GEA Ibérica Surface Condensers



GEA at a glance

When it comes to the performance of a turbine surface condenser in the operational field of a steam turbine cycle, you need utmost reliability and efficiency. Here's where GEA's Know-how is invaluable.
We create customized package solutions for each particular customer's needs. Over the years we have forged long lasting relationships with top quality turbine makers, main EPC contractors, engineering companies and plant end users. This expertise provides our staff with the right knowledge to advise customers of the most suitable application for their cooling problems.
We collaborate with you on all stages of the project development and implement the strictest control measures within all execution phases of the surface condenser packages.



GEA Group Bochum, Headquarter Germany

[Efficiency in food and energy processes]

GEA Group

GEA Group Aktiengesellschaft is one of the largest system providers for food and energy processes. As an internationally operating technology group, the company focuses on process technology and components for demanding production processes in various end markets. The group generates about 70 percent of its revenue from the long-term growing food and energy industries. Our mission: We constantly devwelop our products, integrate new technologies and give our customers worldwide the most reliable and efficient solution.

Corporate structure: Five segments

- GEA Farm Technologies
- GEA Heat Exchangers
- GEA Mechanical Equipment
- GEA Process Engineering
- GEA Refrigeration Technologies



GEA Ibérica, Spain

Power Plant Boxberg, Germany



[Efficiency + reliability = performance]

GEA Ibérica S.A.

GEA Ibérica S.A. is part of GEA's Heat Exchangers Segment and serves the power and process industries with cooling equipment worldwide. We are by tradition a worldwide player in the heat transfer industry and serve our clients in the power generation business and all traditional areas of the process industries such as chemical and petrochemical plants as well as efineries, LNG and GTL plants.

Our product portfolio includes products and systems for:

- Direct Dry Cooling – Air Fin/Fin Fan coolers
- Direct Condensing – Air Cooled Condensers
- Special Applications: Surface Condensers
- Special Applications: Heat recovery steam generators
- Special Applications: Heat recovery systems
- Shell and tube heat exchangers

[Basics]

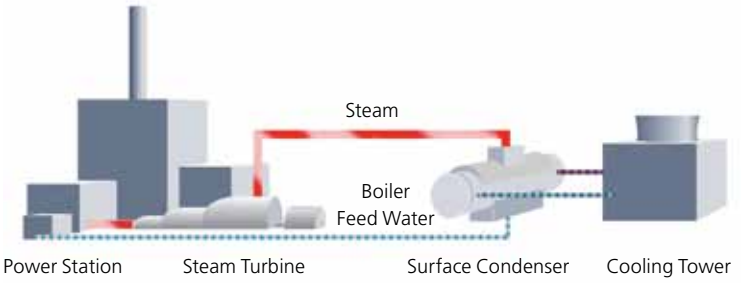
Surface Condensers

Surface condenser is the commonly used term for a water-cooled shell and tube heat exchanger installed on the exhaust steam side from a steam turbine in thermal power stations. Surface condensers are also used in applications and industries other than in power plants.

Main duties of any surface condenser are to convert the exhaust steam from its gaseous to its liquid state at certain under atmospheric pressure, and also, to release non-condensible presented in the steam cycle, together with vacuum units.

For any surface condenser, it is absolutely essential that its main duties must be performed in the most effective way since the lack of surface condenser performance has a strong influence in the overall efficiency of any steam turbine cycle.

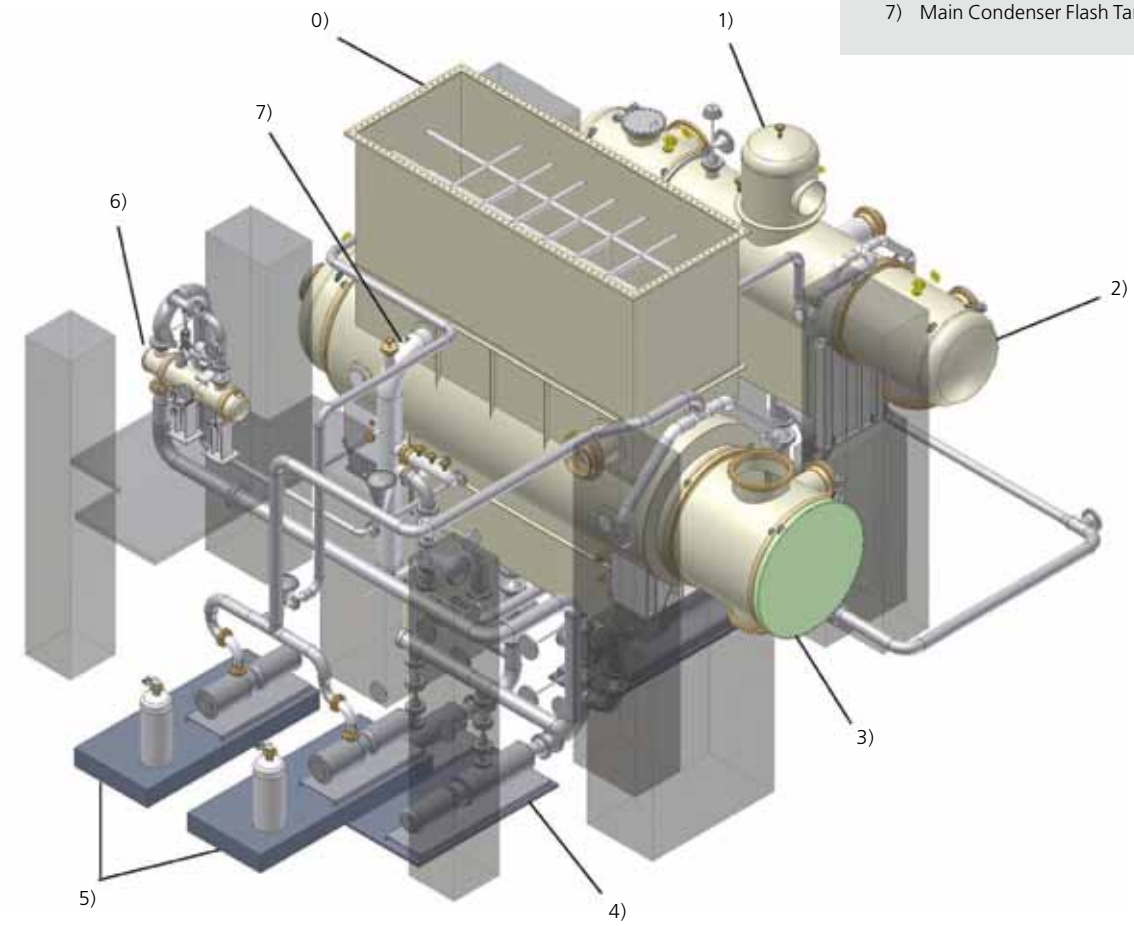
Hot cooling water leaving the surface condenser can be cooled down in a cooling tower (closed cooling system) or directly pumped to an open source (one through cooling system).



[Manufacturing excellence]

Surface Condenser Package

Legend
0) Main Condenser Steam Duct
1) Auxiliary condenser Dump connection
2) Auxiliary Condenser -Dump Condenser-
3) Main Condenser
4) Condensate pumps for Main Condenser
5) Vacuum Units for Main Condenser
6) Gland Steam Condenser
7) Main Condenser Flash Tank



Main Condenser



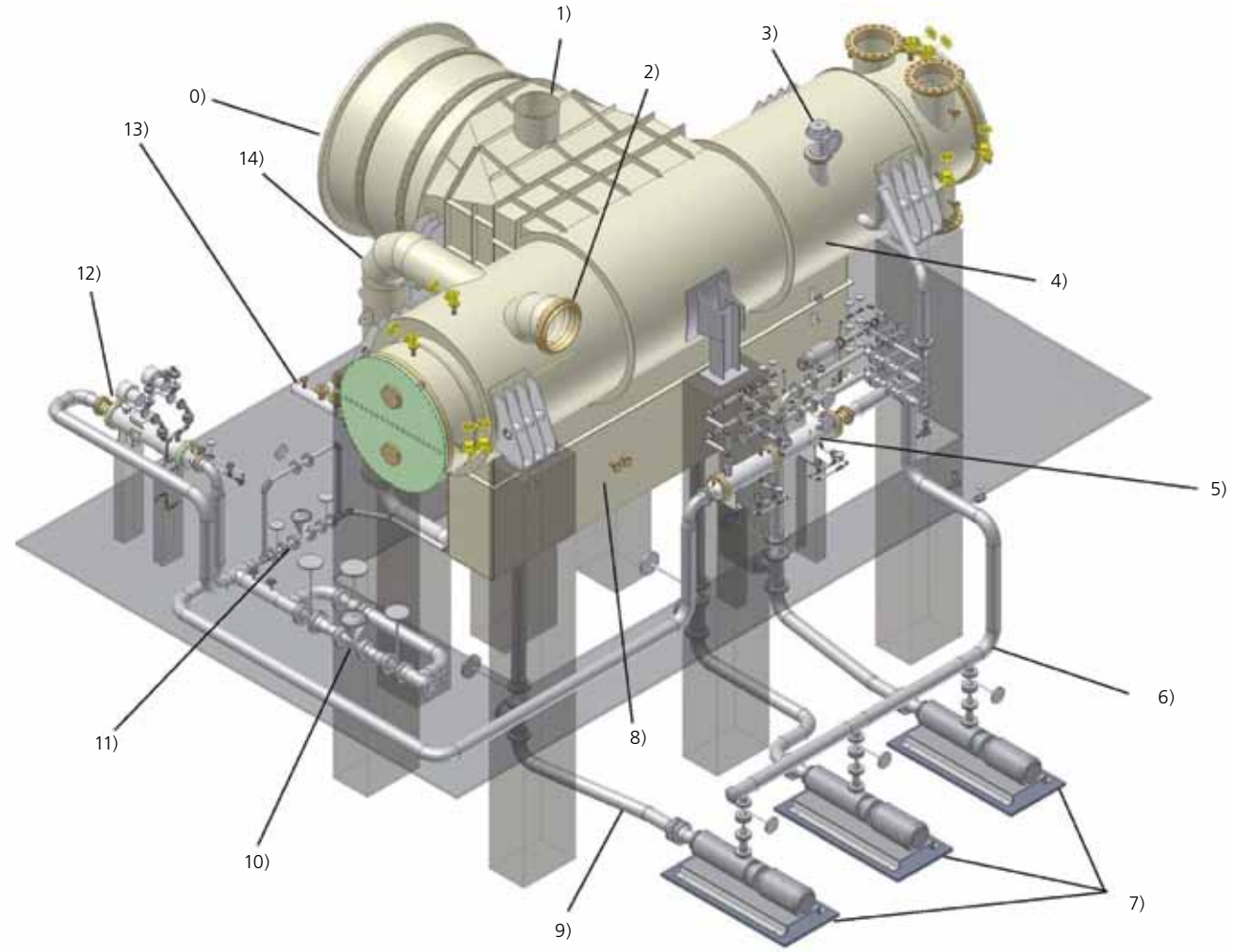
[Advantages]

Our Know-how Your Benefit

- Expertise accumulated during decades provides GEA Ibérica staff the right knowledge to select and advice customers the most suitable choice for each particular application
- Intense project management in close collaboration with customers in bid, order and after-sales stages
- Long-lasting relation with top quality turbine makers, main EPC contractors, engineering companies, end users and plant owners
- Advanced modern design software tools enables GEA surface condensers to meet the most stringent requirements: Special tube bundle design for proper steam condensation and non-condesible release

Legend

0) Axial Duct
1) Dump Steam Connection
2) Rupture Disk
3) Atmospheric Relief Valve
4) Main Condenser
5) Vacuum Unit
6) Interconnecting Piping
7) Condensate Pumps
8) Hotwell
9) Interconnecting Piping
10) Level Control Valves: Overboard
11) Level Control Valves: Return Condensate
12) Gland Steam Condenser
13) Drain Header
14) Flash Tank



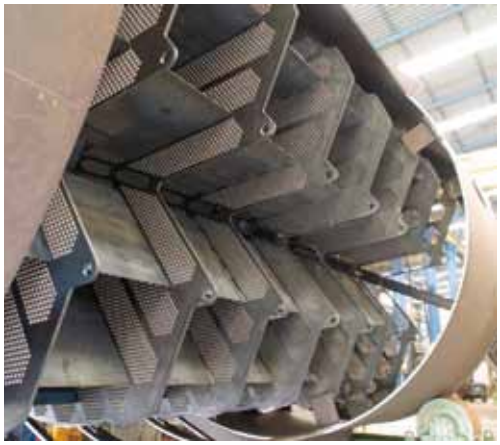
- Global knowledge of the cold end: GEA is one of the very few companies worldwide including surface condensers, cooling towers and air-cooled condensers in its product portfolio. Thus this lets GEA to provide tailor-made and cost-effective solutions to customers for the cold end
- GEA Ibérica as part of GEA Group, is able to deliver through its sister companies technical assistance on site worldwide
- Worldwide reference list including all kind of applications and customers



Condensate Pumps

Designed for Top Performance

GEA Ibérica designs, manufactures and supplies overall operational packages involving basic and detail engineering, procurement, testing and delivery. Condensers are manufactured in diverse materials. Tubes are made of carbon steel, stainless steel, Cu alloys, Ni alloys and Titanium. Tube sheets can be solid type or cladded, according to the quality and nature of the cooling water. All components are mounted or prefabricated in our workshop in common or separated stainless steel base frames.



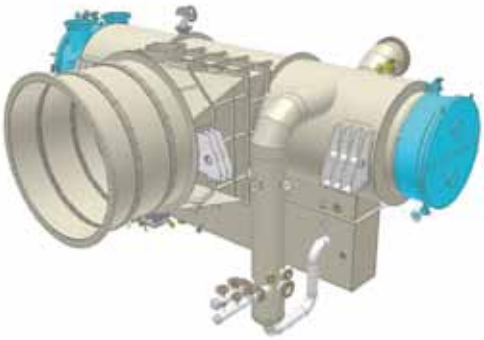
Manufacturing Excellence



Vacuum Unit

Our Standard Supply Comprises

- Condenser: circular or rectangular cross-section, axial or vertical steam entry
- Turbine to condenser steam duct, including the necessary expansion joints
- Vacuum system: either steam-jet ejectors or liquid ring vacuum pump types
- Flash tank, drain header and/or vacuum drains lifting system
- Dump tube and pressure reduction de-superheated system
- Condensate pumps system: pumps are in a vertical or horizontal arrangement; either motor or steam turbine driven; API 610,ISO5199 or standard manufacturer pumps design
- Control system: including level control valves; level, pressure and temperature indicators, transmitters and controllers
- Ball tube cleaning system
- Interconnecting piping with filter, fittings and valves



Condenser

Main Applications

GEA Ibérica Surface Condensers are especially suited to the power industry and carbon and oil fuel single cycle power plants, combined cycle plants, cogeneration plants, thermo solar plants and waste to energy biomass plants.

Other applications include:

- District heating plants
- Desalination plants
- Chemical and Petrochemical Industry, incl. Methanol plants, PTA plants & refineries
- Shipbuilding industry – cargo vessels and liners
- Oil & Gas Industry (upstream and downstream), floating production and storage off shore vessels
- Industrial applications: sugar mills & steel mills
- Mining and metallurgy industry

GEA is your reliable partner for surface condensers. With a world wide, multi-national presence we can prepare individual solutions for each customer. No two projects are alike. Due to GEA's global network of sister companies, we have the capability of delivering technical assistance wherever it's needed for any of our projects.



Main Condenser

Codes and Standards

- HEI –Standards for: Surface condensers, Steam jet & Liquid ring vacuum units
- PED 97/23/CE: Pressure equipment directive
- ASME VIII – Division 1 - Pressure vessel design code
- AD-Merkblätter - Pressure vessel design code
- CODAP - Pressure vessel design code
- TEMA –Standards for Shell and Tube heat exchangers
- ATEX 94/9/EC directive- for apparatus under explosion atmosophere
- ANSI; DIN; ASTM, ASME, ISO, API, U-Stamp; SQL; GOST-R, Rostechnadzor, NR-13.

Third-party Inspection and Certification

Lloyd´s registered; TÜV; DNV; Germanische Lloyd; Bureau Veritas, ABS...



GEA Heat Exchangers
GEA Ibérica S.A.

Barrio San Juan 28 · 48140-Igorre · Vizcaya · Spain
Phone: +34 946 315 000 · Telefax: +34 946 315 129
www.geaibericasa.es · geaigorre@geaibericasa.es

GEA Heat Exchangers
GEA Ibérica S.A.

Ctra. Reial · 122-A, 1º 4ª · 08960 St Just Desvern · Barcelona · Spain
Phone: +34 934 700 793 · Fax +34 933 728 279
www.geaibericasa.es · geabarna@geaibericasa.es

GEA Heat Exchangers
GEA Ibérica S.A.

C/ Colombia nº 64 · 28016-Madrid · Spain
Phone: +34 913 530 000 · Telefax: +34 913 509 366
www.geaibericasa.es · geaiberica@geaibericasa.es

GEA Heat Exchangers
GEA Caldemón S.A.

Pol Industrial Trascueto B1- D1 · 39600 Revilla de Camargo · Spain
Phone: +34 942 261 525 · Fax +34 942 261 526
www.caldemon.es · geaiberica@geaibericasa.es