



ECM-2 G/SR25.2

- Small dimension, light weight
- Executions for Ex-zone 2 with ATEX and FM approval
- Gas flow rate
1x 250 or 2x 150 NI/hr
- Patented Jet-Stream heat exchangers available in 3 standard materials
- Gas outlet dew point $+5\text{ °C} \pm 1\text{ °C}$
- Dew point stability $< \pm 0,1\text{ °C}$
- Digital temperature indication
- Status alarm contact configurable
- Wall mounting housing
- Optimum reliability

Gas Cooler Series EC[®]

Compact version ECM-1 and ECM-EX2-1 for 1x 250 NI/hr

Compact version ECM-2 and ECM-EX2-2 for 2x 150 NI/hr

Application

The **M&C** gas cooler **ECM** is used in gas analysis to lower the dew point of humid gas to avoid condensation in the analyser(s). An extremely stable and low gas dew point avoids water vapour cross-sensitivity and volumetric errors.

Description

Compact, maintenance-free and self-controlling. Intelligent detailed solutions provide optimum cooling of the sample gas and direct separation of condensate to avoid contamination effects.

The new controlled compressor cooling system and the special design of the jet stream heat exchanger – **an M&C patent** – guarantee an optimum dew point reduction to a low, stable value. An additional pre-drainage device is not necessary in normal applications.

The condensate should be removed with integrated small peristaltic pumps **SR25.2** or optionally by external condensate traps **AD...** respectively collection vessels **TG../TK..**

The simple construction enables heat exchangers of different materials to be used depending on the application. Heat exchangers to be ordered optionally.

The digital indicator in the front panel displays the cooling temperature. The function of the cooler can be externally controlled via the alarm contact, configured at $< +2\text{ °C}$ and $> +8\text{ °C}$ as a standard.

The gas cooler **ECM-1** (1-channel) can be equipped with one Jet-Stream heat exchanger with a flow capacity of max. 250 NI/hr.

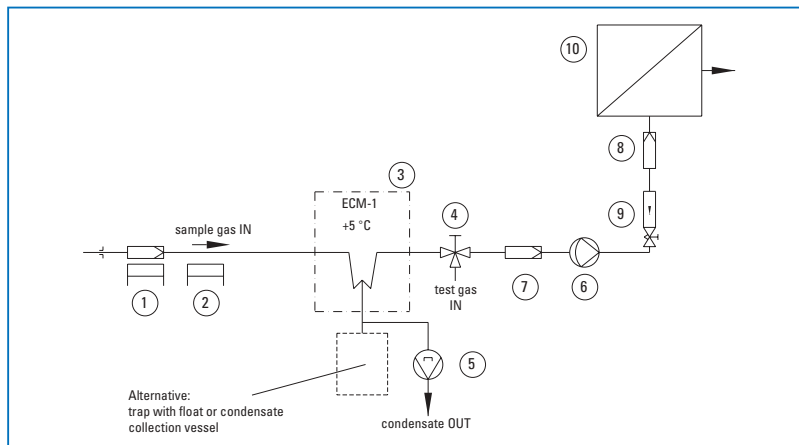
The gas cooler **ECM-2** (2-channel) can be equipped with two Jet-Stream heat exchangers with a flow capacity of max. 150 NI/hr each.

The explosion-proof versions **ECM-EX2-1** and **ECM-EX2-2** can be used in Ex-zone 2 and, they too, may additionally be equipped with up to 2 standard peristaltic pumps **SR25.2**.

The compact and light weight construction allows a simple and space-saving installation. The **ECM** gas coolers are self controlling and maintenance free in operation.

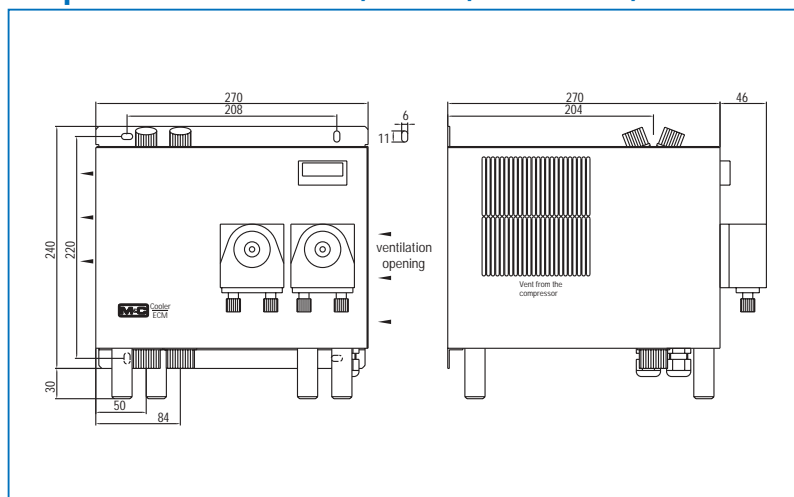
Application example for ECM-1

- 1 Heated filter sample probe **SP210-H** or **SP2000-H**
- 2 Heated sample line **4M4/6**
- 3 Cooler **ECM-1G**
- 4 3-way ball valve **3L/PV-1**
- 5 Peristaltic pump **SR25.2**
- 6 Diaphragm pump **MP47** or **MP06/12** or **N5KP**
- 7 Fine filter **FP-2T-D** with liquid alarm **LA1**
- 8 Aerosol filter **CLF-5/W** optional according to application
- 9 Flow meter **FM10** or **FM40**, 25-250 Nl/hr
- 10 Analysers f. e. **PMA100**



Dimensions

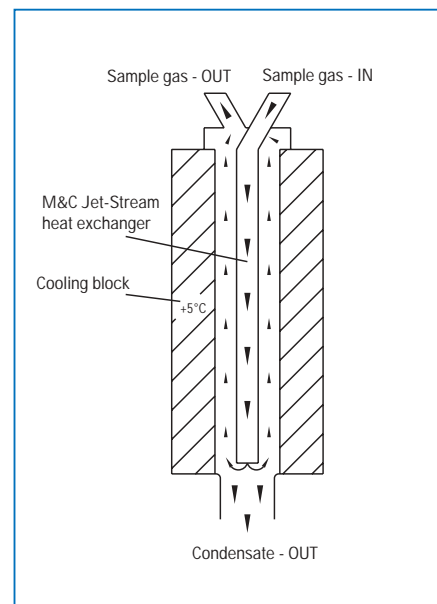
Compact Gas Cooler ECM-1 / ECM-2 / ECM-EX2-1 / ECM-EX2-2



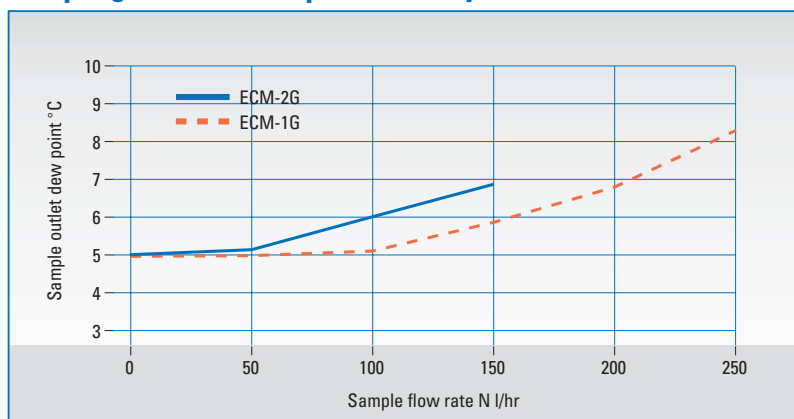
Dimensions in mm

Drawing shows ECM-2G with two heat exchanger out of glass. Heat exchanger(s) and peristaltic pump(s) to be ordered optionally!

Functioning diagram of patented M&C Jet-Stream heat exchanger




Sample gas outlet dew point stability



Sample gas outlet dew point stability at gas inlet dew point of 60 °C. Characteristics of heat exchanger out of PVDF or stainless steel on request.

Technical Data

Gas cooler series EC®	version ECM-1	version ECM-2	version ECM-EX2-1	version ECM-EX2-2
Part No. for basis cooler without heat exchanger	02K7500X* (a)**	02K7510X* (a)**	02K7600X* (a)**	02K7610X* (a)**
Number of heat exchanger possibility	1	2	1	2
Ambient temperature	+10 up to +50 °C			
Sample outlet dew point	set in factory +5 °C ±1 °C, range of adjustment 0 - 20 °C,			
Dew point stability	however min. 5 °C below ambient temperature at constant conditions < ±0,1 °C			
Sample inlet temperature***	max. 180 °C			
Sample inlet dew point***	max. 80 °C			
Total cooling capacity	40 W at +10 up +50 °C ambient			
Ready for working	<15 min.			
Main power connection / power consumption	230V AC* or 115V AC**(a) -15%/+10%, 50/60 Hz, max. 200VA start up current: 230V 50Hz=2,5A / 115V 60Hz=4,5A			
Electrical connection	terminals 2,5mm ² , 2x PG11 cable gland (with FM-approval conduit-hub 1/2" NPT)			
Status alarm-2 contacts, potential free	contact rating 250VAC, 2A, 500VA, 50W, alarm point <+2 °C and >+8 °C*			
Case protection / Electrical standard	IP20 EN60529 / EN 61010		 II 3 G EEx nAC [L] IIC T4 ATEX FM Approval Class I, Div.2, Group A, B, C, D, T4 (FM approval for 115V execution only)	
Method of mounting / Case colour	wall mounting / case colour grey, RAL 7032			
Dimension / Weight	270x270x316 mm (w x h x d) / 12/13,5 kg Version 230V / 115V			

options for basis cooler	ECM-1.. and ECM-EX2-1..			ECM-2... and ECM-EX2-2		
Heat exchanger type	ECM-1G	ECM-1PV	ECM-1SS	ECM-2G	ECM-2PV	ECM-2SS
Part No.	93K0140	93K0170	93K0160	97K0100	97K0110	97K0115
Material of heat exchanger	Duran glass	PVDF	st. steel 316Ti	Duran glass	PVDF	st. steel 316Ti
Max. gas flow rate per h.e.	250 NI/hr***	250 NI/hr***	250 NI/hr***	150 NI/hr***	150 NI/hr***	150 NI/hr***
Gas press. max.-bar abs. ³⁾	2 / 3 ²⁾	3	10*	2 / 3 ²⁾	3	10*
Sample gas connection	GL18 for ø 6 mm o.d. tube*	G1/4"i	G1/4"i* or 1/4"NPT**	GL18 for ø 6 mm o.d. tube*	Tube ø 6 mm*	Tube ø 6 mm
Condensate connection	GL25 for ø 12 mm tube* ø 8 mm or ø 10 mm**	G3/8"i	G3/8"i or 3/8 NPT**	GL25 for ø 12 mm tube* ø 8 mm or ø 10 mm**	G3/8"i	G3/8"i or 3/8 NPT**
ΔP at max. flow rate	1 mbar	1 mbar	1 mbar	1 mbar	1 mbar	1 mbar
Stagnant space approximately	100 ml	100 ml	100 ml	40 ml	25 ml	30 ml
Peristaltic pump SR25.2	1 pc. incorporated in the cooler, compl. installed, Part No.: 01P9125 cooler weight plus 0,6 kg per pump					

* Standard, other version on request.

** Option

*** Maximum values in technical data's must be rated in consideration of total cooling capacity at 25 °C ambient temperature..

²⁾ With GL-Connecting adapter.

³⁾ With SR25.2 max. 2 bar abs.

Order example:

1 cooler ECM-2 with 2 heat exchangers out of glass ECM-2G and 2 peristaltic pumps SR25.2, power 115V 60Hz:
Part. No. 1x 02K7510Xa; 2x 97K0100; 2x 01P9125

GL-adapter and tube fittings for the connection of different tube diameters at the heat exchanger see data sheet 3-5.1.1 and 7-1.1.