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In low humidity dryers, the control of drying performance is essential to optimize dryer operation. Different methods are used, but dewpoint measurement in the outlet of the dryer is the best solution. With small dryers the lack of a suitable instrument has been the reason to use secondary methods or leave the humidity measurement totally out of the drying system. The new miniature dewpoint transmitter from Vaisala, the Vaisala DRYCAP® Dewpoint Transmitter DMT142, offers many superior features combined with a small size and the lowest maintenance need on the market. The DMT142 is small in size but big in performance.

Dewpoint measurement in tight spaces

Vaisala DRYCAP® Dewpoint Transmitter DMT142

The Vaisala DRYCAP® Dewpoint Transmitter DMT142 is a new small-size dewpoint measurement instrument especially designed for industrial OEM applications like air dryers and plastics dryers. Due to its compact size and low-maintenance technology, the DMT142 allows dewpoint measurement to be included in even the smallest air dryers. The DMT142 offers fast and reliable measurement in a wide dewpoint range, and very low maintenance need due to the excellent long-term stability.

Optimized for small size dryers and chambers

The small size of the DMT142 makes it ideal for installations in tight spaces. The stainless steel housing with sintered filter protects the intelligent measurement electronics against dust, dirt and splashed water. The instrument is easy to install: the mechanical connection to the measured space or pipeline is made with standard 1/2" ISO threads. The electrical connection for supply power and out-

put signal uses a standard M8 connector. An additional serial line connection is available as a standard feature for maintenance purposes for a PC connection or for field checks with a portable indicator.

Vaisala DRYCAP® performance

The operation and performance of Vaisala dewpoint transmitters is unique. The lasting high performance is achieved using Vaisala DRYCAP® polymer sensor technology, which incorporates innovations like the patented autocalibration feature and sensor purge. These result in dewpoint measurement with excellent long-term stability, i.e. very small drift. This in turn means very low maintenance needs and costs, which is important in equipment like small-size air dryers.

Autocalibration and sensor purge

The sensor in the DMT142 includes a platinum resistive sensor combined with a humidity sensitive capacitive polymer sen-



The Vaisala DRYCAP® Miniature Dewpoint Transmitter DMT142's small size offers completely new possibilities for dryer control measurements in industrial dewpoint applications, including compressed air applications.

sor. During autocalibration procedure the slight warming of the sensors at set intervals indicates a possible offset drift to the measurement electronics and an automatic small correction is made when necessary to maintain the specified accuracy.

In the sensor purge the sensor element is heated up to clean the sensor from possible contaminants. The sensor as such is

already immune to most chemicals and the purge function improves this immunity even more. The DMT142 is also resistant against oil mist and vapor and particulate contamination.

Recovers fully after getting wet

Because the DRYCAP® sensor technology recovers fully after getting wet, the transmit- ➤



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ter performs exceptionally well in applications that occasionally experience process water spikes such as pipeline condensation during a system start-up or failure. Humidity sensors, which the dewpoint sensors in essence are, should obviously also be durable for high humidity levels, even for water immersion, but not all of them are. Most existing sensors need recalibration or even replacement after a high humidity peak in the process. However, the DMT142 withstands and measures high and low humidities alike. In addition to the very durable sensor, the warming also helps to keep the sensorhead dry in condensing pipelines, resulting in reliable and accurate dewpoint measurement in all conditions.

Additional features and options

The DMT142 has a variety of features that the user can choose from, including different output and installation options. Several different sampling cells are available and measurement can be performed directly in systems of up to 20-bar pressure.

Additionally, the hand-held DM70 can be used to confirm the performance of the DMT142 in the field without disconnecting the transmitter. By comparing the reading of a DM70 reference probe and a DMT142 transmitter the possible drift of the DMT142 can be seen in the DM70 display. If adjustment is needed the transmitter can be sent to a Vaisala Service Center. Most likely, the user will avoid unnecessary factory recalibrations when it is seen how small the drift is in Vaisala dewpoint transmitters. ●

Vaisala DRYCAP® Polymer Sensors incorporate Superior Measurement Technology

Vaisala DRYCAP® polymer sensor technology has advanced the state of the art of process dewpoint measurement. To fully understand the benefits of DRYCAP®, it is helpful to review some of the pros and cons of commonly used sensor technologies for dewpoint measurement. Prior to DRYCAP®, users had only two or three real measurement technology choices, each representing serious tradeoffs in performance.

Aluminum oxide based sensors

Aluminum oxide based sensors offer a measurement range extending below -100°C frost point, and in many cases are the only choice for process measurements in very dry gases. This mature technology is offered in

many form factors (intrinsically safe, portable, etc.) and is in widespread use. Unfortunately, these sensors require frequent calibration. They typically do not respond well to high humidity conditions, sometimes taking 24 hours or more to “dry down” after brief exposure to near saturated conditions.

RH measurement for dewpoint calculation

Polymer RH sensors used in conjunction with a temperature sensor are an excellent alternative for dewpoint measurements that are not too dry. Dewpoint is simply calculated from the measured RH and temperature.

In traditional relative humidity based dewpoint sensors, the uncertainty of calculated dewpoint increases rapidly as the dewpoint decreases. Vaisala's patented autocalibration maintains a ±2°C accuracy.

