TechnipFMC

DIESTA

Efficient, compact air coolers equipped with dual enhanced finned tubes

DIESTA is an innovative finned tube technology for air-cooled heat exchangers. It uses enhanced surfaces to improve plant efficiency and reduce construction costs without deviating from the robust design requirements of oil and gas industry standards such as API 661.

Applications

DIESTA is available for greenfield and revamp debottlenecking projects. Key application fields are:

- LNG air-cooler fields, including MR compressor inter- and aftercoolers and C3 refrigerant coolers (desuperheater, condenser, and subcooler)
- Ethylene quench-water air cooler fields (focus naphtha-based crackers)
- Other areas such as gas processing plants, gas compression stations, and refineries

Benefits

CAPEX savings

- Up to 20% air-cooler field length reduction
- Savings in structures, piping, wiring, and foundation Increased revenue

Increased revenue

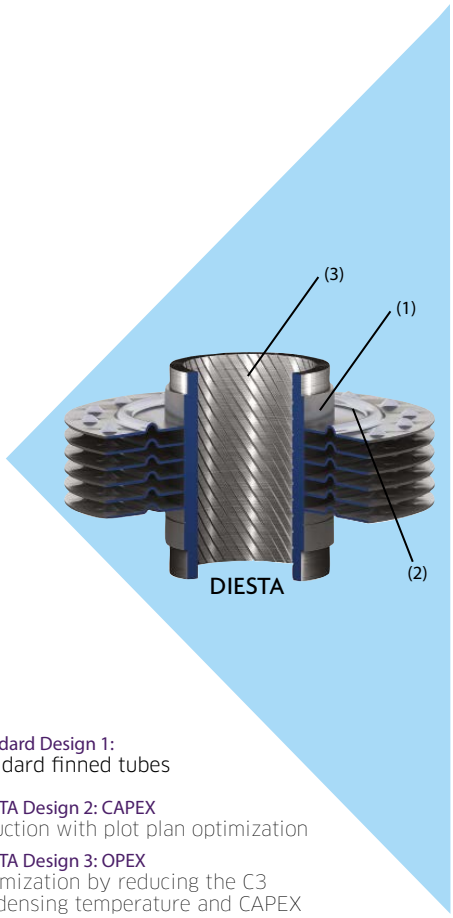
- Substantial revenue savings depending on individual process conditions
- Up to 3% capacity increase through LNG air-cooler optimization

Improved CO_2 footprint

- System efficiency improvement through reduced compression work

The DIESTA tube is a bimetallic finned tube with an aluminum sleeve(1) fully covering the base carbon steel tube. The outside aluminum fins are embedded into the grooves of the aluminum sleeve. To optimize air- and tubeside heat transfer performance, enhancement structures are applied to both sides.

The aluminum fins on the airside combine a groove and a dimple structure(2). Airside mechanical qualification testing confirmed that the tubes are as strong as standard extruded finned tubes and can withstand fouling and cleaning. The tubes have an internally helical fin structure(3) that ensures an increase in the tube-side heat transfer coefficient while controlling the pressure drop.



Different internal structures are available for:

- Gas cooling
- Condensation
- Liquid cooling (including high viscous fluid Pr < 100)

DIESTA production program

- 1-inch, 1¼-inch, and 1½-inch tube OD
- Carbon steel (ASME SA179 and SA334 Grade 6)
- Plain end core tube thickness: 2.11 mm (in accordance with API 661)
- Fin material: aluminum 1100
- Fin density: 10 fpi (394 fpm)

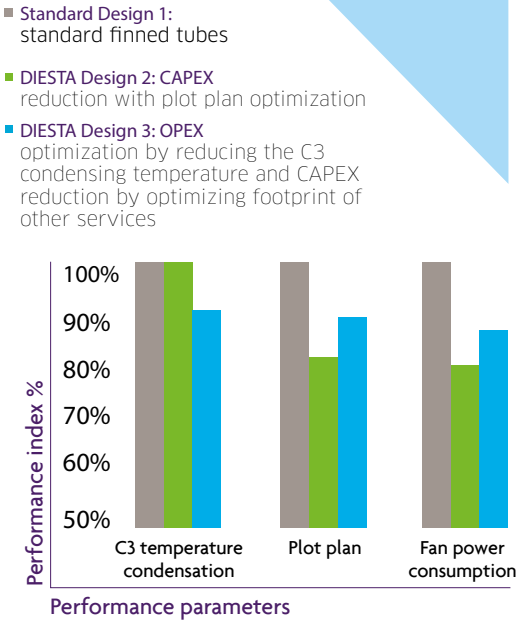
Case study for LNG air cooler field

Assumptions:

- APCI type C3/MR LNG process
- Design optimization for whole air-cooler field with services HP and LP MR aftercoolers, C3 ref. desuperheater/condenser/ subcooler and others

3 potential benefits depending on project objective:

- Maximize LNG production capacity or minimize CO_2 footprint by optimizing C3 condensation temperature
- Minimize CAPEX by optimizing plot plan
- Minimize CO_2 footprint by reducing fan power consumption



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