

1 PRESENTATION



GGE Cooling Systems

Are equipment designed to refrigerate the CNG, Compressed Natural Gas, during the filling operations of CNG Cisterns Trucks.



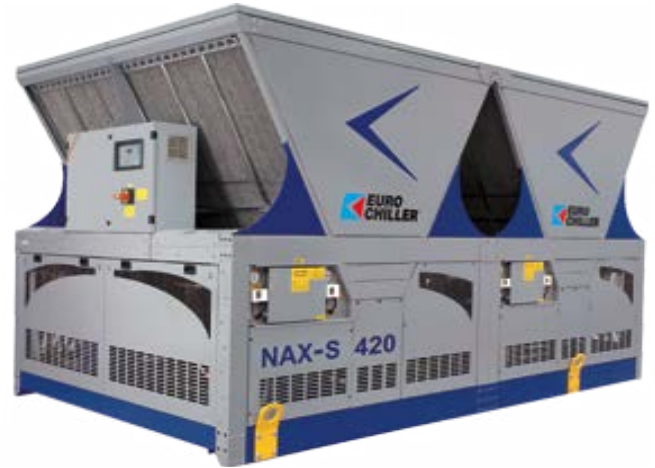
Why is it important to refrigerate the CNG?

To fill CNG trucks to their maximum capacity.



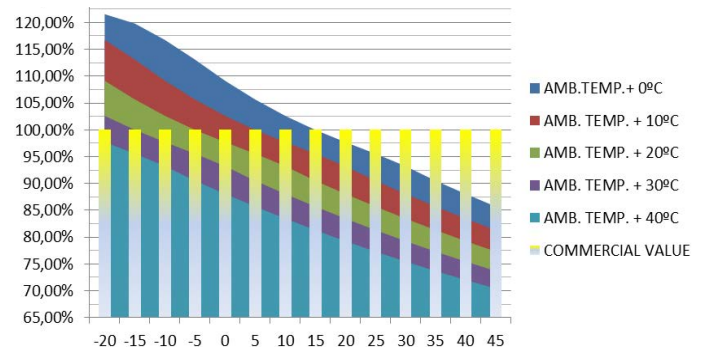
Main components

- Cooling Skid
- Chiller unit



2 WARM UP EFFECT

- During filling operations of CNG trucks there is a compression process inside them, which increases the pressure and as a result the gas is heated.
- This heating effect considerably reduces the amount of gas that can be charged inside a CNG truck.



WHAT HAPPENS WITH THE DIFFERENT TYPES OF CNG TRUCKS?

- Heating caused by compression is independent of the type of truck used.
- Each material has a specific coefficient of heat transmission (higher for metals and lower for plastics), the higher the heat transfer, the lower the final temperature of the system will be.
- Other factors that influence heat dissipation are the surface where the heat exchange takes place (higher exchange to larger surface), if the truck has a container or not (without a container, the heat exchange is higher) and, naturally, the total time of filling operations.

The heating effect always appears. Sometimes it is more important than others.

GLOBAL GAS ENERGY OFFERS YOU SOLUTIONS TO CONSIDERABLY IMPROVE THE CURRENT PERFORMANCE OF YOUR OPERATIONS.

3 COOLING OPTIONS

GGE OFFERS 2 COOLING OPTIONS

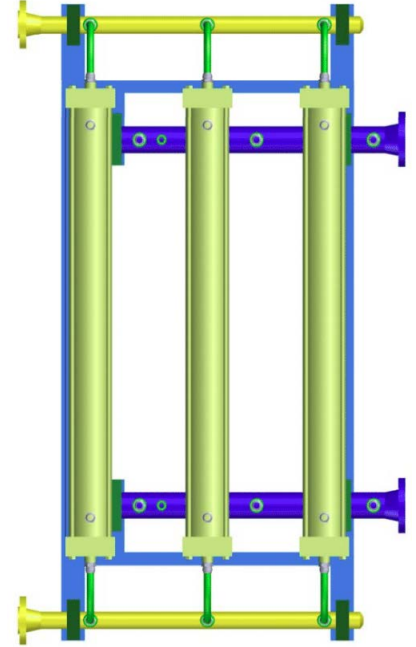
According to the final gas temperature at the exit of the GGE Cooling System

SET 0°C

- For customers without serious heating problems (temperate areas, compressor cooling systems that work correctly) or for those that use "Type I" CNG trucks.
- With these systems GGE can ensure 100% commercial volume at room temperature in "Type I" trucks and 80% of the commercial volume of "Type IV" trucks in very hot areas.

SET 15°C

- This type of solution is suitable for customers with serious heating problems (hot zones, inefficient compressor cooling systems) or who use "Type IV" CNG trucks.
- With this system, GGE can ensure 90% of the commercial volume in "Type IV" trucks, even in very hot areas.



4 MODELS OF COOLING SYSTEM

The GGE Cooling System series consists of 3 standard models:

- **COOLSYS2500**
Maximum flowrate: 2.500 m³ (s)/h
- **COOLSYS5000**
Maximum flowrate: 5.000 m³ (s)/h
- **COOLSYS7500**
Maximum flowrate: 7.500 m³ (s)/h

2 OPTIONS

- **BT**
Minimum final gas temperature: 0 °C *
- **LT**
Minimum final gas temperature: -15 °C *

