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 freenfield 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
  - Substantial revenue savings depending on individual process conditions
  - Up to 3% capacity increase through LNG air-cooler optimization
- Improved CO₂ 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, 1¾-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

**Three 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

---

![Performance parameters graph](image-url)