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Smart Valve

Smart metering

Applications

Media: natural gas, propane and butane (Gases in acc. with EN 437)

Industries: gas industry

Tasks: remote gas supply connection/disconnection in diaphragm meters



Brief information

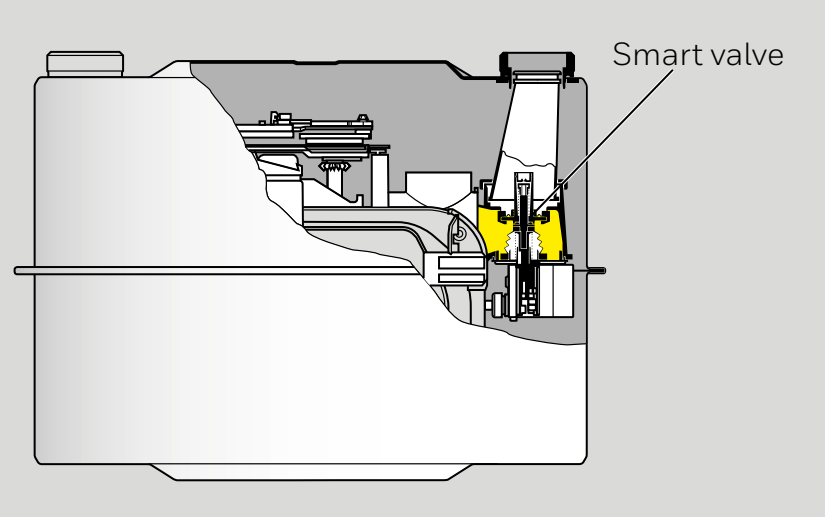
The implementation of smart metering offers customers and utility companies many new possibilities. One of these is the remote reading of data.

By replacing conventional diaphragm gas meters, meters with an additional function can be used, e.g. remote connection and disconnection of the gas supply in diaphragm gas meters.

This reduces enormously the costs and labour caused by consumers in arrears.

An important safety criterion when using remotely switchable diaphragm gas meters is the possibility of re-starting after disconnecting the gas supply. This procedure is subject to one condition: the gas supply may not be restored if any of the customer's gas tapping points are open. For this reason, the meter must be capable of checking for open tapping points.

With the smart valve, the customer does not need to additionally intervene in the remote switching. The independent testing agency KIWA Gas Technologie B.V. NL assessed this valve positively.



Main features

- Remote disconnection of the gas supply
- Safe re-starting without customer intervention
- Automatic gas enable only once all of the customer's gas tapping points are closed
- Closing function like that of a shut-off valve
- No energy consumed when valve is open or closed

Function

Remote shut-down

The smart valve with integrated bypass is open on delivery.

The gas meter designed as a smart meter receives the signal for remote shut-down from the data management software.

The signal is forwarded to the smart valve's gear motor. The valve disc closes the valve seat and the bypass via the gear rack. The gas supply is shut off.

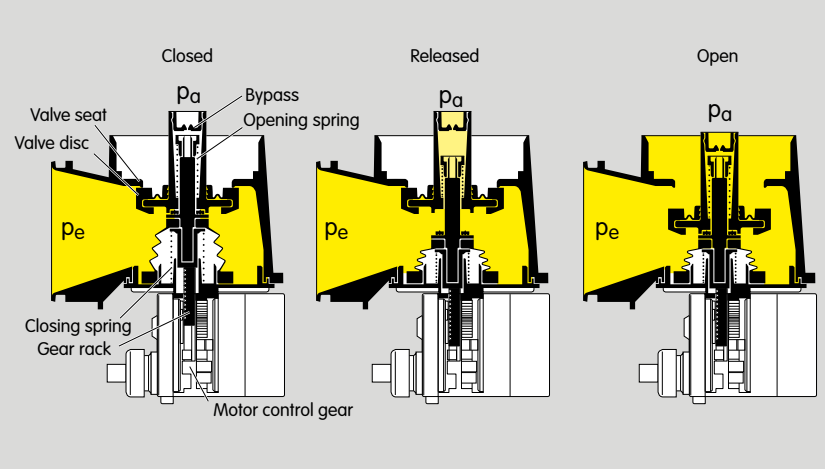
Re-starting

During re-starting, the valve disc is not automatically opened, only the bypass is opened if necessary. This releases a minimal gas flow rate. If all customer appliances are closed, the outlet pressure pa increases. The valve seat remains closed until the pressure gradient between inlet pressure pe and outlet pressure pa has dropped to approx. 8 mbar. The opening spring pushes the valve disc open. The smart valve is open and fully restores the gas supply.

If customer appliances are opened, however, it is not possible for adequate opening pressure to build up and the valve disc remains closed. The gas flow rate that flows over the bypass remains limited until the customer appliances are closed.

Depending on national regulations, a limited and technically safe gas flow rate in the customer's piping is allowed – see Technical data.

Re-starting does not require any interaction on the part of the customer.



Power supply

The power required for the purposes of remote switching of the valve and reading of the index is provided from a source external to the index, drawn from the mounted communication module. This means that the part of the meter of relevance in terms of calibration technology remains unaffected.

The status "Open/Released" and "Closed" can be called up at any time from the customer's data management software.

If there is no data transmission, no electrical energy is consumed.

The cable-based communication operates without a battery. An internal capacitor ensures a minimum waiting time of < 1 minute between each valve operation. The first charging process of the capacitor following commissioning or after a power shut-down causes a start-up time of max. 20 minutes. During this time period too, transfer of the meter reading is possible.

Technical data

Ambient temperature: -10 to +40°C.

Opening time from closed to open/released state: ≤ 4 s,

Closing time: ≤ 0.5 s.

Min. operating pressure: 17.5 mbar.

Allowed flow into the customer's piping:
valve released: for Nl: max. 13 l/h at 35 mbar,
valve closed: max. 5 l/h

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