

LEAKS? SHRINKAGE? LOSSES?

TC diaphragm meters

STOP under-registration

Just like goods in any normal clothing or food store, natural gas is also sold in many 'steps' – from the producer to the initial transporter, then through national transporters to regional distributors. They in turn again sell to the utilities, who finally bill the end-user.

Everyone in this chain would of course like to make sure that they do not sell less gas than they actually bought. Preventing and eliminating leakages is one of the measures that all of the parties involved undertake in order to get the environmentally-friendly natural gas to their customers in as safe a manner as possible. If, however, there are any losses due to systematic errors in the metering system, then it is no use searching for leaks. The only thing to do is to improve the metering system.

As so often happens in life, the one at the end of the chain is hit the hardest, in this case the local supplier. In all of the intermediate steps there are large amounts of gas to be measured and this justifies spending a lot of money on determining how much is actually passed on. Volume correctors and gas chromatographs in gas stations ensure that the energy is measured very accurately. At the other end of the pipe, i.e. in the household, the actual volume is also measured very accurately. However, to determine the energy content of the measured gas, a certain amount of estimation is necessary. Other essential factors such as pressure, calorific value and temperature are not available when measuring with a normal diaphragm gas meter. The pressure and calorific value can be determined relatively precisely but the temperature cannot.

Because of this, many countries have established regulations setting a specific gas temperature, usually 15°C or 20°C, which is to be used for calculating the energy content. In many Central and Eastern European countries as well as in some Western European countries gas meters are installed outside the houses. Studies have shown that the gas temperature in such cases corresponds approximately to the surrounding temperature and, therefore, can reach temperatures as low as -20°C.

The gas equation tells us that if the temperature changes by 3°C, the volume of the measured gas changes by 1%. A real gas temperature of -20°C and a billing temperature of 15°C can therefore lead to 12% under-registration, a loss which is borne by the gas supplier. In the summer, when high gas temperatures could compensate for this loss, very little gas is consumed. This means that the temperatures in the colder periods of the year determine the real metering conditions. If you take the actual average temperature over the year in installations in a cold environment,



BK-G4T measuring unit and a BK-G16 commercial diaphragm meter with TC-90/K



the real temperature would be between -5°C and +10°C. Depending on the price of the gas and the consumption, the annual loss of revenue can amount up to 30 Euros.

Errors such as these can be avoided by investing in better metering technology. For households and for the lower end of the commercial gas meter range we offer our BK-G2.5T to BK-G10T diaphragm meters which include mechanical temperature compensation. Over and above this, the TC-90/K or TC-90/T electronic temperature correctors are also available. If you have outside installations, the extra costs for diaphragm meters with temperature correction devices are very often recovered after only a few months. Why not come and speak to us?

FROM PETER HAMPEL, ELSTER GERMANY

hampel@elster.com