YOUR RELIABLE PARTNER FOR POWER COOLING SOLUTIONS

ENEXIO – the worldwide provider in developing and manufacturing of dry and wet power cooling solutions
WE ARE AT YOUR SIDE

ENEXIO is a global provider with a local presence and references all over the world.
ENEXIO is a reflection of what we do and what we have accomplished as a pioneer in the field of power cooling and water treatment over the decades. It represents a promise to both our customers and business partners that we — as a global provider for power cooling and water treatment solutions — stand for Energy. Engineering. Excellence.

With our experience and pioneering spirit in engineering, manufacturing and service, we deliver state-of-the-art solutions for power plants, water and wastewater applications — always inspired by our profound sense of responsibility for the overall management of resources and a clean environment. We deliver excellence and achieve customer satisfaction everywhere in the world. Our global network of employees work with an unceasing commitment to high quality, ecology and cost-effective products and services.

What our commitment to Energy, Engineering and Excellence means for you is that we are a reliable partner who is always there to meet your expectations with superior results. More than 80 years in the market and a great deal of success have made us a leading manufacturer and solutions provider worldwide of both wet and dry cooling systems. Depending on customer requirements, we can provide any type of cooling solution for power generation efficiency while assuring cooling water economy. Our rich product portfolio ranges from all dry air cooled condenser (ACC) and Heller System technologies to all wet cooling towers, with limitless dry/wet combination systems and evaporative add-on solutions in between.

In addition to our core power cooling solutions, we also offer cooling tower, water and wastewater components that ensure a high degree of operating safety and environmental protection. The ecological Circumix technology — as a comprehensive solution to ash and waste water management in coal-fired stations — completes our extensive portfolio.

The diversity of our designs provides customers with extremely eco-friendly solutions and a minimum of operating and maintenance costs. Underlining our responsibility as a reliable partner, we also offer customers comprehensive maintenance and spare parts service, developing and manufacturing all of the main components at our own production sites. Experience ENEXIO!
CLASSIC AIR COOLED CONDENSERS (ACC)

ENEXIO - as the inventor of the ACC - has played a leading role in the evolution of this technology. We are known for our comprehensive expertise in the field of cooling technology and we offer - the whole range of services for dry cooling systems.
SUSTAINABLE SYSTEMS FORM THE BASIS FOR THE PRESERVATION OF NATURAL RESOURCES

For decades, ENEXIO has been building cooling systems all over the world, covering everything from the construction of new systems to the enhancement, maintenance and optimization of existing systems, always to the highest quality standards and incorporating the latest advancements from our own research and development programs.

A proud part of our heritage of innovation in cooling systems is in being the inventor of the Air Cooled Condenser (ACC). The ENEXIO ACC is a direct dry cooling system wherein steam is condensed inside fin tubes. Typically, the aluminum-plated fin tubes are single-row condensing tubes that are brazed with aluminum fins and are air cooled. Since they are air cooled, no water is required for main cooling of the power plant. This application makes it ideal for when plants are located in water-scarce areas or areas where obtaining permits to access water is difficult and time-consuming.

ENEXIO can supply our ACC on a turnkey basis, or delivered solely on a material-supply basis. In addition to our aforementioned fin tube bundles, our scope of supply for an ACC includes the air-moving equipment (fans, motors, gearboxes, etc), steam ducting (from the Steam Turbine exhaust to the inlet of the fin tubes), condensate system and associated equipment, structural steel and instrumentation.

The benefits at a glance
- No water required in condensing the water-steam cycle
- No plume that ices up roads, runways or neighboring facilities
- There is no challenge on issues of water conservation, pollution or aesthetics

CLASSIC AIR COOLED CONDENSER REFERENCES

ACC for 805 MW
Combined Cycle Power Plant, Livorno, Italy

ACC for 45 MW
Waste-to-energy Power Plant, Bielefeld, Germany

ACC for 413 MW
Combined Cycle Power Plant, Toul, France

ACC for 775 MW
Combined Cycle Power Plant, Denizli, Turkey
From the ENEXIO company who invented the Air Cooled Condenser, comes the next generation of innovative and intelligent design: The InAIR blends proven components and technologies to yield the next generation in dry cooling: an Air Cooled Condenser featuring induced draft fans.
The InAIR combines proven components and technologies to yield the next generation in dry cooling: an Air Cooled Condenser featuring induced draft fans.

Induced draft fans have been used reliably in the majority of power plant main cooling systems world-wide, like in wet cooling towers applications. Now, through innovative engineering and utilization of our self-supporting ALEX bundles, ENEXIO can offer the InAIR, an ACC which offers the superior operational performance of ID fans with added savings in material supply, delivery durations, and construction.

With the new design, the fan-units are protected against side wind by the fan rings and due to the omission of the fan bridge the vibrations are reduced. Based to the new arrangement, the life-time of the gear box and fan will increase.

The benefits at a glance
- Reduced air inlet and total height of ACC: less visual impact
- Smaller footprint of columns
- Reduction of steel structure quantities (up to -60%)
- Reduction of steel structure weight (up to -50%)
- Reduced costs for construction:(-10% to - 25%)
- Reduced construction duration: 20% to 30% decrease in man-hours for erection work
- Easier pre-assembly mainly at grade
- Inherent design of supporting steel structure greatly reduces the requirement of scaffolding
- Reduction in the length of the main steam duct
- Reduced investment costs
- Shorter delivery and erection periods
- Patented around the world
Invented by ENEXIO in Hungary in the early 1950s, Heller System® has gained worldwide recognition as the ultimate dry cooling choice where minimum life cycle costs are in focus. In addition, Heller Systems boast unsurpassed availability/reliability records, with the inherently lowest maintenance and spares stock requirements.
Heller Indirect Dry Cooling Systems include a water-cooled condenser, circulating machine groups, circulating water mains and a dry cooling tower accommodating Forgó-type water-to-air heat exchangers. The water-cooled condenser can either be DC Jet or Surface Condenser type. The cooling tower can either be of natural draft or mechanical draft type.

The Heller System’s inventory of closed-loop cooling water greatly assists in reducing performance deterioration by wind effects which plague other cooling systems, and acts as a buffer against steam condensate contaminants. Available in a wide spectrum of configurations, including surface or jet condensers, noise-free and maintenance-free natural draft towers (made either of concrete or steel), as well as induced or forced draft, low-profile mechanical draft towers for urban use. Proven winterization options for extremely cold sites, some in operation for decades beyond the arctic belt. Summertime capacity enhancement with limited use of water by its dry/wet derivatives, that come as a simple spray augmented dry Heller System, or Heller System combined with wet cooling towers placed next to, or inside the tower. The only dry cooling option, selected for nuclear power plants. When serving coal firing units, its natural draft tower can accommodate flue gas exhaust ducts or complete FGDs, thus rendering chimneys unnecessary, and diminishing ground level concentration of flue gas particles.

**The benefits at a glance**
- Its low operational cost and highest operational availability ensure maximum net revenue of dry-cooled power generation plants
- Its natural draft tower features unique environmental compatibility than can assist in overcoming plant permitting challenges: not a source of noise emissions and can diminish ground level pollution if flue gas flue gas is exhausted through the cooling tower.
- With the smallest vacuum space among dry power cooling systems, best supports rapid start-up combined cycle applications
- The thermal inertia of its circulating water inventory provides ultimate resistance to freezing in partial load winter operation, and to performance deterioration by wind gusts; the natural draft tower design also prevents hot-air recirculation
- Comes also as various dry/wet derivatives for optimal trade-off between water economy and summertime peak cooling performance
- The only accepted dry cooling option for nuclear applications, with existing references

**HELLER SYSTEM® DRY COOLING TOWER REFERENCES**

- Concrete Towers 3 x 700 MW Gebze & Adapazari CCGT, Turkey
- Alu-Clad Steel Tower of 540 MW Zayoun CCPP, Syria
- Winter proofed Mechanical Draft Heller Cooling Tower for 260 MW Co-generating CCPP, Moscow, Russia
- Mechanical Draft Heller Cooling Tower for a 60 MW captive power station in a Chemical plant, Japan
ENEXIO is one of the largest providers of technology on the cooling tower market. In 1954, we expanded our portfolio by adding wet-cooling technologies. That means more than 60 years of experience and success have made us a reliable partner in planning, implementation and maintenance of wet cooling systems.
ENEXIO Wet Cooling Towers are synonymous with efficiency and reliability. Our engineers for wet cooling systems can offer any type of cooling tower design, with an extensive variety of technologies and concepts.

Energy. Engineering. Excellence. This is our promise and it stands for unique expertise in Wet Cooling Towers solutions. With ENEXIO top quality, our engineering specialists care for maximum efficiency and absolute reliability in process cooling. We design and build various sizes of cooling towers, including field-erected mechanical-draft cooling towers, natural-draft cooling towers, fan-assisted natural-draft cooling towers, and hybrid cooling towers. The wide range of designs available from us ensures that our solutions satisfy all cost and environmental requirements, and minimize operational and service costs. Prominent customers throughout the world rely on us.

The Benefits at a glance
- Maximum cost-effectiveness over the entire life cycle.
- State of the art with 2H cooling fills.
- Superior product quality in accordance with rigorous ENEXIO standards.
- High degree of delivery reliability.
- Reliable project management.
- Energy efficiency.
- Low maintenance and spare parts costs.
- Components developed in own test-center based in Germany.
- Uninterrupted continuous operation even during winter season.

WET COOLING TOWERS REFERENCES

Natural draft cooling tower for 2 x 1,100 MW, Neurath, Grevenbroich, Germany

Hybrid cooling tower for 270 MW, Cottam Power Station, Nottinghamshire, UK

24 Cell-Cooling Towers for 1,100 MW, Florida, USA

OL2K, Seawater cooling tower with an water flow of 55,000 t/h each, Kuwait
2H COMPONENTS & SOLUTIONS

Evaporative cooling towers are still considered the most efficient way of cooling process water at industrial sites all over the world. As the pioneer of plastic components for cooling tower applications ENEXIO helps customers to meet their requirements.
PERFECT IN PLASTICS –
ENEXIO 2H
COOLING TOWER COMPONENTS

Due to constant product development and optimization, we offer many different fill media structures and surfaces that allow the adaptation of the fill to the specific water quality in the cooling circuit and thus improve the efficiency.

With economic and ecological factors always an important consideration, construction and operation of wet cooling towers necessitates the use of efficient fills and drift eliminators. Our products are produced in PP and PVC. With our patented manufacturing processes, we can offer the reinforcement of the edges of our fills as well as a uniform material thickness across the foil sheets. Material thickness and weight of the fills can be customized according to customer requirements.

The Benefits at a glance
- Flexibility in dimensions
- Available in PP and PVC
- High efficiency
- Low pressure drop
- Cross-fluted fills for high cooling capacity
- Vertical flow fills for high fouling applications

2H COOLING TOWER COMPONENTS

Cross-fluted Cooling Tower Fill  Vertical Flow Cooling Tower Fill  Drift Eliminators  Trickle Fill  Sanipack Anti-Legionella fills and drift eliminators
Based on decades of experience in dry and wet cooling ENEXIO is equipped to offer first-class services that far exceed traditional service standards. High availability and achieving the projected performance are requirements for optimum and safe operation of a technical cooling plant.
OUR SERVICE –
RELIABLE.
CUSTOMIZED.
SAFE.

ENEXIO is the reliable partner from original replacement parts to complex turnkey retrofit projects to achieve maximum plant performance within the shortest erection time and minimal expenditures. We provide maximum plant availability, improved performance and longer life expectancy with the latest state of the art technology.

SCOPE OF SERVICES FOR DRY COOLING SYSTEMS
The replacement of the heat exchanger bundle is central to any retrofit project. Through our own manufacturing facilities and huge network of partners we can supply any type of bundle to any destination, worldwide. Our experienced site supervisors can help your servicing personnel carry out modification work; or you can choose the turnkey option in which one of our project teams completes the work for you, to agreed criteria. This comprehensive service can allow you to achieve the same quality as for a new build.

Upgrades and Retrofits by ENEXIO
- Bundle replacement
- ACC cell extension
- Inspection Module Program (IMP)
- Modification and replacement of fan drive units
- Solutions for mitigation of wind and noise
- Modification of control logic
- Supply of semi-automatic cleaning systems
- Upgrade for winter operation and freeze protection
- Other tailor-made solutions

Through our in-house manufacturing facilities, our dedicated maintenance services and technical staff can keep your plant operating at peak performance with minimal downtime:

- Monitoring and coordination of erection
- Technical field advisory for commissioning and performance tests
- Consultancy for performance improvement, both hardware and software modifications
- Inspections and trouble shooting
- On-site facility staff training
- Spare Parts Service

SCOPE OF SERVICES FOR WET COOLING SYSTEMS
For wet cooling systems we also offer a wide range of services with all the advantages you’d expect from the leading experts in the marketplace.

We only use genuine equipment for performance enhancement or for component replacement. This ensures that we always maintain required properties and performance values – a policy that has proved its worth many times in some of the largest and most modern cooling plants in the world.

Inspection and regular servicing are important parts of our partial plant service. The information gathered can be analyzed online or at the plant by our specialist engineers and technicians. This ensures rapid rectification of defects to reduce or eliminate downtime.

In many countries, to avoid Legionella contamination, wet Cooling Towers must be cleaned and inspected regularly; we provide specialist teams to undertake endoscopic or deep inspections followed by fully certified cleaning to ensure statute compliance.

All services at a glance
- Plant-Assessments and Inspections
- Spare parts service and installation
- Service agreements
- Optimization of performance
- Regular maintenance
- Assembling and disassembling
- Cleaning service
- Drive unit overhauls
- Fill replacement
- Plant monitoring and Data remote control
- Complete overhauls of cooling units
- From one source Service including Engineering and Procurement

AFTER SALES & SERVICE

Fans in Balance  Inspection Module Program (IMP)  Capacity Measurements  Wide choice of components