Description of equipment

Monitoring the level of moisture in a compressed air system is carried out with the type of application in mind and recorded with the help of a dewpoint measuring instrument.

The dewpoint measuring instrument for monitoring moisture is, in its usual form, composed of the humidity value encoder (humidity sensor) with integrated electronics and the moisture measuring sensor. Both units are linked by means of a sensor lead. Depending on what is required from the installation being monitored, a plotter or signal emitter is connected to the terminals of the moisture measuring instrument.

Dewpoint measuring gauges are used for continuous measurement of absolute humidity of compressed air within the measurement range of -80°C to +20°C. The digital reading indication refers to a pressure of p abs = 1 bar. For other operating pressures, a re-calibration (verification) for the targeted correction value is necessary. The possibility of selecting the measurement range makes it possible to adapt the measurements accurately to the application in question.

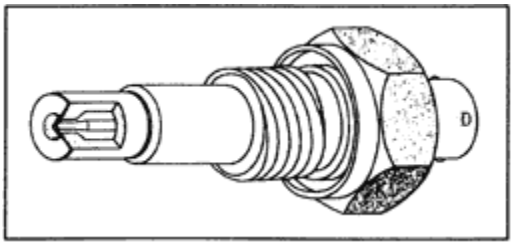

Fig. 8.3.1

The humidity measurement encoder (Fig. 8.3.1) consists of a humidity sensor and integrated electronics. The actual measuring element is an aluminium cylinder, the and face of which is covered by a thin layer of porous aluminium oxide. As an opposing electrode, a very thin layer of gold is vapour deposited onto this.

Depending on the level of the water vapour partial pressure, more or less water molecules penetrate the porous oxide layer of the sensor. The change in humidity resulting from this, causes a change of energy consumption capacity within the humidity measuring encoder.

Sensor capacity forms part of an oscillator (vibration generator) integrated into the sensor and determines the former's frequency. The current pulses emitted by the measuring value encoder are converted into voltage pulses and, then transmuted into a D.C. voltage at the input of the measuring instrument. The linearised voltage becomes a digital reading via a transducer and a digital counting circuit.

The entire measurement encoder possesses a characteristic graph which is linearised. This ensures a high level of accuracy and simple adaptation for changing operating parameters. A limit switch which has been pre-set for an expedient value of dewpoint temperature or of moisture content, signals the
limit value as an alarm or switching flag. These signals emit with 4 - 20 mA as analogue outputs.