

Cost-Efficient Automation

Freelance plays role in think-tank's research into alternative energy sources

The market for energy derived from renewable sources – collectively called bioenergy – is growing into a robust industrial sector. In Germany, the Fraunhofer Institute is forging ahead in research on bioenergy applications and technologies. On the vendor side, Ökobit GmbH is focused on manufacturing, planning and commissioning turnkey biogas plants as well as solutions.

Together, Fraunhofer Institute and Ökobit embarked on operating a large-scale biogas research facility on the premises of an agriculture training center – with ABB's process control system Freelance running the open-loop control.

Building biogas plants is the core business for Ökobit GmbH from Fohren. The company is increasingly also handling the operation of the plants. "For some time, we have been working on plant-oriented, practical open-loop control systems," Achim Nottinger, managing partner of Ökobit, reports. The biogas expert found the perfect partner for this in ABB Automation. "After the first discussion and an intensive exchange of ideas, it became clear – ABB speaks the same language as us on this matter," Nottinger recalls.

Ökobit selected ABB to provide the automation engineering of the large-scale biogas research facility at Eichhof, an agricultural training center in Bad Hersfeld. The result? A synergistic cooperation whereby both companies benefit from each other. "We benefit from ABB's expertise in other fields of application, while ABB benefits from our specialist knowledge on biogas plants," Nottinger explains.

A sophisticated management system...

There was already a smaller fermenter at the Eichhof in Hessen, which was overhauled as part of this project. Ökobit also set up an additional gas-tight fermenter with a capacity of 3100 m³, an extensive pump station for substrate distribution and a sophisticated gas management system that enables investigation of the gases and substrates produced. The plant engineer constructed a "train station" with various docking stations for the testing containers.

"The greatest task that we have mastered together with ABB is networking all of this intelligently," explains Ökobit's managing director. ABB Automation provides the hardware for this, as well as services such as training for programming the open-loop control.



The ABB Freelance process control system controls the complex systems engineering of a modern biogas plant and ensures maximum gas output at a constant quality.

... At a competitive price point

For ABB, this project is significant as it marks the entry of cutting-edge technology into a market segment dominated by low-priced solutions. Karlheinz Leipzig from ABB Automation explains: "The Fraunhofer Institute quickly recognized the possibilities of our Freelance system. Freelance provides increased automation with reduced effort."

Freelance is used in more than 15,000 applications worldwide – proof that it provides good value for money. Furthermore, it is particularly easy to engineer and operate. In the biogas test plant, Freelance is operated utilizing the AC 700F controller, which allows small or distributed plant components or I/Os ranging from a few signals to several thousands to be integrated into the system. The competitive advantage? The same engineering, operation and maintenance method for all plant components and sizes.

The operator stations for the Freelance system are based on conventional PCs that are equipped with DigiVis, the Freelance process visualization system. In this aspect, user friendliness is the clincher – the graphical human interface of DigiVis is based on Microsoft Windows. The Control Builder F engineering tool is used to configure and commission all automation functions.

The research plant at the Eichhof went into operation in fall 2011, under the management of the Fraunhofer Institute. The dissipated heat and gas produced are also used directly. "For the first time, we are in the position to perform large-scale research as part of a Fraunhofer Institute project at a reasonable economic cost," says Achim Nottinger.

Contact us

ABB AB

Control Technologies

Västerås, Sweden

Phone: +46 (0) 21 32 50 00

E-mail: processautomation@se.abb.com

www.abb.com/controlsystems

ABB Automation GmbH

Control Technologies

Mannheim, Germany

Phone: +49 1805 26 67 76

E-mail:

marketing.control-products@de.abb.com

www.abb.de/controlsystems

ABB S.P.A.

Control Technologies

Sesto San Giovanni (MI), Italy

Phone: +39 02 24147 555

E-mail: controlsystems@it.abb.com

www.abb.it/controlsystems

ABB Inc.

Control Technologies

Wickliffe, Ohio, USA

Phone: +1 440 585 8500

E-mail: industrialitsolutions@us.abb.com

www.abb.com/controlsystems

ABB Pte Ltd

Control Technologies

Singapore

Phone: +65 6776 5711

E-mail: processautomation@sg.abb.com

www.abb.com/controlsystems

ABB Automation LLC

Control Technologies

Abu Dhabi, United Arab Emirates

Phone: +971 (0) 2 4938 000

E-mail: processautomation@ae.abb.com

www.abb.com/controlsystems

ABB China Ltd

Control Technologies

Beijing, China

Phone: +86 (0) 10 84566688-2193

www.abb.cn/controlsystems

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