

Smart metering: remote shut-down of diaphragm gas meters

No compromises as far as safety is concerned

Many aspects need to be considered when introducing and implementing full-coverage Smart Metering. As well as remote readout from diaphragm gas meters, Smart Metering and the associated exchange of conventional diaphragm gas meters offer the option of using meters with additional functions which have a crucial impact on the success of the business model to be implemented. In many cases, payment services such as changes of apartment, tenant and supplier result in tremendous costs and staff deployment, be it because of the tenant in arrears who keeps every apartment door locked, or the dead-beat tenant who will certainly be the last one to think of switching off radiator thermostats, boilers and immersion heaters.

Shut-down of diaphragm gas meters is essentially employed today if prepayment systems are used. The disadvantage of conventional prepayment systems, where the prepayment card is used as the medium of communication, is the tremendous logistic and technical effort required to install them, not to mention full-coverage installation. Payment points at which the prepayment card can be recharged must be set up and serviced, and appropriate partners for installation, operation and servicing are essential.

Prepayment cards can become bent or get lost, and must be in stock and made available to the customer accordingly. This very high operational effort overall is one of the essential reasons why prepayment solutions have not become greatly established on the market to date. Even traditional prepayment markets such as Great Britain have realised the opportunity afforded by full-coverage roll-out of Smart Metering, i.e. replacing conventional card prepayment by a far more efficient system based on meters which can be shut down remotely, and new payment methods (e.g. the use of mobile phones).



Gas meters – soon capable of being read remotely?

Even our neighbours in The Netherlands have discussed the topic of remote shut-down of meters in-depth, with the result that the installations are to be equipped with remotely switchable meters during the forthcoming replacement of conventional electricity and gas meters in the next few years, and this will be on an obligatory basis.

The re-start procedure following shut-down can be viewed as an essential aspect in the use of diaphragm gas meters that can be shut down remotely. This procedure is uncompromisingly linked to one condition: if the customer's gas tapping points are open, the gas supply may not

be restored. So the meter must feature a method capable of checking for open tapping points. Manufacturers use various concepts to conduct such checks. One method is based on the use of additional electronic circuitry in the meter or in the meter's index. If the meter is re-started, the gas flow rate is metered as a function of time. If the flow rate is higher than a permitted maximum, e.g. if gas tapping points are open, the valve in the meter closes. This procedure requires the use of an appropriate, fail-safe electronic and metering system since re-starting is a critical process from a technical safety point of view.

Elster-Instromet shows presence North Sea Flow Measurement Workshop

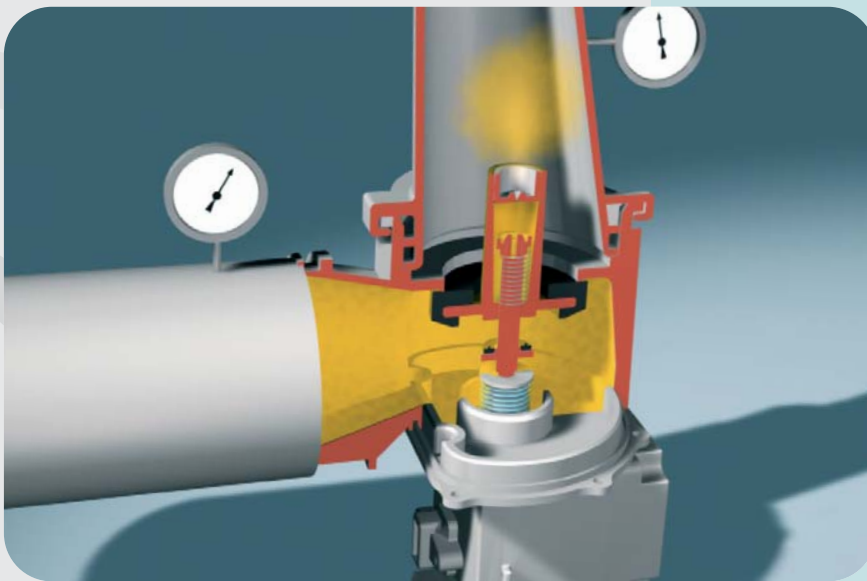
26th International Workshop
21 – 24 October 2008
Fairmont St. Andrews Hotel
St Andrews, Scotland



Elster-Instromet will be presenting its newly updated Q.Sonic ultrasonic flow meter that includes a localised display unit, all metal transducers, multi-point calibration (enabling a 0.1% meter), along with the newly released 'Beta' version of its UniGuard PC user software. The unit is MID approved and meets the requirements of ISO/CD 17089 Part 1, AGA-9 and OIML R-137-1".

Other highlights are the flow computer FC2000, SM-RI 2 bidirectional turbine gas meter and the ISS demo software.

More information about the programme and schedule can be found on the homepage www.tuvnel.com



Smart valve – a valve incorporated in the gas meter

In this connection, it is possible to consider the use of additional methods, such as a re-start button on the gas meter's index, at best as an additional option.

The use of a re-start button on the meter necessitates appropriate and possibly regular training of the end customer. Ultimately, the user must be able to operate the system correctly.

The method of safe re-starting of diaphragm gas meters, developed in this context by Elster, is based on purely mechanical or physical principles. This

involves a valve situated in the diaphragm gas meter's outlet channel, a valve with an additional bypass functionality. On re-start, the entire valve disc is not opened, but merely a bypass which, dependent on national regulations, allows a gas flow rate to the customer's piping that is limited and technically safe. The basic mode of operation is similar to that of the low-pressure gas cut-out in the gas pressure regulator millions of which are in use, the difference being that the bypass aperture is closed too whenever the valve is closed. If all customer appliances are closed, the rising pressure is used to fully open the valve disc and unrestricted gas supply is thus restored. If customer appliances are

opened, it is not possible for adequate opening pressure to build up and the valve disc remains closed. This procedure does not require any interaction on the part of the customer and allows safe re-starting.

Since there is clearly rising interest in the use of diaphragm gas meters which can be shut down remotely, the DVGW is also dealing with valves integrated in the meter. A study group that is to elaborate test requirements of gas meters with integrated valve is taking this topic into account.

One thing is certain: Smart Metering is coming and, consequently, the question as to whether the meter is to feature remote shut-down capability or not must also come up. Possible problems concerning the radio signal reception or battery service life of meters are unpleasant. They increase the effort and expenditure but are not critical for safety. By contrast, safety is top priority when re-starting an installation after remote shut-down.

That is why we think that there can be no compromises as far as safety is concerned.

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