

ABB

Provider of world-leading sustainable and automated solutions

The multinational ABB has a history of innovation excellence stretching back 140 years to 1883 when one of its predecessors, the Swedish company ASEA was founded to take advantage of the new technology called electricity. Nowadays, ABB is a leader in electrification and automation technologies, enabling a more sustainable and resource-efficient future. The company's solutions connect engineering know-how and software to optimise the way in which products are manufactured, moved, operated and controlled. ABB employs around 105,000 people and is active on a global scale.

Embedding sustainability

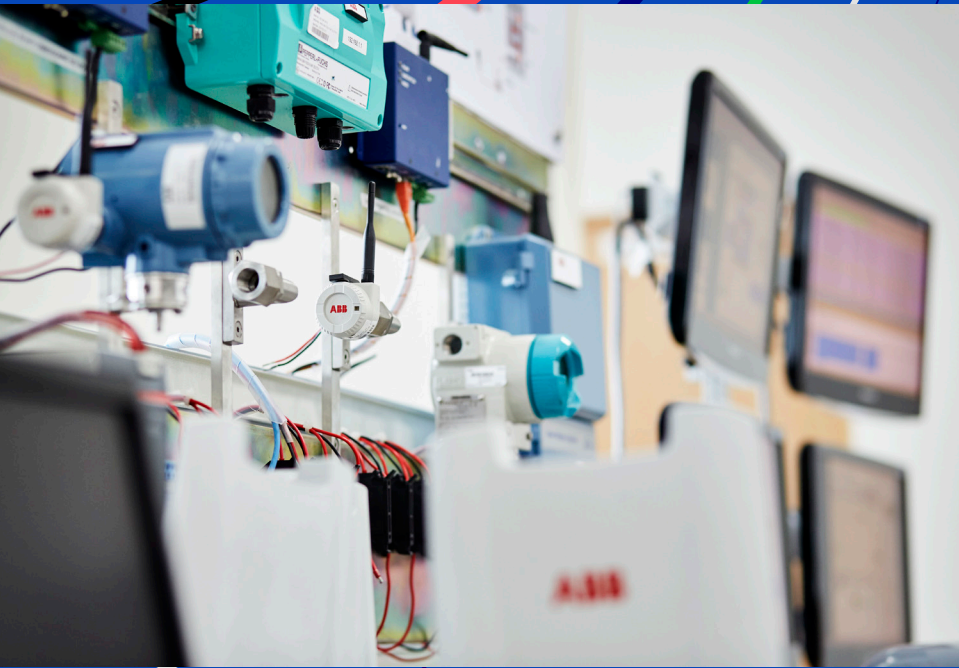
In the four key business areas (Electrification, Motion, Process Automation and Robotics & Discrete Automation) sustainability is a core component. ABB's purpose is to use technology leadership in electrification and automation to address the world's energy challenges and enable a more sustainable and resource-efficient future. Dawid Ziobro, who is research team manager for user experience at ABB's Swedish corporate research centre, suggests that the company's drive to provide both sustainable and also automated solutions in a very diverse industrial and technological portfolio makes it quite unique. "And we do it in a way that is both morally and ethically correct. For us, sustainability is both the right thing to do and a business opportunity. We lead by example by embedding sustainability in everything we do. Our solutions reduce harmful emissions and preserve natural

resources. We champion ethical and humane behaviour to contribute to better lives for people around the world."

Focus on software and digitalisation

As part of the corporate research centre, Dawid wants to understand how ABB's customers work, what they do, what their values are, what their pain points are or what kind of processes they offer. "What we do with that information is to use that data and that knowledge to adapt our strategies. An in-depth understanding can help us in restructuring and also adapting our solutions for those specific customer needs. It shapes new business models and new ways of working that benefit our customers, partners and society." This process is supported by research and development, in which ABB invests significantly, geared towards developing and commercialising the technologies,

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products and solutions that are of strategic importance to future growth. Of the approximately 7,000 employees in research and development, more than 60 percent are focused on software and digitalisation.

Glue

“Software is, quite simply, vital,” Dawid stresses. “ABB provides both hardware products and software solutions. Software innovation enables us to both understand and create the connection between various objects or assets – it’s the glue between various types of hardware assets. We have R&D teams that develop software solutions as well as a global digital division that focuses primarily on digitalising and creating various software solutions for our business domains. Digitalisation is becoming more important and omnipresent – it optimises the various hardware solutions we have. In the five years I have been at ABB, I have witnessed increasing investment in and a growing presence of the digital transformation here.” Collaboration plays a key role in ABB’s ability to research a range of topics from artificial intelligence, software and

sensors to control and optimisation, mechatronics and robotics. Through collaboration, ABB can generate results to advance the state-of-the-art technologies used in its products and in common technology platforms that can be applied in multiple product lines. Moreover, ABB leverages its ecosystem to enhance innovation and invests and collaborates with start-ups worldwide via its corporate venture arm ABB Technology Ventures and start-up collaboration arm SynerLeap.

It is not surprising, therefore, given how crucial software innovation is to the work of ABB that the company should be such a strong contributor to and benefactor of collaboration within the ITEA framework, being a participant in no less than eight ITEA projects. “Publicly funded projects, such as those in ITEA, are very important for us since within research our role is to both unite, combine and collaborate. By doing this with other institutes and institutions that also have state-of-the-art knowledge, hopefully, ABB and others can gain.” For example, through participation in the successful ITEA REVaMP² project ABB uses parts of the

tooling that was developed to assure the source code quality of the frequency converter firmware. Additionally, the automatic build script generation for the different firmware variants of ABB’s frequency converters (ABB Drives) reduces the manual effort in the development and maintenance of the firmware variants. Another example of the benefits gained by ABB comes in the shape of the acclaimed MODRIO project that led to ABB’s Optimax Powerfit product using OpenModelica since August 2015 to generate optimising control code that controls and coordinates about 5000 MW (ca 7.5%) of German electricity production within seconds. This has subsequently been expanded to about 6000 MW, with up to 1500 MW produced by more than 2500 small solar and wind power generators that are coordinated to operate as a single big power plant.

Fruitful visibility

Dawid explains how ITEA projects allow for an arena to be created for different partners to share and exchange ideas and knowledge in fruitful consortia. “We actively look for such initiatives because they create an opportunity for us to be visible and also to benefit from the knowledge and various perspectives that come from the partners in these projects. We see the opportunities that are created when people are engaged in a common project and exploitation. ITEA projects also have a very good review process that really helps point the project in the right direction. Not at all critical or negative but a very constructive and positive experience aimed at making your project more accurate and maybe highlighting various perspectives and pointing out something that you might have not thought about. Furthermore, publications and becoming visible in various types of conferences, articles and journals, these are fantastic spin-offs that these types of publicly funded projects provide. All in all, ABB’s research efforts, along with its business goals, are well and truly supported.”

More information

<https://global.abb/group/en>