

Polyethylene plant - peroxide storage

PTT Polyethylene, Thailand

Organic peroxides are used as catalysts in low density polyethylene (LDPE) plants. However, these peroxides are quite unstable, and can start to decompose even at ambient temperatures. The resultant heat from this reaction potentially may further heat the liquid, and cause a runaway reaction, and auto-ignite the flammable vapours. For safe, longer-term storage and handling, and to preserve quality, the peroxide catalysts must be stored well below the self-accelerating decomposition temperature.

RE provided refrigeration for storage of peroxides in cold rooms and chilled tanks at a new LDPE plant in Map Ta Put, near Rayong. Four individual refrigeration packages with capacities up to 146 kW were supplied to cool ethylene glycol secondary refrigerant to -10°C , and pump it to the consumers including peroxide storage areas, storage vessels' jacket cooling, and peroxide dosing pumps. Each package included 100% refrigeration system redundancy.

- On-shore, Zone 1 & 2 IIC T4
- Open screw and Ex d scroll compressors
- Brazed plate evaporators
- Semi-welded plate condensers

Our Ex d hermetic scroll compressors, previously certified to T3, were further developed and re-certified at our shop to suit the T4 site hazardous area requirements.

Design of each refrigeration package was customised to fit the load profile on the process side. As a result, the four packages differ in compressor type and capacity, cooling medium composition, capacity control for various load conditions and control logic.

In addition to automatic change-over of the redundant PLC, monitoring and controlling all the PLC parameters through the plant's main control system was provided.

