

# (Re-)Calibration

The field of compressed air, gas, and liquid monitoring applications carries significant risks, with little room for error. Precise measurement and monitoring of these essential parameters are critical for a number of reasons, including safe products and industrial process optimization. But the inevitable question is:

- ▶ **How can we be sure that our measurements are reliable in addition to being accurate?**

The answer lies in the meticulous and essential process of calibration.

The precision and dependability of measuring instruments are largely dependent on calibration. Safeguarding the integrity of the measurements in crucial applications of various industries is a critical practice that bridges the gap between raw data and actionable insights.

## Precision Matters

### Why Are (Re-)Calibrations required?

- ▶ **Accuracy Assurance:** By identifying and resolving drift brought on by environmental conditions, routine calibration preserves instrument accuracy. This guarantees precise measurements.
- ▶ **Regulatory Adherence:** To meet regulations, such as the Good Manufacturing Practices (GMP) in the pharmaceutical industry, many industries need calibrated instruments. Costly fines and penalties are avoided through calibration.
- ▶ **Quality Control:** Accurate measurements and consistent production are made possible by calibration, which is a crucial component of quality control.
- ▶ **Safety:** Accurate readings are ensured by calibrating instruments used in safety-critical processes, such as pressure gauges in gas pipelines, which lowers safety risks.
- ▶ **Cost savings:** By addressing equipment issues early to prevent larger problems, routine calibration reduces the need for expensive production errors, retests, and adjustments.
- ▶ **Environmental & Operational Factors:** Uncontrollable environmental and operational conditions, such as temperature fluctuations and environmental changes, can affect instrument accuracy over time. Regular calibration helps counter these influences, providing reliable measurements despite external challenges.



Sensors that have been contaminated through environmental factors

### When Should You Calibrate Your Sensor?

- ▶ Recommended at least once per year unless otherwise stated:
  - ▶ S120 Oil Vapor Analyzer – once per year or 6000 hours
  - ▶ O<sub>2</sub>, CO<sub>2</sub> and CO sensors in S605 & S606 – reference gas calibration once per year and replaced every 24 months
- ▶ When there is doubt about the accuracy of results
- ▶ When there has been high contamination or faults in the system the sensor is installed

### Beyond Recalibration

- ▶ Did you know that SUTO iTEC's Recalibration Service includes expert cleaning and inspection?

You not only benefit from precision calibration but also expert cleaning and inspection.

Learn more about our (re-)calibration process on the next page.

# (Re-)Calibration Service Process at SUTO iTEC

SUTO iTEC's calibration service is a complete process, from cleaning the sensors, through precise testing and operational capability of all components, to restoring the precision of the sensors.

## 1 Customer Sends Sensor

1. Fill out an RMA form, send a copy via email, and add a printed copy inside the package with sensors
2. Add all the details of the sensor: Model number, serial number, etc.
3. Add details of the work to be carried out (Calibrations, repairs, output exchange, etc.)
4. Ensure the packaging is safe/secure for the sensors or transport cases

Download RMA Form

www.suto-itec.com/rma



## 2 Sensor Arrival

1. Sensors are received and service income document created and sent to client
2. Sensors are handed to our calibration technician for pre-inspection
3. General visual inspection done
4. If any defect is reported, it is tested and/or fixed
5. If damaged on the client side, a quote is created. Otherwise, repaired under warranty
6. Sensor is handed to the relevant calibrations division



### 3.1 Calibration Station as Found\*

1. Sensors are connected to the calibration system and verified against acceptable parameters.
2. Certificates with a report are created and sent to the client

\* **As found** – nothing is done to the sensor in terms of cleaning or replacing parts or filters. We receive the sensor and test/verify the values. A certificate is created and provided to the client.

### 3.2 Calibration Station as Left\*

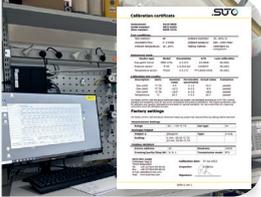
1. Sensors are cleaned
2. Wiring and connectors were inspected for damage
3. Sensors are connected and inspected for leaks
4. Firmware and software updates are done if required, client settings are saved
5. Calibration is done using the calibration software
  - ▶ The software is fully automated (no human error)
6. If it fails, the customer is notified and further actions are taken (quote for replacement or repairs etc.)
7. Client settings are reinstalled into device
8. Certificates are created and sensors are sent for the final test

\* **As Left** – sensor goes through our full service and calibration procedure. Sensor is re-calibrated and certified



## 4 After Calibration (Final Test)

1. Sensors go through final testing after calibration
2. Signal outputs are tested
3. Labels are inspected
4. General electronics are tested (Bluetooth, power supply, etc.)
5. Displays are inspected
6. Final visual inspection



## 5 Packing and Shipping

1. Sensors are packaged for safe return
2. Certificates are checked for any errors
3. All components were checked to see if nothing was missing
4. Invoices and shipping labels, if required, are printed and issued



## Calibration Equipment and Laboratories at SUTO iTEC

With our state-of-the-art laboratories in Germany and Hong Kong, we are trusted partner in calibrating Flow, Dew Point, Oil, Particles, and Water monitoring equipment. Our world-class facilities and expert teams ensure that the instruments meet the highest standards of accuracy and reliability, no matter where you are on the globe.



### Flow Calibration

- ▶ Accuracy: < 0.5% o. RDG
- ▶ Range: 0... 260 m/s (20°C 1000 mbar)
- ▶ Pressure: 0... 0.7 MPa
- ▶ Pipe sizes: DN8... DN100
- ▶ Medium: Compressed Air and technical Gasses
- ▶ References: Sonic Nozzles, Laminar Flow Elements, Turbine Meter, Coriolis Meter



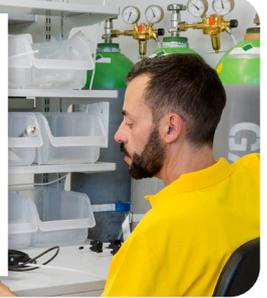
### Dew Point Calibration

- ▶ Accuracy Frost/Dew point:  $\leq \pm 0.1$  °C
- ▶ Accuracy Temperature:  $\leq \pm 0.07$  °C
- ▶ Calibration Range: -70... +20 °C Td
- ▶ Reference: MBW 373 Dew Point Hygrometer / Dew Point Mirror



### Oil and Particle Calibration

- ▶ Accuracy: >0.5 ppm,  $\pm 1.8$  % uncertainty ; < 0.5 ppm  $\pm 2.5$  % uncertainty
- ▶ Gas: Isobutylene in synthetic air
- ▶ Reference: Traceable & certified gas
- ▶ Range: 0.000... 10.000 mg/m<sup>3</sup>
- ▶ Multiple activated carbon filtration system for accurate zero-point calibration



### SUTO Exchange Service

- ▶ Do you want to get rid of downtimes, forth and back shipments and additional overhead, due to sensor recalibration? SUTO is offering an efficient customer-orientated Exchange Calibration Service for dew point and air quality instruments to simplify sensor recalibration.

## Talk to an expert

At SUTO iTEC, we understand that recalibration is a crucial aspect of maintaining measurement accuracy. We are committed to making the recalibration process as effortless as possible for our valued customers.

Should you require recalibration services for your instruments, please feel free to reach out to our dedicated team.



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Be smart. Measure it.