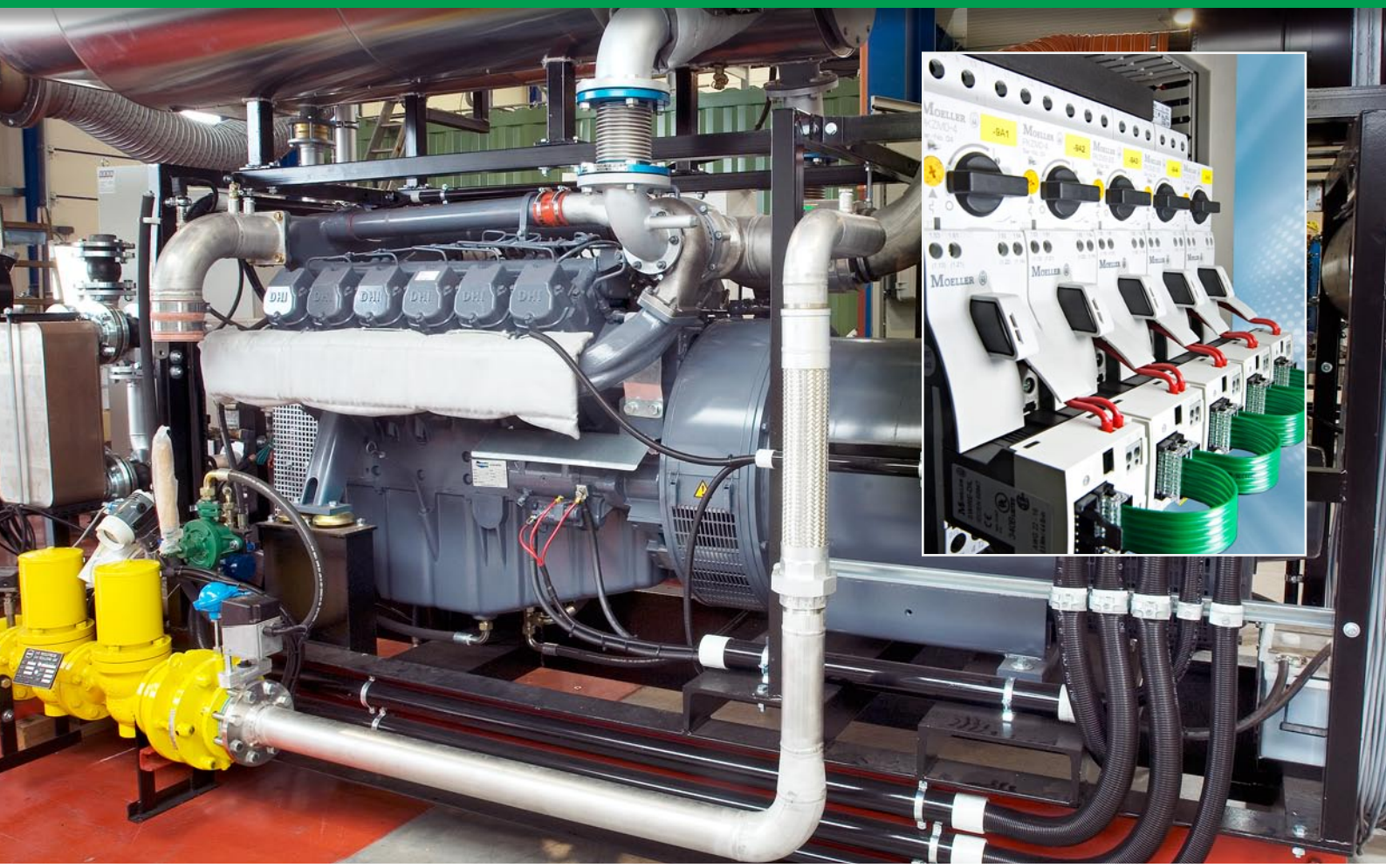


It's Biogas!

Heat and Power Combined: Motor Control with SmartWire

THE COMPANY

SEVA was founded as a GmbH in 1982. Its operations focus firstly on trade and the repair of electric motors and generators, as well as the manufacture of smaller CHP units in the range between 50 and 100 kW. The foundation stone for SEVA Energie AG was laid on 1.01.2000. The company focuses on the production of CHP units and now provides customers with a complete offer, starting with consultation and calculation of profitability all the way to the supply of all necessary construction elements as turnkey projects. The measuring and control technology required for the function and optimisation of a biogas, plant oil, or of a standby generating unit is planned by our company entirely in-house and is delivered ready to be plugged in for operation. (www.seva.de)

Regenerative energy sources such as biomass are booming. The new German Renewable Energy Sources Act (EEG), with a fixed remuneration rate for the generated power, has boosted the demand for CHP stations. Combined heat and power stations are run with biogas, rape seed, olive or soya oil depending on the biomass locally available. The technologically advanced co-generation sets (CHPs) of SEVA Energie AG are making a considerable contribution to economical plant operation. Due to its long business relationship with SEVA Energy AG, Moeller was selected for the supply of SmartWire: SmartWire embodies the principle of "connecting instead of wiring" for connecting xStart motor starter to a PLC and considerably reduces life cycle costs.

MOELLER

We keep power under control.

The co-generation sets which allow the combined operation of biogas and plant oil represent an innovative approach by SEVA Energie AG. The operation of a motor with biogas requires a continuous supply of ignition oil, approximately five litres per hour, for an output of 350 KW. These so-called pilot injection gas engines are more attractive than gas engines due to the reduced financial investment required, the lower maintenance costs and the possibility of flexible operation with different EEC compliant regenerative fuels. If, for whatever reason, the supply of biogas slows down, the operator can switch directly to rape seed oil, olive oil or soya oil so that economical plant operation is ensured.

Everything under control

The service life of CHP units is mostly specified at 20 years. For 24 hour availability, engines and generators have to be equipped with reliable and ruggedly designed mechanical and electrical components as well as being regularly maintained. For the automation concept, SEVA Energie uses switching devices and automation components from Moeller as well as from Moeller's subsidiary Micro Innovation. These are used for the monitoring of the different units such as the temperature of cylinder, engine, charging air, cooling air and heating water, or the oil level. This data is logged remotely via the XI/ON* remote I/O system and forwarded via CANopen to the central HMI-PLC (XV400*). The control of actuators such as the gas solenoid valve and the gas volume control flap is implemented in the same way.

A 5.7" touch display PLC is used for operation and for the display of the CHP operating data. The infra-red touch panel is provided with a rugged operating surface made from laminated safety glass and also ensures reliable operation even in harsh environments. The HMI-PLC is programmed with the CoDeSys programming system in accordance with IEC61131-3. The data transfer for the CHP connection, such as to a biogas plant control system is implemented either via Profibus DP, Modbus TCP/IP or OPC, depending on the requirements at hand. A router and telephone network are all that is required to access the plant remotely.

Connecting instead of wiring with SmartWire

Whenever electric motors such as motor circulating and fuel pumps, gas, inlet charge air and emergency coolers are monitored or switched on or off, SEVA Energie uses Moeller SmartWire components: SmartWire enables conventional xStart motor starters to be connected to a PLC without any complex control wiring necessary.

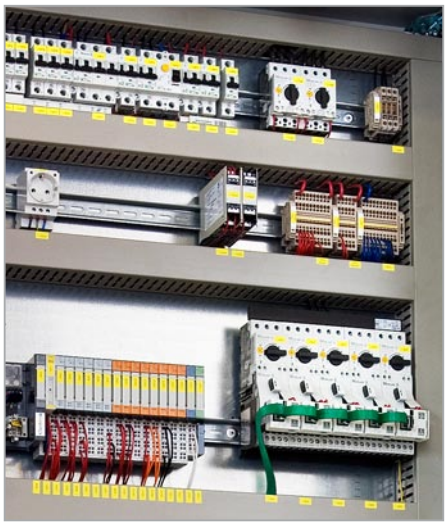
Sensitive operation: The CHP is controlled entirely with an infra-red touch display PLC.

Main switch: An NZM3 circuit-breaker with motor operator also allows remote operation.

SmartWire revolutionises the control wiring between the PLC and switching devices. SmartWire can be used with motor starters of Moeller's xStart Series. Both components, the motor contactor and the motor-protective circuit-breaker, are simply connected with a contact module without any cables. To make the motor starter SmartWire-compatible the user simply plugs an additional SmartWire module onto the contactor. This module is provided with a six-pole plug-in connector. It replaces the control circuit connection and transfers a wide range of information simultaneously, such as switch commands to contactors and/or the feedback signals of the motor starters including the 24 V power supply.

16 to a line

The pre-assembled, pluggable SmartWire cable is used to connect up all SmartWire modules and the SmartWire gateway. For this SEVA Energie uses the SmartWire interface slice for the XI/ON* remote I/O system. Each XI/ON station can be connected to three lines fitted each with 16 SmartWire-compatible motor starters, and addressing is carried out automatically. SmartWire drastically reduces the wiring requirement and prevents wiring faults. This reduces costs and requirements equally in mounting, commissioning and in any troubleshooting during any later operation. SmartWire is an addition to the well-established range of Moeller switching devices and is designed as an accessory for the standard devices. This ensures that the flexibility of the switching devices is fully maintained, and allows the proven system accessories to be used worldwide.



Connecting instead of wiring: SmartWire motor starters are controlled directly via the XI/ON Smartwire gateway.

CONCLUSION

"Our electrical workshop is only giving us positive feedback," said Heiner Bahlmann, head of software at SEVA Energie AG, on the use of SmartWire. "SmartWire is astonishingly easy to use - easy to fit together and ready. Incorporation in the PLC software is also straightforward. We are delighted with the current automation concept using SmartWire and CoDeSys. Due to their high product quality and our many years of good business relations, we use Moeller motor starters, circuit-breakers, motor-protective circuit-breakers as well as control circuit devices."

Quicklink ID:

MS1613

* Products of Micro Innovation, a Moeller Company

Moeller GmbH
Hein-Moeller-Str. 7–11
53115 Bonn
Fax: +49 (0)228 602-2275
E-Mail: info@moeller.net
Internet: www.moeller.net

MOELLER

We keep power under control.