



INTERNAL FLOATING ROOFS FOR STORAGE TANKS, DIRECT CONTACT TYPE

Besides the most common pontoon type of internal floating roof CTS also offers a direct contact roof, which reduces emissions of volatile organic hydrocarbons (VOC's) even more. The emission reduction after installing a direct contact internal floating roof is well in excess of 98%, if equipped with an effective seal. The CTS direct contact roofs are manufactured from aluminium panels, incorporating a light weight but strong honeycomb aluminium stiffening structure. The individual panels are fully welded and pressure tested prior to shipment, so the integrity of the panels is always guaranteed. On the jobsite the panels are positioned into the tank and easily assembled using a state-of-the-art hook and pin design to interconnect the elements. Apart from being very effective a direct contact roof is also low in height, maximising storage capacity for the tank involved.

Direct contact internal floating roof, typical features:

- emission reduction of VOC's exceeding 98%
- maintenance free
- compatible with all stored products, including 100% aromatics
- light weight structure manufactured from aluminium
- can be fitted on tanks with diameters between 4 and 120 meters
- expected service life excess of 30 years
- designed for each specific tank
- easy installation, full installation manuals and project support available
- complies with API 650 Appendix H standard
- successfully used globally by many major oil and tank storage companies
- realistic engineering option for new storage tanks
- suitable for high filling and emptying rates as well as Nitrogen pigging and mixing operations
- can be equipped with several different seal designs in an extensive range of materials
- suitable for 100% aromatics

Seal arrangements:

There are several different seal arrangements available for internal floating roofs. Each seal has its own specific areas of service. Seal materials will have to be reviewed depending on the stored product. The most common seal arrangements are:

- single wiper seal
- double wiper seal
- mechanical shoe seal
- foam seal

Let our team of specialists recommend you the preferred seal for your application.

Engineering aspects:

Each roof will be designed for the tank it has to be fitted in. CTS has developed forms with all relevant engineering information. This includes amongst others the tank diameter, stored product, cleaning routines, pumping rates and pigging requirements. The direct contact roof normally requires a door sheet. It is, however, possible to produce elements fitting through a 24" manhole if required.

The roof modules, the vital part:

Essential for the performance of the roof is the quality of the supplied modules. In this respect it is good to know that all modules are pressure tested prior to shipment. Each module is equipped with a testing plug and the internal honeycomb structure is perforated, facilitating testing of the complete module. The basic design of the roof exceeds the floatation requirements of API by 350%, where the metallic skin exceeds API requirements for minimum thickness by more than 180%. This is the best way to ensure the all important integrity of the roof.

Detailed product information:

Obviously this leaflet could not address all details of our internal floating roofs. Full engineering information including material specifications, engineering drawings and other relevant information is available upon request, please feel free to ask for your copy.



Patented shoe plate seal, bottom view.

Replacing corroded external roofs:

Besides being used in fixed roof tanks an internal floating roof is an excellent alternative for replacing heavily corroded external floating roofs. When combined with an aluminium dome roof it will eliminate rain water ingress, draining provisions, extensive repairs, blasting and painting. The combination of a dome and internal floating roof results in very low emissions. This means that the gains go well beyond reducing just maintenance costs.



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