

System comparison of Löbbe cooling systems - cflex & ibcflexHC

Introduction:

Our cflex & ibcflexHC system series are cooling and optionally heating systems. cflex has been designed as a fully integrated solution on the tank container and is compatible with almost all tank containers on the market - also for retrofitting. While ibcflex has been designed as an external stand-alone system for several tank containers. When used in logistics depots, up to four tank containers with the same flow temperature can be connected to ibcflexHC at the same time. Modular in design, the result of each system is an individual and maintenance-friendly design with many expansion options.

Function:

The systems 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-sanitary glycol-water mixture. cflex is connected directly to the half-pipes normally used for steam heating. While ibcflexHC is connected to the half pipes via a dry coupling. This creates a closed circuit in both systems.

ibcflexHC & cflex have a cooling system consisting of a refrigeration compressor and a plate heat exchanger as standard. In cooling mode, the heat exchanger extracts thermal energy from the glycol-water mixture, which is strictly separated from the customer product.

In the optional 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, whereby the fluid is strictly separated from the customer's product.

The power supply for the system is provided by one or, in the case of ibcflexHC, two industry-standard 380-440 V CEE plugs.

Cooling and heating is fully automatic. The flow temperature at which the cooling/heating medium flows into the container's pipe circuit can be set with high precision. In this way, even very temperature-sensitive products are protected from quality losses due to contact temperatures that are too high or too low. With ibcflexHC, only the volume of the refrigerant/heat transfer medium actually used is ever heated, depending on the number of tank containers connected.

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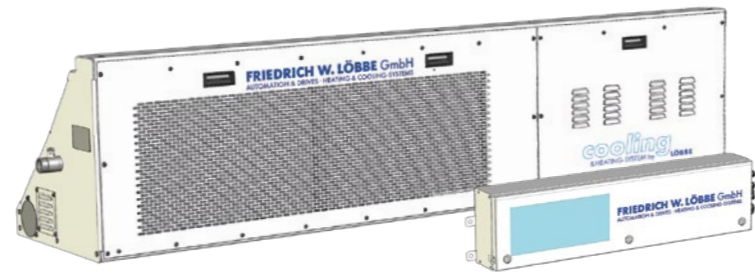
cflex



ibcflexHC



System comparison cflex & ibcflexHC



cflex 1.5







cooling
& HEATING-SYSTEM by LÖBBE



NEW 2023










ibcflexHC 1.1

ibc-cooling
& HEATING-SYSTEM by LÖBBE

	  	  
Product group:	Electrically operated glycol/water heating system for integration on tank containers	Glycol/water cooling- and heating system for external connection to the steam pipes of tank containers
Product details:	In addition to the possibility of heating a product, cflex also offers a cooling function	The weatherproof system is designed for temperature control of two tank containers in warehouses or depots
Housing formfactor:	The container must be slightly adapted to the design of the system ¹	Space-saving, robust cuboid housing. Optionally with storage space for hoses and accessories
Installation of operator panel:	Control panel installation at different locations under certain conditions	
Cooling-/Heating power:	+ Up to 8,1 kW ² cooling and 12 kW heating power (at 440 V)	Up to 38 kW (19 kW+19 kW) heating- and 3,5 kW cooling-power (at 440 V)
System safety:	Stage II (optional Stage III)	
Mains connection:	32 A CEE - 380 to 440 VAC (50/60 Hz)	2x 32 A CEE - 380 to 440 VAC (50/60 Hz)
Ambient temperatures:	-20 °C - +40 °C	
Min./Max. preflow temperatures:	+ From -15 °C to +85 °C	From -10 °C to 55 °C regulator version or 85 °C PLC version
Control unit:	Regulator, PLC or microflexPLC controlled	
aflex extention ⁵ :	Yes	Yes, a mobile agitator (aflex) can be connected when using PLC control
Control schematic:	Operated by a control panel and the regulators. Optional: intuitive visualization, almost all functions are operated using a robust touch display	
Range of functions::	Simple or, with PLC advanced Functions (TRM, SFM, PCM, SCM, ECO) ³	
Telematics interface:	With data interface (RS485/Modbus, other common protocols with PLC)	
Telematics scalable:	Simple telematics functions, with PLC option extended telematics functions, in addition to the simple telematics functions also detailed, historized fault messages incl. remote maintenance ⁴	
Installation orientation:	Upright installation position	ibcflexHC is set up on a straight surface; steep inclines and soft ground should be avoided
Clip-In Generator expandable ⁶ :	No, however, the system can be operated via a clip-on power generator	No
Maintenance:	+ The heating rod 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	+ Consists of a galvanized steel frame, powder-coated aluminum and a stainless-steel control cabinet. It is therefore hardly vulnerable to corrosion

¹It must be specified during the production of the container that a Löbbe hybrid or cflex system will be installed. Large container manufacturers such as CIMC, NT-Tank, Singamas, van Hool, or Welfit Oddy already work with us. ²At condenser temperature 45 °C, evaporating temperature -10 °C and suction gas temperature at 20 °C (according to EN12900). ³See list of abbreviations/special functions. ⁴Remote maintenance access to the heating system is only possible with our self-developed telematics (working title teleflex). ⁵aflex 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. ⁶The 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:

-  **Cooling**
-  **Diesel burner**
-  **Cooling heating**
-  **High power**
-  **Heating**
-  **Battery**
-  **Glykol** (up to 95 °C optional up to 110 °C)
-  **Generator**
-  **Thermaloil** (up to 230 °C)

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.