



New compact LNG fueling station

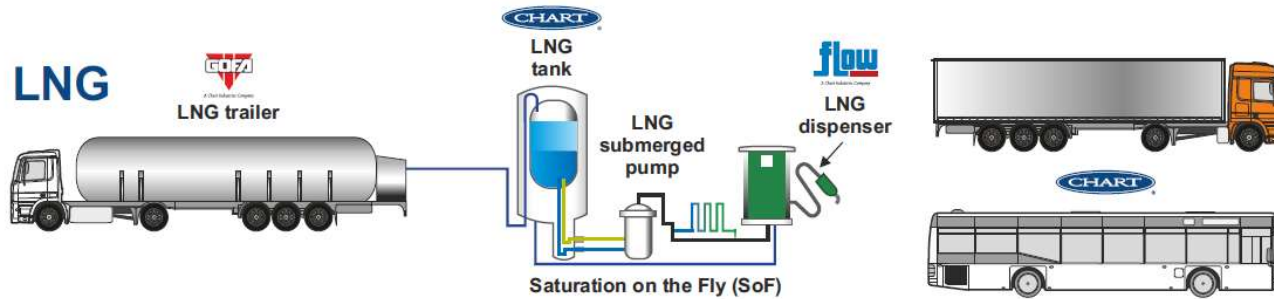
Miloš Schmied, Chart Ferox a.s.

CHART Vehicle fueling product supply chain

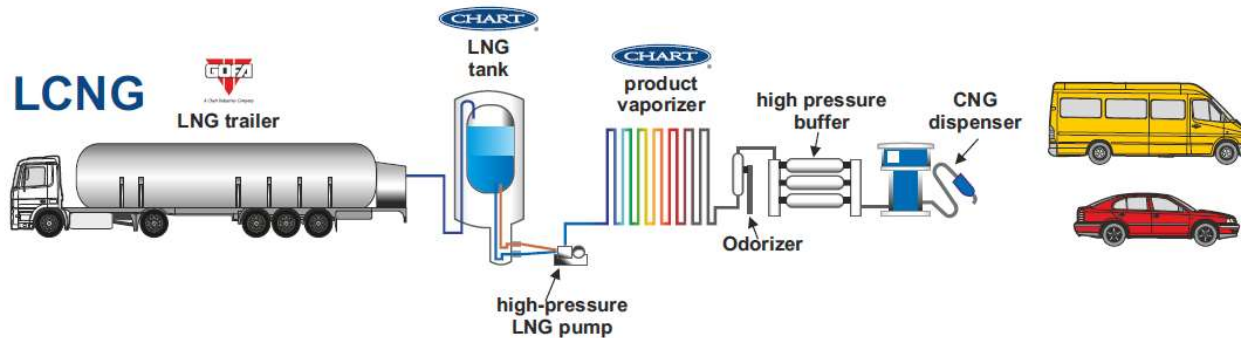


LNG & CNG vehicles

LNG/LBG fueled heavy duty trucks & buses



CNG fueled light goods vehicles & cars



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CHART Vehicle fueling market share



EU market share



Chart LNG / LCNG stations overview

In operation : 57

Under construction : 36

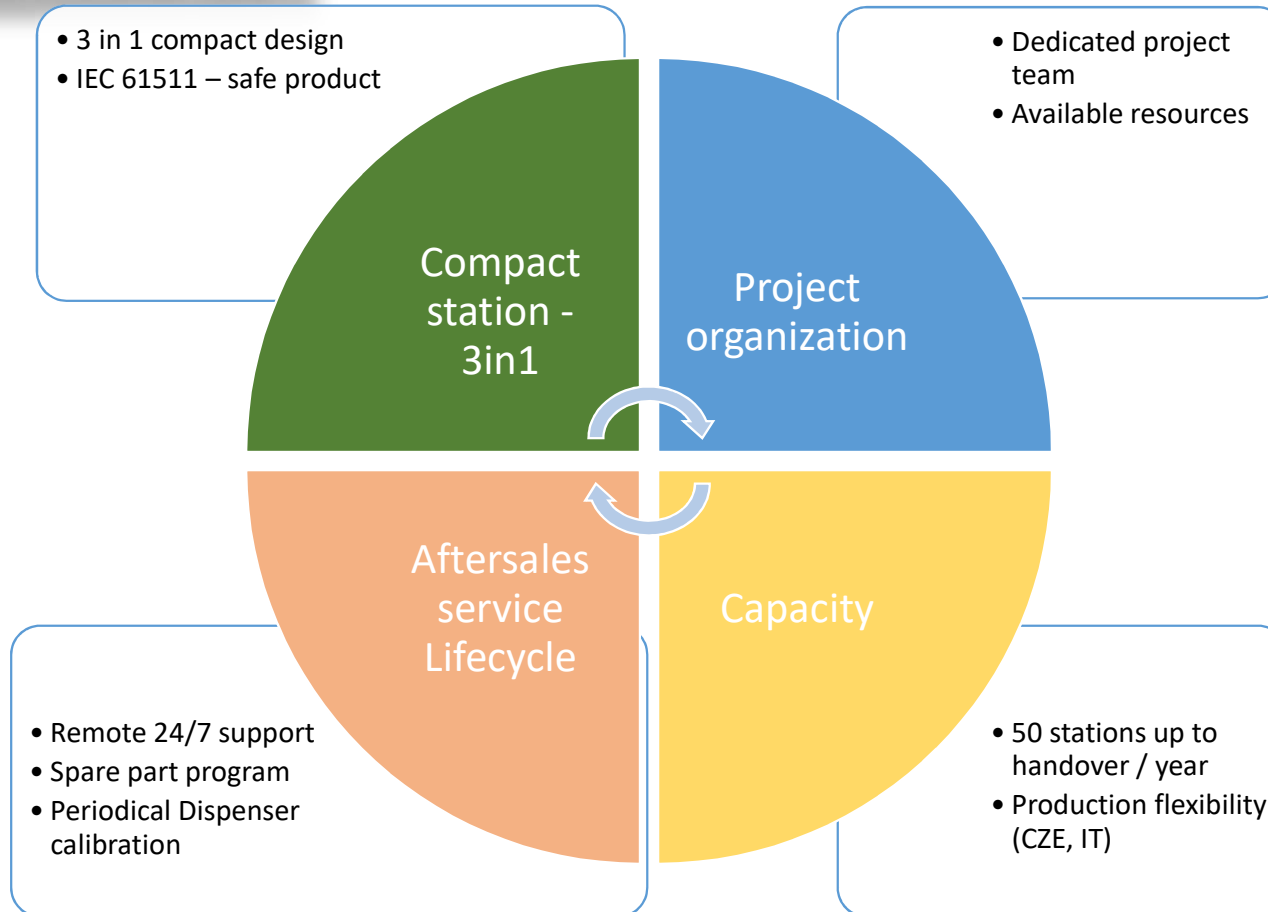
LNG dispensers in operation : 103

LNG dispensers under construction: 42

Vehicle fueling product



Complex customer care



Compact fueling station - 3 in 1



New generation with compact solution – fueling assembly



3 in1 LNG fueling assembly
CE marking

Offload skid

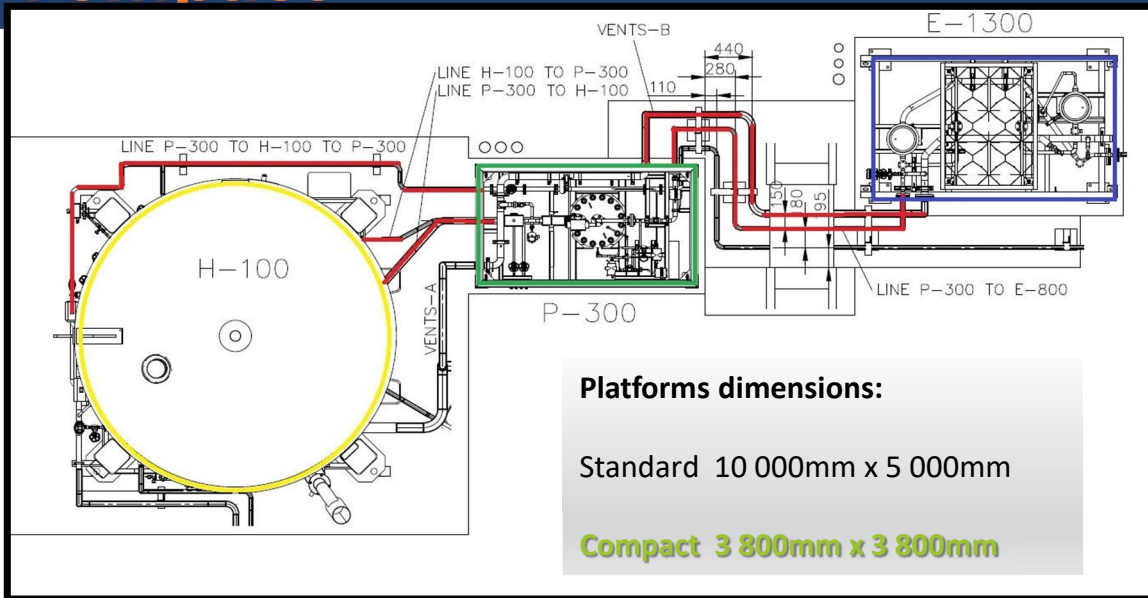
Control system

VIP

1 or 2 (up to 4)
LNG dispensers

Compact
station -
3in1

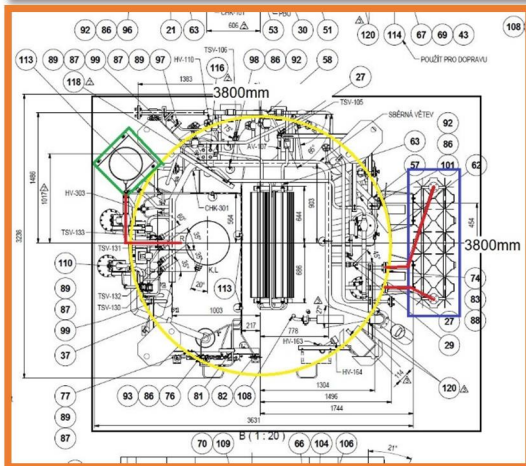
Foot print - Standard versus Compact



Platforms dimensions:

Standard 10 000mm x 5 000mm

Compact 3 800mm x 3 800mm



Interconnecting piping welds on site for Compact station:

- 0 pcs on site (red color, tank – pump skid - SOF)
- 0 pcs on site, only 4-8 pcs of flanged/welded connections

Compact fueling assembly

One assembly (3 in 1) – safe time, energy and investment

LNG tank with Pump skid & Saturation on the fly

Saturation on the fly (SoF)

- offer cold and warm LNG
- immediate offload
- quick fueling
- without waiting time for drivers

Pump skid is part of LNG tank

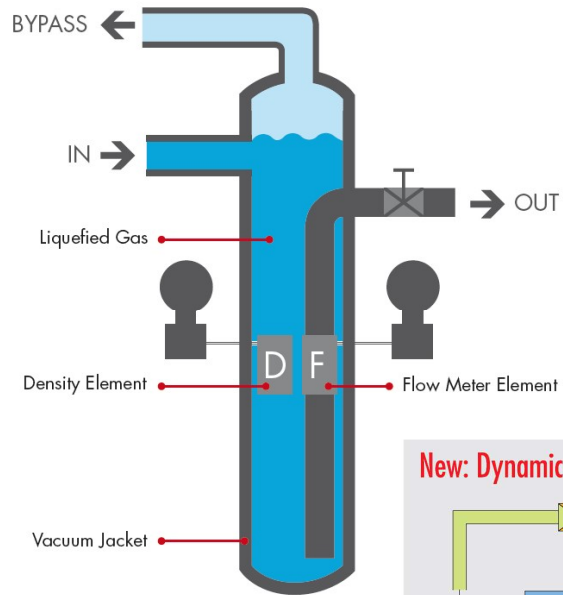
- sump is always flooded by LNG
- the best pump running conditions
- minimize heat leak – Boil off reduced



LNG Dispenser



Schematic

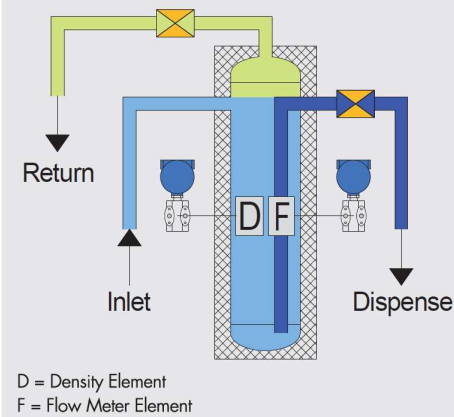


Key facts

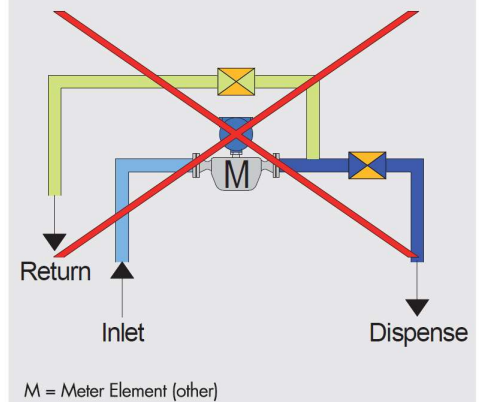
- Average fueling time: only 3 min / 450l
- Measurement accuracy better than 0.25%
- Can be supplied as part of a mobile or stationary LNG fueling station
- MID approved
- Digital display showing price, amount of gas in kg and price per kg

Calibration at site
done within 1hr !
No extra cylinder
needed !

New: Dynamic Density Measurement



Old Technology: Meter with Bypass



Functional safety IEC 61 511

ISO 16924 – LNG fueling station

ISO 16 924 – LNG Fueling station

Chapter 16 – EMERGENCY Shutdown

16. 2 – Procedure

LNG fueling system **MUST** be designed according IEC 61 511

Does not mean just to use SIL rated instruments!!!

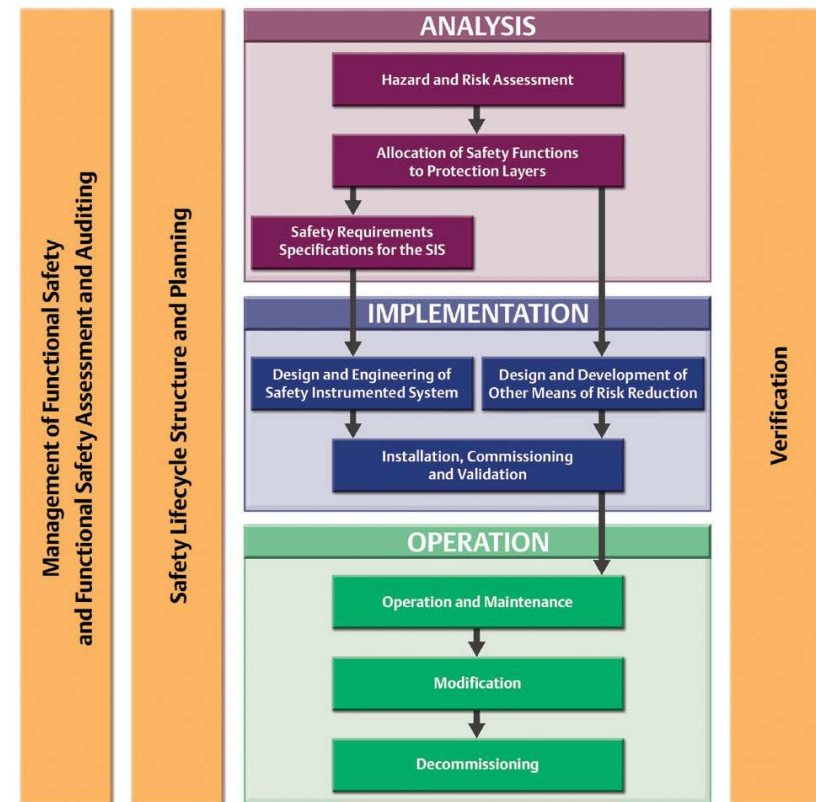


Chart project organization

Chart FEROX – Project structure

Project team

- Project manager – commercial
- Project coordinator – admin support
- Project engineer – technical ownership
- Project designer

Partners for customer realization team

- communication matrix
- engineering clarification
- cooperation with 3rd parties
- project execution

Project organization

Project Management Process

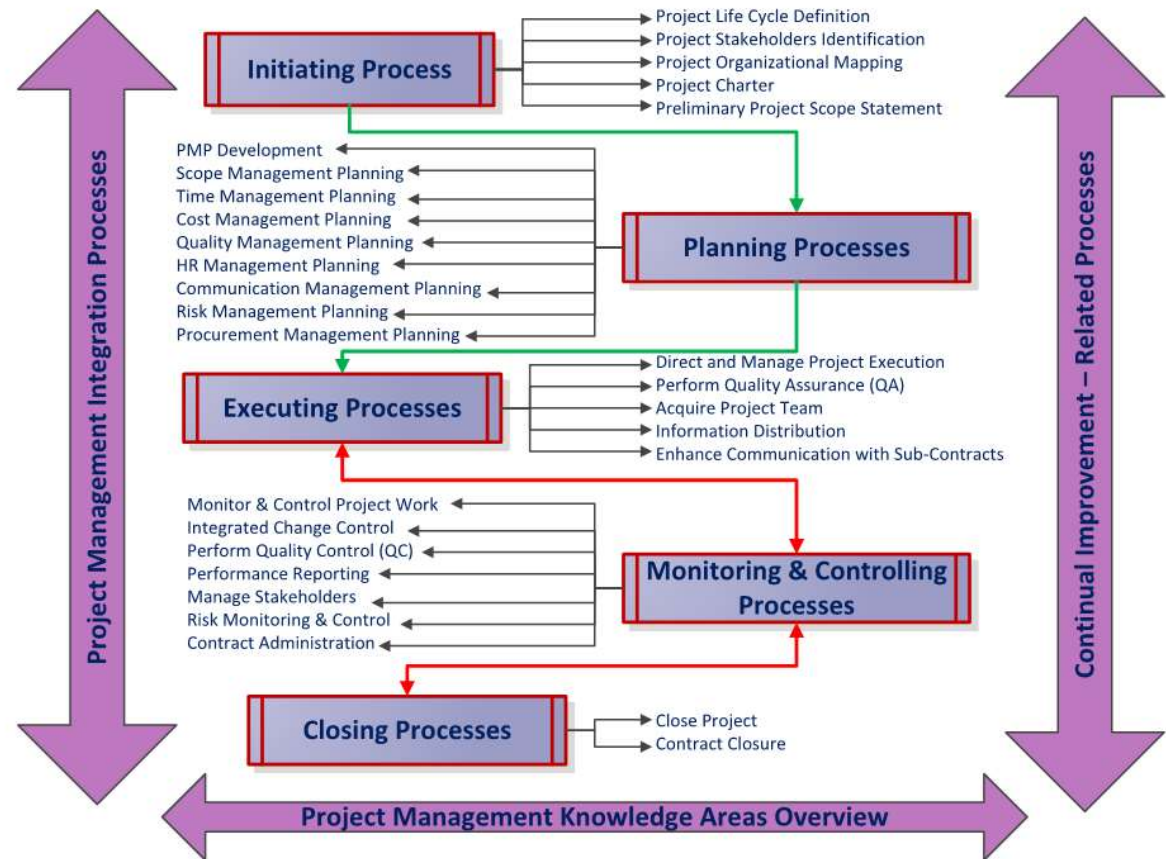


Chart production capacity



Chart – multiple production capacity, site in Decin (CZE) & Ornago (IT)

Capacity

Production

Chart Ferox (Decin - CZE):

- slot production system in place
- 50 stations up to handover per year
- on stock production of LNG vessels

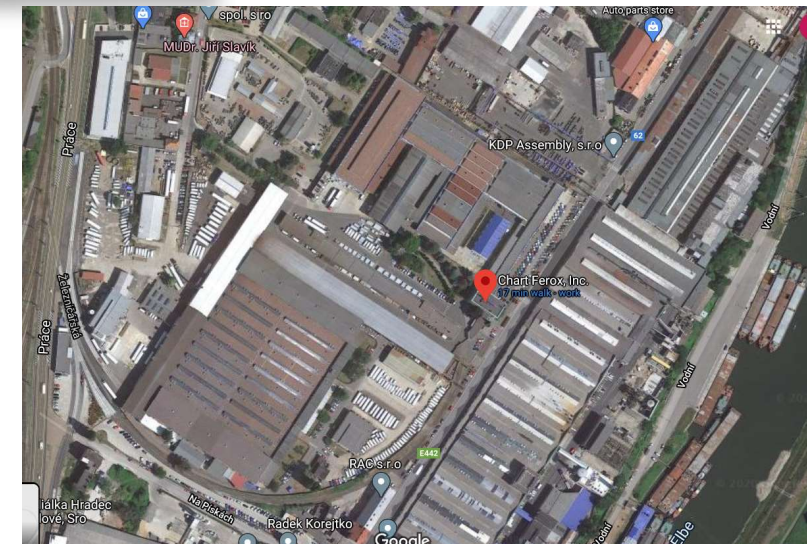
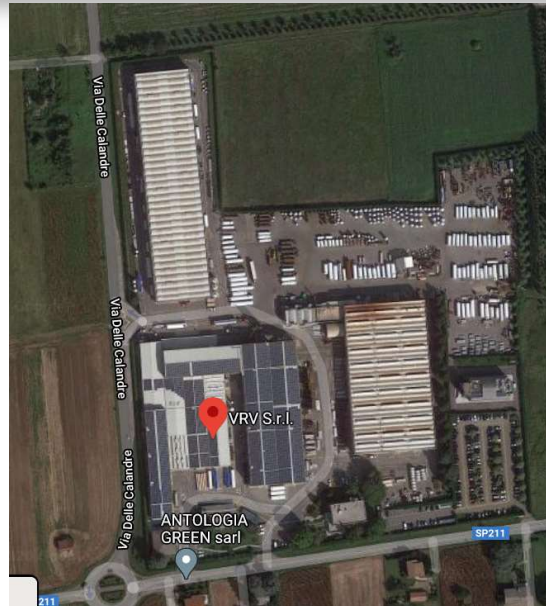


Chart VRV (Ornago - Italy):

- 3in1 production in place
- ONE design
- on stock production of LNG vessels

- Gofa – Goch, Germany
- Flow – Solingen, Germany
- VCT – Gablingen, German
- Ferox – Decin, Czech Republic
- VRV – Ornago, Italy
- Cryo Diffusion - France



Chart Lifecycle service



Chart – OPEX under control

“CHART LIFECYCLE SERVICE” is deemed to keep the station OPEX under control and includes following service segments:

- Start-up phase of LNG station - Hypercare
- Helpdesk
- Periodical Maintenance
- Extended Maintenance
- Training program
- Spare Part program
- Periodical Calibration



Aftersales
service
Lifecycle

Section Break