

HAMON

Process Heat Exchangers

AIR-COOLED HEAT EXCHANGERS



Hamon in a few words

Hamon started its industrial activities in Europe (Belgium and France) a century ago and developed the cooling tower business. Hamon spread its wings geographically in the seventies and further consolidated the thermal business in the nineties. Hamon became a world leader in the product lines it chose to be in, respectively:

- Wet cooling towers
- Air-cooled heat exchangers
- Air pollution control
- Chimneys

With over 50 years of experience in the field of heat exchange, Hamon D'Hondt can address and resolve all clients' needs in air-cooled heat exchange.

Hamon D'Hondt designs and manufactures air-cooled heat exchangers (ACHE) and finned tubes and can offer their products to chemical, petrochemical, power and heat recovery industries.



Hamon D'Hondt has developed significant innovative technologies in the design and fabrication of high pressure equipment and in the manufacturing of components made with special materials such as Titanium, Hastelloy, Incoloy, Duplex, Super Duplex, Monel and Nickel Alloys.

Thanks to its consolidated design and manufacturing experience combined with the adoption of improved design and fabrication concept, Hamon D'Hondt is able to give a high technological contribution to the completion of industrial plants and implementation of energy programs worldwide.

Hamon D'Hondt specialises in the design and manufacture of the following products for chemical, petrochemical and power generation plants:

- Air-cooled heat exchangers (API 661)
- Tube bundles
- Aluminium finned tubes
- High frequency and studded welded finned tubes

The complete service starting from thermal and mechanical engineering to the complete manufacture, including the internal design and supply of the main components like finned tubes, fan hubs, fan blades, etc, guarantees Hamon D'Hondt supplies for the best performance and efficiency.



Hamon D'Hondt facilities

Hamon D'Hondt has two factories: the main one in Fresnes-sur-Escaut, France and a new one in Jubail Industrial Area, Saudi Arabia, to serve more specifically the Middle East markets.

French factory

Hamon D'Hondt has a large factory in Fresnes / Escaut (France) with a covered area of 17.550 m² on a total surface of 115.000 m².

The workshops are equipped with the most modern machinery for proper manufacturing and control of the complete air-cooled heat exchangers.



Hamon D'Hondt Middle East facilities

Saudi Arabia factory

Hamon D'Hondt has a factory in Jubail Industrial Area (Saudi Arabia) with a covered area of 3.500 m² on a total surface of 12.000 m².

The workshops in Saudi are performing tube finning, bundle assembly, air-cooled heat exchanger modularizing, and all relevant tests (hydrotest, helium leak testing, vibrations, noise...), whereas the pressure parts (headers) are being manufactured in France and shipped to the Jubail factory.



Air-cooled heat exchangers

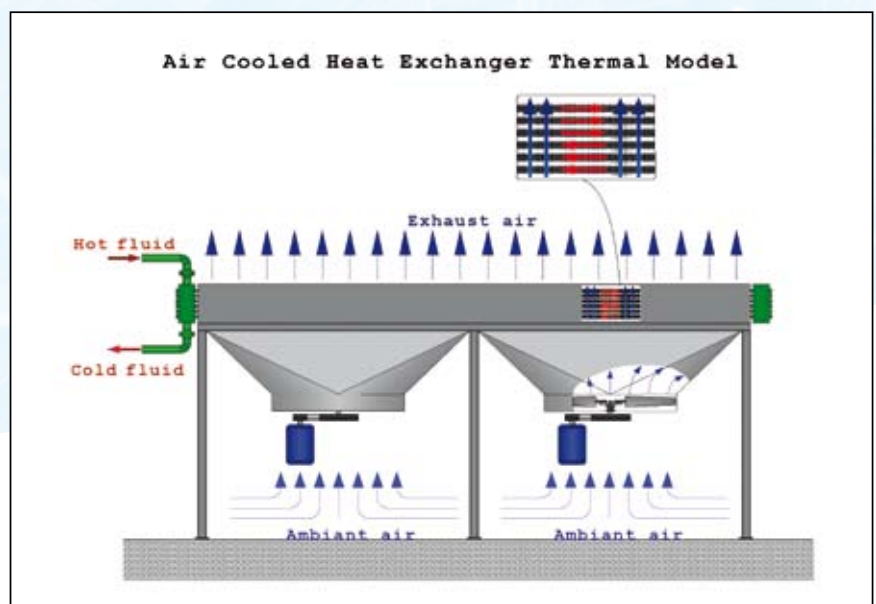
The air-cooled heat exchangers are mostly used when the plant location and the ambient conditions do not allow an easy and economic use of other cooling systems.

The most evident advantages of air-cooled heat exchangers are:

- No problem arising from thermal and chemical pollution of cooling fluids
- Flexibility for any plant location and plot plan arrangement (installation over other units)
- Reduction of maintenance costs
- Easy installation by bolted assembly
- Lower environmental impact than shell and tube heat exchangers thanks to the elimination of an auxiliary water supply

Hamon D'Hondt provides complete aircooler units including tube bundle assembly, motor-fan groups, structure, access ladders and walkways. Typical arrangement can be forced draft, induced draft, or air-recirculation unit. Hamon D'Hondt also supplies pre-assembled modules.

Typical components include headers, finned tubes, and motor-fan assembly.



Air-cooled heat exchangers

Forced draft

Allows easier maintenance of the fans. Fans deliver air at ambient temperature with consequent higher efficiency.



Induced draft

The plenum chambers are mounted on top of the bundle and protect the finned surface against wind, rain, snow and partially hail. The location of the fans also ensures an optimum air distribution, limits air recirculation and allows lower level at maintenance walkway level. Fans deliver hot air.

Recirculated / Winterization

This feature is recommended for special processes (hydrate prevention..) and cold climates, where it is advisable to provide warm air by recirculation to prevent freezing. The recirculation may be achieved by means of louvers, steam coils and variable fans.



Tube bundles tailor made

Hamon D'Hondt designs and manufactures interchangeable tube bundles using top performance equipment.

All types of air-cooled bundles can be replaced with no alteration of the heat exchange capacities and are fully adaptable to existing piping and existing structure. The replacement bundles are re-designed according to the latest code editions and innovation standards.



Retubing

Hamon D'Hondt performs the re-tubing of tube bundles; this is directly made in our workshops. Hamon D'Hondt also manufactures fully interchangeable finned tubes.



Aluminium finned tubes

Hamon D'Hondt produces a wide range of **finned tubes** (with aluminium fins) for all industrial sectors and is fully equipped to test the contact between tube and fins ensuring the expected thermal performances (pull and push test, ...).



Aluminium KLM type

KLM finned tubes are Hamon D'Hondt proprietary development.

Manufacturing process

- The fins are composed of an aluminium or copper strip tightly wound around the tube
- The bases of the fins form a perfect seal, thus offering total protection to the underlying tube
- The tube and base of the fins are simultaneously **knurled together**, thus guaranteeing a perfect fit between the fin and the tube to provide optimum heat exchange

Advantages of the KLM fin system

- Tube protected against corrosion
- Resistant to vibrations
- May be used at temperature up to 320°C (608°F)
- Unique combination of high thermal performance and stress resistance with atmospheric corrosion protection
- KLM can favorably replace any type of finned tubes



Aluminium Extruded type

Manufacturing process

- An aluminium muff is shrunk onto a bare tube, which has been carefully degreased first
- The assembly is passed through the machine by means of a set of rotating disks
- The compression of the disks around the aluminium muff results in the extrusion of the aluminium around the base tube, thus causing the formation of the fins
- The pre-stressing of the aluminium muff means that the fins are held perfectly around the base tube

Advantages of the extruded finning process

- Tube protected against corrosion
- Fins have extra rigidity
- Heat transfer remains constant
- May be used at temperatures up to 300°C (572°F)



Aluminium Embedded "G" type

Manufacturing process

- A groove is cut in the bare tube by metal lifting
- The strip is embedded under tension into the groove and pressure is applied to the lifted metal to fix the fin
- This manufacturing process ensures that the fin is fixed tightly to the tube, providing optimum heat transfer

Advantages of "G" fins

- Provides a perfect fit between the fin and the tube
- May be used at temperatures up to 400°C (752°F)

Services

For all products Hamon D'Hondt offers a full scope of services including engineering, procurement, supply of complete units, assistance at commissioning and start-up.

Hamon D'Hondt also ensures full after sales services:

- Supply of spare parts (finned tubes, plugs, gaskets, bearings, fan blades, pulleys, motors..)
- Trouble shooting or revamping studies
- Performance optimization
- Re-tubing of bundles in our workshop

Hamon D'Hondt provides all spare parts for their products, either from the ready stock (bearings, fans, motors, plugs, gaskets, ...) or manufactured on demand (header, finned tubes, bundles) in compliance with the original parts (all parts guaranteed except wear parts).



Spare parts

Our service is not limited to the main and most frequent replacements. We are available for any kind of supply according or not to our design; our experienced team can help you implementing and improving the performance of your equipment.

A non-exhaustive list of the products, which can be supplied as complement of our units are:

- Vibration switches
- Vibration detectors
- Bearings
- Louvers
- Positioners
- Finned tubes
- Collars, tubes supports and any other parts as per your needs.

The Hamon D'Hondt production range covers all types of finned tubes with aluminium fins, steel fins, etc. The finning operations are completely carried out in our workshops and guaranteed by our periodic production tests.

All tubes can be supplied with any kind of exchanger tube material and a wide choice of dimensions and thicknesses.



Complete range of mechanical parts such as:

- Aluminium or plastic fan blades
- Fan hubs
- "V", HTD, etc. pulleys type and belts
- Electric motors
- Gearboxes
- Other accessories

If not available from stock, can be supplied within the shortest time.

Among the most common spares needed for the air-cooled heat exchangers are plugs, gaskets and belts, subjects to frequent wear. Our well stocked warehouse put at your disposal, standard materials and dimensions, nearly upon immediate delivery.

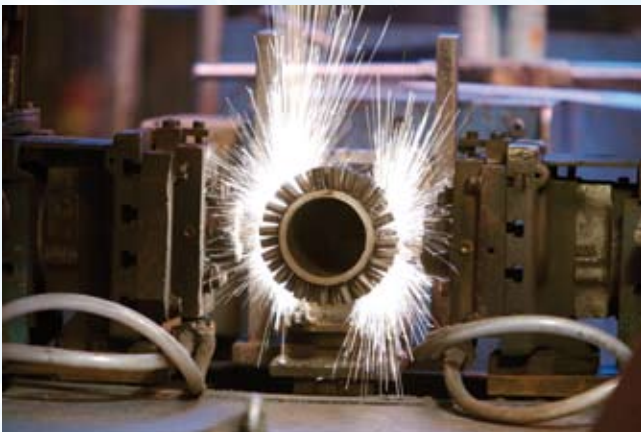


Hamon D'Hondt can supply replacements of pressure parts for air-cooled heat exchangers. All pressure parts are supplied in accordance with the same quality assurance as the original equipment and constructed following all pertinent international Codes and Regulations and certified, when required, by the main International Certification Bodies. Re-tubing of tube bundles can be made in our workshops. A special care in the workshop organization assures priority during the manufacturing cycle to guarantee short delivery terms.

Other activities

Studded tubes

- Studded tubes under Biraghi trade name
- Automated studding equipment
- All tubes and studs material combinations: carbon, alloy and stainless steel
- Main applications: petrochemical
- Approved by the industry majors



Welded finned tubes

- High frequency welded finned tubes under Biraghi trade name
- Automated HF equipment
- All tubes and fins material combinations: carbon, alloy and stainless steel
- Plain or segmented fins
- Main applications: energy (i.e. HRSG) and petrochemical (fired heaters)
- Approved by the industry majors



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