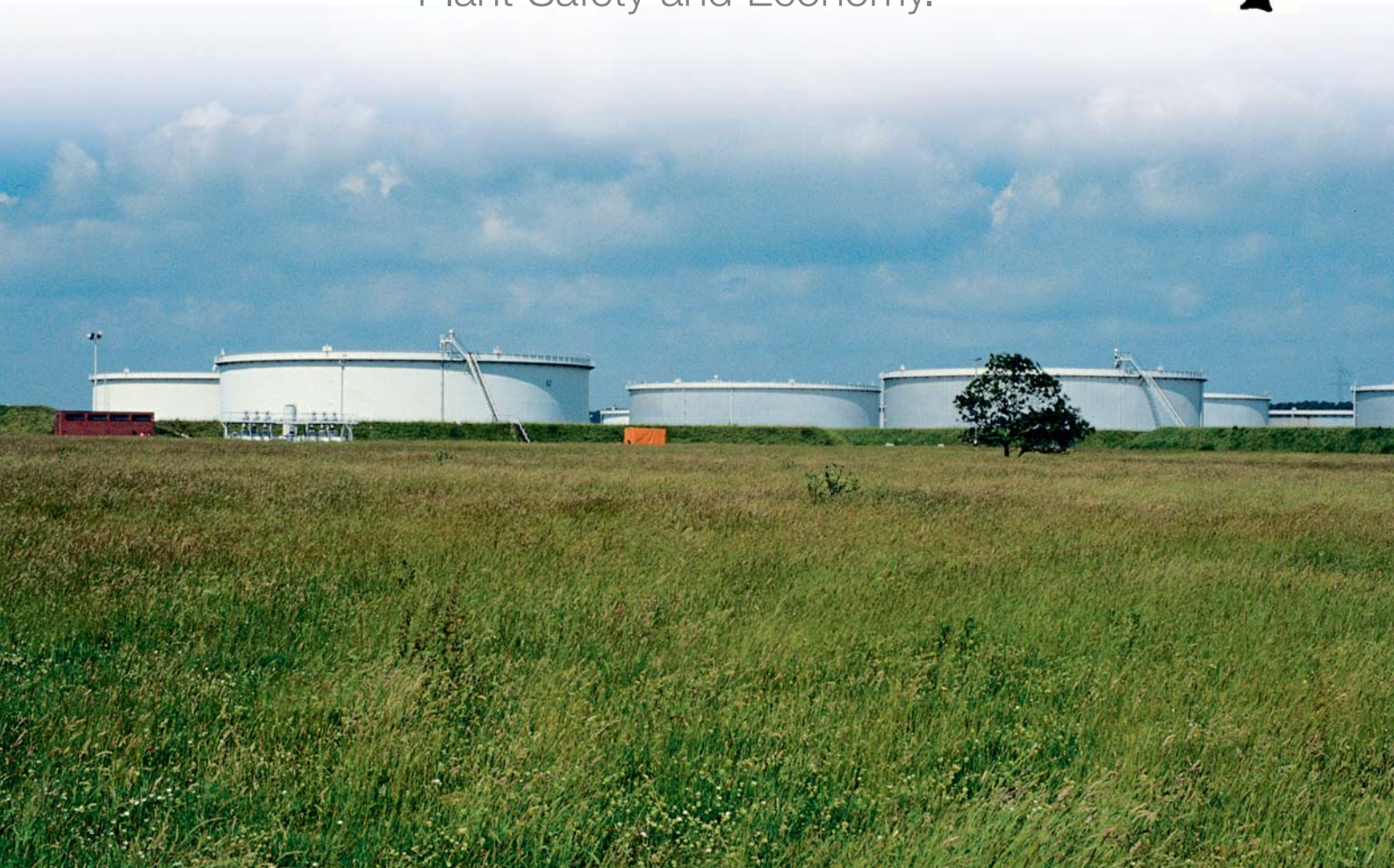




Advanced Floating Roof Sealing Technologies
to the Benefit of your Environment,
Plant Safety and Economy.



History of IMHOF Innovations



IMHOF Tank-Technik, based near Frankfurt in Germany, has designed, developed and manufactured seals for floating roofs since 1980. With its innovative design and quality of manufacture. IMHOF is now the most successful supplier of tank seals for floating roofs in Europe.

Mr. Imhof, the founder and designer, is also an advisor to national and public codes of hydrocarbon emission control in Europe.

- 1980** First rim mounted secondary seal installed in Germany (IM-WSI).
→ Increase of floating roof efficiency from 90 % to 95 %.
- 1981** Introduction of the first water absorbent secondary seal worldwide.
→ The floating roof tank does not need an additional fixed roof.
- 1983** Introduction of spring loaded primary seals (IM-PFYT, IM-PGT).
→ Primary seals with foam elements or with liquid filling can be substituted.
- 1987** Internal floating cover with flexible membrane (VARIOFLOAT).
- 1989** Introduction of integrated primary – secondary seals with wax scrapers for crude oil tanks.
→ The tank walls and the floating roofs stay free of wax deposits.
- 1990** Introduction of guide pole seals.
→ The efficiency of the floating roof is increased to 98 %.
- 1995** Supply of MULTISEALS (threefold seals) for internal floating roofs.
→ The efficiency of the tanks is increased to 99 %. Vapour balancing and vapour recovery, are no longer first choice.
- 2001** Introduction of new pantograph systems with integrated compression spring elements.
→ The centering of floating roofs is increased.
- 2005** Introduction of threefold floating roof seals and guide pole cover HELICOAT for external floating roof tanks.
→ Costly vapour balancing and vapour recovery systems are no longer required.
- 2006** TRICON, an innovated floating roof control system is introduced.
→ A number of remaining side issues of floating roof technology can be solved.

Rainwater Seals for 'White Products' Storage



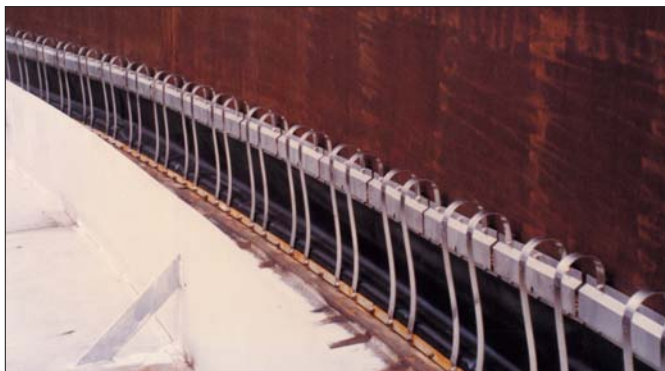
The water tight secondary seal with water absorbent seal component, is the most important innovation in tank sealing technology within decades.

Practical tests by seal users have demonstrated 50 to 100 times better water removal of rainwater flowing down the inner tank wall, in comparison to standard (none absorbent) secondary seals and lip seals.

Your storage tank for 'white' storage liquids, like gasoline, E 85, jet fuel, MTBE, alcohol, naphtha, etc. will not need an additional fixed roof or umbrella roof. With the IMHOF water seal you can guarantee the quality of your stored product.

The corrosion of the tank bottom, and the need for frequent rainwater drainage of the tank are drastically reduced.

The water seal in the tank



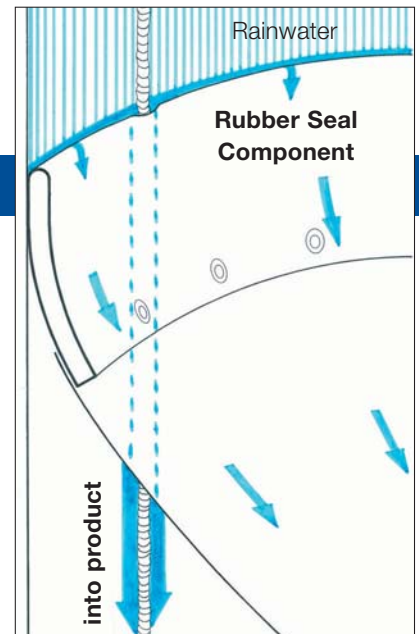
Seal type IM-WSW



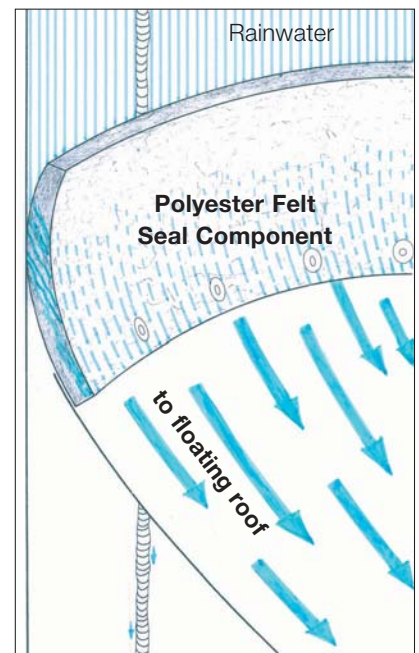
Seal type IM-WG



Seal type IM-UW

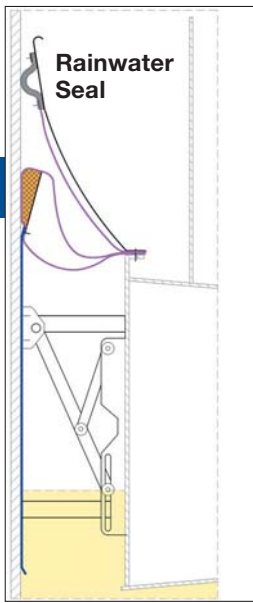


The non absorbent seal component collects the rainwater above the seal and let it through at weld seams or other irregularities on the tank wall.

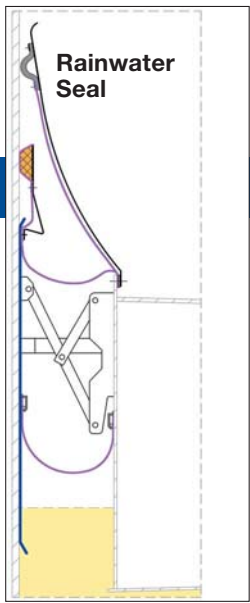


The fibrous water seal absorbs the rainwater at first contact with the seal. The water flows through the felt material and is guided by the sealing curtain or weather shield to the floating roof.

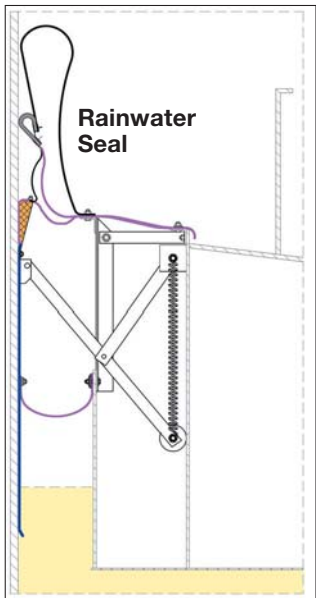
Threefold Sealing Systems (Multiseals)



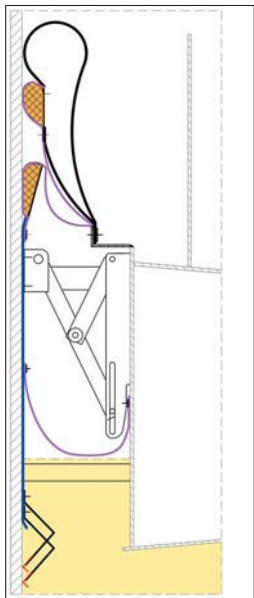
IM-GLS2 + IM-VW



IM-GH + IM-SG2 + IM-VW



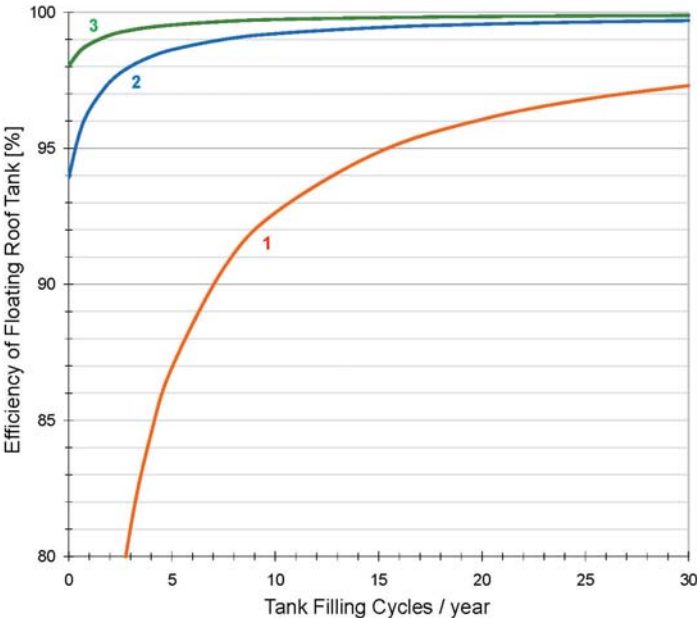
SIPM seal + IM-SG2 + IM-UW



IM-GHXS2 + IM-WSA

A floating roof tank with an IMHOF Multiseal can substitute a fixed roof tank with vapour balancing and vapour recovery, and will save a lot of money and emissions.

Existing floating roof seals can be upgraded to the IMHOF Multiseal system. In floating roof tanks storing 'white products' the third seal (top seal) shall be a **rainwater seal**.



Typical efficiency chart for different seal types for floating roof tanks

- 3 Threefold seal plus guide pole seal, plus guide pole cover plus roof leg seals
- 2 Double seal plus guide pole seal
- 1 Primary seal only, no guide pole seal

HELICOAT – the Flexible Cover for complete Sealing of Guide Poles



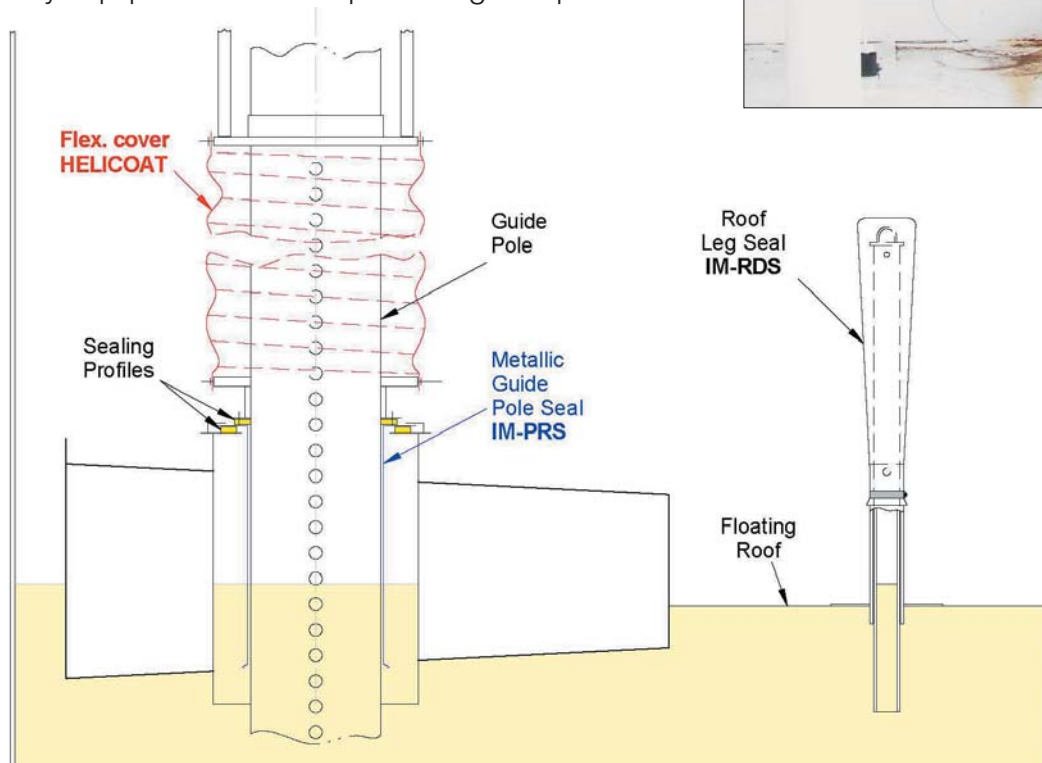
Due to the fact that guide and measurement poles often need to be perforated from top to bottom in order to guarantee accurate level measurement, substantial quantities of emission emerge from the inside of the guide pole.

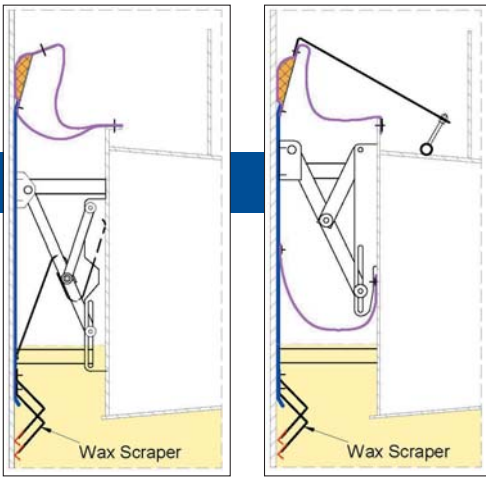
In order to eliminate this source of emission, IMHOF has developed the flexible guide pole cover, HELICOAT.

Apart from reducing emission in and around the guide pole, the guide pole cover also protects against penetration of rainwater between the guide pole and the floating roof.

By using the combination of the flexible guide pole cover HELICOAT, together with the metallic guide pole seal IM-PRS, the reduction of emission around the guide pole **will be more than 99 %**.

Due to its split designs the systems HELICOAT and IM-PRS can be installed at any time during tank operation, without the need to dismantle any equipment at the top of the guide pole.





IM-GLXS2

IM-GHXS2+B



Tank wall without ...



... and with an IMHOF wax scraper

Crude Oil Seals with Wax Scrapers



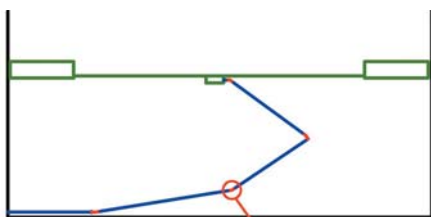
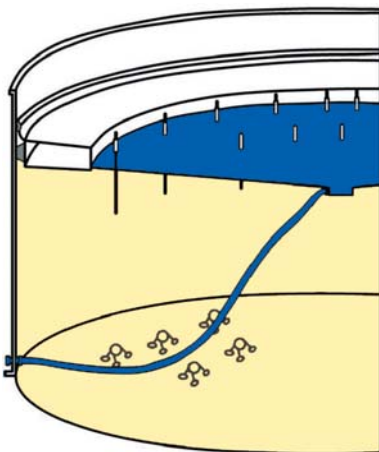
For crude oil tanks we recommend integrated primary-secondary seals, based on a shoe type primary seal, combined with an efficient wax scraper systems.

The built-up of paraffin wax scales at the tank wall and on the floating roof deck will be avoided with the system. Due to the cleaning of the tank walls the amount of withdrawal losses is reduced.

If requested all type of crude oil seals can be covered with triple seals or weather shields.

The advantages of IMHOF Crude Oil Seals offered

- Highest possible efficiencies by multifold sealing systems.
- Adaptability to extreme rim gap variations.
- No soiling of tanks with paraffin wax.



Rainwater Drainage Systems for External Floating Roofs

For drainage of external floating roofs we offer two reliable techniques.

1. Rainwater drainage via flexible drain hose

The flexible drain hose is the simplest form of rainwater drainage for floating roofs. The rubberised hose, with integrated fabric layers and helical wire spring, offers the necessary flexibility and resistance to wear and tear. The hose is supplied complete with flanges, ballast weight, chain and clamp.

Qualities of rubber available: Nitrile, Viton, Dia. of hoses: 3", 4", 6".

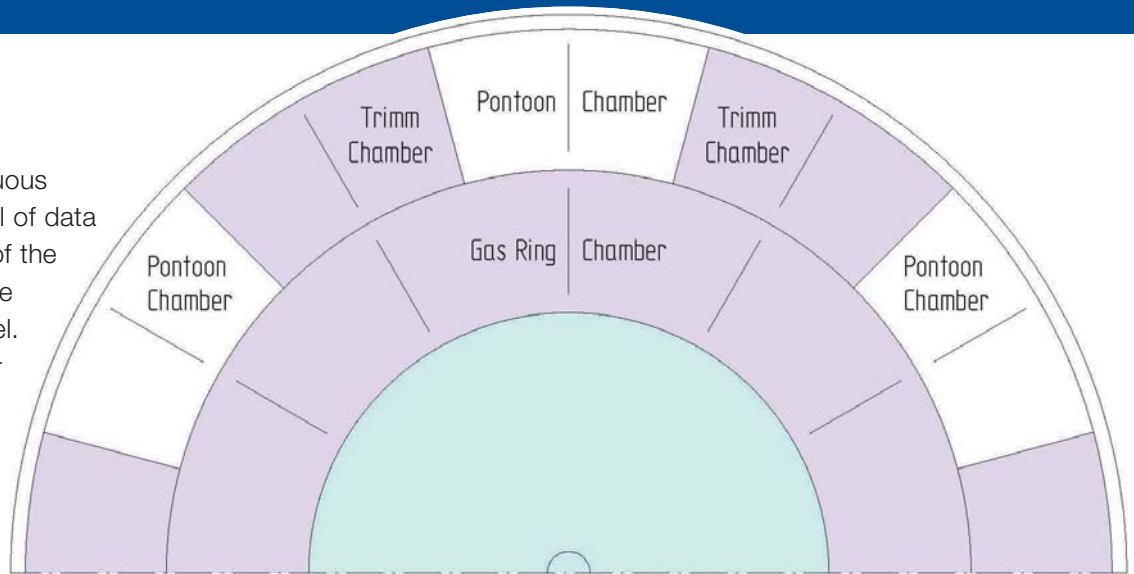
2. Rainwater drainage by articulated pipe systems

The key elements of this drainage system are flexible joints using composite hoses, 3", 4", 6" diameter. The hoses are laminated with a number of highly resistant foil materials consisting of PP, PETP or PTFE, backed by inner and outer helical stainless steel wire. The composite hose is protected against irreversible deformation by pivot-jointed metal bushes. If specified by the client, we can supply the complete drainage system, including steel pipes with flange connections, sealing rings, etc.

TRICON – the innovative Floating Roof Control System (trim and control)

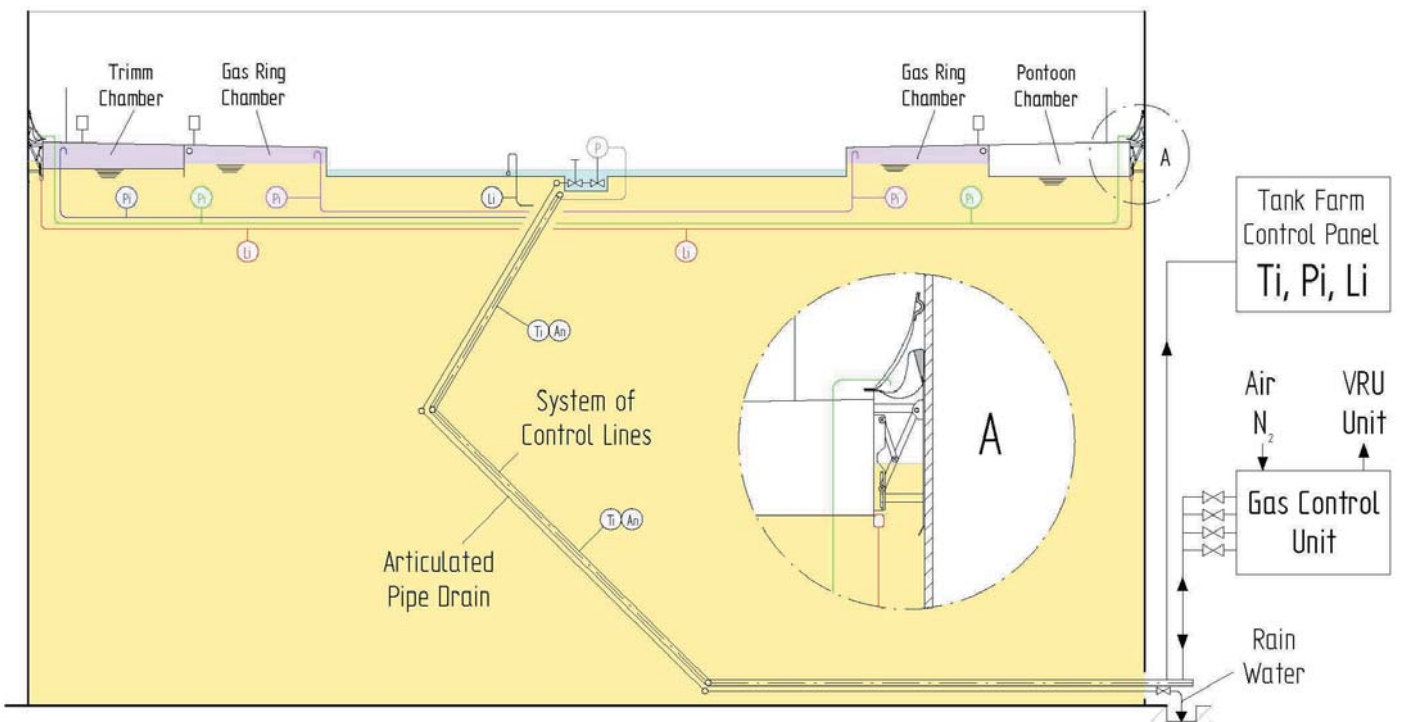


TRICON offers continuous monitoring and control of data and risk assessment of the floating roof tank at the tank farm control panel. No more inspection or operations with risks for the operators is required on the floating roof.



The TRICON roof offers:

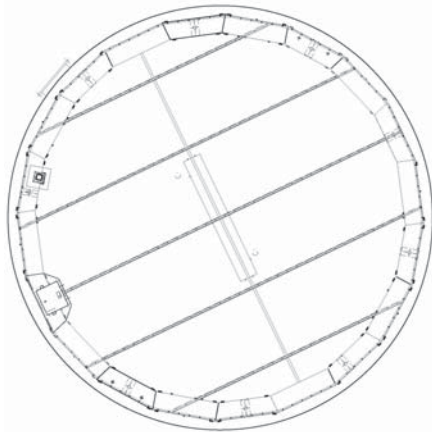
- Continuous control of correct and even floating of the roof.
- Possibility of trimming of the roof with vapours present underneath the roof.
- Temperature measurement of stored liquid.
- Sampling of stored liquid.
- Extreme reduction of emission by vapour respiration from seal intermediate spaces, as may be required at elevated storage temperatures or vapour pressures.
- Rainwater control and possible cooling of floating roof by rainwater evaporation.
- Automatic fire detection and fire fighting.





IMHOF

Tank-Technik



Our Products

- Sealing systems for external and internal floating roofs.
- Complete internal floating roofs
- Rainwater drainage systems for floating roofs
- Special seal types
(e.g. guide pole seals, roof leg seals, etc.)
- Floating roof measurement and control systems
- Gasholder seals



Installation Services

- Complete installation services
- Supervision and management of clients installation teams



Engineering Services

- Development and design of new sealing solutions
- Tank inspection and reports
- Evaluation of emission
- Analysis of tank geometry
- Technical and commercial studies and advice



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