

Vulcan gets to the heart of heat transfer equipment

Vulcan Finned Tubes

At the heart of every heat exchanger is a component that isn't very well known and is even more misunderstood. In addition, since most heat transfer equipment is engineered, built and installed turnkey by outside engineering and fabrication companies, end users generally know little about the components that make up their equipment.

It is not until an unexpected shutdown occurs that most people learn about finned tubes. And, in many cases, what they learn is that they needed the finned tubes yesterday. It is at these critical times that many users discover that finned tubes are not a stock item but are usually manufactured to meet a customer's exact specifications. Many times, the tubes can take weeks, if not months, to produce.

Vulcan Finned Tubes, a company located in Tomball, Texas, specializes in manufacturing finned tubes for heat transfer applications and understands that each customer's specifications and delivery needs are different. Whether you are planning for a turnaround a year out, or you get caught in an unexpected shutdown and need finned tubes overnight, Vulcan has the ability to

meet your needs.

What is a finned tube?

There are many different types of finned tubes that are used for various applications, but they are all similar in that they consist of a pipe or tube, some sort of fin configuration and a means by which the fins are attached to the tube.

In heat exchanger applications, where temperatures can reach well over 1,000 F, the finned tubes must be rugged enough to withstand constant heat cycling, vibration and a corrosive atmosphere. Such applications require the fins to be continually welded to the outside



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diameter of the tube.

Vulcan Finned Tubes manufactures all of the commonly used types of welded finned tubes. The company's welded helical finned tubes consist of steel fins wrapped helically around a steel pipe and are continually welded using the gas metal arc welding (GMAW) process. The helical fins can be either solid or serrated.

Vulcan also manufactures longitudinal finned tubes that consist of steel channels placed longitudinally along the pipe and spot welded using the electrical resistance welding process. Some examples of equipment using these types of finned tubes are fired heaters, boilers, waste heat recovery units, cogeneration units, glycol dehydration units, air preheaters and tank heaters.

In air-cooled applications, temperature ranges are much lower, but heat cycling and vibration are still factors that must be dealt with. Vulcan manufactures aluminum L-foot finned tubes for these applications. These finned tubes consist of aluminum fins formed into an L-foot configuration and wound helically around the tube while under tension.

Vulcan offers both solid fin and perforated fin L-foot finned tubes. Some examples of equipment used in air-cooled applications are air-cooled heat exchangers and compressor radiators.

Why use finned tubes?

Finned tubes are typically used in applications that involve the transfer of heat from



Finned tubes are typically used in applications that involve the transfer of heat from a hot fluid to a colder fluid through a tube wall.

a hot fluid to a colder fluid through a tube wall. The rate at which each fluid can transfer heat to or from the other fluid is a function of the temperature difference between the two fluids, the heat transfer coefficient of the fluid and the surface area to which



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the fluid is exposed. The fluid with the lower heat transfer rate controls the process, since one fluid cannot transfer heat faster than the other fluid can handle it.

In the case of a bare (or unfinned) tube, the outside surface area is not significantly

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greater than the inside surface area. Therefore, the fluid with the lowest heat transfer coefficient will dictate the overall heat transfer rate, sometimes resulting in a very inefficient heat transfer process.

When the heat transfer coefficient of the fluid inside the tube is several times larger than that of the fluid outside the tube (for example, steam inside and oil outside), the overall heat transfer rate can be greatly improved by increasing the outside surface area of the tube. In effect, the lower heat transfer coefficient is multiplied by a larger area.

The whole concept of finned tubes is to increase the outside surface area. The advantage of finned tubes is that by increasing overall heat transfer rate, the total number of tubes required for a given application is reduced, thereby also reducing overall equipment size and decreasing the cost of the project. In many application cases, one finned tube can replace six or more bare tubes at less than one-third the cost and one-fourth the volume.

For more information on how finned tubes can help your company, please contact Vulcan Finned Tubes at (281) 255-4775 or visit the company on the Web at www.vulcanfinnedtubes.com. □

Service... when you need it most.



Vulcan's sales staff is available 24 hours every day to meet your emergency needs. If emergency circumstances warrant, our shop staff can begin your job immediately and continue working around the clock to meet your turnaround delivery needs.



- Welded helical solid finned tubes
- Welded helical serrated finned tubes
- Welded longitudinal finned tubes
- Aluminum L-foot finned tubes
- Pipe, fittings and flanges
- Bending services
- Turbulators
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- Tube Ferrules
- Shoulder plugs & gaskets



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