# The reliable way to detect dust concentrations

FWE200DH: Extractive dust measuring system for wet gases

Waldkirch, June 2015 – The FWE200DH represents SICK's next stage in the development of a dust measuring device for measuring dust concentration in wet gases. The gas is extracted via a sampling probe and heated above dew point. Any droplets in the gas vaporize, making it impossible for them to falsify the measurement results. Using the scattered light principle afterward enables even minimal dust concentrations to be measured.

In facilities for applications such as waste treatment or metal processing, waste gases are purified in scrubbers before they are released. However, they are usually significantly cooled and saturated with water, causing them to pose a particular challenge for the dust measuring device. Despite this, it is essential for the permitted dust limits to be reliably and accurately monitored.

Conventional dust measuring devices are unable to differentiate between dust particles and water droplets, resulting in incorrect measurement results. The FWE200DH provides the solution: The dust measuring device continually extracts the waste gas from the stack, dries it in a matter of seconds with a thermocyclone, and uses forward scattering to take high-precision measurements of dust concentrations, which are usually very low. The FWE200DH is constructed in a way that saves space, allowing it to be attached directly to the stack. It is fitted with a corrosion-resistant sampling probe made of PVDF. Since no moving parts come into contact with aggressive gas, the measuring device is very low-maintenance. The FWE200DH can be used for monitoring wet-scrubbing plants, taking measurements in saturated gas following flue gas desulfurization, and measuring dust concentrations in wet exhaust air.

## Measuring dust in fertilizer production

Specifically with the fertilizer industry in mind, SICK has expanded the FWE200DH dust measuring device to include an integrated flushing mechanism. This is because the highly hygroscopic salts that are typically used in fertilizer plants can lead to a heavy buildup of deposits in the measuring system.

Aside from ammonia, the waste gas in the prilling system of a fertilizer plant usually contains wet ammonium nitrate dust too. The FWE200DH extractive scattered light dust measuring device uses an ejector pump to draw this wet dust into the heated cyclone of the device, where the water is vaporized. The dry dust is then analyzed in the measurement cell and blown back into the process via the ejector. Thanks to the newly developed solution from SICK, it is now possible to rinse out the deposits in the measuring system resulting from this process.

Image: FWE200DH.jpg

Special solution for fertilizer production: FWE200 with integrated flushing mechanism

SICK is one of the world's leading manufacturers of sensors and sensor solutions for industrial applications. Founded in 1946 by Dr.-Ing. e. h. Erwin Sick, the company is headquartered in the German town of Waldkirch, in the Breisgau region near the city of Freiburg. It is a technology and market leader, maintaining a global presence with more than 50 subsidiaries and equity investments as well as numerous representative offices. In the 2014 fiscal year, SICK had around 7,000 employees worldwide and generated Group revenues of €1,099.8 million.