

# Full Steam Ahead

## easyRelay and easyHMI Ensure Continuous Steam Generation

There are several technological production processes that require a continuous supply of steam. This ranges from the sterilisation or cleaning of containers to food processing or concrete production. Steam is used to heat the pitch in football stadiums or to de-ice ropes in the Arctic, is used in the production of mash as well as in sweets. Certuss, a company based in Krefeld, has been producing steam generators for fifty years and includes Moeller's easyRelay and easyHMI in the components used. One reason why these devices, as well as Moeller protective devices and switchgear, were selected was their extensive certification for international use.



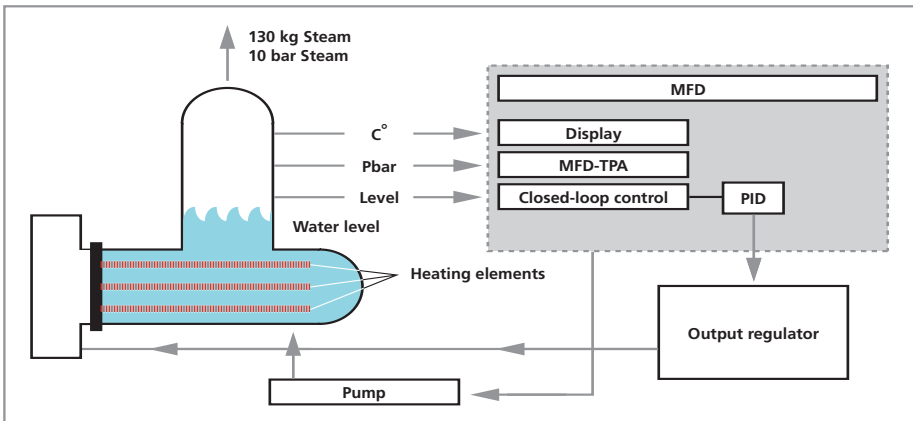
### THE COMPANY

Certuss Dampfautomaten GmbH & Co. KG is based in Krefeld and was founded fifty years ago by Hans-Joachim Schröder. In accordance with the succession plan, Karl-Heinz Till acquired 80% of the company shares in 1999. Since September 2006 Mathias Brauner has been the chairman of the board as the new principal partner. His other partners are Peter Sdunek (technology) and Bernd Gläßer (sales). The first Certuss steam generator developed by Hans-Joachim Schröder offers low-noise steam generation and reliable continuous operation without the need for extensive maintenance. Since that time an internationally-active company with three production facilities and a tightly woven network of service representatives and partner companies has evolved. Every year Certuss produces around 500 steam generators in different performance classes and sells them round the world. ([www.certuss.com](http://www.certuss.com))



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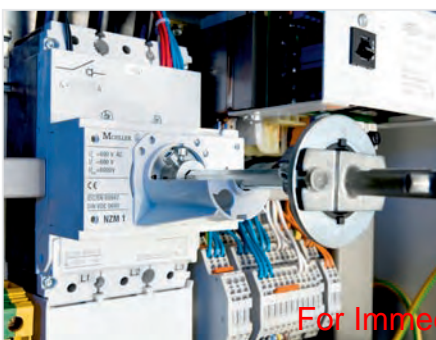


Depending on the primary energy used, automatic steam generators are run with oil, gas, electricity or with the combined firing of oil and gas. Gas and oil-fired Certuss steam generators are forced-flow "once-through" boilers that are also called high-speed steam generators since they can supply steam within two to ten minutes.

#### Control and monitoring unit for up to four automatic steam generators

The central unit of the oil or gas powered steam generator is the automatic stoker, as well as a monitoring / operating unit. The operating safety directive stipulates the use of an automatic stoker. This exclusively controls the burner. A higher-level central controller and monitoring unit is required in order to operate up to four steam generators simultaneously.

All the monitored data, such as flue gas and feed water temperatures, pump pressure on the steam generators, water hardness and setpoint deviations, are recorded and evaluated via two easy819-AC-RCX devices with a local easy202-RE expansion. All steam generators also have to be synchronised with each other. The operation of the entire system and the display of all operating data is implemented with an MFD-80-B-x multi-function display. The display located in the switching cabinet is fitted at the back with an easyCPU module (MFD-AC-CP8-NT) and an I/O module (MFD-AC-R16). An alarm is triggered in the event of malfunctions and the appropriate automatic stoker is controlled. A faulty burner can thus be switched off immediately. The recording of operating hours is also an important feature since the steam generators



have to be deslimed every eight hours in order to remove deposits from the heating coil. If required, the system can also be monitored from round the world via a telephone or Internet connection.

#### Electrically heated steam generator with 100kW

Electrically heated steam generators are used if neither oil nor gas are available as primary energy carriers at the production facility or place of use. The extremely compact design and a chimney free operation provide the electrically operated boiler with outstanding features compared to oil/gas driven plants. Three electrical heating elements that are controlled by semiconductor contactors ensure that the necessary thermal energy is provided. An electrically heated steam generator does not require a burner, a fan or any complex heating coils, and thus allows a problem-free installation in the smallest "broom cupboard".

The latest 100 kW steam generator developed by Certuss is controlled exclusively via easyRelay and easyHMI. The current supply is implemented using a Moeller NZM1 circuit-breaker with a rated current of up to 160A and a switching capacity of up to 100kA to reliably protect the system from overload and short-circuit. Miniature circuit-breakers from the Moeller Xpole series protect the three heating elements from short-circuits. Two xStart PKZ0 motor-protective circuit-breakers protect the water pumps from damage.

The electric boiler is controlled via an easyRelay (easy819-DC-RCX) and an MFD display. The power supply/CPU module is fitted with the MFD-TAP13-PT-A I/O temperature module for temperature measuring, which offers two inputs for Pt100/Ni1000 temperature sensors as well as 6DI (2AI), 4DO, 1AO. In compliance with operating safety regulations, the water

Everything under control: With MFD temperature module, PID controller and PWM output signal, the easy819 ensures continuous steam generation.

level and the temperature also have to be measured and displayed mechanically in the steam boiler. For this a mechanical roller level display is used.

#### Pulse width modulation for constant steam supply

The steam volume supply per hour is normally set. The water supply for the slightly varying steam consumption volume is regulated via the pump and the temperature via the heating elements. The manipulated variable required is calculated by a PID controller and passed on via the digital outputs of the easy819 to the semiconductor contactors of the heating elements. The average temperature of the heating elements is increased or lowered using pulse width modulation, i.e. the relationship between the on and off times. The easy819 also monitors water quality.

## CONCLUSION

Alfred Thomas, head of the development department at Certuss Dampfautomaten GmbH & Co. KG explains: "Safety has top priority with our steam generators. For us only components that are certified in compliance with EN/IEC standards can be considered. UL and CSA approvals for use in the USA/Canada are as equally important as GOST-R for Russia. The Moeller components meet these requirements in full. As easyRelays, easyHMIs as well as Moeller protective and switching devices also meet the shipping classification requirements in accordance with Lloyd's Register of Shipping, our steam generators can also be used on ships. The simple networking via easyNet, the circuit diagram programming, the country-specific language selection and the extensive range of the easy series were key features for us. As all controller components also have a rugged design and can be provided ex works with the Certuss logotype, these Moeller products were first choice."

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