

# PSG Process Cooler

## MAK Process C

### Application

The compact high performance and low maintenance compressor coolers series **PSG Process** are used for continuous extractive gas analysis. They serve primarily for exact constant lowering of the sample gas dew point and thus for drying of the humid sample gas flow. In this way water vapour cross sensitivities and volumetric errors are minimized and damages of the sensible analyzer are avoided. The high-performance heat exchanger system in the **PSG Process** series has been specially developed to dry even high gas flow rates precisely, thus promoting rapid transport of the sample to the analyzer. An optional condensate drain is used for condensate removal, which can also be configured in an oxygen-clean version on request.

### Technology

The precise proportional temperature control in combination with the long-lasting hot-gas bypass system and the innovative corrosion resistant heat exchangers achieves low extremely constant dew points. Also load fluctuations and high thermal stress is compensated reliably. The mono or dual heat exchanger with one or two gas paths is built in a solid aluminum cylinder which guarantees an optimal energy exchange between sample gas and cooling medium. In addition, the aluminum cylinder is an effective cold storage that supports the compensation of unfavorable operating conditions. The **MAK Process C** is equipped with an exchangeable heat exchanger which allows an easy replacement without dismantling the device.

### Functions

The **MAK Process C** compressor cooler operates with the FCK-free refrigerant R134a. Stainless steel is used as the heat exchanger material. The built-in solenoid valve can quickly and reliably compensate for large load changes. The simultaneously used superheated steam bypass valve achieves more constant sample gas temperatures. The sample gas cooler is equipped with a digital display for checking the sample gas temperature and with a potential-free fault signal contact.



- ✓ High performance compressor cooler
- ✓ Peak performance even at high ambient temperature
- ✓ Flow rate up to 500 l/h
- ✓ Operating pressure up to 100 bar
- ✓ 1 - 2 gas paths, completely tubed
- ✓ Corrosion resistant, easy to change  
Stainless steel heat exchanger
- ✓ Option: gas paths cleaned for applications with oxygen
- ✓ Option: additional temperature sensor for systems with SIL standard
- ✓ Long-life hot gas bypass system without switching the compressor
- ✓ Compact design
- ✓ Digital display for temperature and alarm
- ✓ Alarm contact

## Technical Data

MAK Process C			
Gas paths			1
Heat exchanger			Mono
Heat exchanger material			SS316
Gas flow Vn <sup>1)</sup>	l/h		500
Gas inlet dew point <sup>1)</sup>	°C		80
Gas inlet temperature max.	°C		180
Ambient temperature	°C		+5 bis +50
Operating pressure	bar		100
Gas outlet dew point <sup>1)</sup>	°C		3,0 ± 0,5
Dead volume per gas path	ml		67
Ready for start up	min		5
Cooling capacity	KJ/h		774
Design data			
Dimensions (B x H x T) [mm]	mm		310 x 266 x 321
Weight without options	kg		19,0
Housing			wall mounting / RAL 7035
Gas / condensate connections			condensate outlet at bottom D12
Electrical data			
Power supply			230V 50/60 Hz or 115V 50/60Hz
Temperature display			digital
Alarm set-points	°C		< +2.0 / > +10.0
Protection rate			IP 20 EN 60529 / EN 61010
Power consumption			190W at 230VAC – start-up current 6,3A
Alarm contact			250V AC / 1,5A / 375VA

1) at standard conditions, dew point 70°C inlet temperature, 10-25°C ambient temperature

### Order matrix

Heat exchanger SS316	1 Gas path				1														
	2 Gas paths				2														
	1 Gas path Oxygen ready				A														
	2 Gas paths Oxygen ready				B														
Number of heat exchanger	1 Heat exchanger								1										
Condensate trap	None																		0
	11-LD																		1
	2x 11-LD																		2
	11-LD Oxygen ready																		A
	2x 11-LD Oxygen ready																		B
Housing	Wallmounting																		1
Power supply	230V 50/60Hz																		F
	115V 50/60Hz																		B
Additional PT100 with transmitter for SIL	Without																		0
	with																		1
Matchcode	<b>MAK Process</b>	<b>- C -</b>																	0
																			0
																			0



**Option:** Stainless Steel Condensate Drain 11 LD  
also available in Oxy ready

Example code: **MAK Process - C - 1111F - 1000** ➔ Sample gas compressor cooler **MAK Process** with mono heat exchanger made of stainless steel, condensate connection at the bottom D12 with condensate drain 11 - LD, in wall-mounted housing and with a voltage of 230V 50/60Hz