

Industrial Solution for Biogas

Because biogas plants must work around the clock, great emphasis is placed on diagnostics and availability. A company specialized in the production and service of biogas plants therefore uses motor feeders with IO-Link activation, which allow service and remote maintenance to be optimized.

“We explicitly look for integrated systems that enable high quality and availability,” emphasizes Ralf Breckling, CEO of biogas plant supplier North-Tec Maschinenbau GmbH in Bredstedt, near Husum, Germany. For this reason, the entrepreneur uses robust and reliable industrial control systems and integrated system solutions based on Totally Integrated Automation (TIA): “It is a great advantage for us, with regard to time and cost-efficiency, that the components can be easily integrated and wired from the control unit to the contactor and that performing diagnostics is simple as well.” A high degree of availability – and thus diagnostics (especially remote diagnostics) – is of significant importance in the biogas industry. Longer feeding downtimes result in considerable economic losses, as biology needs time to get back on track.

Cost-saving motor feeders with plug and play

This is why North-Tec used motor feeders with IO-Link for the first time at a plant in Leck-Eng, near the Danish border. The facility with a wet digester, a post-digester, and a digestate storage container supplies two combined heat and power stations with a capacity of 400 kW each. “The combination of a Sirius 3RT2 contactor and a circuit breaker for the Sirius 3RV2 motor contactor enables us to configure feeders up to 18.5 kW very safely and quickly via plug and play,” explains Breckling. He considers the intelligent IO-Link connection a smart complement that saves further wiring effort and provides a wide variety of diagnostic information



Biogas plant
in Leck-Eng

that would not be available in the case of conventional wiring. North-Tec also has turnkey solutions mastered: The WinCC flexible visualization software features a standardized IO-Link template for Sirius motor feeders, which provides important diagnostic information without any additional programming effort.

Easy communication via IO-Link

Up to four IO-Link groups, that is, up to 16 motor feeders, can be linked to the IO-Link master of the Simatic ET 200S distributed periphery. A simple plant controller based on ET 200S is adequate for all the control processes within the biogas plant or linked subsystems with their own control – such as a combined heat and power station in this case. That is, the distributed periphery is also available with an intelligent IM151-8 head component with integrated CPU.

Communication is effected via Profinet. Breckling considers IO-Link the best tech-

nology currently available, as it is easy to integrate into automation via IP addressing, it offers safe and simple remote access, and it can be expanded according to the user's needs. If there is a great distance between automation units, another Simatic ET 200S distributed periphery can simply be linked to the control via Profinet, which is very useful if there are satellites for combined heat and power stations, as in the case of the biogas plant in Leck-Eng. Here, the second combined heat and power station is 2 kilometers away in the engineering room of a residential building; this allows the generated heat to be used without having to cover long distances.

Deep insights into the plant

As diagnostics on this plant can be performed up to each motor feeder via remote access, the service staff of North-Tec immediately knows what alarm or error has been triggered for what reason and



A tangled wiring mass with standardized Sirius connection components is a thing of the past

“Thanks to Totally Integrated Automation we have developed an economic solution that is robust, reliable, and flexible.”

Ralf Breckling, CEO of North-Tec Maschinenbau GmbH



All photos: Siemens AG

IO-Link saves wiring effort

IO-Link is an open concept for connecting sensors, switching devices, and actuators to the control level by means of a point-to-point connection. Up to four motor feeders can be connected to each other and to the associated IO-Link master. Only the first starter of a row is wired to the master; a plug connection suffices for the others.

what is the quickest way to remedy it. Information on power demand, power consumed, power supplied, and grid quality also provides valuable reference points for the optimization of the system’s operation. That is why North-Tec integrates Sentron PAC 3200 multifunction measuring instruments as standard procedure.

Exceeding the maximum consumption agreed in the reference contract with the power supplier (EVU) means high costs for the plant operator. To avoid this scenario, the limits are monitored by means of the measuring instrument, and units are switched off or switched on with a delay via software, depending on what the situation calls for. “That way, we can sort of program operational expense optimization,” explains Breckling.

In the biogas expert’s opinion, there are about 400 biogas plants in Schleswig-Holstein alone that are running around the clock – and that should be equipped in the same way for cost-optimized remote

maintenance. “The only way to perfectly comply with the service requirements in the long term is to use an industrial solution for which the standard components are available over decades,” he states. +

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