

# ENGINEERING REPORT

## Safety Equipment for Natural Gas Extraction

SIL

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## Safety Equipment for Natural Gas Extraction

When natural gas is being extracted from gas fields only, the borehole is build up as a so called gas-probe. This gas-probe is hard-piped and flange mounted onto a valve manifold.

The valve manifold itself is the borehole completion – it consists of two main slide valves, of which one is made out as an automatic safety slide valve. In case of critical process pressure the safety slide valve securely closes the gas-probe - thus in normal operation the applied natural gas can be extracted safely from the borehole and fed in a pipeline.

As most of the boreholes are somewhere on the free field and have no electrical supply, pneumatically powered components are used since compressed air can be stored in pressure tanks easily.

The control is set up with two pneumatic safety pressure limiters, whereof one monitors the minimal and the other the maximal natural gas pressure. Also a pressure gauge is mounted for visualizing the actually applied natural gas pressure.

In general these three measuring instruments are flange mounted onto the process piping. Furthermore a hand valve for manual operation. It is mounted in the control-air line and hard-piped with the two pressure limiters.

An expensive and work-intensive design!



PINTER has integrated all these and more features into a single safety control and measuring device:



For example, an additional pressure switch to monitor the control air has been integrated. In case of pressure drops or failures a battery-powered intrinsically safe (EEx i) minimum-alarm is triggered.

The actual control air pressure is also clearly readable from the integrated pressure gauge. Obviously the control air monitor is designed to close the safety slide valve in case of an error.

Minimal and maximal switch points are freely adjustable from 0 to 160 bar. This wide adjustment range guarantees a stable natural gas supply. As with the control air, the actually applied natural gas pressure is indicated.

Also an emergency-shut-off function was integrated in this measuring and control device.

Basis for both, the process monitoring and the control air monitoring is the well proven and wear-free MANOCOMB precision pressure switch series

The process connection of the whole unit is made out as a flange-type diaphragm seal and protects the integrated measuring instruments from damages through solid material which might be carried along with the natural gas as well as from dynamic pressure boosts.

The diaphragm itself is mechanically protected from deposits and abrasive rock particles by a special coating.

An elaborately designed installation is turned obsolete with this combined measuring and control unit!



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