

Butadiene storage – propane refrigeration

Vopak Terminals, Singapore

Butadiene is an intermediate chemical, used in manufacture of ABS plastics. This refrigeration unit is a part of new butadiene storage facilities built for Vopak by Chiyoda in Jurong Island, Singapore. Rundown flow from Shell or other producers of butadiene arrives by pipeline and is cooled before being stored in sphere tanks for export.

- Zone 1 hazardous area
- 410kW capacity for cooling butadiene down to 5°C with capability to increase capacity up to 820kW
- 2 x 100% Mycom screw compressor 160L, cast steel casing
- Three flooded fully welded 316SS plate exchanger evaporators, cooling butadiene
- Refrigerant cooled plate exchanger as oil cooler
- Air-cooled fin-fan condenser
- Locally mounted control panel; PLC panel in remote safe area

Butadiene is toxic, carcinogenic, flammable and unstable. Although the liquid contains an inhibitor, polymerisation can occur if liquid temperature is allowed to rise for significant periods, so system reliability is critical. Due to the hazardous properties, leak integrity is also critical and for this reason we proposed fully-welded plate exchangers. These provided total leak integrity, as well as substantial advantages in smaller space, lower weight and much lower refrigerant charge, compared to the more conventional shell & tube exchangers.

The system is required to operate with wide load variations all year round, from 100% down to 0% capacity.

After commissioning, RE continues to provide training, maintenance, spares and technical support for the unit.

