

TAKING EMISSIONS LIGHTLY

SAMPLE GAS CONDITIONING USING AN ABOUT 7 KG LIGHTWEIGHT SYSTEM FOR ACCURATE COMPARISON - AND SPOT MEASUREMENT

Those conducting gas analysis in changing locations previously had a heavy burden to carry. The gas conditioning system in the bulky case alone often weighed almost 20 kg. The new PCS.base system by Bühler Technologies weighs less than half. Packed inside a convenient shoulder bag, it can easily be lifted for comparison- or spot measurements. Coolers, filter and pump as well as optional moisture detectors and flow meters set the stage for reliable analysis values.



With the bag open, the PCS Base gas conditioning system weighing in at only 6.8 kg is ready for use after only ten to 15 minutes. It is perfectly aligned with the Baseline gas sample probe.



Service technicians can easily transport the lightweight gas conditioning system to the measuring point inside the sturdy, high-quality shoulder bag. The bag also holds accessories such as sample gas probe and replacement filter.

Service staff is often not somebody to envy. By nature they travel a lot and need to manage any condition in every client's location. For employees charged with emissions measurement such as so-called recurrence inspections, this means: Taking gas condition including sample gas probe and analyser to the measurement site. And that's oftentimes the stack. Conventional gas portal conditioning systems, packed inside a case with handle, made this task anything but easy. They typically weigh nearly 20 kg. And safety is not always satisfactory, since it only leaves one hand free.

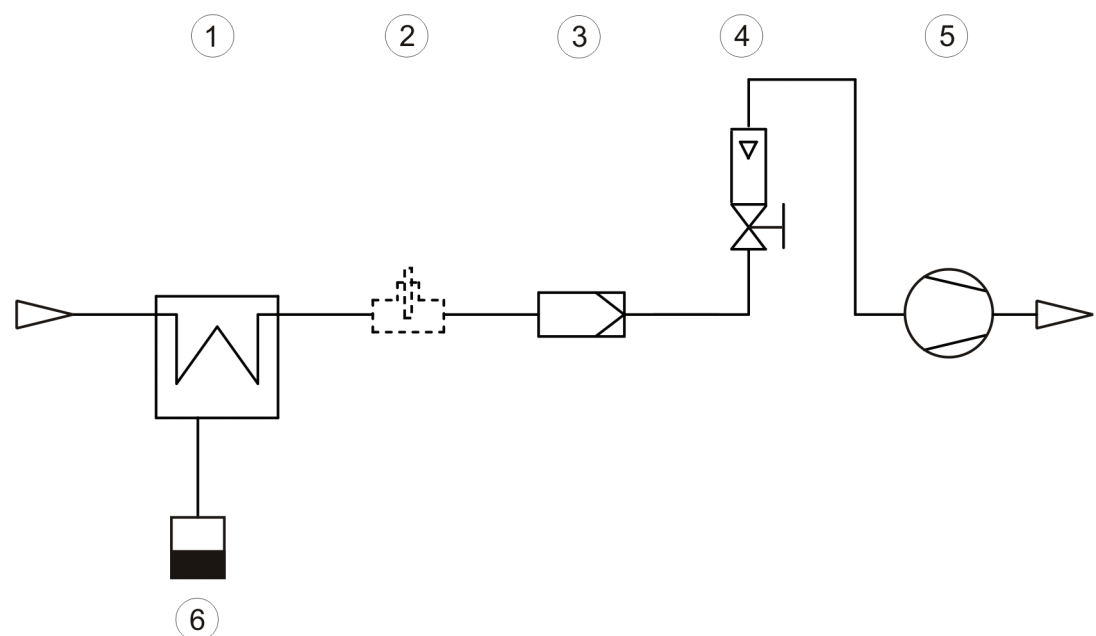
Developers at Bühler Technologies, specialists in analysis technology, now have a radical response. Their previous solution TGAK still weighed 18 kg. Even it was the German acronym for portable gas analysis inside a case – the portability of this gas conditioning system was limited. Unlike the new system, PCS. base. Weighing in at a mere 6.8 kg. The service technician can easily strap this one on his back, since the Portable Conditioning System Base comes inside an ultra-lightweight bag which, like to photography cases, also offers lots of room for accessories such as the sample probe Baseline, also newly developed.

Probe and conditioning focusing on what's important

Baseline and PCS.base are perfectly coordinated. Together they make a solution ideal for service as well as comparison- and spot measurement. Oliver Fries, sales director for EMEA & South America

at Bühler Technologies reports: "Numerous customers simply want to regularly check e.g. oxygen or carbon monoxide levels. That's where our simplified combination of Baseline sample gas probe and the PCS.base gas conditioning system are just right." Bühler Technologies already presented the prototype of this lightweight at Achema – and impressed customers straight away. The convenient shoulder bag, the optimally coordinated, functional technology, and last but not least the low list price (of about 2,000 Euro): Several Achema visitors request a quotation straight away. But Fries admitted: "This solution is very well suited for spot measurements. However, those who need measurements to control a process or verify measurement values for authorities should resort to the more sophisticated technology such as the Smartline with PCS Smart."

The light weight of the PCS.base stems from focusing on the essentials. The standard version consists of a Peltier cooler with condensate trap, a filter, and a gas pump. If necessary, a flow meter and a moisture detector can be added. However, the flow metre is only necessary if the analyser itself does not have a flow meter.



1	Cooler	4	Flow meter with needle valve (optional)
2	Moisture detector (optional)	5	Pump
3	Filter	6	Condensate trap

The standard PCS Base consists of Peltier cooler (1), filter (3), gas pump (4) and condensate trap (6). If necessary, a moisture detector (2) and a flow meter with needle valve (5) can be added.



The moisture detector protects the analyser from moisture entering. It therefore communicates with the sample gas pump, which is switched off on gas cooler overload. "I would almost always choose the moisture detector," Fries recommends, "since it protects the analyser, a delicate and expensive measuring instrument, from penetrating moisture, hence damage or limited functionality." This would save a lot of expenses for cleaning and maintenance.

Fixed output dew point or defined difference

Bühler engineers selected the recently released TC-Mini as the cooler, developed specifically for portable gas conditioning systems. It can be used in two ways. Choose from a fixed output dew point setting of 3, 5, 10 or 15 °C, or alternatively, cooling via Delta-T control.

The system normally cools the system to the 5 °C preset. An output dew point of 5 °C means 0.8 percent residual moisture, so approx. 8,000 ppm – a standard established in emissions

measurement. Fries explains: "This is a defined state, it always returns comparable values. The ambient temperature during measurement will typically not be below this value – meaning, the system is therefore protected from condensation."

The TC-Mini cooler, however, also features a Delta-T control, which is particularly beneficial when trying to determine non-water soluble gasses. It ensures the gas temperature always remains a specific value below the ambient temperature. Due to the defined temperature difference, the residual moisture in the cooled gas will then not condensate inside the analysis system. With this application the output dew point does fluctuate along with the ambient temperature. The carbon monoxide or oxygen content, however, can be determined quite accurately. The advantage: If the system only cools to 35 °C instead of to 5 °C at an ambient temperature of 50 °C, this increases the available cooling performance whilst safely preventing condensation in the analyser.

With this application one should keep in mind the ambient temperature must always be above the output dew point setting. Moisture would otherwise condense in the lines behind the cooler.

Not only is the PCS.base extremely simple to use with the

transport bag open. The functional gas conditioning system is also easy to maintain. The filter is accessible from the front and can be replaced when dirty. If the condensate trap is full, the condensate can be drained via compression valve and collected in the included container and properly disposed of. The pump and cooler are durable and essentially maintenance-free. All the necessary steps for maintenance are clearly illustrated in the manual with an intelligible description.

Hand-free service

With the encouraging feedback at Achema, which only resulted in the modification of a few details, series production of the PCS.base will start October 2015. Oliver Fries is excited: "Now we can also optimally supply those users in need of lightweight, quick and easy to operate gas sampling system and gas conditioning." Service technicians who will now have their hands free when climbing their next stack will be grateful. Once at the top, the system will be ready for use after only ten to 15 minutes, depending on the ambient temperature.

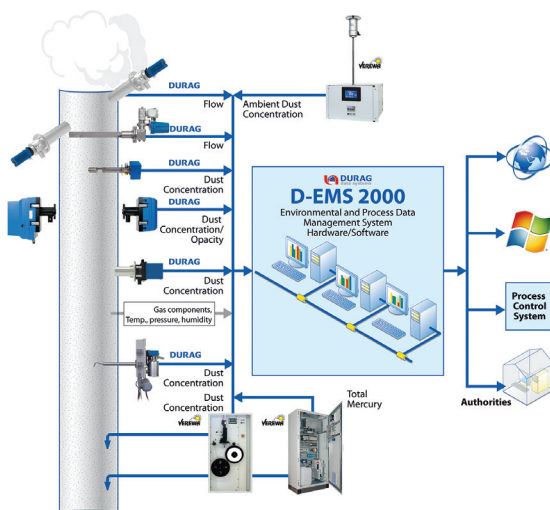
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