Sample Gas Cooler
EGK 2 Ex

Accurate measurements of gases require gas samples with stable dew points even under harsh ambient conditions.

The EGK models provide a CFC-free, compressor-type cooling system connected to a cooling block. The cooling block evenly dissipates the heat thus supporting the highly efficient heat exchangers. The temperature of the cooling block is regulated by the **Bühler Constant Regulating System**. This system allows smooth regulation and eliminates the disadvantages of the traditional on-off operating mode.

The controller is self-checking. Significant deviation from the preset is signaled by a status output. A bi-color LED on the front shows 4 different operating conditions.

Condensate is removed either into condensate vessels or by automatic condensate drainers which can be attached to the heat exchangers within the cooler's outer contour.

- **ATEX certificate Zone 1 (Cat. 2G)**
- **CFC-free**
- **Nominal cooling capacity 615 kJ/h**
- **1 or 2 heat exchangers can be inserted: up to 4 gas paths**
- **Self-checking with status output**
- **4 operational conditions displayed**
- **Simple operation and test**
- **Easy to install**
- **Condensate draining can be mounted inside of outer shape**

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Technical Data

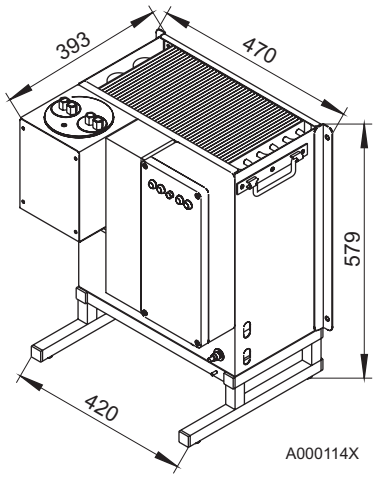
ATEX-class	II 2 G EEx pqem [ia] IIC T4
Ready for operation	after max. 20 minutes
Cooling capacity (at 25°C)	> 615 kJ/h (170W)
Ambient temperature	+0..45°C
Gas outlet dewpoint (preset)	approx. 5 °C
Dew point stability static	± 0.2 K (with st. steel)
	± 0.5 K (with PVDF)
Over whole spec. Range:	± 2 K
Power supply	230V, 50 Hz or
	115V, 60 Hz
Power consumption	250 VA (230V)
	300VA (115V)
Fuse	motor protection switch
Potential-free status outputs (fail-safe)	250 V / 3 A AC
	24 V / 1 A DC
Protection classelectrically	IP 54
Housing material	stainl. steel / polyester
Installation	upright or against wall
Dimensions (H x W x D)	approx. 700 x 500 x 500 mm
Weight incl. 2 heat exchangers	approx.37 kg

Display

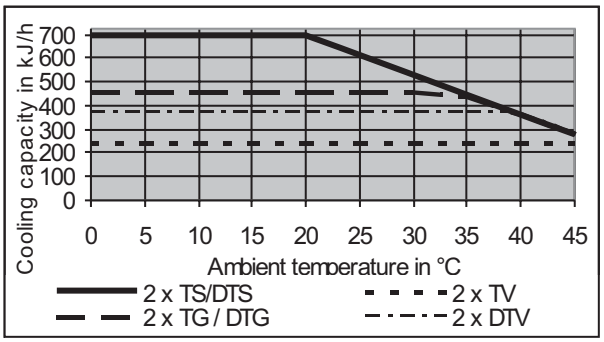
Status LED with 4 conditions:

Green:	Temperature in range
Green flashing:	Temperature in range, compressor is running
Red:	Temperature off range, cooling operation
Red flashing:	Cooler stooped or service required

Dimensions



Performance Data



Heat Exchanger

The energy content of the sample gas and, as a result, the required cooling capacity of the gas cooler is determined by 3 parameters: gas temperature ϑ_G, dewpoint τ_e (moisture content) and flow v. The outlet dew point rises with increasing energy content (heat) of the gas. The required cooling capacity is determined by the maximum acceptable level of the outlet dew point.

The following table shows cooler performance assuming the following conditions: τ_e=65°C and ϑ_G=90°C. Indicated is the v_{max} in Nl/h cooled air (i.e. after the moisture has condensed). If the actual values stay below the parameters τ_e and ϑ_G, v_{max} can be increased. For example (TG), instead of τ_e= 65°C, ϑ_G = 90°C and v = 250 l/h the values τ_e=50°C, ϑ_G=80°C and v=350 l/h could be achieved.

Please contact one of Buhler's application specialists for assistance and further information.

Heat Exchanger	TS	TG	TV	DTS	DTG	DTV [4]
Flow rate v_{max} [1]	530 l/h	280 l/h	125 l/h	2*250 l/h	2*140 l/h	2*115l/h
Inlet dewpoint $\tau_{e,max}$ [1]	80 °C	80 °C	65 °C	80 °C	65 °C	65 °C
Gas inlet temperature $\vartheta_{G,max}$ [1] und [3]	180(135) °C	135°C	135 °C	180(135) °C	135 °C	135 °C
Max. cooling capacity Q_{max}	450 kJ/h	230 kJ/h	120 kJ/h	450 kJ/h	230 kJ/h	185 kJ/h
Gas pressure p_{max}	160 bar	3 bar	3 bar	25 bar	3 bar	2 bar
Pressure drop Δp (v=150 l/h)	8 mbar	8 mbar	8 mbar	each 5 mbar	each 5 mbar	each 15 mbar
Dead volume V_{tot}	69 ml	48 ml	129 ml	28/25 ml	25/25 ml	eah 21 ml
Sample gas connections	G 1/4" i [2]	GL 14	DN 4/6	tube 6mm	GL 14	DN 4/6
Condensate out connections	G 3/8" i [2]	GL 25	G 3/8" i	tube 10mm	Gl184	DN 4/6

[1] with maximum heat transfer of the heatexchanger and max. cooling capacity of the cooler

[2] NPT-threads upon request

[3] Values in parentheses due to temperature class

[4] Use of automatic condensate drainers and glass vessels not possible

Please indicate with order

Coolers

45 90 999	EGK 2 Ex, 230V / 50 Hz
45 91 999	EGK 2 Ex, 115V / 60 Hz

Heat exchanger

45 10 023	TS, stainless steel 1.4571
45 10 013	TG, Duran glass
45 01 004	TV-SS, PVDF
45 01 026	DTSstainless steel 1,4571, two streams
45 01 027	DTG Duran glass, two streams
45 01 028	DTV, PVDF, two streams

Motor protection switches

The cooler has to be connected via a motor protection switch

9132020009	Motor protection switch mounted **outside** of hazardous area for cooler 230V/50Hz
9132020029	Motor protection switch mounted **outside** of hazardous area for cooler 115V/60Hz
9132020032	Motor protection switch mounted **inside** of hazardous area for cooler 230V/50Hz
9132020035	Motor protection switch mounted **inside** of hazardous area for cooler 115V/60Hz

Accessories

44 10 0011	Automatic condensate drainer 11 LD V 38 (SS)
44 10 0044	Automatic condensate drainer AK 20 (PVDF)
44 90 99922	Bracket for mounting AK 20
44 10 005	Condensate vessel GL 1; glass, 0,4 l
44 10 019	Condensate vessel GL 2; glass, 1 l