

System comparison gflexLC, gflex & gflexHP

Introduction:

Our system series gflexLC, gflex & gflexHP are pure electric heating systems. All three systems are compatible with almost all tank containers on the market – also for retrofitting. Modular in design, the result of each system is an individual and maintenance-friendly design with many expansion options.

Function:

gflexLC, gflex & gflexHP temper the tank contents indirectly via the outer wall of the container. For this purpose, the circulation pump conveys a heat transfer medium in a closed circuit through the half-pipes, which are normally used for steam heating. The heat transfer medium is a food-hygienically safe glycol-water mixture. The electric heater installed in our system, with one or optionally two heating rods, is part of the closed circuit. All components of the three systems are equally reliable and robust.

In heating mode, the electric heater integrated in the system heats the heating medium. The heating of the heat transfer fluid is carried out according to the principle of a continuous flow heater, thereby the fluid is strictly separated from the customer's product. The power supply for the system is provided by an industry-standard 380-440 V CEE plug. Heating is fully automatic. The flow temperature at which the heat transfer medium flows into the container's pipe circuit can be set with high precision. As a result, even very temperature-sensitive products are protected from loss of quality due to too high contact temperatures.

Additional info:

gflexLC is the most cost-effective version of the system series. In terms of basic equipment, gflexLC is limited to a simpler design and to the essential range of functions. The system comes with the least equipment of the three systems, but with some options it can be extended with equipment functions. gflexLC in its standard equipment is equipped with a simple AC pump, because of this, the outdoor temperature range in which the system operates is limited to -10 °C. gflexLC can be operated with a flow temperature of up to 95 °C. gflexLC is also equipped with a simple 2-point-controller with the option to replace it with a controller with a data interface for a telematics system.

gflex is the standard version of all electric heating systems. It has all the standard functions and constitutes the basic equipment of all heating systems, through some options extended equipment functions can be retrofitted. However, there are significant differences to gflexLC, because unlike the gflexLC, the gflex system, is equipped with a high-quality stainless steel three-phase pump and can therefore operate in an outdoor temperature range of up to -20 °C. In addition, the gflex system is multi-voltage capable and has extended safety functions. A controller with data interface for a telematic system is installed as standard equipment. Optionally, this controller can also be equipped with a PLC control.

With both options, the gflex version is always ready to be used with a telematics system. gflex can be operated with a flow temperature of up to 95 °C and optionally up to 110 °C.

gflexHP is the high-power system of the system series. Thanks to the higher performance, the flow temperature is reached particularly quickly. gflexHP and gflex share some of the basic features. These include, for example, the high-quality stainless steel three-phase pump, which allows the system to operate in an outdoor temperature range of up to -20 °C, a flow temperature of up to 95 °C - optionally up to 110 °C, and multi-voltage capability. However, there are significant differences, gflexHP generally has two heating elements and more power (38 kW). In addition, a microflexPLC is always installed as the control unit. This is accompanied by the further advantages of extended (safety) functions (TRM, SFM, PCM, DBM, ECO), as well as extended remote maintenance and extended telematic functions that are achieved through a combination with our teleflex telematic system.

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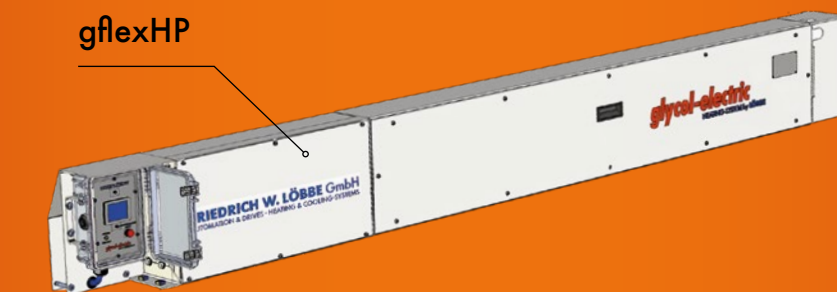
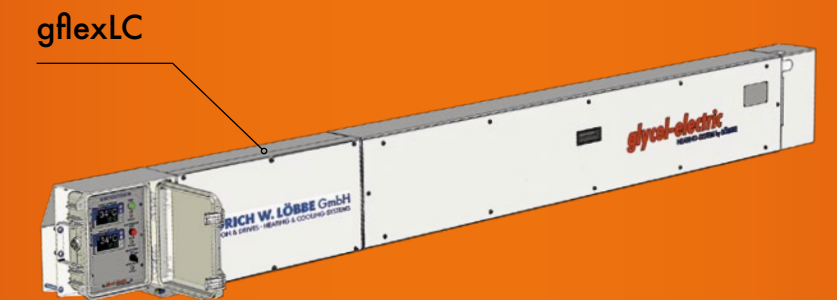
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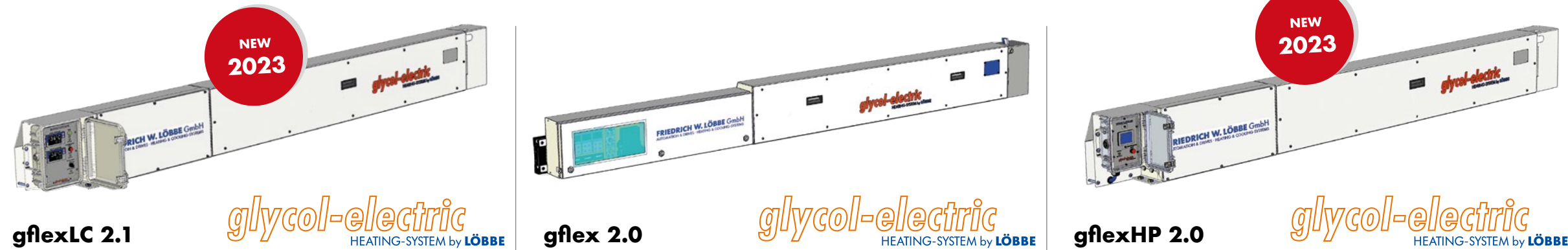
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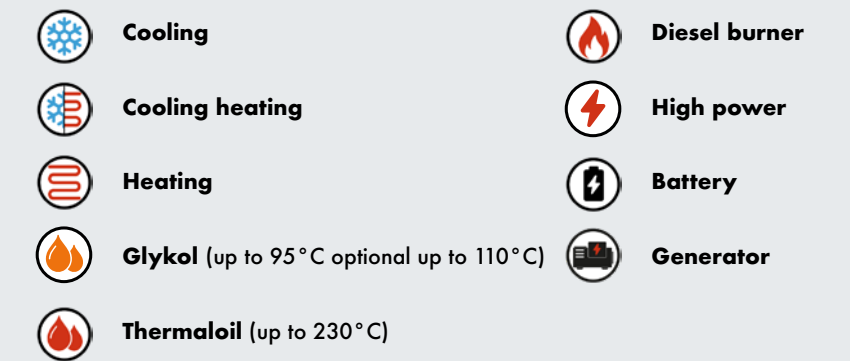
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Product group:	Electrically operated glycol/water heating systems for integration on tank containers		
Product details:	Lowest priced system, compact design	Standard system, compact design	+ High power system, compact model, to quickly reach the target temperature
Housing formfactor:	+ The systems are adapted to the contours of the tank container in their narrow design		
Installation of operator panel:	Easy control panel installation possible at different locations on the tank container	Control panel installation at different locations	+ Easy control panel installation possible at different locations on the tank container
Heating power:	12 kW to 19 kW (at 440 V)		+ 38 kW (at 440 V)
Circulating pump:	Single phase, powered by transformer 230 V/50 Hz 0,12 kW	+ Powerful three-phase stainless-steel circulating pump 380V to 440V 3 AC rotation direction monitoring 50 Hz 0,47 kW, 60 Hz 0,74 kW	
System safety:	Stage II	+ Stage III	
Mains connection:	32 A CEE - 380-440 V 50/60 Hz, requires manual adjustment within the control unit	32 A CEE - 380 to 440 VAC (50/60 Hz)	63 A CEE (or 2x32 A CEE) - 380 to 440 VAC (50/60 Hz)
Ambient temperatures:	-10 °C - +40 °C	+ -20 °C - +40 °C	
Max. preflow temperatures:	Up to 95 °C	+ Up to 95 °C, optional to 110 °C	
Control unit:	2-point-regulator, optionally with data interface	Regulator or PLC controlled, with data interface	+ microflexPLC controlled
aflex extension ³ :	No	+ Yes (both regulator and PLC/microflexPLC controlled)	
Control schematic:	The system is operated by a control panel and the regulators	The system is operated by a control panel and the regulators. Optional: intuitive visualization, almost all functions are operated using a robust touch display	+ The system has an intuitive visualization, almost all functions are operated using a touch display
Scope of functions:	Simple control functions, threshold monitoring	Simple or, with PLC, advanced functions (TRM, SFM, PCM, DBM, ECO) ¹	+ Advanced control and safety functions (TRM, SFM, PCM, DBM, ECO) ¹
Telematics interface:	With optional data interface (RS485/Modbus)	With data interface (RS485/Modbus, other common protocols with PLC)	+ With data interface (all common protocols)
Telematics scalable:	Simple telematics functions - temperature curves, errors	+ Extended telematics functions, in addition to the simple telematics functions also detailed, historized fault messages incl. remote maintenance ²	
Installation positions:	Upright installation position only	+ Upright and horizontal installation	
Clip-In Generator expandable ⁴ :	No - however, the system can be operated via a clip-on power generator		
Maintenance:	+ Heating rod, pump and other wearing parts are easy to reach and replace (partly by Tri-Clamp connections)		
Housing:	+ All housings are made of stainless steel and are additionally powder-coated for corrosion protection		

¹See list of abbreviations/special functions. ²Remote maintenance access to the heating system is only possible with our self-developed telematics (working title teleflex). ³aflex is an agitator extension for many of our heating systems and for our cooling /heating system cflex. The heating system is extended in the control accordingly and can control one or more agitator drives. The drives can additionally be equipped with frequency converters to control the rotation of the agitators. ⁴The clip-in generator is a small power generator system which can operate electrically low-power heating systems, such as dflex and at the same time represent a runtime extension. Since a diesel-powered heating system can run longer on its diesel filling, than on its battery charge, the clip-in generator can be used to provide an equalization.

Pictograms & abbreviations list:



TRM: Temperature Rise Monitoring

The controller monitors the rate of temperature rise. If this rises too quickly, the heat is not transported away correctly and there is a high probability of a flow fault; the system then switches off the heating process and outputs an error message.

SFM: Software Flow Monitoring

The temperature of the heating medium is monitored at two points in the system. If the differential temperature remains stable within a set range, the flow of the heating medium is in order. If the differential temperature drops, there is a flow fault, and a warning message is issued.

PCM: Power Contactor Monitoring

The mechanical main and circuit contactors in the system are switched at fixed intervals (once a day), the auxiliary contacts are monitored, and it is determined whether the contactor is still working reliably. In this way, any „sticking“ of the contactor can be determined. If one of the two contactors no longer switches correctly, the system is disabled for heating processes and an error message is displayed.

DBM: Double Boost Mode

This mode is currently only available for the hybrid and dflexHP systems. When connected to the mains voltage, the system can also switch on the diesel burner in addition to the electric heating element. This is only possible for a certain period and is then blocked until the system is restarted.

SCM: Single Channel Monitoring (ibcflex only)

The single channel monitoring measures the temperature at each back flow connection of the ibcflex, thus the most accurate temperature control of the product is possible. This monitoring can also be carried out directly in the product, either cable-bound or by radio sensors.

ECO: Eco Mode

The eco mode is an automatic operating mode to make the heating process as energy-efficient as possible. In a system with a minimum of two heating elements, both are controlled in such a way that the heating phase is as short as possible, and the holding phase is as economical as possible.

STB: Safety Temperature Limiter

The safety temperature limiter is a standard component installed in every heating system, from Stage I to Stage III. It is the most important and, in case of a temperature rise monitoring (TRM) in the system, also the last instance for emergency shutdown of the heating process. The sensor of the STB is located directly on the heating rod and switches off the heating rod at a fixed defined overtemperature (e.g., 105 °C).

Stage I-III: Safety Level (I - lowest / III - highest level)

The individual safety levels are shown in a table, currently only levels II and III are used. Level I is only used in old or transitional systems.