

FA 10 Where growth is fuelling up

The amount of tanks is on the rise all around the globe. New markets are opening. The trend is towards larger valves

Any economy would begin stuttering without tanks. Depots make sure that enough diesel, petrol and heating oil can be stored, and tank trucks bring their goods as close as possible to consumers. Stored liquids and gases keep the economy going. In the depot chain valves for tanks play an important role. Experts see emerging markets in the Middle East and Asia as especially dynamic growth drivers, as these markets have a lot of catching up to do in view of their depot infrastructure. As a matter of course, valves have to keep things in check here.

Tank container fleet growing

Each year the fleet of tank containers is growing – very much to the delight of valve manufacturers. According to the International Tank Container Organisation (ITCO) around 44,000 tank containers were built in 2015. This saw the number of such containers rise to a total of around 458,000, a growth of 7.2 percent compared to the year before. A look at the previous years also shows continuous growth: in 2013 there were 394,000 units in total, in 2014 the amount grew by 12.6 percent to around 444,000. “This growth shows the recognition of the tank container as a safe, reliable, economic and sustainable means of transport,” emphasises ITCO pres Heike Clausen. She described the tank container industry as “an extraordinarily innovative and progressive industry”.

Maintenance safety

The tank container sector can, however, only be a trailblazer by using high-quality valves. “Valves and shut-off solutions represent important components within the technical safety chain,” explains Frank Schaper, chairman of the German tank depot association UTV. “They make sure that tanks can’t be filled or emptied by mistake in their ‘passive’ state”. With the help of shut-off valves tanks can be physically isolated when it is time for planned on-site inspections, “which in turn serves the safety of the persons entrusted with inspection and maintenance”. Modern shut-off valves ensure that volatile emissions – called volatile organic compounds (VOC) – “are reduced to zero”.



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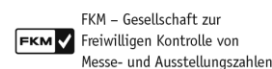
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Long lifecycles and reliable

Users expect, that tank valves “in general function are reliably and have a long lifecycle when they are serviced properly,” adds Schaper. Safety and environmental compatibility are written large, in view of the dangerous materials that are sometimes stored. Not only non-toxic substances such as water are stored, but also hazardous substances like acids, lye, fuels and all kinds of oils, as well as liquefied gases propane and butane. The use of materials depends on the type of fluid, and if the tank is aboveground, or below.

Valve manufacturer SchuF can confirm such end user expectations. “As tanks are often totally emptied only every ten years, it is highly important that tank valves have a long lifecycle,” says global sales director David Donne. In addition, it is especially important that a tank is sealed-off well outwardly when hazardous media is being stored.

Requirements increasing

Awareness has been raised exactly here in the last few years: the safety and environmental protection requirements are increasing around the world. In 2010, for instance, the norm API 625 was enacted. For liquefied gas, it advises fitting internal tank valves for simply safety tanks and requires them for double-walled tanks, as soon as the wall of the shell has a recess on the side or floor, for an outlet.

A central role within a tank system are internal emergency stop valves, or in-tank emergency shut-off valves. They are used when, for instance, propane, propylene, butane, chloride, VCM, vinyl chloride, ethylene, LPG and ammonia gas are stored. “Thanks to the automatically sealing, intrinsically safe design it is ensured that the medium will not escape the tank, even if the pipe or the valve itself is damaged,” explains David Donne.

Emergency stop valves in case of failure

In normal operation emergency stop valves are kept open using pressurised air, “in the case of emergency the air feed is interrupted and the valve closes by itself, thanks to an interior weight”. This allows emergency stop valves to keep media from escaping, contaminating the environment.

In order to prevent emissions, internal tank valves are built with special gaskets and bellows, to make sure fluids and/ or gas won't escape.

Internal safety emergency valves are often used in cylindrical tanks aboveground. Cylindrical tanks with emergency safety valves are often built in-ground, as well as above. For emptying of, for instance, LPG a spring-loaded release valve is used below a tank, mostly for spherical tanks. "If the valve is damaged externally, or torn off, the valve cone with the spring remains on the tank and keeps it closed," explains Donne.

Gigantic tanks

More often than enough, the valves used in tanks can be gigantic. Sizes of six metres, or even 40 metres, aren't seldom. As a rule of the thumb, the height of the tank defines the size of the valve. The valve drive used on top of the tank is connected to the valve body using a steel wire rope.

The nominal diameter of the valve outlet often varies between 2" respectively five centimetres and 24" respectively 50 centimetres. While the dimensions tend to be smaller in the chemical industry, they are greater in the mineral oil sector, due to huge turnover rates. Stainless steel and steel are often used as materials for valves.

LNG driving growth

As internal tank valves mostly are special designs used for decades, it is difficult to provide an outlook for tank valves. Valve manufacturer SchuF, however, is experiencing growing demand for such valves, especially in the USA, Russia and the Middle east. According to the company, one reason could be the new API norm, as well as the stricter safety and environmental protection rules in numerous countries.

The trend towards LNG is seeing an influx of orders for valve manufacturers. "Whilst the demand for natural gas is continuing to rise in both Germany and the EU as a whole, European gas production is at the same time declining," analyses Eon, a German energy company. Considering the Ukraine crisis and the associated political and economic consequences, transport of LNG by sea offers an interesting perspective. After a terminal went online in Lithuania in order to reduce dependency

from neighbouring Russia, there are also plans for a further, smaller LNG terminal in a port in Estonia.

Port of Rotterdam is expanding

The turnover of LNG at the port of Rotterdam shows just how high demand is. Last year, turnover was 2.3 million tons, a growth of 91.3 percent compared to one year earlier.

The port of Rotterdam has reacted by expanding: the Gate Terminal LNG break bulk project in the port is supposed to supply smaller amounts of LNG to bunker ships or small tankers for inland shipping and maritime vessels. The new break bulk activity will see a new harbour basin and loading infrastructure for small tankers and bunker ships. Shell has already signed up as the first customer.

Valves are always on board. Already on LNG tankers safety valves ensure safe transport. The fuel tank storing the liquefied natural gas has to emit steam during transport in order to keep pressure and temperature on a constant level. Valves control the inlet and outlet flow at terminals, liquefaction plants, evaporation systems and naturally in storage tanks.

A focus on renewables

Storage of renewables is also becoming a factor. Solar thermal energy for instance offers the tank industry a further perspective. Estela, the European Solar Thermal Electricity Association, expects the share of solar thermal energy to rise to two percent in Europe, and to even four percent in 2030.

One of the greatest challenges of solar electricity production is energy storage. Solar thermal plants see sun rays bundled by parabolic trough mirrors and directed onto glass tubes with molten salt floating through them. The salt is heated up to temperatures above of 400°C. At night, the fused salt is stored in stainless steel tanks.

Even if it sounds exotic, tanks for wine are also a trend. China is about to become a major wine-growing region. Increased levels of wealth in emerging markets and the growing popularity of western diets are firing

tank manufacturing in Asia. An opportunity for tank suppliers, such as the valve industry, to garner orders from these attractive markets.

Tank dimensions keep growing

Classic tank users naturally also continue to place their trust in high-quality valves. Refineries store pre-products for processing, as well as final products for sale. Oil and gas production requires tanks for intermediate storage until transportation, while the chemical industry stores chemicals in tanks. The petrochemical industry uses tanks to store pre-products for, for instance, making polypropylene.

Only companies able to make out trends and adapting production will remain successful. One trend is rising demand for large-sized tanks. A reason could be the increasing amounts of products requiring storage. Furthermore, buying large amounts of pre-products is cheaper, which in turn reduces costs.

Making weight

A trend with consequences. "The larger tanks require larger valves. This also means a valve becomes heavier, making it necessary to develop lighter valve designs," explains David Donne, SchuF. Furthermore, companies that wish to participate from worldwide tank construction, need to be able to build earthquake-proof tank valves in order to fulfil safety requirements in regions prone to earthquakes.

This makes one thing clear: storage tanks are needed all the time, and nearly everywhere. A circumstance which will never see orders for tank suppliers such as valve manufacturers come to an end, despite all economic turmoil.

Innovations on valves will be presented at Valve World Expo Düsseldorf from November, 29 until December, 1, 2016 at Düsseldorf Fairgrounds.

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