



CRYOTRUCKS

ECOLOGICAL SOLUTIONS FOR THE TRANSPORT OF FUTURE



Our story

Eco-sustainability of on-road transportation is the founding principle of the CRYOTRUCKS consortium, established in 2005 thanks to the vision of a few sector-specialized operators with the goal of **promoting GNL** as an alternative to diesel for heavy vehicles. It is a revolutionary idea that is paying off: **by 2030 more than 200,000 vehicles** will run on GNL in Europe.

The project

CRYOTRUCKS sets the guidelines for a cleaner future also in the **refrigerated transport** sector. The **CRYOFRIDGE** system makes use of the refrigerating power of **liquid nitrogen** in lieu of the system operating on diesel. A very simple system, rechargeable through a **specific distribution network**, that allows gaining substantial **energy savings** and eco-friendly results: liquid nitrogen, once transferred its refrigerating properties is released in the atmosphere of which it is the major element at 78%. Since no motors are used, the noise is less than **40 db and allows stops and usage in the urban areas** also at night time.

The development

The refrigerating power of Liquid Nitrogen is much greater than traditional systems, thus significantly reducing the time it takes to **reach the operating temperature** and ensuring ideal continuity to the cold chain.

The system is simple and **maintenance free** and its overall dimensions in the cargo area correspond to 30% of the space used for a traditional refrigeration system, thus providing **added volume capacity** and ensuring less accidental damage.

CRYOFRIDGE is silent and eco-friendly. Consequently, it can be used also in urban areas and it consists of an extra-thin evaporator built-in or external to the cargo area.

The ultra-thin evaporator advantages:

- External assembly: only 5 cm from the cargo area ceiling;
- Internal assembly: only 10 cm of depth from the ceiling.

Compared to traditional evaporators that occupy a height of 20 cm, the **CRYOFRIDGE** evaporator ensures **better load space**, avoiding accidental damages to the evaporator itself.

- The air flow varies from 6 to 9 m/s in just 5 cm of free space towards the ceiling of the cargo area. Thanks to the Coanda effect, the flow remains close to the ceiling of the cargo area and from there it gets distributed in a **downward motion along the entire length** of the area, in an even manner. Since there are no mechanical moving parts except the circulation fans, the lifespan of the equipment is expected to exceed 10 years, that is more than double of the lifespan of a traditional diesel refrigerator.

Our objective is to create a network of liquid nitrogen distributors that can serve the entire Italian roadway network.

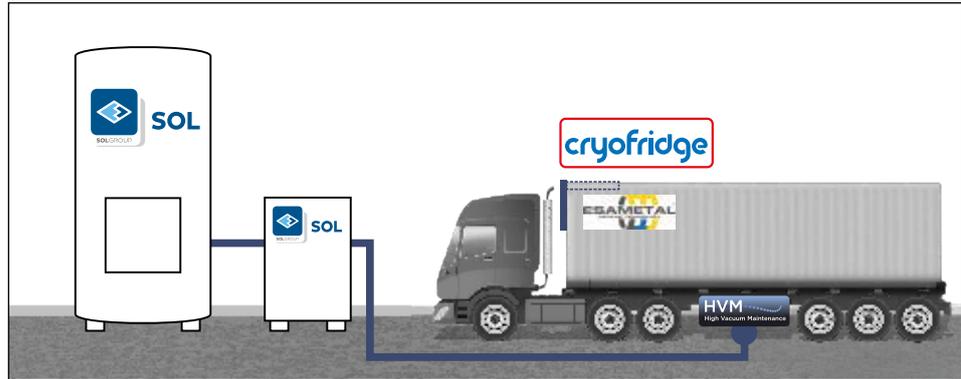
On request, it is possible to install a **dedicated distributor for your refrigerated vehicle fleet.**



SILENT - ECO-FRIENDLY - COMPACT - EFFICIENT - COST-EFFECTIVE

Technical Characteristics

The **CRYOFRIDGE** system is significantly **more powerful and efficient** than any traditional refrigerator: the nominal refrigerating capacity is 13,000W at 0°C and it remains rather **constant at any value set**. The power capacity at -20° C is 12,500W. The highest performing traditional systems can barely reach 12,000 and 7,000W respectively at the same temperature. This means that the internal temperature drops significantly faster with the **CRYOFRIDGE** system. Thanks to these characteristics, the **CRYOFRIDGE** system can maintain constant temperature with a minimum airflow since it works continuously and not in start & stop mode.



Advantages

- **Reduced noise** to operate in otherwise forbidden hours also in urban areas
- **Saving in fuel consumption** with a high environmental impact
- Reduction of the technology-related emission footprint in terms of **greenhouse gas emission**
- Faster in **reaching the operating temperature**
- Greater efficiency in **cold chain continuity**
- Extremely high operating cost-effectiveness: **no maintenance required**
- Significant weight saving thus cost saving and greater cargo capacity
- **Extremely reduced use of space** in the cargo area
- **Quick and even** cooling across the entire length of the cargo area
- **System lifespan greater than 10 years**

Specifications 13,6 m. Long Trailer

| | | |
|------------------------|------|----------------|
| Volume | 84 | m ³ |
| Nitrogen tank capacity | 950 | litres |
| Ambient Temperature | 28 | °C |
| Cooling time | 1 | °C/min. |
| Autonomy | 24 | hours |
| Nitrogen consumption | 39.5 | l/h |
| Noise | 40 | db |



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