

ADVANTAGES OF ELECTRIC PROCESS HEATERS

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Electric process heaters are essential to some of the largest and most important global industries. These include:

- Chemical
- Oil & Gas
- Food & Beverage
- Defence
- Pharmaceutical
- HVAC

Also known as immersion heaters, [process heaters](#) play vital roles in manufacturing and processing applications. They have a high degree of customizability, making them efficient and reliable for most any heating application.

[Different types of immersion heaters](#) and heater elements are used to achieve specific process goals. Electric flanged heaters and flange elements, for example, are commonly used in [boiler heaters](#). For [infrared radiant heaters](#), tubular heating elements are generally used.



Electric Process Heater Function

The most common functions for electric process heaters are to achieve or maintain a temperature through direct heat transference. The name immersion heater comes from its immersion in the medium it is heating. This allows for direct heat transfer.

Direct heating makes electric immersion heaters more efficient and capable of more accurate heating. There is less wastage of energy transferring heat to the medium. Heated mediums include gases, oils, and liquids.

Heating these mediums can result in changes of state such as steam generation or reducing viscosity. It serves to protect or prepare a medium for use.

Electric Process Heater Applications

Electric process heaters play key roles in many industrial applications. Oil & gas refining, petrochemical, and power generation are just a few processes that require immersion heaters.

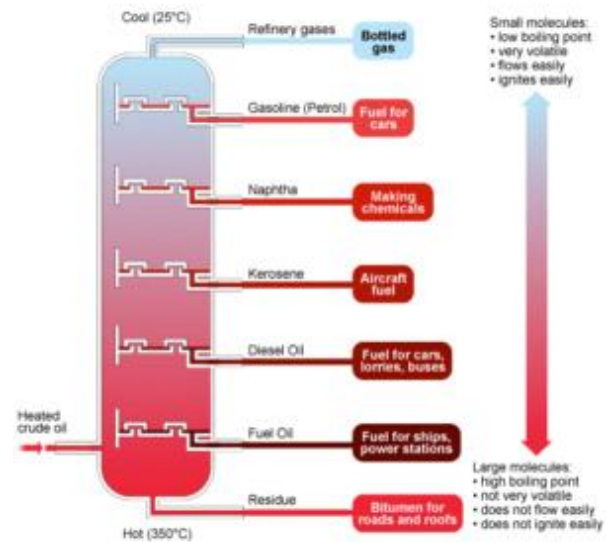
Below we include a few examples of electric immersion heater applications.

Crude Oil Heating

Electric process heaters are required for processing crude oil. Crude oil is an essential natural resource. A common role immersion heaters play in crude oil refining is crude oil heating. Crude oil heating reduces the viscosity of oils, making the oil flow more easily. This is imperative for pipeline transport of crude oil.

A great example of this is in [heating bitumen with immersion heaters](#). Bitumen is often called tar or asphalt. Unrefined, it is a thick and heavy liquid. Bitumen is perhaps best known for processes such as paving roads, sealing roofs, and waterproofing. However, in its natural state, it is too thick to work with.

By heating bitumen, the oil becomes more easily spreadable. As it cools off it becomes solid, so temperature maintenance is crucial. Exposure to air will reduce adhesive qualities and cause solidification. As a result, it is commonly stored in tanks. For this purpose, [immersion tank heaters](#) are an ideal solution.



Freeze Protection

Temperature maintenance makes electric process heaters a necessity for many applications. Process heaters are often employed in freeze protection to prevent damage to the medium being heated, the equipment containing the medium, and the process heater itself. In addition to protection, it also enables processes to remain active and effective even where subjected to extreme cold.

[Immersion heaters are ideal for freeze protection](#). They are able to apply direct heat for fast and efficient heating, as well as accurately monitor and maintain temperature ranges.

A good example of the importance of freeze protection is found in the oil & gas industry. Fuel oil temperatures need to be kept above 32°F. Instead of freezing, these oils turn into a gel or wax below this temperature. At 15°F the wax begins to crystallize and separate from the oil. This results in difficult handling and removal. Pipelines get clogged and oil is damaged. That means processes are slowed or stopped and the product is lost.

Space/Area Heating

Space and area heating is important for a wide variety of purposes, such as protecting equipment, human comfort, and neutralizing viruses. Electric process heaters with [tubular heating elements](#) are commonly used for this purpose.



Immersion heaters with tubular heating elements are best for use in industrial conduction heating, convection heating, and radiation heating. They are essential to medical, thermoforming, automotive, mining, oil & gas, and manufacturing industries.

An example of their use is in livestock holding in the [agriculture industry](#). Healthy livestock needs a warm place to stay. But in livestock holding facilities the number of livestock is not always consistent. Using electric process heaters for convection heating makes it possible to heat only the required area.

Convection heaters will heat a smaller area and are used in a series with other convection heaters to heat the whole facility. This allows for more selective heating, only providing heat where it is needed. That means there is no wasted energy, but the livestock gets the warmth they need to thrive.

Advantages of Electric Process Heaters Over Fuel & Combustion Heaters

Electric process heaters are replacing fuel and combustion heaters due to their numerous advantages. With the ready availability and access to electricity, reliance on traditional natural resources for heating is fading. Some of the advantages of electric power for immersion heaters include:

- Safety
- Efficiency
- Greater Control and precision
- Eco-friendliness
- Capable of operating at higher temperatures

Safety

Electric immersion heaters are safer to use. Fuel is not as stable as electricity. It is more prone to fire or combustion. Electric process heaters come with [control boxes](#) that are equipped according to safety needs. They can simply protect workers from coming into contact with wires, or can even use explosion proof terminal boxes.

Efficient & Economical

Electricity is a much more efficient power source. A fuel-based immersion heater is only [32%-38% efficient](#) where only 1/3 of the heat produced is actually passed on to the medium. Whereas electric immersion heaters are 100% efficient. Combine this efficiency with the rising cost of fuels, and electricity becomes an even more economical choice.

Additionally, electric process heaters are less expensive to maintain. Combustion adds wear and tear to an immersion heater that you simply don't get with electricity. That means electric heaters require servicing and maintenance less often, as well, damage is less common. As well, they have longer lifespans, so they do not need to be replaced as often.

Greater Control

Electricity has a high degree of control. Combined with automation and [Wattco temperature control panels](#), specific temperatures and ranges can be reached and maintained reliably. Automatic shut off switches prevent overheating and protect processes.

Eco-Friendly

Electric immersion heaters are not only efficient, they are eco-friendly. Electricity produces no harmful emissions and results in a smaller ecological footprint.

High-Temperature Capabilities

Electric process heaters can reach higher temperatures than fuel heaters. That makes them capable of performing tasks other heaters cannot. Being able to reach and maintain operation at high temperatures gives electric immersion heaters a big advantage over combustion heaters.

Choosing A Wattco Electric Process Heater

More industries are choosing Wattco electric process heaters. [Contact Wattco today](#) to request more information, or browse our [electric immersion heater catalog](#).