



cuboGas

I compressori Cubogas per la liquefazione

11 Novembre 2022

Ecomondo -Area Forum CIB

energy to inspire the world





Cubogas corporate

cuboGas



energy to inspire the world

CuboGas is part of Snam: one of the world's leading energy infrastructure operators



Leading energy infrastructure operator that ranks among Italy's largest listed companies, by market capitalization

Through a sustainable and technologically advanced network for transportation, storage and regasification of **CNG, LNG, biomethane and hydrogen**, Snam guarantees the security of supply and is a key enabler in the energy transition. **SNAM is heavily active in supporting the H2 development. In the H2 ecosystem is involved in** (examples): **HyAccelerator** (first H2 start-up incubator launched by a private Co.), **Hydrogen valleys** and R&D developments with **Universities**, pilot projects.



Snam4Mobility's mission is to support the Energy Transition in the Transport segment by promoting the use of **natural gas (CNG, LNG, biomethane) and hydrogen** in Mobility.

In particular, Snam4Mobility:

- Develops **technologies and know-how** for innovation
- Provides infrastructures for **refueling stations** (opened stations (CNG / LNG): 40 - forecast openings (CNG / LNG) : 150, **forecasted opening H2: 8 by 2025**)
- Has the ambition of becoming a **system integrator** for the development of **green mobility solutions and services** dedicated to public utility services, fleets and passenger transport.



A worldwide leader in providing compression solutions and technologies for natural gas, biomethane and hydrogen (under development)

The company, which is based in Cherasco (CN), operates on the Italian and international markets with the Cubogas and Fuel Maker brands; it has **+80 years of history** and **+4.000 compression solutions installed around the world.**



CuboGas offers a proven technology for several applications ... cuboGas

Mobility



CNG online station (public and private)

CNG stations directly connected to the pipeline



CNG daughter station (public and private)

CNG stations where the NG is delivered to the stations through trailers



Self-Refill Mobile Station & Trailer (g-MRU/e-MRU)

Mobile refueling unit that can reach end user's sites to refuel vehicles



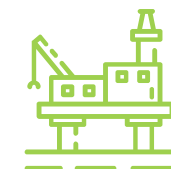
Biomethane

Biomethane compression following its upgrade from biogas in treatment plant



LNG Boil off recovery

Cubogas package compressing natural gas coming from a LNG storage boil-off and delivering it to the pipeline



Oil & Gas

Solutions for applications such as gas recompression in wells, powering turbines, underground storage and many others



energy to inspire the world



The current offering **APPLICATIONS**

cuboGas



energy to inspire the world

CuboGas offers different types of compressors, usually supplied in integrated solutions -packaging- (1)

cuboGas

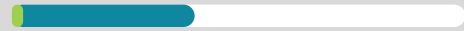


A Series

POWER 37 – 110kW



INLET PRESSURE 0.5 – 100 bar



CAPACITY 100 – 1900 Sm³/h



- Suitable for stations for fast or slow filling of light vehicles
- Available with or without soundproof enclosure
- Available with or without internal storage
- 2, 3 or 4 stages of compression
- Electric motor driven V-belt coupled
- Suitable for CNG applications up to 110 kW
- Touch screen power-control panel
- Integrated blowdown system
- Air-cooling for gas and oil compressor
- frame



1B Series

POWER Up to 110kW



INLET PRESSURE 20 – 200 bar



CAPACITY 545 – 3750 Sm³/h

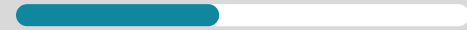


- Specifically designed for daughter station applications
- Available with or without soundproof enclosure
- 1 or 2 stages according to inlet pressure
- Electric motor driven V-belt coupled
- Suitable for CNG applications up to 110 kW
- Integrated blowdown system
- Air cooled
- Water jacket cylinder
- Touch screen power-control panel



2B Series

POWER Up to 250kW



INLET PRESSURE 0.5 – 100 bar



CAPACITY 300 - 4000 Sm³/h



- Suitable for stations for fast or slow filling of heavy commercial vehicles and for mother stations as well
- Available with or without soundproof enclosure
- Available with or without internal storage
- 2, 3 or 4 stages
- Electric motor driven V-belt or direct couple
- Suitable for CNG applications up to 250 kW
- Air-cooling for gas
- Liquid cooled
- Touch screen power-control panel



4B Series

POWER 20 – 600kW



INLET PRESSURE 1 – 100 bar



CAPACITY 600 – 9800 Sm³/h



- Suitable for mother stations
- Available with or without soundproof enclosure
- 2, 3, 4 or 5 stages
- Electric motor driven V-belt, direct couple
- Suitable for CNG applications in range of 200 – 600 kW
- Touch screen power-control panel
- Air or water cooled

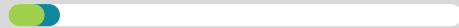
CuboGas offers different types of compressors, usually supplied in integrated solutions -packaging- (2)

cuboGas



Pocket 200

POWER 37 – 45kW



INLET PRESSURE 1.5 – 5 bar



CAPACITY 74 – 200 Sm3/h



Pocket 400

POWER 55 – 110kW



INLET PRESSURE 0.7 – 70 bar



CAPACITY 120 – 1600 Sm3/h



Hydraulic

POWER 15 – 55kW



INLET PRESSURE 30 – 250 bar



CAPACITY 285 – 3000 Sm3/h



- **A-series compressor with integrated dispenser**
- Fully integrated unit
- Available with one or two fill hoses
- Internal storage 480 – 640 liters
- Not lubricated cylinders
- Compact solution easy to install and maintain

- **Specifically designed for daughter and mother stations**
- Available with or without soundproof enclosure
- Fully assembled and factory tested
- Inlet and outlet gas piping
- Electric motor / Gas engine
- Hydraulic pump
- Pneumatic circuit
- Liquid cooled
- Automatic reversing valve



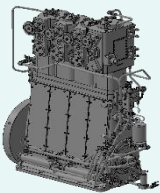
The H2 Development PRODUCTS

cuboGas



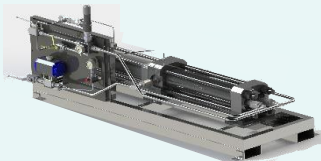
energy to inspire the world

Three major H2 equipment are under development



Compressor

Power	400 kW
Inlet pressure	25/35 Barg
Outlet pressure	400 Barg
Capacity	180 kg/h
Other	4 cylinders, OIL FREE, vertical, mechanical



Booster

Power	90 kW
Inlet pressure	300/400 Barg
Outlet pressure	900 Barg
Capacity	80 kg/h
Other	Single cylinder, hydraulic, used stand-alone or added to the compressor



Dispenser

Pressure output	350 and 700 Barg
Output T	- 20 and - 40 Celsius degrees





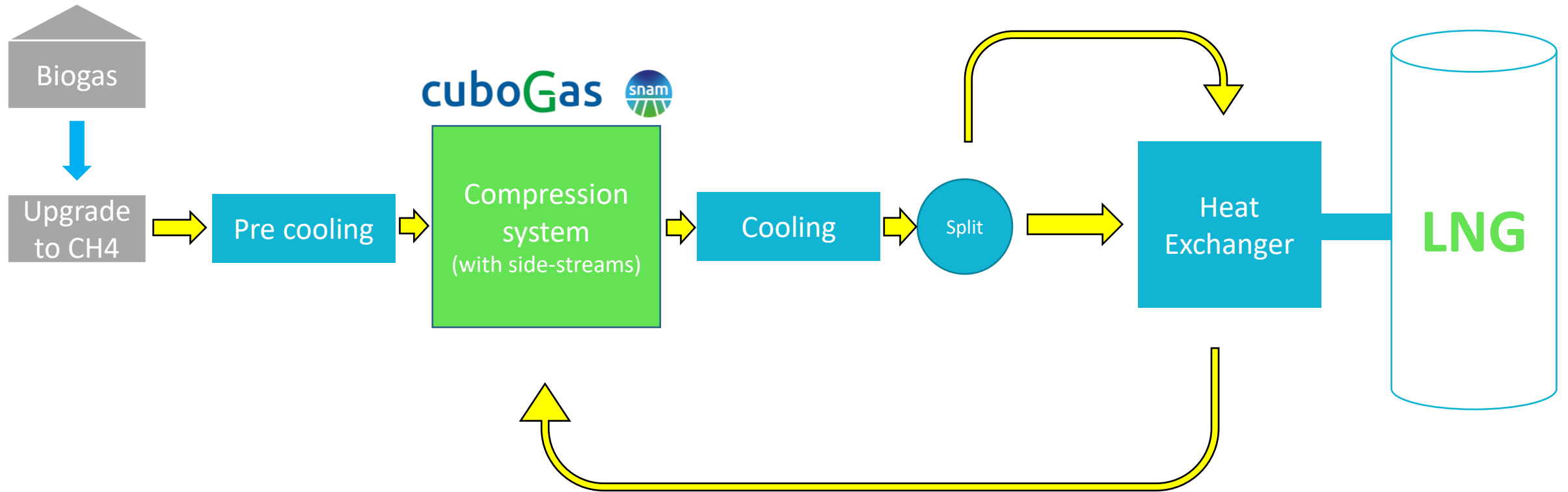
Biomethane application

cuboGas

Biomethane focus

	1	Upgrading	Screw Compressors	
	2	Grid Injection	Reciprocating compressor - Variable power according capacity - P in: 4/12 bar; P out: 50-75 bar	
	3	Trailer filling	Reciprocating compressor - Variable power according capacity - P in: 4/12 bar; P out: 200 -250 bar	
	4	Liquefaction	Reciprocating compressor - Variable power according capacity - P in: 2 /12 bar; P out: 80-100 bar	
	5	On site CNG station	Reciprocating compressor - Variable power according capacity - P in: 4/12 bar; P out: 200 -250 bar	
	6	Daughter CNG station	Reciprocating compressor - Power 75-90kW - P in: 20/200 bar; P out: 200 -250 bar	

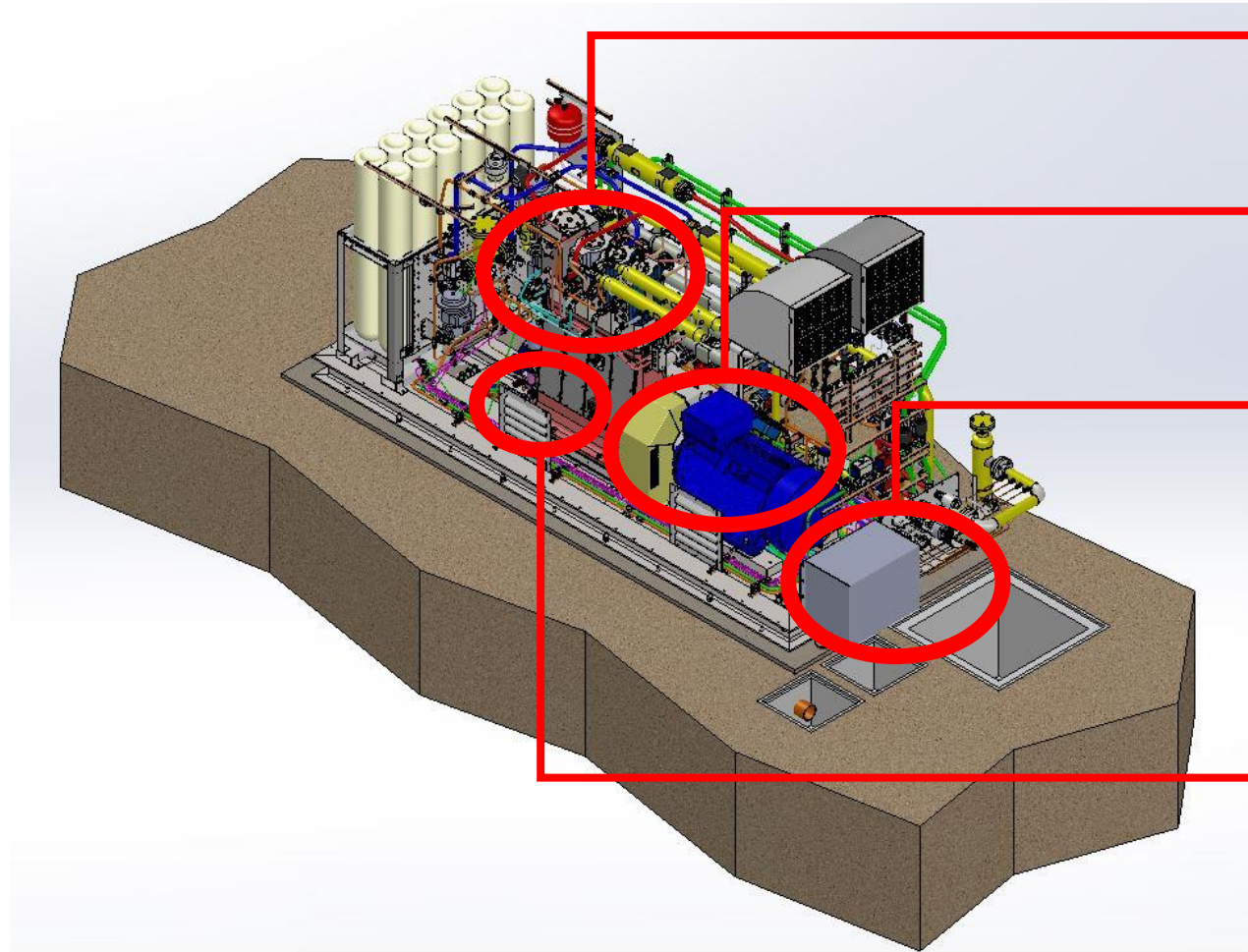
LNG: Linde cycle liquefaction process



LNG: Linde cycle liquefaction process – Compressor details

cuboGas 

Compression
system
(with side-streams)



BVTN Oil-Free configuration
100% oil free gas compression
With distance piece API 618 type B

Direct drive motor w/inverter
Max energy efficiency

Gas vent recovery
Min environmental impact
No vent emissions = no air pollution

Side-streams control
Max flow and process control
With full remote control



energy to inspire the world

Case History Biomethane application (I)

	Mother Station (# 7 uts)	Daughter Station (# 14 uts)
Cliente	<div>● — Gruppo S.E.S.A. S.P.A. — ●</div>	
Tipo di Compressore	Compressore alternativo Cilindri Verticali - Tipo 2B3 cil. 100 - 67 mm	Compressore alternativo Cilindri Verticali - Type 1B/2 cil. 62 mm
Fasi di Compressione	3	2
Capacità Compressione(Sm ³ /h)	1500 @ 14.00 barg	2000 @ 200 barg
Trasmissione	Cinghia	Cinghia
RPM	900	550
Motore (kW)	200	75

Mother Station



Daughter Station



Case History Biomethane application (II)

	# 1
Cliente	Energi Sicilia
Tipo di Compressore	Compressore alternativo Cilindri Verticali - Tipo 2B2 cil. 58 - 58 mm
Fasi di Compressione	2
Capacità Compressione(Sm³/h)	550 @ 15 barg
Trasmissione	Cinghia
RPM	890
Motore (kW)	75 inverter





energy to inspire the world

I compressori Cubogas per la liquefazione

THANK YOU FOR YOUR ATTENTION