



**HEATEC**

# Heating-coil modules for liquid storage tanks

Heatec builds heating-coil modules for field installation in tanks and compartments. The modules are usually installed when bulk liquid tanks are being constructed at plant sites. Or they may be installed in holds of ships or barges at a shipyard. The modules can be used to heat asphalt cement, crude oil, heavy oil, or chemicals. Either hot oil or steam can be used to heat the modules.

## Advantages of modules

Our factory-built modules provide important cost savings and advantages. They significantly reduce the amount of work required in the field. On-site construction will go faster. And far fewer field-welds are required. That means fewer joints subject to leaking.

Factory conditions provide a degree of manufacturing control that cannot be easily matched in the field. We build all of our modules to ASME code (certification is optional). We can X-ray all welded pipe joints when requested. Otherwise, we make X-rays of random samples. And we leak-test all modules before they leave our factory.

## Custom built

We customize heating coil modules for the application. A wide variety of configurations are possible. The number of modules and the size and weight of each module can be customized to suit specific conditions. Where conditions permit, larger modules are usually preferred so as to mini-



Heating coil modules are available in a wide variety of configurations. The overall length and width of a module can be made to virtually any size. Likewise, the number of banks and the number of coils in each bank can be made to order. The module shown here has solid fins.



Heatec heating coil modules can be installed in large tanks like the 500,000-gallon asphalt tank shown on the right-hand side of this asphalt terminal picture. A Heatec helical coil heater providing 8-million Btu/hour heats all tanks at this terminal.

mize field welding. But sometimes conditions greatly limit the size of each module. For example, where modules must be fitted into the existing hold of a ship or barge, the size of the access openings and the handling provisions govern module size and weight.

### Fins

The pipe we use in our modules is available either with or without fins. Fins increase the heat-transfer surface area of the pipe about 300 percent, but varies according to the number of fins per inch. Using fins reduces the amount of pipe needed and reduces costs. Moreover, reducing the amount of pipe leaves more room in the tank for liquid. Fins are not recommended where the heating surfaces are subject to coking.

Fins are commonly made by spiraling a long strip of metal around the pipe and welding one of its two long edges to the pipe. The fins may be either solid or serrated. A serrated fin is made by making numerous cuts along one edge of the fin. The serrations increase efficiency by increasing the turbulence of liquid flowing around the fin. It also increases its surface area slightly.

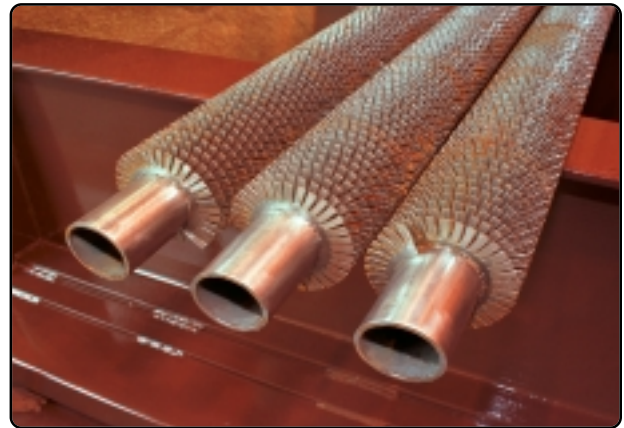
### Pipe material

The modules are made using schedule 40 (minimum) seamless pipe. The pipe is either carbon-steel or stainless, as required.

The fins on this pipe greatly increase the heat-conducting surface. The fins may be either solid, as shown here, or serrated. These are one inch wide, and 0.059-inch thick. These pipes have three fins per inch, but they can be increased up to about to 6 per inch.



Serrated fins are shown here. The serrations increase efficiency even more than solid fins by increasing the turbulence of liquid flowing around the fins.



This asphalt tanker has over 22 miles of Heatec piping installed in fourteen compartments. The piping is heated by hot oil supplied by three Heatec helical coil heaters, each capable of providing 15 million Btu/hour.

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