



Edgetech Instruments

TECHNICAL NOTE

AcuDew FSV (Field Span Verification)



FSV allows users of the Edgetech Instruments AcuDew Moisture Transmitter to ensure optimum accuracy between laboratory calibrations by checking the span of the instrument and correcting for any deviation.

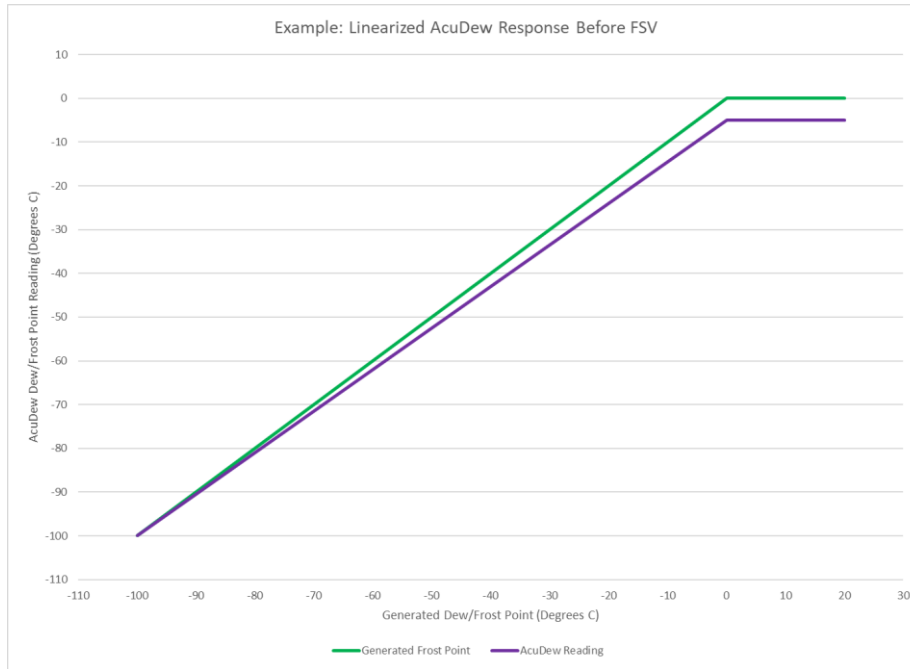
The FSV facility uses the fact that each sensor is designed and manufactured to give no further increase in response when it reaches its maximum moisture level. An AcuDew Transmitter, for example, having a full-scale value of 0°C dew point, will read 0°C dew point when exposed to a gas with this moisture concentration, and will continue to read 0°C dew point as the moisture concentration rises above 0°C dew point. The transmitter can, therefore, be adjusted to read 0°C dew point on any gas with a moisture concentration wetter than 0°C dew point, ambient air for instance, thus setting the calibration curve closely back to its original curve.

FSV should be carried out periodically, every 2 to 3 months, or when verification of instrument performance is required.

Normally we depict it as below, in this case for an AcuDew Transmitter calibrated with a range of -100 to 0° C dew/frost point:



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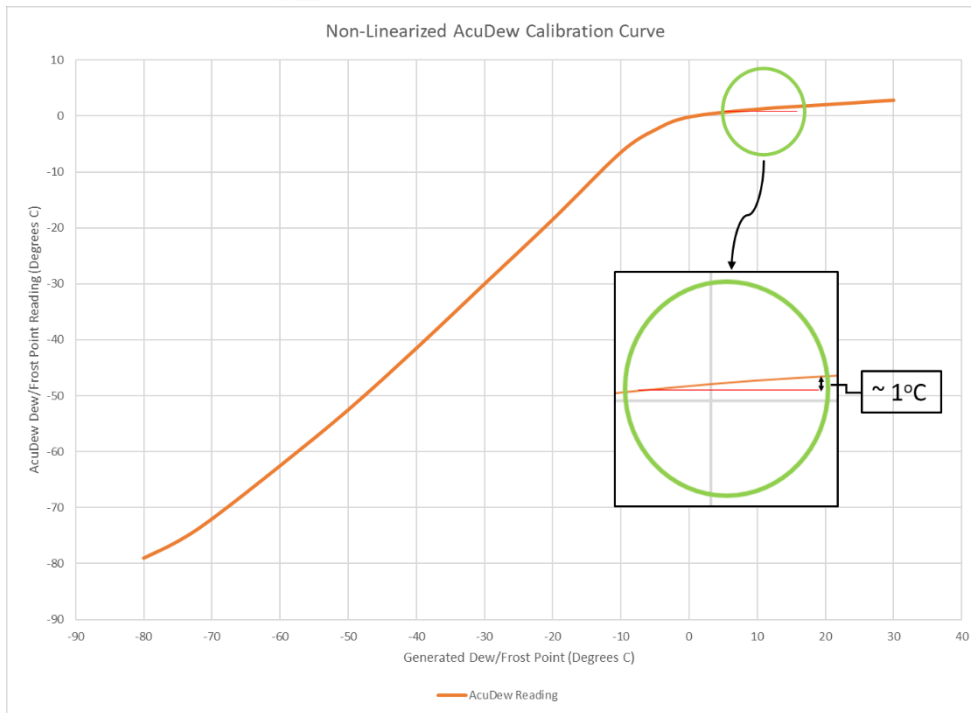


It is understandable that some users may be sceptical about this, pointing out that the ambient dew point can vary significantly on different days, which is very true.

If we now look at a typical sensor response without the linearization we can see that, although the response above the FSV point is not totally flat, it does level out very significantly.



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The difference in the indicated dew point between applied dew points of 5^o C and 15^o C is perhaps of the order of 1^o C (the degree of non-linearity will vary for different sensors.)

Considering that the response from -80 to 0^o C dew/frost point is linearized, it can be seen that an error in the FSV point of 1^o C dew point will, for example, translate to approximately 0.25^o C dew point at -60^o C. This is well within the stated accuracy of the instrument, and an improvement on what might have been the case without FSV.

Like many sensors, all aluminium oxide type sensors (often also referred to ceramic, metal oxide, and AlOx) are affected by changes in their calibration over time, some more rapidly than others. The Edgetech Instruments AcuDew Moisture Transmitter can limit the effects of this by the application of FSV.