

How to Choose the Right Enclosure for Your Process Heater

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HELIMAX Ultra-Efficient Heat Exchanger

Are you wondering what your company needs for terminal enclosures? Although enclosures are a critical part of electric process heaters, choosing the right enclosure is different from retrofitting, with a different subset of rules.

There are several considerations to keep in mind when choosing an enclosure for your electric process heater. Whether your company is purchasing a process heater for the first time or trying to find a better enclosure for your current system, this article will provide valuable insight.

Choosing the Best Enclosure to Meet Your Individual Needs

Factors to consider when selecting an enclosure are based on the location and environment of the process heater itself. Maybe the heating system is housed outdoors, where it is exposed to rain and wind, requiring a moisture-resistant enclosure. Perhaps the system is used mainly for general purposes and located in a protected location indoors, with nothing else around it. If the area around the process heater is a hazardous location, then a specific type of enclosure will be needed to prevent an explosion.

When deciding which enclosure to choose for your electric process heater, the appropriate solution for your system will be dependent on the heater's environment and intended application. Depending on the installation environment, the correct enclosure will be different.

Questions About the Process Heater Environment

Here are some important questions to ask yourself about the environment surrounding the process heater:

- Where will the process heater be located? Indoors or outdoors?
- Is the system exposed to wind, rain and sun?
- If outdoors, is the heater in an area that also has flammable and explosive gases present?
- What are the minimum and maximum temperature extremes specific to the process heater's location (indoors or outdoors)?
- What are the site's government installation requirements?

- What are your company's safety requirements?

Compliance and Safety Considerations for Selecting the Optimal Enclosure

Compliance and safety are two of the most significant factors to consider when choosing the proper enclosure for a particular process heater. All compliance discussions are, in the end, safety discussions, as opposed to product performance requirements evaluating whether a system will hold up and perform under stress (for example, in elevated temperature).

Certain enclosure characteristics can improve performance in several specific ways.

For cooling devices, such as an air conditioner, the addition of sunshades can limit solar gain on the enclosure. Rain shields can be added if driving wind-force rains are a concern or if a process heater is located in an area where hurricanes are common. Rain shields are considered uncommon in the field.

In short, the size of the enclosure determines its ability to dissipate heat and plays a role in how well the terminal enclosure performs under stress.

Worst-case scenario, a customer has chosen the wrong enclosure, for whatever reason. Whether the system is indoors or outdoors, multiple things can go wrong.

Installing a general-purpose indoor enclosure outside in the rain, for example, can cause the heater to be polluted by water and dust, leading to rapid failure of the heater. Proper maintenance and protection of any electrical process heater are crucial; for instance, if that same system is located inside a building containing combustible material, the risk of potential arc could be a catalyst for a major explosion.

It is important to note that, unlike many industries where dangerous equipment is clearly labeled, if an electric process heater is malfunctioning, the potential for explosion may not be obvious, since explosive gases are not visible to the naked eye.

This has been an issue for the industry in the past, specifically in granaries, sugar factories, etc., with high dust production. After an explosion at a sugar factory in Chicago, it was clear that taking dust production into account was essential for proper maintenance of any commercial electric process heater.

Advantages of Choosing the Right Enclosure

Conversely, as opposed to choosing the right enclosure to avoid adverse outcomes, such as explosion, non-compliance and other safety concerns, selecting the proper enclosure offers several benefits, including measurable gains in cost and efficiency.

Obtaining a higher rating may result in increased cost but also increase cost-efficiency.

Suppose the particular heater requires the installation of a hazardous location enclosure. In that case, it will increase the enclosure cost substantially, whereas systems that need moisture-resistant or general-purpose enclosures will cost less.

Specific enclosures have third-party approval; for example, hazardous locations are labeled as CSA. Under certain circumstances, Watlow can put NEMA on enclosures if such a label is required according to agency approval.

To avoid unnecessary costs to the customer, it is important to understand what is actually needed for each individual client, as opposed to limiting the scope to only what is required.

Oftentimes, customers are already looking for a specific solution. It is crucial, therefore, to find out what each client needs to achieve those solutions. If a U.S.-based company is producing a product locally, it must also comply with OSHA requirements.

On the other hand, installation in the European Union entails other specific certification needs based on the location of installation. If customers are informed on which standards are required to meet those certifications, that can be helpful. If not, details of installation location are needed to comply with all local regulations.

Most energy customers will have all of that information laid out in the specifications already. Smaller individually-run operations may need additional assistance in this regard.

Watlow (<https://www.watlow.com/about-watlow>) manufactures products used globally, with different geographical contexts, local and regional regulations and industrial compliances, and our expertise helps customers make the best decisions for their applications. For more guidance on choosing the right enclosure for your electric process heater, or any other question, contact (<https://www.watlow.com/contact-us>) Watlow representatives today.



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