Innovation
Sustainability is key to success

Innovation is crucial to ABB's success in our markets, and to meeting customer needs while lowering environmental impact. We continuously seek to further strengthen and expand our product portfolio, creating the technologies, products and solutions that will improve the productivity, efficiency and flexibility of our customers' operations.

ABB's research and development departments worldwide employ some 6,000 highly skilled people in different businesses and at seven corporate research centers. Spending on order and non-order related research and development in 2010 was $1.34 billion, representing 4.2 percent of revenues.

When developing new products, ABB designers follow sustainability guidelines applicable to each phase of the process. These include, for example, standardized Life Cycle Assessment procedures, a handbook for environmentally aware design, a health and safety checklist to identify potential risks, and a list of prohibited and restricted substances to ensure our sustainability objectives are also embedded into product development.

One area that has led to huge changes in recent decades is power electronics. Compact and reliable semiconductor devices are permitting electrical power to be converted with an unprecendented degree of flexibility, efficiency and controllability. ABB's award-winning drives and converters are contributing to these advances.

Motors are important to virtually all manufacturing processes, and are customized for numerous different applications. In the oil and gas extraction industries, for example, sparks, hot surfaces or high electrical fields are all potential threats to safety. ABB's large synchronous and induction motors have been developed to operate to stringent safety requirements and guarantee spark-free operation.

In the area of power transmission, ABB achieved a significant milestone in 2010 with the commissioning of the Xiangjiaba-Shanghai project in China, the world's first UHVDC (ultrahigh-voltage direct current) transmission link to go into commercial operation. The new link helps to meet the electricity needs of about 24 million people, based on local consumption, and sets a new benchmark in terms of voltage levels and transmission capacity. The high-capacity power link occupies less space than the existing system, with transmission losses under seven percent, considerably less than the existing system. The electricity saved is equivalent to the power needs of around one million people in China.

Cooperation to achieve better results

As well as conducting research in our own laboratories, ABB collaborates with over 70 universities and research institutions across the world. In Finland for example, ABB is one of the founders and an active member in the strategic center for science, technology and innovation in the energy and environmental sector (CLEEN Ltd.). CLEEN facilitates cooperative knowledge building and the creation of innovative solutions that are beyond the R&D capability of a single company or area of industry. Efficient energy use, distributed energy systems, energy markets and smart grids are major areas of research.

ABB Technology Ventures grows our business

The third pillar of ABB's technology edge is the corporate venture capital unit, ABB Technology Ventures (ATV). ATV investments are used to build technology leadership strategically and drive growth. In 2010, we invested in the California-based Trilliant, which provides smart grid communications infrastructure that enables improvements in energy efficiency and grid reliability, and we also entered the market for U.S. electric vehicle infrastructure through a stake in ECOtality.

Other equity investments were in renewable energy companies such as Pentalum Technologies, which is developing wind-sensing technology for control and optimization of wind turbines and wind farms, and Aquamarine Power, which has technology to convert energy captured from waves near shore into electricity. These investments ensure that ABB is well positioned as these markets develop.

GRI indicators

PR1 Health and safety impacts of our products

ABB products generally help improve users' health and safety. They do this, for example, by improving industrial environments (automation control products), reducing exposure to aggressive, repetitive or hazardous operations (robotics), and reducing potential explosions, fire risks and oil pollution (oil-free capacitors and cables). Products with a potentially negative impact are those that could contribute to global warming (leak of SF_6 gas from substations), require deforestation and present a visual impact (transmission lines), cause losses of energy (most electrical products), or cause electrocution if misused.

PR2 Number of non-compliance incidents relating to product health and safety

All countries in ABB's sustainability management program are asked to give details of any non-compliance incidents, including those concerning health and safety impacts of products and services. No such incidents were reported for 2010.

PR3 Product and service information

ABB's goal is to produce Environmental Product Declarations (EPDs) for its core products. They describe and quantify the environmental impact and performance of ABB products through every phase of their life cycles, covering raw material extraction, component manufacture, transportation and use over their full operating lifetime. They also contain recovery, recycling and disposal instructions for when the product has completed its useful life. The EPDs are published on ABB's Web site and help customers to select products that will improve their own environmental performance. ABB also engages with customers with particular reporting needs, to ensure clarity and completeness of environmental data.

PR6 Adherence to marketing communication regulations
PR7 Non-compliance concerning marketing communications

This is not an issue for ABB, which works in the field of advanced technologies and does not supply to the consumer product market.