# Trace Moisture Measurement in Welding - GTAW and MIG

**Application Note**

SHAW MOISTURE METERS

*Gas Tungsten Arc Welding (GTAW) and Gas Metal Arc Welding (GMAW), commonly known as TIG and MIG welding respectively, both rely on a shielding gas to protect the molten weld pool from atmospheric contamination. In both processes, even very small amounts of moisture in the shielding gas, gas delivery system or consumables can dissociate in the arc and introduce hydrogen and oxygen into the weld zone, increasing the risk of porosity, cracking and other weld defects.*



GTAW is typically used for high integrity, high purity weld applications, so routine monitoring of trace moisture at the torch head is often required. MIG welding is more easily automated and is widely used in production environments where weld criticality may be lower, so routine torch head moisture validation is less common. However, where verification is required, the same general measurement approach used for GTAW can be applied by disabling the wire feed and measuring at the torch head.

Controlling moisture remains essential in MIG welding as well as GTAW. Moisture may be introduced by contaminated shielding gas, gas line ingress, leaks, condensation or moisture absorbed by wire and other consumables. Under arc conditions, this moisture can break down and contribute to hydrogen pickup in the weld, which can lead to porosity, reduced ductility, hydrogen assisted cracking and inconsistent bead appearance.

Trace moisture measurement provides a practical means of verifying shielding gas quality and identifying contamination before it affects weld performance. Measuring at or near the torch head helps confirm that the gas delivered to the weld zone remains sufficiently dry after passing through regulators, hoses, fittings and other components. This supports stable process conditions, consistent weld quality and improved confidence in the integrity of the finished joint.

## Suitable Products



**Dewpoint Sensor**




**Handheld Hygrometers**



**Portable Sample System**

We design and manufacture dewpoint instruments for many different applications.

For advice, choosing the right product for your application, please contact us:

**+44 (0) 1274 733582** or **enquiries@shawmeters.com**