



SP2000-H

Application of M&C gas sample probe

Sample extraction out of coal bunkers to control the CO level for fire protection Gas Sample Probe Series SP®

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Special Features

In coal bunkers, where a lot of fine coal dust exists, it is necessary to measure the CO concentration to avoid a fire which can occur inside the bunker.

In this application the main problem is the gas sample probe versus service life and low maintenance.

M&C developed a special probe to do this job. It works really good and was tested in several applications.

M&C® Description

This kind of probe is based on an M&C electrical heated SP2000H probe with pre filter V20-T and back flush facilities.

The pre filter V20-T is a hose filter made from PTFE with additional weaved stainless steel wires to protect electrostatic charging. This filter is hold by a stainless steel support tube, which will be screwed into the G3/4" internal thread of the probe flange.

The advantage of such a flexible and movable filter V20-T is that dust which lays on the filter surface can be removed very easily by an air pressure hammer. This effect is much more better than with solid stainless steel pre filters.

The dust retaining rate is about 50% of particuls <3 micron. Therefore, it is necessary to have an additional filter with a 0,1 µm filter fineness /GF150 in the heated part of the SP2000-H probe.

At the inlet of the SP2000-H probe, a 3-way ball valve /3VA is installed. This ball valve has a pneumatic actuator -MS1 to do back flush through the ball valve fully automatically.

Back flush is done by 5 short air pressure hammers (1 s) during a time of approx. 10 s.

This job does a solenoid valve unit 2 with integrated control unit -234ZR which is mounted in a box directly to the probe.

A timer relay sets the back flush time (10 s) and the quiescent period (max. 300 h).

During backflush, the control unit gives a status alarm (pot. free switch over contact).

The probe consists of following parts:	Pcs.	Type	Part number
M&C-Gas sample probe, heated, 230V 50Hz	1x	SP2000H	20S2000
Fine filter, 0,1 micron	1x	/GF150	20S9020
3-way ball valve, integrated	1x	/3VA	20S9325
Pneumatic actuator for ball valve	1x	/MS1	20S9055
Solenoid valve unit	1x	-2	20S9345
Control unit	1x	-234ZR	20S9370
PTFE hose filter, length 0,4 m	1x	SP2000/V20-T	20S9315
Shut off ball valve with free valve opening, flange connection DN65 PN6 on both sides	1x	KFV /V20-T	on request
Adapter tube with self regulated electrically heating >100° C, heat insulation, flange connection DN65 PN6 on both sides, 230V 50Hz or 115V 60Hz, 250W.	1x	AR /DN65-500	on request

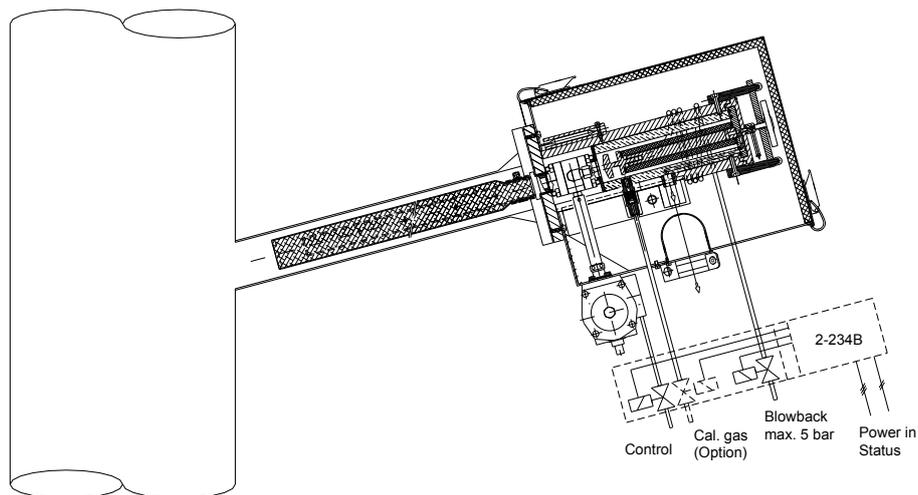
Other options on request.

Technical basic data of the sample probe	SP2000H / GF150 / 3VA / MS1-2-234B, SP2000 / V20-T
Process temperature	max. 200 °C
Pre filter length	400 mm Standard
Operating temperature probe SP2000H	180 °C, thermostate controlled
Mounting flange	DN65 PN6 or optional 3" 150 lbs
Probe low temperature alarm	potential free contact
Temperature limiter	with manual reset
Material in contact with sample	SS 316Ti, PTFE, Viton, glasfibre
Power supply	230V 50Hz or 115V 60Hz
Power consumption	650W
Pressure of blow back gas	max. 5 bar g
Pressure of control air	5,5-13,5 bar g
Blow back cycle status alarm	potential free contact, contact rating 250V 1A

M&C | Please find 3 applications depending on the sample composition

	Sample dew point	Sample pressure	Mounting position
1.	dry sample	atmospheric pressure	On the process tube line, a prolonged connection piece with flange is fixed. The tube filter V20-T is projecting into the stump.

M&C | 1. Application for dry and not pressurized sample

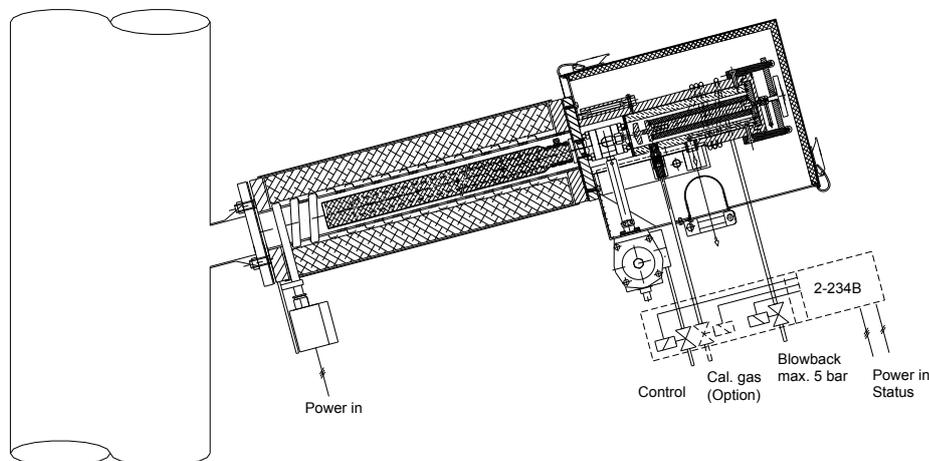


Due to its limited mechanical strength, it is advisable in case of a high flow rate and particle charging not to install the PTFE tube filter directly into the process line. However, if you do so, you should mount an additional protective tube, and the reduction of the cross section must be considered.

	Sample dew point	Sample pressure	Mounting position
2.	wet sample (max. dew point +80 °C)	atmospheric pressure	On the process tube line, a connection piece with flange is fixed. An electrically heated adapter tube (> 100 °C) with thermal isolation is mounted and the tube filter V20-T is projected into the tube. This avoids the filter to become wet and blocked by the dust loaded and humid sample gas.

In order to avoid the temperature to fall below dew point, all external parts of the sample point must be sufficiently isolated or heated!

M&C 2. Application for wet and not pressurized sample



	Sample dew point	Sample pressure	Mounting position
3.	wet sample (max. dew point +80 °C)	Max. 5 bar pressurized sample (Solutions for higher pressure on request)	On the process tube line, a connection piece with flange and a cut-off ball valve is fixed. On this ball valve, an electrically heated adapter tube (> 100 °C) with thermal isolation is mounted and the tube filter V20-T is projected into the tube. This avoids the filter to become wet and blocked by the dust loaded and humid sample gas. At pressurized sample, the additional 2-way ball valve allows easy maintenance of the pre-filter.

In order to avoid the temperature to fall below dew point, all external parts of the sample point must be sufficiently isolated or heated!

M&C 3. Application for wet and pressurized sample

