

# ★ Turbo expander with oil brake TP



## ★ Typical Application

Industrial Gas Industry (Air Separation Units: Nitrogen or Oxygen production, Nitrogen refrigeration loop) to provide refrigeration for power up to 600 kW.

## ★ Usual Gases Handled

Air, Nitrogen, or waste gas from air with high oxygen content possibility.

## ★ References

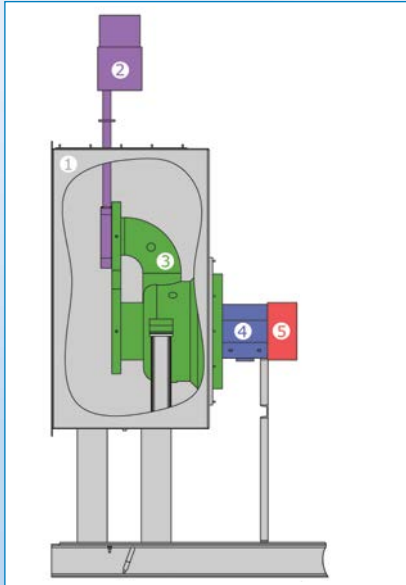
Cryostar has a long experience in the design of the TP, with the first unit built in 1979 and more than 200 TP in operation sold to the major gas companies.

## ★ Features and benefits

- ★ Turbo expander with oil pump brake mounted on a common shaft.
- ★ The “cartridge” design of the expander allows access to the rotating element without removing the expander casing.
- ★ For easy maintenance, a spare “plug-in unit” (expander without casing) allows customer to change all internal parts within a minimum of time and with maximum reliability.
- ★ Variable nozzles allow operating on a wide range of flows and pressures.
- ★ A modular lube oil system is feeding the oil brake and bearings.
- ★ The standard cost effective expander package can be customized to meet the most stringent customer specifications or standards like API614.



## ★ TP 2D View



- 1 Cold box extension (to bolt or weld on main cold box)
- 2 Quick Closing Valve
- 3 Expander
- 4 Bearings
- 5 Oil pump brake

## ★ Sizes and type

Cryostar offers now TP 120, TP 200, TP 300, depending on customer needs.

**TP 200** →

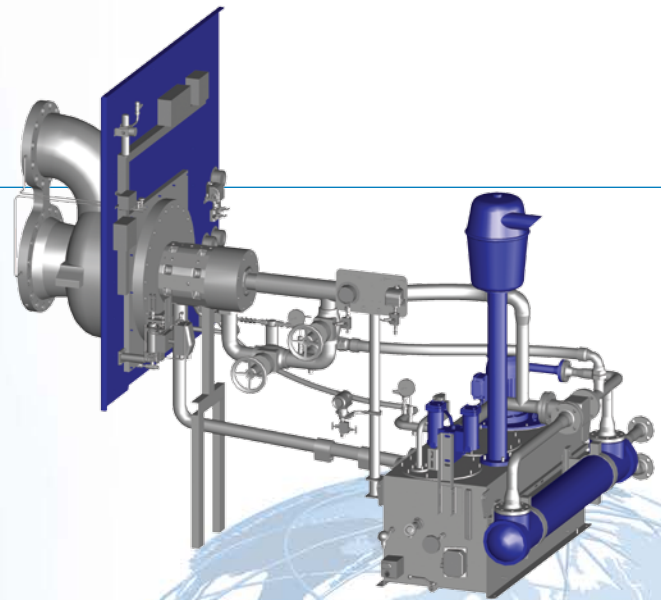
T: Turbine (expander)  
P: Oil Pump  
200 is the expander wheel diameter in mm

**TP 120 ECO** →

TP 120 without skid and usually reduced scope of supply

## ★ Range of operation

- ★ Flow up to 100'000 Nm<sup>3</sup>/h (25 kg/s)
- ★ Pressures up to 100 bar
- ★ Expander temperature -270° C to +200° C
- ★ Power up to 600 kW (800 HP)



## ★ Other available Expanders

- ★ **TC:** Expander with process compressor and oil lubricated bearings
- ★ **TFC, TCC:** Cryogenic expander with cryogenic compressor and possible oil brake
- ★ **MTC:** Expander with process compressor and active magnetic bearings
- ★ **ECO:** Expander with oil brake (low pressure/flow/power)
- ★ **TG:** Expander with generator and oil lubricated bearings
- ★ **MTG:** Expander with high frequency generator and active magnetic bearings
- ★ **LTP, LTG:** Liquid expander with oil brake or generator

