

**Your single source solution ... wet or dry**

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## Leading Technology



GEA Power Cooling, Inc. applies the latest technology in creating state-of-the-art wet and dry cooling solutions that provide superior performance and years of cost effective service with minimal maintenance requirements. From extremely cold to extremely hot climates, from severely space limited sites to those with highly restrictive noise parameters, GEA has the expert engineering capabilities and resources to accurately provide a broad range of advanced, cost-effective wet or dry cooling solutions. These solutions include parallel condensing systems that effectively combine wet, evaporative cooling and dry, direct cooling to substantially reduce water consumption and superior aftermarket support to best serve customers' needs. From inspection and preventive maintenance to upgrades and replacement parts for all existing cooling towers and air cooled condensers, you can trust GEA to provide cost-effective lifetime customer support.



Supporting the power and process industries with extensive engineering excellence, product quality and unequalled customer service, GEA has an extensive history of setting the standard for effective cooling system solutions for more than 85 years.

### Wet Cooling Solutions

- Counterflow Cooling Towers
- Crossflow Cooling Towers
- Plume Abated Cooling Towers

### Dry Cooling Solutions

- Air Cooled Condensers (ACC)
- Parallel Condensing Systems (PAC System®)

### Specialty Products

- Recuperators
- Rotor Air Coolers



# Lifetime Support

The Aftermarket Services Division of GEA Power Cooling, Inc. provides an extensive range of replacement products and aftermarket services for any existing wet or dry cooling installation. Aftermarket Services is dedicated to supporting customers throughout the Americas, Pacific Rim, Australia and the Middle East. From inspection and preventive maintenance to upgrades, extension cells and replacement parts for any brand of cooling tower, air cooled condenser (ACC) or parallel condensing system (PAC System®), you can trust the Aftermarket Services Division of GEA to maximize performance and minimize costs.

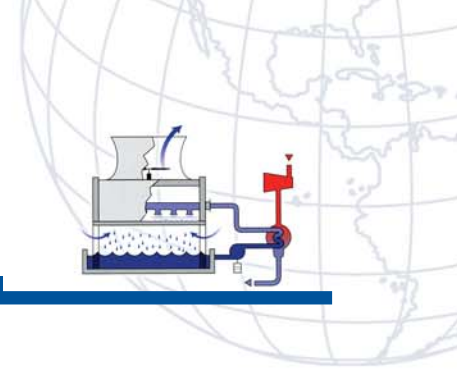
GEA takes pride in the quality of its field engineering services for onsite operator training, start-up and commissioning assistance. The Aftermarket Services division is widely recognized for its responsive attention and dedication to customers' needs as well as its ability to optimize production and ensure continuous operation at maximum capacity.

## The Aftermarket Services Division provides:

- Spare parts and service for all makes of existing cooling towers and air cooled condensers
- Inspection service
- Repairs
- Preventive maintenance
- Replacement towers
- Extension cells
- Upgrades
- ACC expansion
- PAC System retrofit
- Inlet Pre-humidification System (IPS)
- Windscreens
- Conversion to Variable Frequency Drives (VFDs)
- Fin-Tube Cleaning System
- Control Logic upgrade
- Online monitoring system
- Onsite operator training
- Start-up and commissioning assistance



# Wet Cooling Solutions



GEA Power Cooling is a world leader in wet cooling technology and an undisputed industry leader when it comes to efficiency and noise reduction. The Wet Cooling Division is known for successful design and erection of new cooling towers as well as the repair, preventive maintenance and modification of existing cooling towers worldwide.

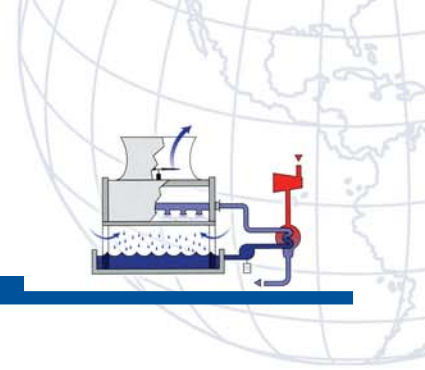
- The GEA group has built thousands of towers since 1920
- Projects have ranged from small one-cell towers to large multi-cell mechanical draft cooling towers for process plants and power facilities to the world's largest natural draft tower
- GEA professionals design, manufacture and install wood, fiberglass and internals for concrete cooling towers

- GEA provides repairs, service and replacement parts for all makes of existing towers
- GEA offers proven low noise and plume abatement systems

## Counterflow and Crossflow Cooling Towers

Counterflow and crossflow cooling towers from GEA are custom designed, field erected and available in pultruded FRP, timber and reinforced concrete. There is virtually no limit to the size of the counterflow and crossflow systems. Individual cell sizes range from 5,000 to 36,000 GPM. Systems are available for "clean" as well as "gray", and salt water applications, low pump head situations and low noise or plume abatement applications.





# Wet Cooling Solutions

## Fiberglass, Wood or Concrete Structures

GEA is the recognized leader in building pultruded fiberglass structures which provide longevity, ease of inspection and reduced maintenance. This lightweight, high strength material is virtually impervious to any environmental condition or chemical in the circulating water, making GEA's fiberglass tower a clear choice for seawater, wastewater or any cooling application. Fiberglass towers offer longer service life and can fit on existing basins for cost-effective tower replacements.

GEA's wooden structure cooling towers incorporate a standard structure with six-foot symmetrical modules. The standard modules allow easy modifications to meet any thermal design and water flow while minimizing engineering time. Wood options include treated Douglas Fir or Redwood.

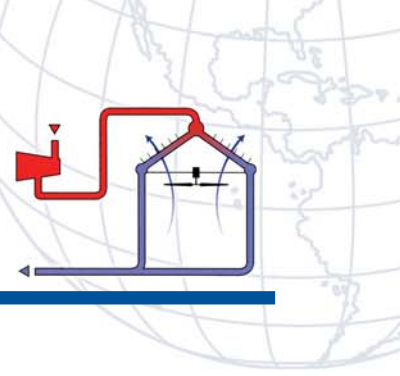
GEA concrete cooling towers are an effective wet cooling solution where geographic location and local construction costs are conducive to this type of tower. Both natural draft as well as mechanical draft towers are available. GEA has extensive, field-proven experience in building and maintaining concrete cooling towers and offers extensive renovation and upgrade services to enhance the longevity of existing towers.

## Plume Abatement Cooling Towers

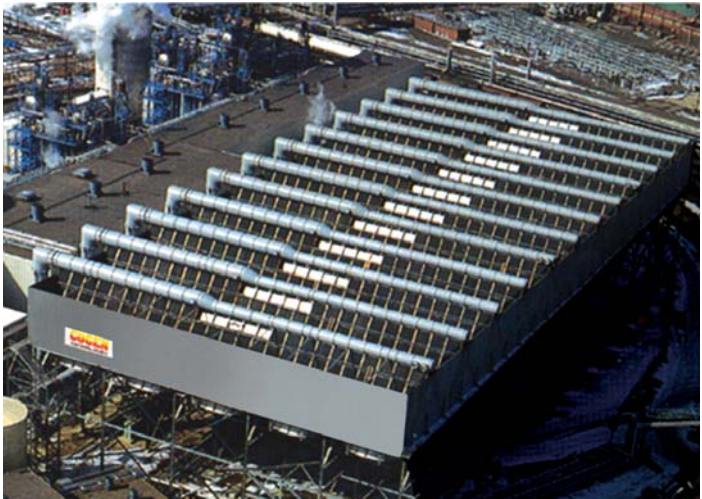
Depending on atmospheric conditions, saturated air leaving conventional cooling towers presents unattractive or even dangerous visibility conditions should towers be located near highways or airports. GEA's wet-dry Plume Abatement Towers are designed to eliminate cooling tower plumes. Using a wet tower that provides cooling capacity and a dry system that provides hot, dry air, the system reduces the humidity of the exiting air, preventing the formation of visible plumes.



# Dry Cooling Solutions



Of the approximate 100 air cooled condensers in North America, nearly two-thirds were supplied by GEA. The name GEA is synonymous with dry cooling worldwide with more than 600 dry cooled system installations since 1939. The GEA PAC System can utilize its dry cooling section to efficiently reject a substantial amount of heat even on hot days to minimize peak water use. GEA Power Cooling is the only company in the world with successful parallel condensing (PAC System) operating experience, having a total of eight installations. The longest running PAC System has provided reliable service for over 15 years. The Dry Cooling Division's complete range of in-house services – from design to initial operation – has allowed GEA to supply air cooled condensers around the world.



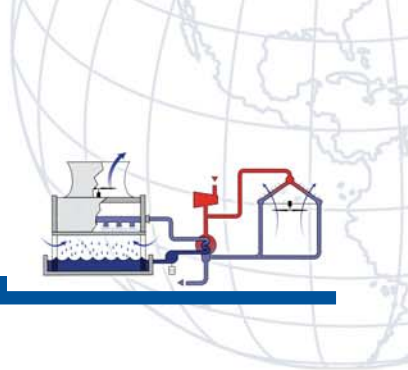
- GEA has supplied 75% of the installed dry cooling capacity in power stations worldwide
- Supplied the largest Air Cooled Condenser (ACC) system in North America
- Introduced the first Parallel Condensing (PAC) System, a combination wet/dry parallel cooling system in 1989
- Awarded the largest PAC System in the world, serving a 750 MW steam turbine generator



## Air Cooled Condensers (ACC)

GEA's Air Cooled Condenser (ACC) technologies combine compact surface requirements with low energy consumption to optimize efficiency. GEA has the most ACC operating experience and the greatest number of operating units in cold weather applications down to -40° F. GEA's air cooled condenser is comprised of fin tube bundles grouped together into modules and mounted in an A-frame configuration on a steel support structure. V-frame, vertical and horizontal configurations are also available. GEA employs a two-stage, single-pressure condensing process to achieve efficient and reliable condensation.

# Dry Cooling Solutions



## Parallel Condensing Wet/Dry Systems (PAC)

GEA's PAC System is the successful combination of two proven subsystems, operating in parallel to share the heat rejection duty. The combination reduces water consumption to align with the designated cooling water available, enabling effective cooling in applications previously thought to be impossible.

On cool days, the amount of heat rejected through the system's dry section can be increased up to 100% to reduce water consumption. In addition, the PAC System can reduce or eliminate plume entirely by shutting off the wet section of the system.



## Specialty Products

### Recuperators or Regenerators

Recuperators or regenerators reduce fuel consumption by utilizing waste heat recovered from the exhaust gas stream of older, lower-efficiency gas turbines, typically increasing the overall turbine efficiency. GEA specializes in the design, fabrication, delivery and construction of shell and tube heat exchangers used to increase fuel efficiency of older gas turbines through waste heat recovery.



### Rotor Air Coolers and Fuel Gas Heaters

GEA designs and fabricates double tube wall type shell and tube heat exchangers used to increase overall fuel efficiency and rotor blade cooling of newer gas turbines using waste heat recovery of the gas turbine exhaust.



## A Proud Heritage



*GEA Worldwide  
Headquarters*

GEA Power Cooling, Inc. is based in Lakewood, Colorado, and is part of the Process Engineering Segment of the GEA Group, a global leader in specialty mechanical engineering and plant engineering.

GEA stands for Global Engineering Alliance. The GEA Group, headquartered in Bochum, Germany, is a multibillion dollar global technology group with operating companies in 50 countries.

GEA Power Cooling is recognized as an industry leader worldwide for both wet and dry cooling solutions. Backed by the strength of this resourceful, engineering solutions group with highly skilled and quality-focused staff, GEA Power Cooling, Inc. is well recognized for:

- Technical engineering excellence
- Cost-effective solutions
- Product quality
- Unequaled customer service satisfaction
- Complete cooling solutions, including installation

[www.geapowercooling.com](http://www.geapowercooling.com)



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