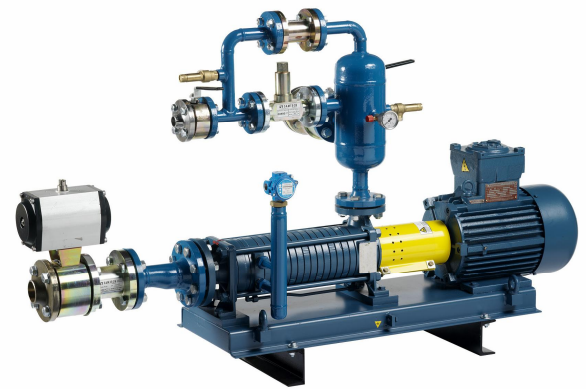


## Samtech UPS pump system for underground tanks

The Samtech UPS pump system for underground tanks is a ground mounted pump system located outside of the tank, which operates on suction lift. There is no maintainable parts within the sealed pressurized LPG vessel.

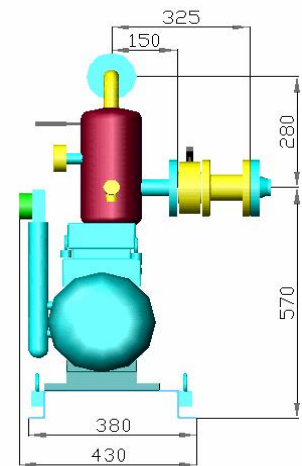
This system is necessary where extraction of LPG is only possible by top-off loading via the dome flange, when there are minimum safe distances, lack of space and are requested technical safety regulations.



### Application

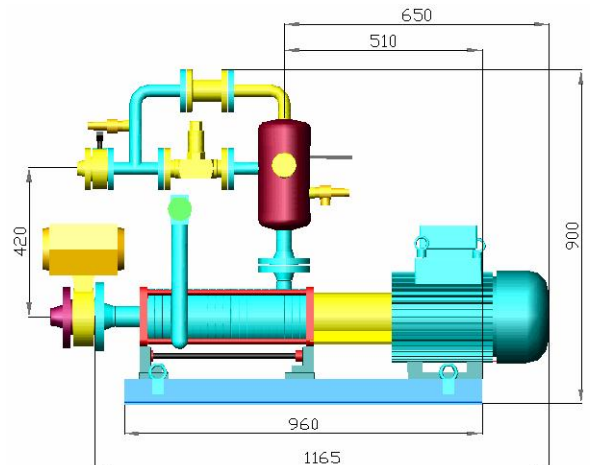
- Auto gas dispensers
- Burner feed
- Vaporized feed
- Cylinder filling
- Carrousel filling
- Road tanker loading/off loading

With Samtech UPS pump system is possible to obtain maximum utilization of the storage tank volume, considerably more than that with a submersible pump.



### Technical specifications

Output:	75-150 l/min
Differential pressure:	max 18 bar
Speed:	1450 - 1750 rpm
Shaft sealing :	standard mechanical seal
Nominal pressure:	PN 25
Temperature:	-25 °C to 80 °C
Flange connections:	UNI PN40



### Main components

- Dry-running protection and amplifier
- Motor (explosion/flame-proof)
- Bypass valve, return line, relief valve with orifice, check valve and ball valve
- Pressure gauge
- Discharge connection with ball valve

### Main advantages

- No items within the LPG tank: easy of maintenance
- Lower operating costs
- Maximum utilization of the storage tank volume
- Higher operating efficiency
- Reduced filling times
- For dispensers with 2 nozzles and with 4 nozzles
- Huge savings over submersible equipment:
- Possible feeding of one pump from two tanks

## Operating principle

The pump primes vapour out of the suction line after start-up.

By the exhausting of vapour and re-vaporization in the suction phase heat is drawn from the liquid in the suction pipe and lowers the temperature and pressure in the suction pipe.

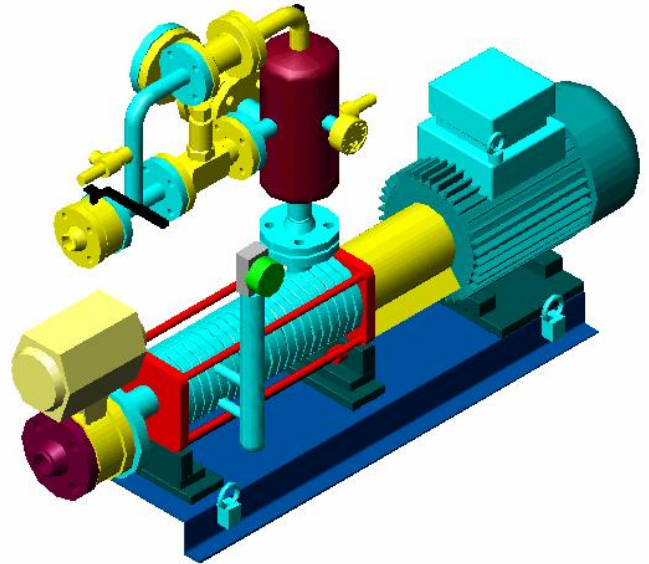
This fact generates a pressure difference, against the constant tank pressure, that causes the rising up of the liquid to the pump. This allows the pumping start.

## Operation

During normal operation, a small by-pass flow of liquid LPG and any vapour is fed back to the tank above the liquid line. This increase the temperature/pressure of the vapour phase above vapour pressure of the liquid. Then liquid is forced up of the pump suction line. Finally, there is a small continuous by-pass in order to eliminate vapour bubbles within the LP gas.

## System configuration:

- Side channel combi pump
- Motor explosion/flame proof EExd
- Dry running protection
- Gas separator
- Pressure gauge
- Relief valve
- Base plate
- Flexible or magnetic coupling
- Bypass valve
- Check valve
- 2 ball valves
- Piping
- Foot valve (option)



## Dry running protection

The dry running protection device is the most important component of the system after the pump.

This device is fitted directly into the retaining stage of the pump to detect the liquid level inside the pump casing. The dry running protection also keeps the pump in a primed condition. This device is Ex rated and designed to operate in hazardous areas.

## Pump selection for Car Filling Stations

The criteria for selection of the right pump size are:

- At start-up: required differential pressure: 9 bar
- During filling: differential pressure: 5,5 bar
- Dispenser filling flow rate 30 l/min per nozzle  
(1 minute to refill a 30 lt tank)

The UPS Samtech system can be used with a two nozzles dispenser and also with 4 nozzles dispensers.

Another benefit of the top-mounted UPS system is that is possible the feeding of one pump from two tanks. The existing installation remains un-touched.

This is not possible with vertical or submersible pumps.

For this reason, a second tank can be installed at a later time with increased demand of LPG and the initial costs for one tank installations are kept low.

