

Circulation Heaters

Immersion heaters are used widely for the industrial tank heating in various sectors of the North American markets. The use of immersion heaters designed for the industrial setting is applicable to the heating of liquid medium in a tank for a circulation purpose. The heaters used in this type of platform is called the circulation heaters—they are synonymously identified as the inline heaters because of the shape and how the platform is created within the pipe shape of structure inside of the tank. WATTCO™ manufactures many different shapes of inline heaters as the industry leader of the electrical heating elements and controls.

Tank Heating: Immersion Heaters

There are essentially two types of immersion heaters in tank heating application: direct immersion and indirect immersion. The direct immersion heater is installed inside of the tank in direct contact with the medium. It is used mostly in water heating or other such chemicals where the contact with the heating rods are acceptable and the conductivity of heat transfer is best attained as such. The indirect immersion heater is installed inside the tank, but surrounded by a pipe shaped shielding so that the medium inside of the tank does not directly contact the heating rods. It is primarily used in applications for slow heating of the tank to keep the medium at a prescribed temperature for optimal circulation density.



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The use of immersion heaters extend to several areas of tank and vessel heating for various purposes. The primary purpose of heating is invariably to prevent the freezing or solidifying of liquid contents ranging from as fluidic as water or chemical to as viscous as oil or asphalt, correspondingly. It also has to maintain the tank/vessel at a desired temperature for a viscid level required to pump with ease. Moreover, the use of immersion heaters is applicable to situations such as building up of a reaction temperature for certain chemicals in order to maintain an optimal reactor efficiency. Another usage of immersion heaters can be attributed to a steam generation heating for indirect heat transfer through a conduit. It is a great way of keeping the tank from freezing and maintain the coherent liquidity of the contents inside.

The tank heaters that are best suited for oil industry are circulation heaters. Unlike some other immersion heaters, the circulation heaters are exclusively used in a setting for tanks filled with oil or

other viscous contents. In keeping the heating rods away from the viscous contents, there are advantages for using indirect heating method such as ease of tank maintenance and repair.

Overview of Circulation Heaters in Tank Heating

The concept of circulation heaters is essentially as simple as many other immersion heaters when compared for the application of tank heating. The structure of tank built for indirect heating using the circulation heaters consists of two main parts. The chamber of the tank in which the main liquid content is stored, and the separate chamber that houses the heating rods installed inside of the main chamber of the tank. WATTCO™ builds many shapes and sizes of heating rods that would fit the inside housing of the circulation heaters. The heating rods are usually shaped in a long straight inline style, and mounted on the cap for easy installation that would fit into any size of pipe circuit.

The indirect application of circulation heaters allow the ease of maintenance by which the tank needs not be drained in order for the heating rods to be serviced or replaced. These heaters also have drain valves installed virtual anywhere within the tank for easy draining of the content. The circulation heaters are widely used by the oil and gas companies for the obvious design benefits they provide. In the process of indirect heating application, WATTCO™ utilized the technology such as Digital thermocouple probes or RTDs in order to control the flow of heat. The entire process of indirect heating is achieved by the controlled flow of channeling re-heated water or glycol solution through a pipe thus dispersing the heat transfers into the closed circuit of the tank maintaining a desired temperature.

There are other industries beside the oil industry that can benefit from the use of circulation heaters. In addition to chemical and petrochemical processes, mining industries can use inline heaters for water treatment as well as pressurized applications, according to the official WATTCO™ description, and food industries for sanitation purpose as well as food production. The additional application for circulation heaters also include steam boilers and gas heating, mildly or severely corrosive solutions, light or medium oil, demineralized or deionized water, and much more.

The circulation heaters are very affordable, and easy to install. The inline heaters can be mounted both vertically and horizontally in their orientation, allowing a greater flexibility within the



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limited confine of space. They are available in variety of sizes and elements. The size ranges from as short as 2 inches in length to as long as 42 inches to accommodate many different applications. The element aspect of the circulation heaters also offer several application prospects based on the applicability of tank contents. Some are available in steel or stainless steel, which would be best suited for food industry. Other materials such as copper and titanium for more exotic application, or a military grade such as Incoloy® and Inconel®. WATTCO™ specifically use a very reliable NEMA 1 standard terminal box, or for more specialized boxes, NEMA 4/4X and NEMA 7 terminal boxes for water proof and explosion proof, respectively.

Circulation Heater Solution by WATTCO™

The circulation heaters are a part of the main focus and among the most popular product lines. The demand for circulation heaters is high industry wide, growing steadily over the year in US and Canada. There are many applications for circulation heaters throughout the various industries. The significance of WATTCO™ in the circulation heaters industry is not just the fact that they are the leading manufacturer of circulation heaters, but that they design and produce an unequivocally high quality of circulation heaters from the materials they use to the workmanship they show. That is the reason why the circulation heater solution by WATTCO™ works.