



**EKİN ENDÜSTRİYEL**  
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## **Tube Heat Exchangers**





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Tube Heat Exchanger is a class of heat exchanger designs used in all processes. It has several variations within its own group.

In tube heat exchangers, heat transfer surface consists of tubes. While one fluid runs through the tubes, other fluid flows outside the tubes but inside the shell as parallel or across the tubes. So, heat is transferred over tube surfaces.

### Components of Tube Heat Exchangers

- Straight or U bend tubes enabling heat transfer
- Shell manufactured from tube or bent plate
- Face plate or face plates by which the tubes are fixed
- Baffles directing the flow outside the tube but inside the shell and supporting the tubes
- Nozzles enabling the exit and entrance of shell side fluid
- Head and Head Nozzles enabling the exit and entrance of tube side fluid
- Flanges that detect mirror and heads

- Carrying legs enabling the assembly of heat exchanger on any base
- Isolation preventing heat loss from the outer surfaces of heat exchanger

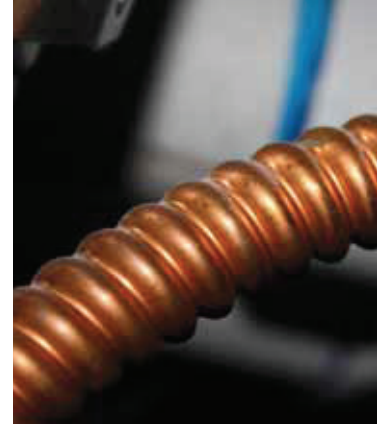
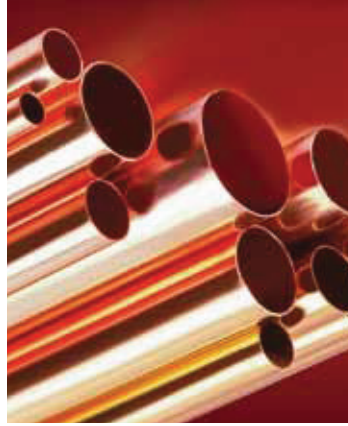
### Advantages of tube heat exchangers

- They can be designed and manufactured to bear very high pressures
- They have extremely flexible and steady design
- They can be designed and manufactured to bear very high and very low temperatures
- They are resistant to thermal shocks
- They have no dimension limit
- They can be used in all applications
- Pressure loss is at a minimum and can be maintained at a minimum in line with the process purpose.
- They can easily be disassembled and assembled back for maintenance, repair and cleaning
- Easy maintenance and repair
- Pipe diameter, pipe number, pipe length, pipe pitch and pipe arrangement can be altered. So, the designs of tube heat exchangers are quite flexible



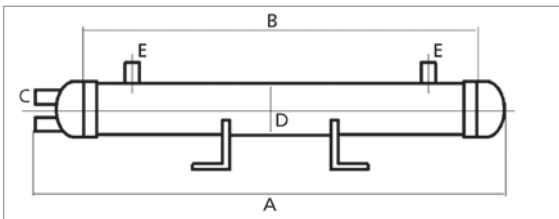
## Oil Cooler Heat Exchangers

Many machines used in industry need to be cooled while running. Cooling process generally starts as a result of the clash of water coming either from cooling tower or chiller with hot oil in the heat exchanger coming from the machine. MIT Oil Coolers can be used in all applications with its wide range of capacity. Oil coolers can not only be manufactured in certain sizes as standard but can also be specially manufactured as per intended processes. Inner tubes in MIT Oil Coolers are manufactured from grooved copper ones and this way, heat transfer is much more compared to standard straight tube exchangers.



**Outer tube material:** St 35.8

**Inner tube material:** Copper



| Model      | Heat Transfer Surface Area (m <sup>2</sup> ) | Capacity (Kcal/h) | A (mm) | B (mm) | C (inch) | E (inch) | D (mm) |
|------------|--|-------------------|--------|--------|----------|----------|--------|
| MIT 14-50  | 1,1  | 16500             | 500    | 430    | 1"       | 1"       | 140    |
| MIT 14-75  | 1,6  | 24000             | 750    | 680    | 1"       | 1"       | 140    |
| MIT 14-100 | 2,2  | 33000             | 1000   | 930    | 1"       | 1 1/4"   | 140    |
| MIT 14-125 | 2,7  | 40500             | 1250   | 1180   | 1"       | 1 1/4"   | 140    |
| MIT 16-50  | 1,3  | 19500             | 500    | 430    | 1"       | 1"       | 160    |
| MIT 16-75  | 2,1  | 31500             | 750    | 680    | 1"       | 1 1/4"   | 160    |
| MIT 16-100 | 2,7  | 40500             | 1000   | 930    | 1"       | 1 1/4"   | 160    |
| MIT 16-125 | 3,4  | 51000             | 1250   | 1180   | 1"       | 1 1/2"   | 160    |
| MIT 16-150 | 4,1  | 61500             | 1500   | 1430   | 1"       | 2"       | 160    |
| MIT 22-75  | 3,2  | 48000             | 750    | 680    | 2"       | 1 1/2"   | 220    |
| MIT 22-100 | 4,3  | 64500             | 1000   | 930    | 2"       | 2"       | 220    |
| MIT 22-125 | 5,4  | 81000             | 1250   | 1180   | 2"       | 2"       | 220    |
| MIT 22-150 | 6,5  | 97500             | 1500   | 1430   | 2"       | 2"       | 220    |
| MIT 22-175 | 7,6  | 114000            | 1750   | 1680   | 2"       | 2"       | 220    |
| MIT 22-200 | 8,7  | 130500            | 2000   | 1930   | 2"       | 2"       | 220    |
| MIT 22-250 | 10,9   | 163500            | 2500   | 2430   | 2"       | 2"       | 220    |
| MIT 25-75  | 5,6  | 84000             | 750    | 680    | 2"       | 1 1/2"   | 250    |
| MIT 25-100 | 7,5  | 112000            | 1000   | 930    | 2"       | 2"       | 250    |
| MIT 25-125 | 9,4  | 141000            | 1250   | 1180   | 2"       | 2"       | 250    |
| MIT 25-150 | 11,3   | 169500            | 1500   | 1430   | 2"       | 2"       | 250    |
| MIT 25-175 | 13,2   | 198000            | 1750   | 1680   | 2"       | 2"       | 250    |
| MIT 25-200 | 15   | 225000            | 2000   | 1930   | 2"       | 2"       | 250    |
| MIT 25-250 | 18,8   | 282000            | 2500   | 2430   | 2"       | 2 1/2"   | 250    |
| MIT 25-300 | 22,5   | 337000            | 3000   | 2930   | 2"       | 2 1/2"   | 250    |

## Specially Manufactured Heat Exchangers

Most of the time, different solutions are required to be offered for different processes in heat transfer applications. After obtaining the necessary information regarding the process, it is designed by mechanical engineers specialized in the field and schematic drawing is then produced. During controls made over schematic drawing, shop drawings are produced after confirmation that no dimensional problem is in question is received. Each heat exchanger whose shop drawings are confirmed is only special to the process they are designed for and is generally unique. After heat exchangers are manufactured, they can be isolated as well if required and heat loss can be minimized this way. There is no capacity limit in the manufacture of tube exchangers. Exchangers can be grouped in more than one way by series or parallel connection and their capacities can be increased. Ekin Industrial, who is a supplier to plants requiring great capacities such as petrochemical plants or power plants, is one of the leading companies in the sector with its broad experience.

Depending on their process requirements, the following materials can be used in tube exchanger

ST37

ST35.8

AISI304

AISI316

Copper

Titanium

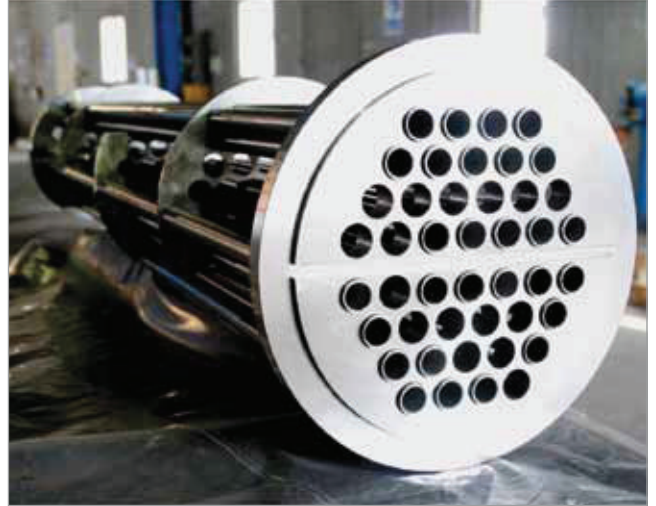


## Sanitary tube heat exchanger

In some food and chemical applications, heat treatment is applied at very high temperatures or pressures. At these temperatures and pressures, plate heat exchanger cannot be used since heat resistance and compressive strength limit of the gasket is exceeded. For such applications, MIT engineers developed demountable and sanitary tube heat exchangers. For this type of heat exchangers, the temperature limit reaches up to 350 °C. Welding of this type of heat exchangers should be done in a very sensitive manner to achieve a smooth flow surface. In MIT manufacturing plant, this type of welding is carried out by certified welders and is inspected by expert engineers during 3-phase quality control stage.

MIT engineers, who are experts in food processing, take capacity, location and type of the food to be processed into consideration while offering the most convenient solutions during design.

In high pressure applications, matters such as material thicknesses and welding technologies are of vital importance apart from the capacity calculations. So, each heat exchangers manufactured by Ekin Industrial are tested 72 hours long at a pressure 1.5 times more than normal operating pressure and are only dispatched if a problem does not occur during the test.



## Maintenance and Revision of Tube Heat Exchangers

Although tube heat exchangers are long lasting and troublefree, they are subject to certain deformations and contamination resulting from external factors. Depending on the systems they are used in, they do need to go under cleaning and maintenance at regular intervals.

Cleaning done without correct methods and chemicals may damage the tubes and require greater revisions in the heat exchanger. So, it is of utmost importance for the cleaning and maintenance to be carried out by a team of experts.

For all types of tube heat exchanger, expert staff of MIT provides cleaning, maintenance and repair services. Maintenance and cleaning processes are completed as soon as possible and the product is delivered to your plant as its first day performance.

Apart from cleaning, inner tubes that are corroded and deformed in time can be changed individually or as a group depending on the structure of the heat exchanger. Tube materials can be selected as required during this process.

