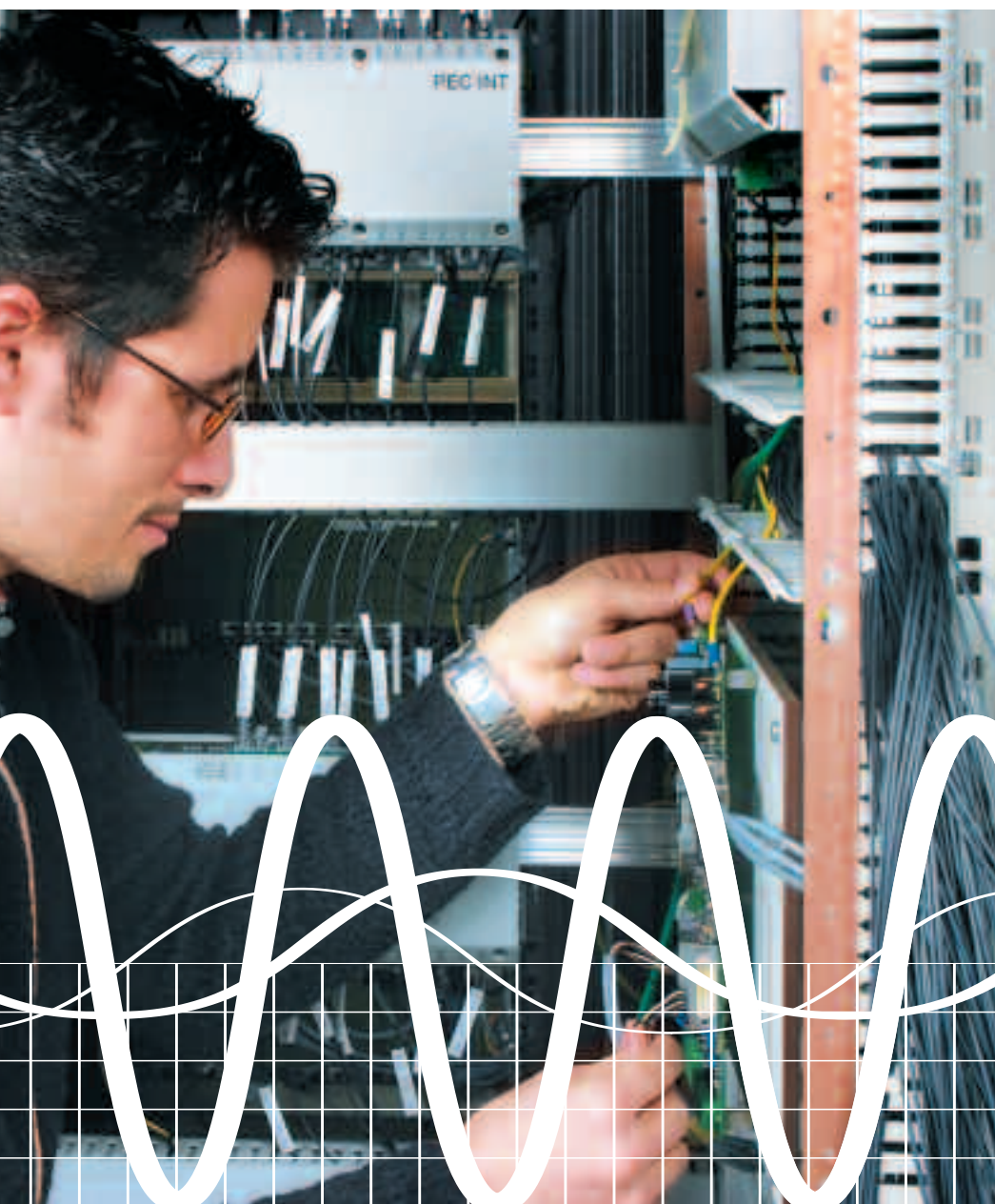
Milestones of experience

A long history of experience in the High Power Rectifiers business reflects our deep technological know-how. The list below shows major milestones in the development of the advanced high-level technology which ABB now offers

1913	Manufacture of first mercury-arc rectifier
1925	Introduction of grid control for mercury-arc rectifier
1939	First high voltage DC transmission at 50 kV
1950	Development of contact rectifiers
1958	Supply of first semiconductor rectifier
1960	First plant above 100 kA
1968	First thyristor rectifier for current reversal for Cu-electrolysis
1970	First converter unit above 100 kA
1985	First thyristor rectifier for Al-electrolysis
1988	First thyristor rectifier for arc furnace supply
2002	World's biggest thyristor free-wheeling circuit

Today, more than 1300 installed plants, with a total of 86,000 kA, and 49 GW DC power are clear evidence of the success of ABB rectifiers and our engineers.





Global resource, local availability

Our facilities around the world exist to provide value-added resources through technical services, system and control engineering, electro-mechanical engineering and project management.

Through our Local Engineering Centres (LECs) in North America, Brazil, India, South Africa, China and Australia, we offer local sourcing and manufacturing, while drawing on our worldwide experience. We also have a Sales and Service Centre in Germany.

This unique approach is reflected in our global standardisation programme, which enables us to offer a common solution to our customers worldwide, on a local basis.

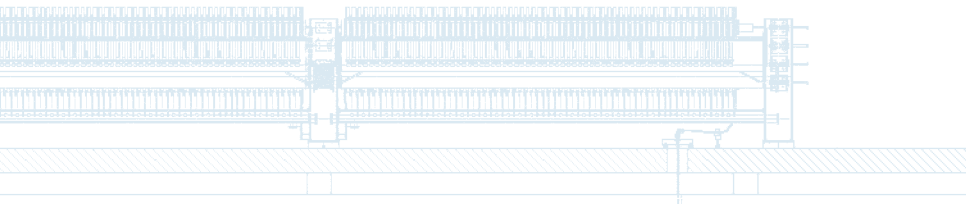
Adding value to our customers

Value-Partnering is our commitment to add value to our customers' processes, by reducing their total cost of ownership. Our aim is to enable our customers to obtain maximum production output by:

- Ensuring efficient production planning
- Providing integrated engineering
- Implementing our global standardisation programme
- Improvement of supply management
- Shortening delivery times.

We aim to establish clear focus points and deliverables with our customers, then do whatever is necessary to achieve them.

Our knowledge. Your power.

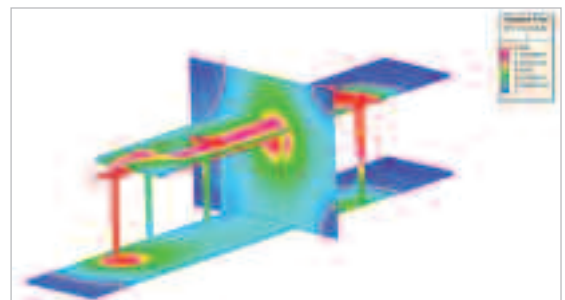
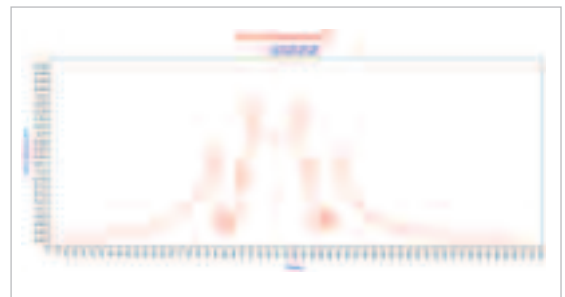
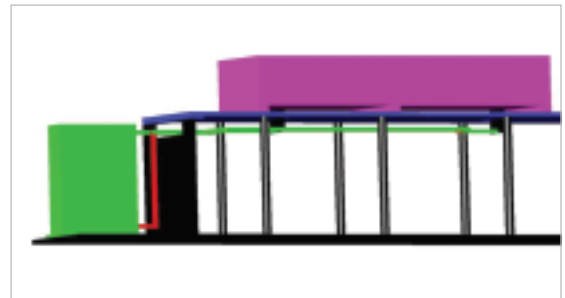
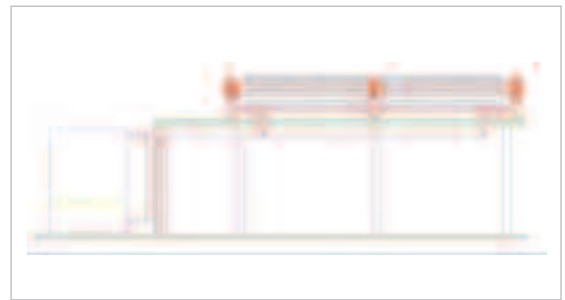


Whatever the size of your project, it is sure to benefit from the unparalleled experience, unmatched expertise and unique integrated approach of ABB.

Our multi-industry engineering knowledge allows us to offer total product integration that industry-specific companies cannot. And even if we are not supplying a complete system, our knowledge of the bigger picture means we always consider control and protection – helping customers to avoid problems in the long run. In fact, we see the bigger picture in more ways than one: our global view enables us to provide standardised products, offering a common solution on a local basis, for global customers. Common technology and technical concepts means we can reduce costs, while at the same time achieving the necessary level of flexibility to address specific local requirements and legislation.

So for example, we can meet local IEC, NEMA (USA), CSA (Canada) and AS (Australia) standards, as well as voltage requirements from 400V to 480V and 575V to 690V, and from 50Hz to 60Hz.





Solutions and services

The comprehensive range of capabilities provided by ABB is too wide to cover in detail here. But our specific solutions and services can be broadly broken down into engineering and consulting services for;

Plant Engineering

Systems Engineering

Transformer Engineering

Rectifier Engineering

Filter Engineering

Mechanical Engineering

These services including clarification of customer's specification, definition and optimisation of plant configuration, total plant efficiency, calculation and optimisation of total rectifier system cooling requirements, design reviews, factory acceptance tests and reports, and pre-and post-installation services.

Our engineers also carry out busbar engineering, busbar system calculations and simulations.

Time Varying Magnetic Field studies

We have vast experience and technological know-how to execute magnetic field studies and optimisation of transformer rectifier rooms, walkways, dc busbars for pot rooms and electrolyser rooms. Our studies include static 3D magnetic field calculations, Time Varying Magnetic Field studies, DC ripple and human protection against exposure assessments.



All you need to know

For comprehensive engineering support, advice or information on any aspect of your rectification system, please contact ABB.



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