RIM SEALS
SECONDARY SEALS

Sustainability
CTS seals offer an optimal solution for reduction of emission in the area between an external floating roof and the tank shell. Every tank is different and operating conditions vary significantly. Local requirements on emission reduction also play a major role and finally tank seals play a key role in prevention of rim fires and can therefore be regarded as safety critical equipment.

Within this challenging playing field of legislation, technical and safety requirements CTS has a proven track record in supplying the optimal sealing solution. The range of seals we provide combines efficient design with optimum sealing throughout the complete rim gap.

**Standards and safety**
CTS tank seals comply with all international standards such as API, EN, BREF IPPC, EPA, ATEX and NFPA as well as with specific requirements such as EEMUA, PGS 29 and VLAREM.

**Engineering**
During the engineering phase our team of engineers will review local emission requirements, safety aspects and tank geometry to tailor the seal to each specific tank. All other important properties, such as material selection are taken into consideration for optimal performance of the seal. This ensures a long term maintenance free service life. Seal materials have to withstand the stored product as well as the elements for longer periods of time. Our solutions will be suitable for dealing with these specific conditions.

Completely in line with the sustainability vision all emission requirements will play a major role in the decisions we make during design.
Secondary seals

We offer a full range of secondary seal solutions. Secondary seals need to combine several aspects that can sometimes be contradicting and therefore many designs are available depending on the specific priorities and combinations of safety, storage conditions, stored product properties legislation and weather conditions. The most noteworthy aspect of a secondary seal is safety, a good secondary seal will effectively prevent rim fires regardless of weather conditions.

All CTS secondary seals are independent from the primary seal and can be installed on all possible rim configurations. We will design the seals specifically for each tanks it is installed on and make sure it reduces emission in the best possible way. All our secondary seals are available in a wide range of materials, including galvanized steel and different grades of stainless steel.

Design and engineering
Our secondary seals are available in many different configurations. The tip configuration as well as the seal design can be changed depending on the service requirements and actual tank conditions.

Our special tank inspection sheet will facilitate this engineering process.

Support and assistance
We hope this leaflet triggers more questions. Our team of experts will be happy to support and assist you in selecting the optimal solution for your specific sealing situation.

Complete solution
We offer a complete package from engineering to commissioning. We will provide an installed seal, experienced supervision or supply installation drawings, installation manual and advice for local crews to install the seal.

Solutions
- Liquid mounted gas tight seal type for maximum emission reduction
- Long service life (expected more than 30 years)
- Best available emission control technology per EPA and IPPC BREF
- Increased operability in all hydrocarbons and chemicals, including 100% aromatics
- Available in many stainless steel grades and galvanized steel
- Only fire retardant sealing materials are used
- Seals can be supplied per API RP 545
- Fire safe secondary seal design available

Design highlights
- Greatly reduce the risk of rim fires
- Eliminate rain water in the stored product
- Expected service life in excess of 30 years
- Can be installed while the tank remains in service
**CTS20 Secondary compression plate seal**

The CTS 20 is the most common design for secondary tank seals. It consists of compression plates pushing a rubber tip against the tank shell. Behind the compression plates, fully shielded from weather exposure, the vapour barrier fabric ensures the vapour tightness of the seal.

**Highlights**

- Proven technology for secondary seals
- Optimum protection against rim fires

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**CTS20LP (Low Profile) secondary seal**

The CTS20LP (Low Profile) is a low profile designed to have a minimal height ensuring a maximum filling capacity. The height is approximately 150-250mm above the rim of the floating roof. The compression springs push the tip against the tank shell and ensures proper sealing on this location. These springs are covered with a weather and hydrocarbon resistant antistatic fire retardant PTFE vapour fabric. This fabric supported by the springs ensures rainwater run off the seal onto the floating roof.

**Self-supporting structure**

A CTS20LP seal is available in many different configurations depending on the service requirements and actual tank conditions. CTS has already successfully supplied CTS20 LP seals for rim gaps over 400mm.

**Highlights**

- Allows for a reduced foam dam height
- Increased filling height of the tank
Internal floating roof seals

Internal floating roof seals require special attention during the design phase. As inspection is often difficult, durability and reliability of these seals are very important. CTS has wide experience in these seals, which ensures a long term optimal performance without the need for maintenance or inspection.

**CTS 50 foam seal**

The foam seal is one of the most effective primary tank seals when considering emission reduction. The CTS 50 is specifically tailored for internal floating roofs, where the weight and height are adapted to the internal floating roof design. The foam core offers a uniform sealing pressure regardless of the shape of the tank shell. This seal has a large contact area and is therefore a very tight seal. Primary foam for internal floating roofs are liquid mounted.

**Features**
- Excellent vapour tightness, resulting in maximum emission reduction
- Liquid mounted seal design

**Highlights**
- Excellent vapour tightness, resulting in maximum emission reduction
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**CTS 60 and CTS 70 wiper seal**

The CTS wiper seal is the most economic seal for internal floating roof. The polyethylene wiper provides an effective seal against the tank shell. It complies to all relevant codes and specifications.

**Highlights**
- Efficient design
- Available in primary (CTS60) and double (CTS70) design
- Vapour mounted

**CTS 80 compression plate seal**

One of the innovations introduced over the years is the internal floating roof compression shoe seal. This seal type combines the simple and low maintenances characteristics of the compression plate seal with the excellent sealing efficiency of the shoe plate seal.

The CTS80 has the same design basis when compared to the CTS30. This basic design will be tailored to each specific internal floating roof. This combination of innovative technology and consideration for specific tank geometry makes our compression shoe sealing system the best available technology for emission reduction on external floating roof tanks.

**Highlights**
- Optimal service life (more than 30 years)
- Wax scraper for heavy or waxy products available (CTS90W)

**CTS 90 mini shoe seal**

Over the years our mechanical shoe plate seal has proven to be one of the most resilient and versatile solutions for sealing the gap between the tank shell and floating roof. It combines excellent sealing characteristics with very good product compatibility.

The CTS 90 tank seal consists of metal shoe plates that connect to the tank shell, these shoe plates are supported by with scissors and pushed against the shell with special leaf springs. The durable vapour barrier completes the seal.

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