

Making our world more productive



# UN portable tank for helium (HELICS™)

Highest safety and efficiency standards



## Cryogenic excellence for the efficient and secure transport of helium

# -269 °C

At this temperature, liquid helium boils off at the slightest increase in temperature.

One of the world's most valuable rare gases, helium supplies are both limited and finite. As demand for this gas rises to support new electronics and medical applications, efforts to conserve it are becoming more urgent. Transport is a key link in the conservation chain, especially as this rare gas often has to be transported over long distances and across different climate zones.

At a temperature of -269 °C, liquid helium boils off at the slightest increase in temperature. High-performance UN portable tanks offer the ultimate levels of insulation efficiency and are thus essential to slow down this boil-off process. Today, very few companies have the knowledge and experience required to master the logistical challenges involved in designing containerized liquid helium tanks to the highest safety and efficiency standards for trouble-free, cost-effective delivery worldwide with no losses over long periods of time.

### Proven expertise

For more than ten years, we have been specializing in UN portable tanks for helium (known as HELICS™). Building on our long-standing expertise in cryogenic technologies, these containers are specifically designed for zero losses during transport while ensuring the best safety and efficiency performance.

They optimize the transportation of liquid helium and ensure smooth delivery anywhere in the world – by sea or road.



Liquid helium containerized tank. Designed for trouble-free transport around the world.

### At a glance

- More than ten years' experience in the HELICS™ business
- Several decades of experience in the manufacture of cryogenic equipment
- Over one hundred years of experience generating and handling industrial and cryogenic gases
- All-stainless-steel design
- Low OPEX
- Easy handling for the operator
- Manufactured at Linde's Schalchen plant with rigorous quality control combined with German fabrication quality
- Compliance with all relevant design codes and approvals
- Full service offering from specification definition to after-sales support
- Several locations for maintenance and service



Made entirely from stainless steel.



Easy handling for the operator.



## Performance

Our containers use a liquid nitrogen (LIN) shield between the inner and outer vessels to ensure that very little heat reaches the liquid helium. This minimizes the pressure build-up in the helium vessel. As a result, our containers can transport liquid helium for at least 40 days and, depending on operating conditions, even over 60 days.

### Highlights

- Helium holding time:  $\geq 40$  days to reach 5.7 bar (g)
- Start conditions: 10% ullage liquid helium at 0.2 bar (g) and 2% ullage nitrogen. Reference ambient temperature is 20 °C

## Ease of logistics

To support the growing number and diversity of helium applications worldwide, our tank containers are designed for ease of logistics. Suited to both road and sea transport, they ensure that our customers can get the helium they need, where they need it – quickly and with ease.

### Highlights

- Designed for road and sea transport
- Container frame size 40" ISO 1496-3
- Tare weight 15800 +/- 250 kg (34833 +/- 552 lb)
- Built to fit a 40' gooseneck trailer

## Design codes and approvals

To ensure the highest possible safety standards for both road and sea transport, our tank containers comply with all relevant design codes and standards. For consistently high performance levels, we also have rigorous quality assurance processes in place – based on ISO 9001 certification, ADR as well as ASME incl. 'U' stamp.

### Highlights

- ADR/EN
- ASME/DOT
- IMDG
- CSC
- TIR
- Declaration of conformity according to TR CU 010/2011
- Certification of conformity according to TR CU 032/2013



Manufactured at Linde's Schalchen plant with rigorous quality control.



Made from stainless steel, designed for robust performance.

## Helium vessel

Reflecting our vast experience in the design and operation of cryogenic equipment for the broadest application spectrum, our helium vessels are built to withstand the most rigorous transport challenges while complying with all relevant safety standards.

## Nitrogen vessel

Over the decades, we have gained vast experience in the design and delivery of nitrogen-based cooling insulation solutions.

### Highlights

- Approx. 1310 kg (2888 lb) at 98% filling ratio
- MAWP at 0.7 bar (g) (10 psig), operating pressure 0.3 bar (g) (4 psig)
- Pressure regulation set to maintain the operating pressure of 0.3 bar (g)

## Outer vessel

Made entirely from stainless steel, the outer vessel and entire frame of our helium containers are designed for robust performance, ease of handling, low operating costs and minimal maintenance effort.

### Highlights

- Material: all stainless steel for long lifetime and ease of maintenance
- Compliance with all relevant safety regulations
- Painting in accordance with EN ISO 12944
- Resistant to extreme ambient temperatures

## Full service offering

Looking beyond the delivery of HELICS™, we can also support you with a broad range of services. These extend from the definition of specifications through procurement right up to delivery, cool-down of HELICS and after-sales support. We can even assist you with operation improvements and maintenance as well as periodic inspections at our manufacturing yard.

### Engineering excellence

All HELICS containers are manufactured at our Linde Engineering Schalchen site in Germany. Schalchen has been manufacturing premium-quality plant components and modules for the past 60 years. With over 800 engineers and skilled workers, Schalchen also offers field installation and advice on operation. A specialized service crew is also available for immediate and professional service provision.

Read more:

[linde-engineering.com/un-portable-tanks](https://linde-engineering.com/un-portable-tanks)

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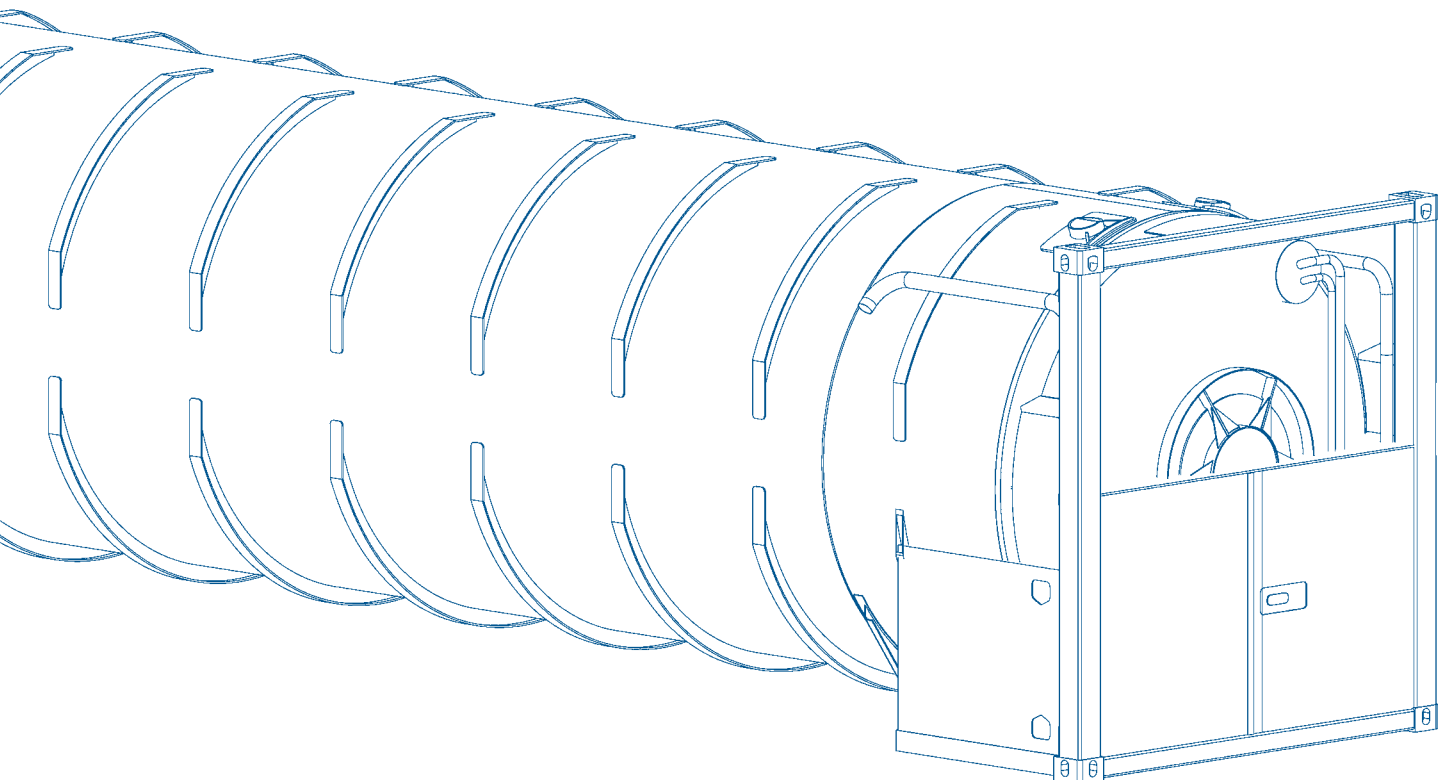
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Schalchen plant.

# Your partner for the production and processing of gases

## Delivering reliable process plants for maximum capital efficiency

Linde has been optimizing gas processing technologies for 140 years, successfully delivering more than 4,000 plant engineering projects around the globe. Favoring trusted, lasting business relationships, the company collaborates closely with customers to enhance plant lifecycle productivity and innovate process flows. The company's proven gas processing expertise plays an indispensable role in the success of customers across multiple industries – from natural gas and oil refining through petrochemicals and fertilizers to electronics and metal processing.

## Operational excellence along the entire plant lifecycle

We work closely with our customers to gain an in-depth understanding of individual needs. Building on the unique synergies of Linde as an integrated plant operator and engineering company, Linde offers innovative process technologies and services to exceed our customers' reliability and profitability expectations. This commitment to innovation extends along the entire plant lifecycle. The LINDE PLANTSERV® service team supports customers every step of the way – from maintenance and repairs to full revamps. Leveraging the latest digital technologies to offer on-site and remote operational and support services, we consistently take asset performance to the next level.

## Making the impossible possible

From the desert to the Arctic, from small- to world-scale, from standardized to customized designs, Linde's engineering specialists develop solutions that operate under all conditions. The company covers every step in the design, project management and construction of gas processing plants and components. Customers can always rely on Linde to deliver the plants, components and services that fit their needs best – anywhere in the world.

Discover how we can contribute to your success at [www.linde-engineering.com](http://www.linde-engineering.com)

Get in touch with our component manufacturing team:

Phone: +49 8621 85-6434, inquiry: [www.linde-engineering.com/contact](http://www.linde-engineering.com/contact)

## Core competencies at a glance

### Plant engineering

- Air separation plants
- LNG and natural gas processing plants
- Petrochemical plants
- Hydrogen and synthesis gas plants
- Adsorption plants
- Cryogenic plants
- Carbon capture and utilization plants
- Furnaces, fired heaters, incinerators

### Component manufacturing

- Coldboxes and modules
- Coil-wound heat exchangers
- Plate-fin heat exchangers
- Cryogenic columns
- Cryogenic storage tanks
- Liquefied helium tanks and containers
- Air-heated vaporizers
- Water bath vaporizers
- Spiral-welded aluminum pipes

### Services

- Revamps and plant modifications
- Plant relocations
- Spare parts
- Operational support, troubleshooting and immediate repairs
- Long-term service contracts
- Expert reviews for plants, operations and spare part inventory
- Operator training

