

# Achievements and innovations in 2014



## An eco-efficient switchgear insulation gas

A new gas mixture developed by ABB can replace sulfur hexafluoride (SF<sub>6</sub>) in high-voltage switchgear, significantly reducing the risk of greenhouse gas emissions. For decades, SF<sub>6</sub> gas has been used extensively in the electrical industry for its superior insulation properties, which make it possible to reduce the size of switchgear installations and enable installation in areas where space is at a premium. The new gas mixture with its lower global warming potential can reduce CO<sub>2</sub> equivalent emissions by up to 50 percent through the equipment life-cycle, paving the way for more eco-efficient switchgear in the years ahead.



## Most powerful submersible power transmission cable

ABB has successfully developed and tested a 525 kilovolt extruded high-voltage direct current cable system to make renewable energy installations more efficient and cost-effective. This innovation will more than double the power capacity and expand the cable's reach to distances of up to 1,500 kilometers, while keeping transmission losses under 5 percent. The new technology offers savings in capital and operational costs which will, in turn, improve the feasibility of some renewable energy projects. The cable system can be deployed in subsea and underground applications, making it ideal for efficient power delivery through densely populated or environmentally sensitive areas.



## ABB wins Zayed Future energy Prize 2014

ABB was awarded the Zayed Future Energy Prize 2014 in recognition of our efforts to drive innovation, renewable energy and energy efficiency. The award, in the category "Large Corporations", was based on achievements that reflect impact, innovation, long-term vision and leadership in renewable energy and sustainability. The Zayed Future Energy Prize was launched in 2008 and was named in honor of the late Sheikh Zayed bin Sultan al Nahyan, who was a founder of the UAE, ruler of Abu Dhabi, and the UAE's first president from 1971 until his death in 2004.

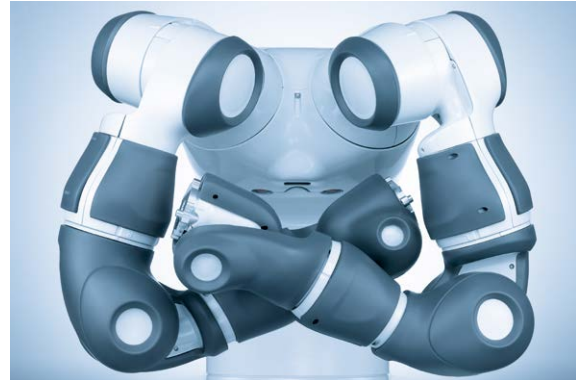


## ABB technology keeps the lights on in La Gomera

ABB's PowerStore™ system is employed on the Canary Island of La Gomera, where load fluctuations and variable supply from renewables have posed ongoing challenges. These rapid power fluctuations can dramatically affect system stability and lead to outages or equipment damage. PowerStore's inverter-based technology combined with flywheel storage capability can instantly stabilize the microgrid by very rapidly absorbing power surges from the wind turbines or by supplying power to make up for short-term lulls. This gives the island's 22,000 inhabitants a more stable, reliable and uninterrupted supply of clean electricity.

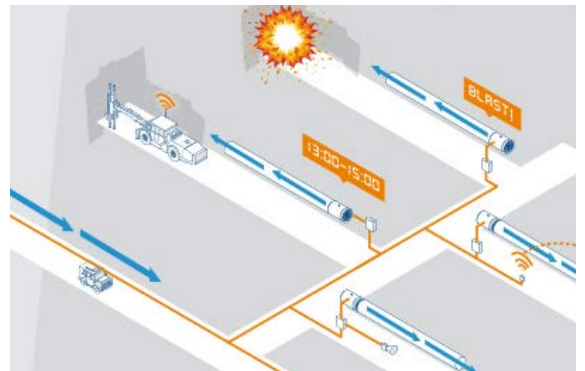
### “YuMi” heralds new era of human-robot collaboration

ABB has unveiled the world’s first truly collaborative robot: YuMi®. An innovative, people-friendly dual arm robot with breakthrough functionality, YuMi will unlock vast additional automation potential in industry. The robot’s soft, padded dual arms, and innovative force-sensing technology ensure the safety of YuMi’s human coworkers so that it can work cage-free. Capable of handling everything from the delicate and precise parts of a mechanical wristwatch to the components used in mobile phones and computers, the robot is designed for a new era of automation, where people and robots work hand-in-hand on the same tasks.



### SmartVentilation in mines

ABB’s SmartVentilation is a complete solution to the challenge of providing fresh air and venting toxic gases from subterranean mines. The modular system can be fully integrated into ABB’s 800xA control system to regulate the operation of the mine’s intake and exhaust fans. This provides operators, engineers and mine managers with an easy way to supervise and control the ventilation system, either from a central location or using mobile devices. The solution also minimizes energy use by ventilating only those areas of a mine that require it, reducing an operator’s electricity bill by up to half.



### Taking analyzers aloft to measure gas emissions

A research aircraft outfitted with a Fast Methane Analyzer from ABB’s Los Gatos Research is clarifying the pattern of Switzerland’s methane emissions. The nation’s agriculture sector is responsible for 80 percent of Swiss emissions of this potent greenhouse gas and the country aims to reduce them, for example by experimenting with different dairy feed. Using ABB’s airborne analyzer, scientists can measure emission rates from a broader area, more quickly and comprehensively than relying on conventional flask samples collected on the ground. These high resolution data now enable more accurate tracking of experimental trials.



### Controlling the home at the touch of a button

ABB’s free@home® system provides full control of all electrical systems, from blinds to lighting, heating, air-conditioning and door communication via a switch, smartphone or tablet. An easy to install, simple interface makes home automation a reality for many households and a business opportunity for many installers. The solution provides on-site or remote control for improved comfort, energy efficiency and security, and reduced costs.

