

BOILER ACCESSORIES: ESSENTIAL FOR A WELL-DESIGNED HEATING SYSTEM



WHEN IT COMES TO A SUCCESSFUL COMMERCIAL HEATING INSTALLATION, THE BOILER IS OF COURSE FUNDAMENTALLY IMPORTANT, BUT DOES NOT OPERATE ALONE. KEY COMPONENTS ESSENTIAL FOR QUICK, COST-EFFECTIVE, SIMPLE AND SAFE INSTALLATION, AND A WELL-DESIGNED HEATING SYSTEM THAT PERFORMS TO THE STANDARD EXPECTED, ARE THE ACCESSORY PARTS. ACCESSORIES SHOULD NEVER BE AN AFTER-THOUGHT, BUT SHOULD BE CONSIDERED FROM THE VERY OUTSET.

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In this article we look at the four most important accessories to a successful commercial heating installation: **Frame & Header Kits**, **Hydraulic Separation**, **Pumps** and **Insulation Kits**. We provide advice on the different types available and their suitability for your project, along with recommendations on key features to look for to ensure the best possible cost and efficiency

FRAME & HEADER KITS FOR BOILER CASCADES

When you have a site that requires a high output, you have the option to install a single large commercial condensing boiler or several smaller boilers in a cascade. The cascade option offers several benefits, including a high turn-down, easier access to challenging install areas (as the parts are smaller and more manageable to handle) and, overall, the cascade can be space saving compared to an equivalent single boiler of the same capacity. For ease and speed of installation, prefabricated frame and header kits should be chosen to remove the need to build (including welding in the case of steel frames) the support frame to mount the boilers and the pipework that all your individual boilers are connected to, including the connection pipework between the main headers and the boilers. All that is required onsite is to bolt the prefabricated sections together. In the case of Ideal Heating's own frame and header kits, this can save the installer several hours compared to traditional site based fabrication, as they are already largely complete when received onsite.

The types of frame and header kits can be chosen to suit the application, with inline headers being the most prevalent. Back-to-back versions are also available, along with

standard and low height versions of the mounting frames for the boilers, so be sure to check that the frame and header kits suit the plantroom you are working on.

HYDRAULIC SEPARATION

By their very nature, heating systems can become contaminated with debris and dirt. When installing new boilers onto an old system, the very last thing you want is for that 'dirty' water to circulate through your new boiler as it may impact its efficiency, lead to boiler breakdowns and reduce its working life. System separation will prevent this.

This can be achieved through using plate heat exchangers and low loss headers with filters or strainers, or air and dirt separators to assist with removal of harmful debris in the system.

Plate heat exchangers, which are becoming the more popular choice, work by transferring heat from the boiler circuit to the system circuit without the two circuits coming in direct contact; they are hydraulically separated by a pressure break with no mixing of the fluids in the different systems. The heat is transferred through a series of parallel plates with channels between them which the water can flow through independently of the other system.

The advantage of installing a plate heat exchanger onto a system is that they do more than simply protect the boilers from potentially poor quality water. The boiler circuit and secondary circuit can operate at different temperature profiles provided the plate heat exchanger is specified correctly; the two systems can operate at different pressures, which can be particularly important when fitting new boilers



PLATE HEAT EXCHANGER

onto an old system which might not be suitable for pressurised or sealed operation; or the fluid within the secondary system could be a process or food grade fluid that could not be heated directly by a boiler.

Something to take into consideration when looking to install a plate heat exchanger would be the heat transfer capacity and the temperature profiles on each side of the plate. These parameters will have a direct impact on how effectively the plate heat exchanger will function, therefore the plate will need to be accurately sized prior to installation to achieve and maintain these parameters.

Plate heat exchangers are typically offered in two types, gasketed and brazed. Gasketed plate heat exchangers comprise a series of plates fitted with elastomeric gasket which are retained in a frame whereas brazed plate heat exchangers eliminate the gasketed joints, often allowing for higher design pressures and temperatures.

The other key means of achieving hydraulic separation, a low loss header is essentially a large chamber through which the system water flows at a low velocity. As the flow rate through the header is very slow, dirt and debris fall to the bottom, where they are removed via a drain valve. To prevent any of the debris that settles out being carried back through the boiler, low loss headers are normally mounted vertically. This also allows any air in the system flow to migrate up to a point where it can be vented. If you are using a horizontal low loss header, it's important to employ additional dirt separation on the return to the main plant. In systems based on ferrous metals, such as iron and steel, consider using a magnetic low loss header which combines the benefits of a low loss header with the addition of a magnet inside it, capturing the magnetite particles as well. Low loss headers have a further benefit in that they enable the boiler to operate independently to a system where the load is likely to be variable and the operating range

for the system may not be ideally suited to the boiler. For the boiler, if it was installed directly to the system pipework, a variable flow rate may lead to minimum flow rates for the boiler not being maintained. By keeping both systems hydraulically separate, each side of the system can operate without disturbing the other. The boiler can provide as little or as much heat input as is required, and the system load can vary over a very wide range without affecting the boiler.



When specifying a low loss header, make sure it is sized appropriately for the boilers you are going to use it with and your expected flow rates. If the flow velocity in the body of the header isn't low enough, you won't get effective separation between the two systems.

INSULATION KITS

All headers and pipework should be insulated in accordance with current standards and guidance. Whilst you could use traditional insulation methods and materials, choosing a pre-formed kit made specifically for your header is by far the better option as this will provide better insulation, with less energy loss, and will be far faster to install.

In the case of our own insulation kits, these are manufactured from expanded polypropylene and consist of modular sections which are combined to encase the header. They are secured together using interlock features.

of their cost relative to the entire commercial heating system, and detrimental as their service life may not be as long.

One useful feature to look for in a pump is the ability to modulate the pump speed, which allows the boilers to operate more efficiently. By modulating the pump speed to match the boiler output you can efficiently maintain a certain temperature differential, whilst also using less energy to drive that pump.

Also aim for a compact sized pump as it needs to fit between the main headers and the boiler itself.

CHECK AVAILABILITY

On a final note, one aspect that is frequently under looked is parts availability. The commercial heating industry has suffered from scarcity over recent years. Make sure there is good availability not just on the heating appliance but on all the accessory parts as well.



BOILER CIRCULATION PUMPS

Pumps may all perform the same task of moving water, but the volume that they can move and the head which they can apply to that volume varies greatly.

When selecting a pump, always opt for a recognised manufacturer with a robust reputation for quality. Scrimping on a pump is pointless and detrimental; pointless, because



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