

Cold Box**Product Coding**
PXXXXXXXXX**Introduction**

Cold box package is a core unit in cryogenic separation processes used in oil and gas, petrochemical, and air separation plants. It integrates multiple heat exchangers, separators, and internal piping into a single insulated enclosure to enable efficient low temperature processing. By housing all cryogenic equipment in a controlled cold environment, the cold box ensures stable performance, minimal heat leakage, and high operational reliability.

Function

The primary function of the cold box is to provide the required cryogenic conditions for gas cooling, condensation, and separation. Feed gas is progressively cooled inside the cold box through brazed aluminum plate-fin heat exchangers until partial or full liquefaction occurs. The condensed components are then separated in internal phase separators, while the remaining vapor streams are routed back through the exchangers for heat recovery, maximizing energy efficiency and minimizing refrigeration duty.

Features

- Integrated design combining plate-fin heat exchangers, phase separators, piping, and valves in a single insulated module.
- High performance insulation system (perlite or multilayer insulation) to minimize heat ingress.
- Compact layout enabling reduced plot space and simplified installation.
- Precision manufactured internals for cryogenic service with strict leakage control.

- Designed in accordance with international cryogenic and pressure vessel standards.
- Modular construction allowing offsite fabrication, testing, and rapid field erection.

Applications

- Natural gas processing units for NGL recovery, LPG extraction, and helium separation.
- Air separation units for production of oxygen, nitrogen, and argon.
- Hydrogen, syngas, and petrochemical plants requiring deep refrigeration services.
- LNG, cryogenic recovery, and low temperature purification systems in refinery and petrochemical complexes.



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