

Turbo-Brayton subcooler

for Liquefied Natural Gas (LNG) boil-off reliquefaction

The Air Liquide Turbo-Brayton subcooling system is an optimal solution for natural gas reliquefaction. Combining performance, reliability and compactness, it can be integrated on LNG carriers to re-liquefy boil-off gases, but also on bunker barges or vessels, FSRU, FSU and LNG fuelled vessels.

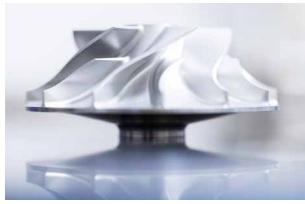


key benefits of the Turbo-Brayton

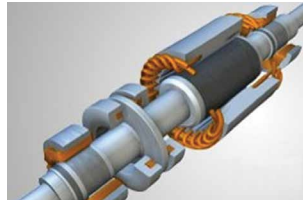
- **Single skid solution:** easy installation, plug and play design, short start-up & low foot-print
- **Easy integration** thanks to subcooling
- **Safety** with inert and non flammable gas, leak tight
- **High reliability:** with contact free, oil free technology
- **Utility free:** only water and electricity
- **Drastically reduced maintenance:** few days each 5-years
- **Fully automatic,** unmanned operation
- **Turndown** between 0% and 100% and **high efficiency** on all operation range
- **Flexibility in operation:** unlimited number of starts and stops
- **Retrofit friendly**

Reverse Turbo-Brayton principle

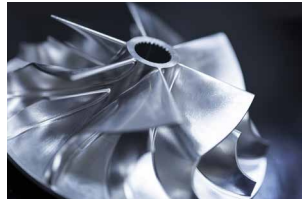
Turbo-Brayton is an innovative and patented solution.



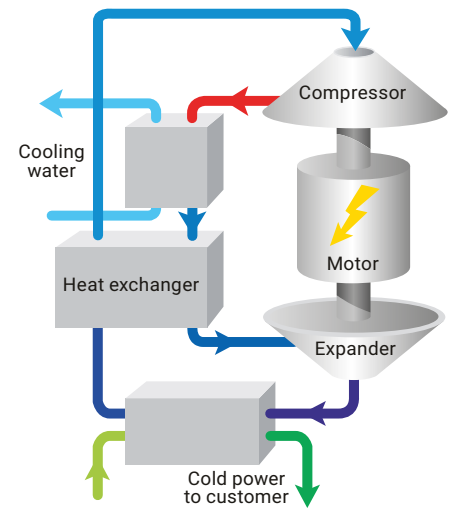
Compressor



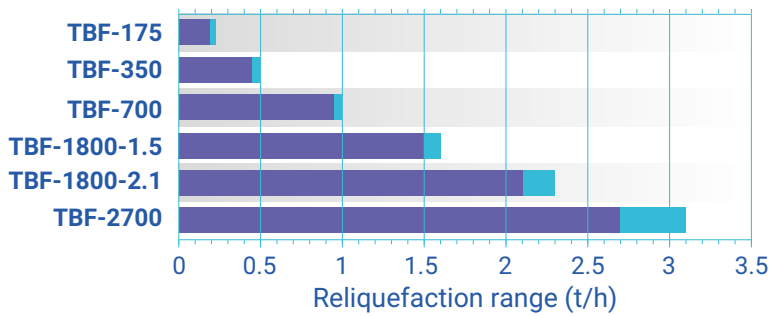
Motor on magnetic bearing (oil-free, contact-free & high reliability)



Expander



Off-shore Turbo-Brayton range



■ Operation range ■ Max. range, depending on operation conditions

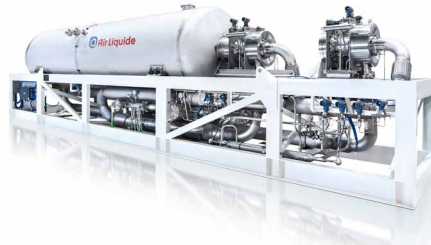
References

Air Liquide's Turbo-Brayton subcooling system is a reference on the market:

- **LNG bunker vessel:** large part of existing fleet is equipped with Turbo-Brayton
- **LNG carriers:** 130 references including 60 units in operation
- **Retrofit installation:** more than 20 references (LBV, LNGC, FSRU, etc.)



Turbo-Brayton TBF- 175



Turbo-Brayton TBF-350



Turbo-Brayton TBF-700



Turbo-Brayton TBF-1800-1.5



Turbo-Brayton TBF-1800-2.1

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