

Measuring Cartridge The Unique Difference



Fig.1: Exchanging a measuring cartridge at Elster



Fig.3: Cartridges in preparation for shipping to Asia

Fig.4: Patent registration

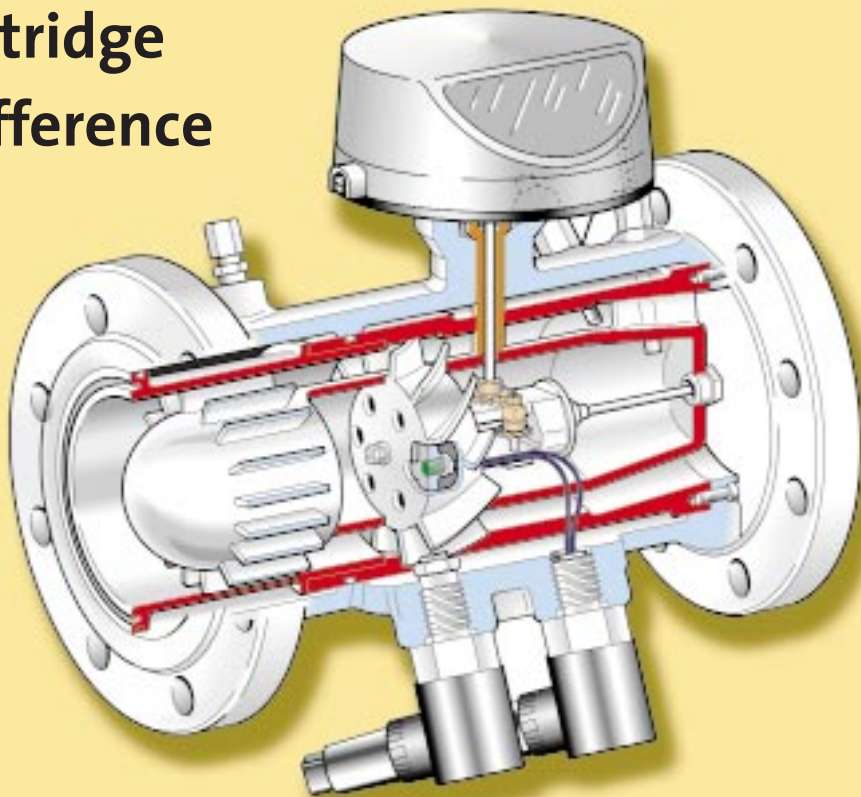


Fig.2: Cross-section of the Elster turbine meter showing the measuring cartridge

Turbine meters from different manufacturers are designed in very different ways. One of the most important differences can be found in the way the measuring unit is installed in the housing. In Europe, the majority of designs include the axial-mounted measuring unit. The turbine wheel, the bearings and the flow channel are installed in the housing from the side (axial). In America, however, it is more common to install the measuring unit from the top. The

housing has a third large opening at the top and the gear unit is installed through this opening. In the case of the axial gear units, the housing is normally a part of the measuring unit, i.e. the measuring behaviour is also influenced by the surface structure of the housing.

A special feature of Elster's axial-mounted measuring unit is the exchangeable cartridge. Figure 1 shows the exchange of the cartridge from a housing of the late eighties. The measuring behaviour is only influenced by the design and the manufacture of the cartridge. The pressure-tight housing is, therefore, no longer a part of the flow channel and has absolutely no influence on the accuracy of the turbine meter (Fig. 2). This means that there are basically three major advantages compared to the traditional design: forces from tension in the pipeline cannot affect the measurement for maintenance purpo-

ses or in the case of damage to the meter, only the cartridge needs to be removed and not the complete device if the consumption is lower, smaller cartridges can be installed in standard housings and these smaller cartridges can then measure the lower volumes more accurately.

The cartridges are manufactured separately from the housings and can be calibrated in what is known as "master housings" on test rigs. This makes it possible to replace old or faulty cartridges with new, already-calibrated ones in a very short time on site in the gas station. The advantage of being able to exchange the measuring cartridge becomes more apparent the further away the device is from Elster's factory (Fig. 3):

- it is not necessary to transport the complete turbing meter back to Elster
- the weight and the packaging of the cartridge is lower
- transport times can be reduced
- the storage of cartridges is cheaper than that of complete meters
- the exchange of a cartridge on site does not have to be done by Elster personnel.

The above-mentioned features are unique to the design of the Elster turbine meter and the patent for this has been registered in many countries. Figure 4 shows one of our patent registrations which we have in Japan, USA and in Europe.

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