

ARMANO

problem
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Pressure Measurement in Alkylation Units for the Gasoline Production



Application:

Bourdon tube pressure gauge RSChG 100 – 6 with diaphragm seal MDM 7910 in primary and secondary Monel design for the application in alkylation units

for refineries

Alkylation units in refineries are used for the production of high-octane fuels by using hydrofluoric acid (HF), and more rarely also sulphuric acid, as catalyst. Butene and propene, which are products of the FCC process (fluid catalytic cracking), are used as feedstock.

The HF alkylation unit is a key element of refining. It plays a crucial role in providing one of the most important feeds to gasoline blending.



The problem:

The significance of the HF alkylation has grown side by side with the increasing number of FCC units in refineries. Handling hydrofluoric acid, however, poses specific hazards. HF values in the air can reach high concentrations without being noticed as odour. Since HF interferes with the nerve function,

it is possible that burns are not noticed immediately.

HF vapour leakage and medium leakage has to be avoided in any circumstances.

Application:**Bourdon tube pressure gauge RSChG 100 – 6 with diaphragm seal MDM 7910 in primary and secondary Monel design for the application in alkylation units****for refineries****Our solution:**

Monel 400, a nickel-copper alloy with high strength and outstanding corrosion resistance, is an important structural material when dealing with hydrofluoric acid. The alloy is used for instruments, valves, pumps, shafts, fittings, fasteners and heat exchangers.

The Monel 400 Bourdon tube pressure gauge with chemical seal by ARMANO has been especially developed for the application in HF alkylation. Specific constructional and production-related features have been taken into account.

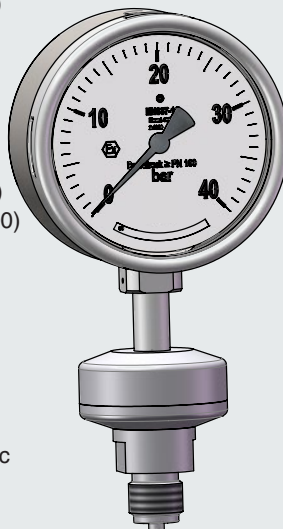
A redundant design and monitored manufacturing processes guarantee a reliable pressure measuring instrument for this demanding medium.

Our advantages at a glance:

- ◆ **Fully welded construction** – All components are welded and helium leak tested. Thus, no leakages can occur due to vibrations or temperature variation.
- ◆ **Double medium barrier** – Chemical seal and pressure measuring instrument are made of Monel and suitable for hydrofluoric acid. In case of failure of the first medium barrier, the pressure gauge still offers full protection against leakage of hydrofluoric acid.
- ◆ **Overrange protected construction of the pressure gauge** – Even after considerable overload, the measuring properties and the accuracy class 1.0 remain unchanged.
- ◆ **Guaranteed water-free manufacturing process** – All production steps are absolutely dry and water-free.
- ◆ **Certified manufacturing process** – Any mix-up of materials is precluded.
- ◆ **Certified welding procedure** – carried out by externally certified employees.
- ◆ **Weld seam inspection** – by externally qualified personnel.
- ◆ **Individual certificates and documentation** – for each instrument.

Our instrument in detail:**The HF pressure gauge: RSChG 100 – 6vDW welded to MDM 7910 M400****Bourdon tube safety pressure gauge RSChG 100 – 6vDW**
(model overview 1000 and data sheet 1600)

- ◆ Case: with bayonet ring stainless steel
- ◆ Nominal case size: 100 mm (4")
- ◆ Process connection:
 - ◆ bottom connection
 - ◆ welded connection piece d8x5
 - ◆ material 2.4360/N04400 (Monel 400)
- ◆ Wetted parts: 2.4360/N04400 (Monel 400)
- ◆ Pressure ranges: e.g. 0 – 40 bar (S), DIN EN 837-1 (dial inscription)
- ◆ Version: overrange protected
- ◆ Accuracy: class 1.0
- ◆ Movement: stainless steel
- ◆ Window: laminated safety glass
- ◆ Case filling: glycerin 86.5 %
- ◆ Marking according to ATEX with II 2GDc
- ◆ CE marking (with or without)
- ◆ Adjustment with dry air (water-free)

**Diaphragm seal MDM 7910v**

(model overview 7000 and data sheet 7935)

- ◆ Process connection:
 - ◆ G ½B with orifice Ø 10 mm (0.39")
 - ◆ material 2.4360/N04400 (Monel 400)
- ◆ Wrench flat: AF 21
- ◆ Nominal pressure: PN 250
- ◆ Material body: 2.4360/N04400 (Monel 400)
- ◆ Material membrane: 2.4360/N04400 (Monel 400)
- ◆ Filling fluid: FO1 (halocarbon)
- ◆ Operating temperature: t_A +20 °C
- ◆ Ambient temperature: t_U –20 to +60 °C
- ◆ Inspection certificate 3.1 according to EN 10 204 on the material tests for bar stock re-stamping certificate
- ◆ Material quality certificate for the membrane including heat treatment condition
- ◆ Chemical seal with batch number body and membrane stamped at the coverage
- ◆ Water-free including sticker "dried and water-free"