

FLK series  
Compact liquid-air cooling system

**DELTATHERM**

INDUSTRIAL COOLING AND HEATING



# Industrial cooling and heating.

**Partner of the industry for over 45 years.**

Since 1971 **DELTATHERM®** has belonged to **Hirmer GmbH**, a family business with its headquarters in Much near Cologne, one of the leading German manufacturers of cooling and temperature control systems. In three plants, 120 employees produce and distribute about 10,000 chillers, temperature control units, heating and cooling equipment and cooling components per year. All plants are located in the greater Cologne area. **DELTATHERM®** has a plant of its own for manufacturing casings and cabinets. We also have our own software development and build our own control electronics. Working closely together with our customers, our engineers are happy to develop special solutions and individual designs. 120 service partners support our plant customer service in 60 countries on 6 continents. We always have 95% of all replacement parts in stock, ready for dispatch within 24 hours. Quality, process safety, ease of maintenance and user-friendliness are our top priorities.

The safety of your production plants and of the production process are, to a large extent, dependent upon how well and how reliably your processes are temperature-controlled or cooled. At **DELTATHERM®**, qualified specialists - from trained tradespeople to master craftsmen and engineers - ensure the optimal mixture of planning, project engineering, diligent manufacturing methods and thorough quality control. Our planning and construction department, the building of our own control electronics and software development as well as our own plant for metal working all ensure that we have almost the entire vertical range of manufacture for temperature control units in-house. Purchased components such as pumps, valves, relays etc. are acquired from market-leading or renowned manufacturers.

All devices and systems are subject to a comprehensive functional test before dispatch. Because we are fully aware of what a plant standstill and the resulting production downtimes can cost our customers, we offer:

- Global plant service
- Service hotline to our experts, in German and English
- All standard components in stock and available globally in the shortest time by express mail
- Replacement part availability > 95%
- More than 120 service partners with locations on 6 continents – in Europe, North America, South America, Africa, Asia and Australia
- 24-hour online service, through which we can check and maintain your systems
- Ensuring the productivity of your **DELTATHERM®** machines

■ Made  
■ in  
■ Germany



*„We focus on only one thing: customer satisfaction. We achieve satisfaction through our high product quality, permanently available service and the highest level of flexibility, through which we find individual solutions for all requirements. And we live out this claim - every day, for over 45 years.“*

Sascha and Mario Hirmer  
Managing Directors

# FLK series

## Compact liquid-air cooling system with tank and pump in the power range from 1.1 to 10.5 kW.

When cooling the process medium in the temperature range above 25 °C, the air convection cooling of the FLK cooler is an energy-saving alternative to compression cooling.

The circulating pump conveys the circulating medium over the component to be cooled back to the DELTATHERM® liquid-air cooler. The series is ready for connection and has been tested for function and leaks. For frost-free indoor installation.

### Main applications of the FLK systems are:

- Liquid-cooled motor spindles
- Liquid-cooled drives
- Liquid-cooled torque motors
- Liquid-cooled servomotors
- Liquid-cooled linear motors
- Liquid-cooled converters
- Liquid-cooled bearings
- Liquid-cooled tools
- Liquid-cooled welding systems
- Liquid-cooled X-ray systems
- Liquid-cooled CT or MRI systems



#### Short specification of the standard equipment FLK

- Container-mounted heat exchanger and submerged pump
- Motors and electrical switches prepared for direct connection by the customer
- Highly-efficient water / air heat exchanger made of copper tubing with pressed-on lamellae made of aluminium and a frame made of galvanised sheet steel
- Fan in axial design with suction-mounted sickle blade
- Direct drive via AC or three-phase current external rotor motor
- Maintenance-free and friction-optimised ball bearings
- Medium circuit
- Unit completely piped or hoses internally
- Externally mounted media connections
- Large-volume water tank made of HDPE / stainless steel / steel
- Free tank filling through a resealable filler
- Tank emptying option
- External contact protection in accordance with DIN 31001
- Protection class IP 54

#### Available options

- Complete control and regulation
- Level switch
- Air filter mat for air inlet at the heat exchanger
- Air filter mat monitoring
- Variable speed control of the fans
- Pump overflow valve for pump protection
- Manometer for display of the water outlet pressure
- Wire marking
- Heavy-duty connector (e.g. Harting)
- Flow monitor with analog or digital signal
- Water filter
- Gate valves in flow and return
- Check valves and solenoid valves for the water circuit (consumer higher than coolant)
- Tank filling via floater valve
- Automatic water backfeed with floater switch
- Tank heating for temperature control
- Pump switch-off
- Multi-circuit system
- 24V AC/DC control voltage
- Potential-free collective fault indicator
- External ON/OFF switching
- Special voltages and frequencies (50/60Hz)
- Limit temperature monitoring
- Differential temperature control
- External temperature sensor

FLK series

Series FLK 1 - 7		FLK 1	FLK 2	FLK 3	FLK 4	FLK 5	FLK 6	FLK 7
Cooling capacity	kW	1.1	1.6	3.6	4.3	6.4	7.9	10.5
Air inlet temperature	°C	20	20	20	20	20	20	20
Air volume	m <sup>3</sup> /h	800	1400	2600	2600	5200	5200	5200
Medium inlet temperature	°C	30	30	30	30	30	30	30
Medium outlet temperature approx.	°C	27	27	27	27	27	27	27
Medium amount approx.	l/min	5	10	15	15	30	40	50
Pump pressure	bar	2.8	2.5	2.0	2.0	2.9	2.0	1.0
Pump drive capacity (50/60 Hz)	kW	0.46 / 0.66	0.11 / 0.15	0.46 / 0.66	0.46 / 0.66	1 / 1.35	1 / 1.35	1 / 1.35
Medium pressure loss	bar	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Water / Glycol mixture	%	70 / 30	70 / 30	70 / 30	70 / 30	70 / 30	70 / 30	70 / 30
Tank contents approx.	l	27	27	27	27	27	27	27
Number of axial fans	piece	1	1	1	1	1	1	1
Connected load per fan (50/60 Hz)	kW	0.68 / 0.70	0.64 / 0.78	0.13 / 0.23	0.13 / 0.23	0.13 / 0.23	0.65 / 0.85	0.65 / 0.85
Water connection outlet/inlet	inch	3/4 " IG (female)						
Max. operating pressure		atmosphercially open						
Air direction		horizontal						
Width (W)	mm	320	320	320	320	420	420	420
Length (L)	mm	500	500	500	500	600	600	600
Total height (H)	mm	710	710	710	710	810	810	810
Empty weight about	kg	45	45	45	45	49	49	49
Connection voltage	V / Hz	3x400 V +/- 10 % 50 Hz PE   3x460 V +/- 10 % 60 Hz PE (other voltages on request)						
Medium temperature min. / max.	°C	+5 / +50	+5 / +50	+5 / +50	+5 / +50	+5 / +50	+5 / +50	+5 / +50
Ambient temperature min. / max.	°C	+5 / +50	+5 / +50	+5 / +50	+5 / +50	+5 / +50	+5 / +50	+5 / +50
Noise level at 1 m distance approx.	dB(A)	70	70	70	70	70	70	70
Pipe material		copper						
Lamella material		aluminium						

Components in contact with circulating medium: Stainless steel, brass, bronze, copper, plastic, rubber, iron

Approved media:

- 70 % distilled water with 30% Antifrogen N
- 70 % distilled water with 30% Glysantin G48
- 70 % distilled water with 30% Tyfocor

Note:

Pump, fan and other electrical components must be connected and secured directly on site. Regulation and protection optional.

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## Further products from our product range



Industrial series cooling towers  
with open or closed circuits from  
80 to 18,000 kW cooling capacity



Dry and hybrid coolers for water, oil  
or emulsion from 0.5 to 15,000 kW  
cooling capacity



Rack chillers in the power range from  
0.15 to 3 kW cooling capacity; as  
heat exchanger up to 10 kW



Industrial cooling machines for water,  
oil and emulsion from 0.2 to 5,000 kW  
cooling capacity



Temperature control systems for water  
up to 160 °C and oil up to 350 °C



Immersion chillers for water, oil  
and emulsion from 1.7 to 115 kW  
cooling capacity

Technical modifications and errors reserved.

