

The Tecklenburg biogas plant, Germany

VAG ZETA® Knife Gate Valves
make green energy more efficient

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VAG On-Site

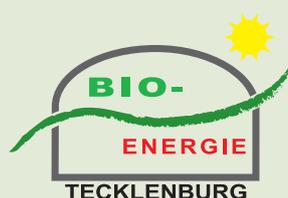
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The exploration of renewable energies points the way to the environmentally sound generation of power in the 21st century. Biogas plants using renewable raw materials as green resources are a key technology in this respect. They are climate neutral, make use of agricultural products among others and thus have a perfect ecobalance. VAG valves help to accurately control the plants' complex industrial process equipment and to make them even more efficient through automation. One example can be found in Tecklenburg at the foot of the Teutoburg Forest in Germany. Since January 2007, the Tecklenburg biogas plant has been operating there, using pneumatically actuated valves made in Mannheim, Germany.

Project overview

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| Projekt: | Biogas plant in Tecklenburg, Germany |
| Valves: | 15 VAG ZETA® Knife Gate Valves DN 150 and DN 200 with handwheel and pneumatic actuator |
| Project completion period: | September 2006 – January 2007 |
| Supplier: | VAG-Armaturen GmbH, Germany |
| Customer: | Bioenergie Tecklenburg GmbH & Co. KG |



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Farmers as power generators

It took two years to obtain all approvals and permits for the construction and operation of the biogas plant in Tecklenburg. The company founded especially for this purpose repeatedly had to call on the authorities in charge to win them over for its green source of energy. What eventually convinced the authorising bodies was the argument that the plant would create a second economic foothold for the local agricultural industry. The plant owned by Bioenergie Tecklenburg has been operating profitably since January 2007 and its eleven shareholders, all of them farmers from the region, are now successful power generation entrepreneurs.

The plant

The 500 kW biogas plant uses renewable raw materials as energy carriers. The biogas emitted by the fermentation of silage fodder, 80% of which comes from the shareholders' farms, is used for the generation of power and heat in a unit-type cogenerating station.

The primary and secondary fermenters must be connected via a complex pipeline system. The dosage of the substrate between the primary and secondary fermenters is ensured by automated knife gate valves.

A real challenge for the valve technology

The high demands on quality and user-friendliness of the valves were a real challenge. Each single component had to ensure the absolutely trouble-free and fully automatic operation of the complex process. VAG-Armaturen GmbH with its distribution partner HTI Cordes & Graefe, Osnabrück, Germany submitted its bid for the private invitation to tender sent out by Relapo GmbH based in Hopsten, Germany. 15 ZETA Knife Gate Valves were to support the proper operation and perfect function of the Tecklenburg biogas plant.

Maximum profitability

At the end of 2006, VAG-Armaturen GmbH was finally given the green light. It was the concept, the quality, but above all the flexibility of VAG's offer with respect to the automation of the valves which convinced Bioenergie Tecklenburg. In addition, it had become necessary to deliver and install all valves as early as the end of December as this was the only way to ensure that the plant could take up operation on schedule in January 2007. The automation of the valves then had to be carried out in a second step as the valves were initially equipped with a handwheel and were to be upgraded with pneumatic actuators later on directly on site – the important promise VAG had made. And above all, upgrading would be possible

without dismantling the cogenerating knife gate valves from the pipeline. In February, the day had come: 10 of the 15 valves were equipped with pneumatic actuators made by FESTO, VAG's partner for pneumatic and actuators. Without interrupting operation, a decisive increase in profitability of the entire plant was achieved.

Conclusion

Since December 2006, the VAG ZETA Knife Gate Valves have been operating smoothly and trouble-free. Both the deadline for set-up and the profitability expectations of the planners were met and VAG took a further step in the direction of the climate neutral generation of energy. According to the operator, the investment of 1.5 m is expected to have paid for itself in about 10-12 years. The waste heat recovered by the unit-type cogeneration plant corresponds to 330,000 l of fuel oil and is used by farms and for the heating of residential buildings. In addition to the heat, four million kWh coming from this highly profitable green power generation machine are to be fed into the local power supply network operated by the public utilities of the city of Lengerich. A successful and innovative project for both Bioenergie Tecklenburg and VAG-Armaturen GmbH.