

Innovative  
Energy  
Recovery

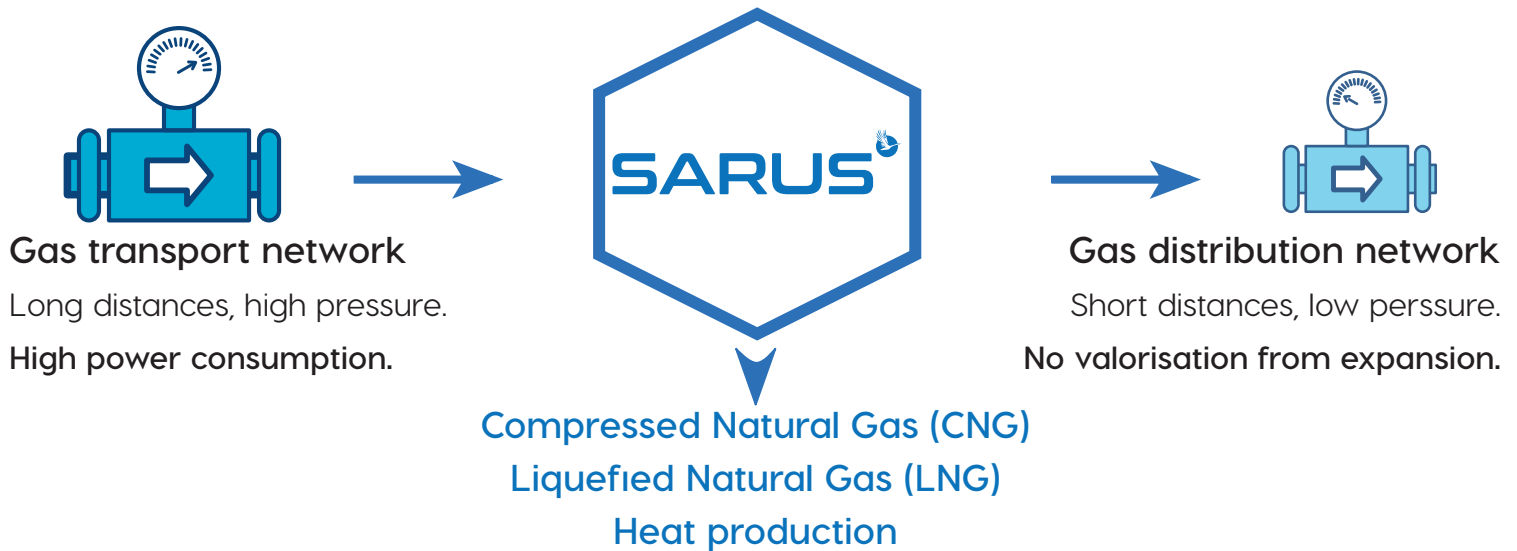
# Who are we ?

SARUS designs energy recovery solutions for gas networks.

Based in Paris, we also have a 140m<sup>2</sup> workshop in Amiens.

Our prototypes are tested at the RICE test center in the Paris region.

The **patented** SARUS technology makes it possible to **recover energy** lost during the expansion process like at the **interface** between the **gas transport network** and the **gas distribution network**.



## Our technology

### Piston compressor

**Without power consumption.**

Our piston compressor allows the compression of **any type of gas** (natural gas, CO<sub>2</sub>, H<sub>2</sub>) **up to 1000 bar**.

### Self - oscillating expander

Pressure driven motion.

No electronic or mechanical drive.

No wear-parts.

Direct drive.

No dynamic seal needed.

**300 bar** max at admission.

### Maturity

Our machine is protected by a PCT patent (2019).

The extension of this patent is underway.

We have 2 POC at TRL6.

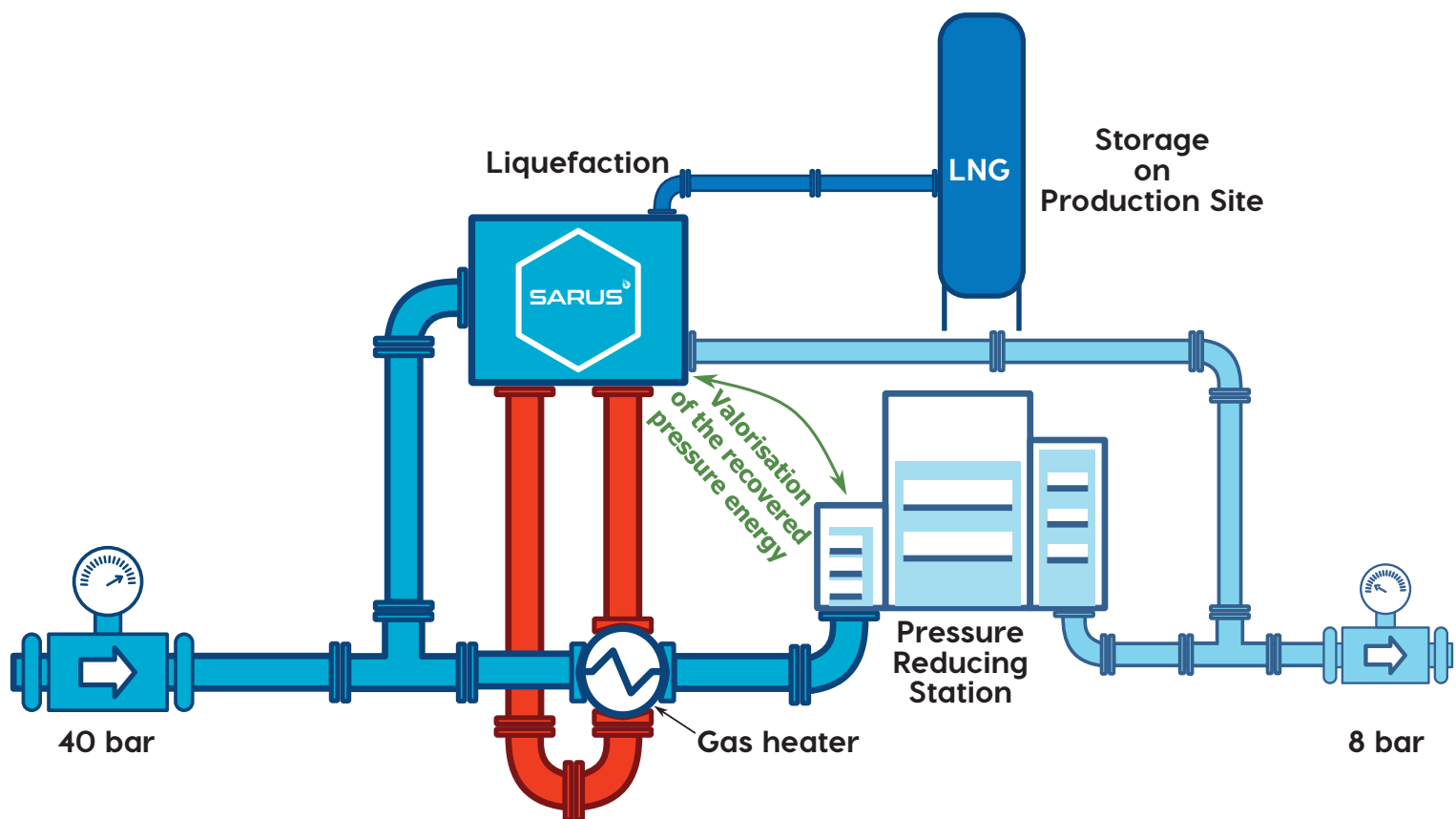
These two POC were tested at GRTgaz's RICE center in Alfortville.

# Liquefied Natural Gas (LNG) production

## Liquefaction without power consumption with built-in Heat Pump application

**SARUS** developed a **revolutionary machine** able to liquify natural gas **while** producing enough heat to preheat the main pipeline upstream of the pressure reducing station.

This **2 in 1 solution** allows for **exceptional energy savings** at the pressure reducing station **while** enabling the possibility of storing part of the gas stream as **LNG** on site.



**Application :** A fraction of the flow passes through our expander in parallel to the station.

**Performance :** Liquefaction ratio ~45%, depending on pressure ratio.

**Technology :** Open cryogenic cycle taking advantage of the isentropic transformation in our expander to cool the gas.

**Advantages :** Production and storage of LNG at network downstream pressure.

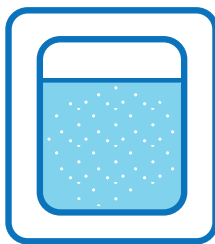
Can be used as buffer storage or as fuel.

Part of the energy recovered is converted into **heat to be used** on the main **pipe's gas heater**. It replaces a conventional gas heater therefore saving energy.

# Potential applications for the produced LNG

## On grid

Under-drawing of the transmission system in high season  
Need for buffer capacity at the delivery station



Storage tank

## Off grid

Refueling NGV stations



Storage tank



Refueling stations



Refueling stations



## Case study



Transport network  
**36 bar**



Distribution network  
**6 bar**



Flow rate  
**725 kg/h**



Liquifaction yield  
**55 %**



Size  
**1 m x 2.5 m**



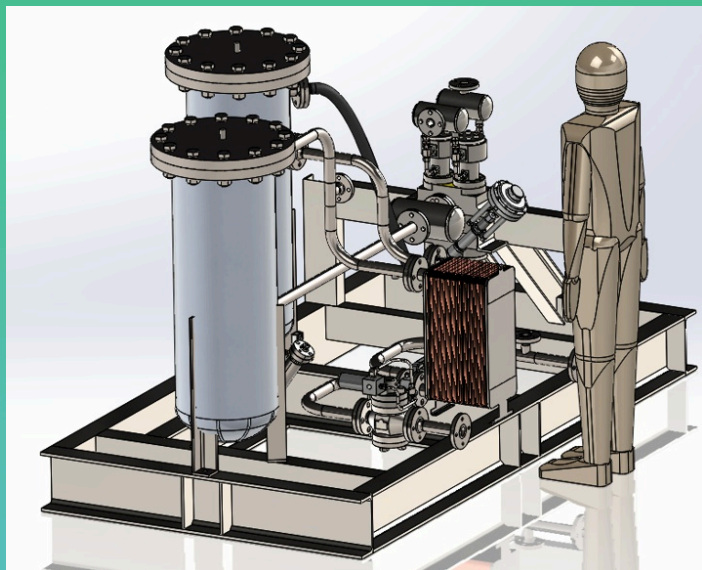
Weight  
**1 T**



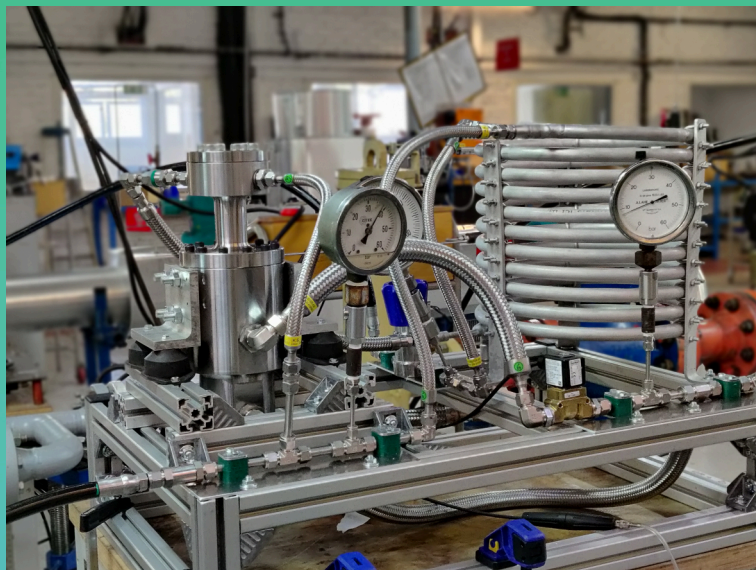
Cryogenic storage  
**60 m<sup>3</sup>**

Daily production  
**4.5 T**

# Our achievements



3D model of the LNG production skid



POC CNG TRL6 being tested at the Research and Initiative Center for Energy (RICE)

## They trust us



## CONTACT US

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