AVIA CASE STUDY

Primagaz helps Avia keep drivers on the road

The challenge

To design, build and supply a network of LNG refuelling stations throughout France.

The solution

Four mixed-use (LNG/CNG) refilling stations strategically located in Limoges, Montelimar, Simandres and Montbartier serving cars, utility vehicles, small vans and trucks, with four others under construction and further stations planned.

The benefits

- **Security of supply** using our own dedicated fleet of LNG-powered trucks with prime positions at all Europe's main LNG terminals.
- **Peace of mind -** With fuel capacity of 83m3 per site to satisfy expected consumption of 1500 mT a year, drivers have reassurance that their vehicles will not run out of fuel.
- **Flexibility** with features including a choice of station designs, fuel types and dual-side refuelling capability for maximum use of the space.
- **Safety assured** with a tailormade safety system that includes gas detection monitors on all equipment, automatic shutdown system and a control panel that continuously tracks what is going on in the station.

A market shift

With increasing demand for LNG from larger operators in the international transport market as they switch from diesel to cleaner, safer and more sustainable fuels, leading independent fuel retailer Avia identified the need for a network of LNG refuelling stations across Europe. Mainstream manufacturers including Volvo, Scania and Iveco have developed LNG-powered lorries for this market and demand is set to continue as companies strive to meet clean air targets. Wanting to work with a company with a proven track record, Avia partnered with SHV Energy company Prima LNG.

The Avia station locations were strategically chosen on the basis of traffic density, market potential and logistical considerations.

Four LNG/CNG stations have already been built in Limoges, Montelimar, Simandres & Montbartier - another four are under construction with further stations planned in the near future. The Avia stations are currently meeting demand from an average of 50 trucks daily. Capacity is based on each truck driving a minimum of 120,000km annually, resulting in an average fuel consumption of 30kg of LNG per 100km.

A flexible solution

Each station has been designed to give maximum flexibility. They offer the opportunity to adjust fuel storage capacity in line with estimated traffic at each site, dual-side refuelling capability for efficient vehicle throughput and require only limited space (from around 1000m3). Their intelligent design means stations can be installed quickly and are easily relocated. A thermosiphon system installed on the fuel tanks help reduce gas losses and pump maintenance costs.

Safety and sustainability

With safety of paramount importance, all Prima LNG stations are designed and manufactured to meet both local and European safety standards including ISO 16923 and ISO 16924. The control system is aligned to the available space within each station and stations are remotely monitored to support preventive or corrective maintenance. A tailormade safety system has been implemented that includes gas detection monitors and safety warning panels fitted on all equipment and an automated shutdown facility.

Reflecting the drive to reduce emissions, all Prima LNG refuelling stations have been equipped with venting prevention technology.

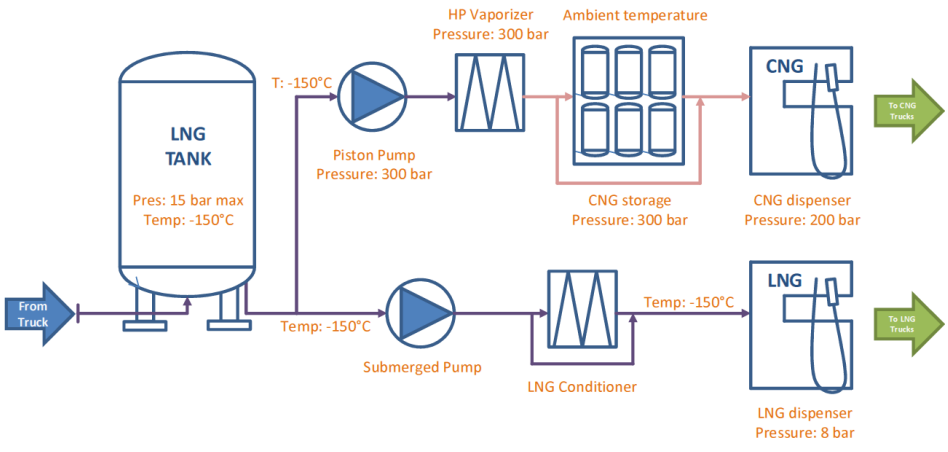
On Avia's acceptance of Prima LNG's design, the necessary equipment was specified and produced on schedule. Construction was delayed slightly while various external circumstances – permits, civil works delays – were obtained and due to Avia lacking a permit from the customs authorities, one station experienced a delay in commissioning.

However, expert stock management meant Prima LNG was able to make up some of the lost time. A strong supplier relationship enabled dispensers to be sourced and activated within a very short lead time. Additionally, we ensured that all civil works, piping and electrical work was incorporated in the initial station design to accelerate the building process.

How a mixed refuelling station works

A mixed use refuelling station is highly versatile, supplying both LNG and CNG. This enables it to serve cars, utility vehicles, small vans and trucks.

CNG is a separate flow that comes out of the same LNG storage and is vaporised, compressed and distributed through a CNG dispenser.



Satellite plant

Inside the big cryogenic tank, the LNG is stored as a liquid. The installation consists of two main lines - one for LNG and another for CNG. The LNG is transferred from the tank with the help of a submerged cryogenic pump to the LNG dispenser. The driver connects the nozzle from the LNG dispenser to the receiving tank on the truck and, in this way, LNG is transferred to the vehicle.

The CNG (compressed natural gas) is created with the help of a piston pump and a high-pressure vaporiser. As the LNG in the tank is transferred through a vaporiser it becomes gas.

After that, an odorant product is added to the gas to give it a noticeable smell for safety purposes and it is then stored in a buffer storage before it is delivered to the CNG dispenser.

From dispenser to tank

This picture shows the connection from the LNG dispenser to the LNG tank of the vehicle. Procedure is different depending on the type of truck

Scania & Iveco

When a Scania or Iveco truck arrives with high pressure inside, the small flexible hose on the pictures allows to vent gas back to the installation before filling.

Volvo

For a Volvo truck a bigger flexible hose is used, which allows to return gas after filling. The big blue filling nozzle at the end of the flexible hose of the dispenser is connected to the vehicle tank to fuel the truck with LNG.

Offload box

The offload box is installed near the filling point of the LNG tank. It is used to deliver LNG from the trailer to the tank of the installation.

Payment terminal

The stations are equipped with a payment terminal similar to that used for diesel stations.