

Still using Steam to get up to Temperature?

Is steam the only option for heating industrial processes? I am sure most of you think so; it is a proven technology after all. However, as we are now well into the 21st century is there an alternative that is realistically viable, or preferable? As always there is no one-size-fits-all answer BUT there are alternatives and as regulations and profit requirements tighten they can offer many benefits to organisations in the food, pharmaceutical, chemical and general industrial manufacturing sectors.

One option that is increasingly being used for temperature control of processes is thermal fluid heating. This proven technology has been used very successfully in the plastics industry for a number of years. Traditionally using oil to reach high temperatures (without the issues around steam pressure) they now also provide either water or a combination of the two for consistent lower or mixed temperature requirements.

So what benefits do these bring to other industries?

Thermal fluid temperature control units lead to incredibly precise yet still highly flexible (and therefore cost effective) options on the temperatures needed throughout a process. As process manufactures are pushed to run more efficient processes to tighter quality regulations they can need highly adaptable options to change temperatures quickly at the push of a button or ensure consistently degree accurate temperatures so the material is processed within precise parameters.



Heat efficiency can be improved by using thermal fluid temperature control units. This does depend on the level of maintenance and insulation used with a steam system but as the temperature control units are small enough to be deployed right next to or under the process element they are heating, there is much less piping needed, less valves, less risks of leaks and minimal exposure to ambient temperatures. They also usually have low volume tanks, reducing the liquid volume in circulation, resulting in a reduced power input needed for heating.

Flexibility is a key selling point, as they are small units (think sizes ranging up from a large desk-top computer box) working alongside the process, when the production line needs to change you just power down, unplug and move the unit, there are no major engineering works to change the piping for the flow of steam, enabling the reduction of time and money wasted with the whole process down.

That flexibility also builds redundancy into the processes, instead of an issue impacting the whole process these small units can be isolated or quickly swapped, again offering efficiencies for the process if there is an issue. They are highly manoeuvrable, most are on casters and can be fitted beside, below, above or even in the roof space close to the process they are heating.



Maintenance of these newer thermal fluid units is a breeze. Many units now offer self cleaning or non ferrous parts, self diagnostic systems and manufacturers are reducing the moving parts (for example using solid state relays) to significantly reduce the amount of wear and tear units will experience during their lifetime. Add to this a corrosion free construction removing steam abrasion and you can significantly reduce the maintenance costs for your process heating control.

Environmental Considerations

Environmental and safety regulations are also tightening. The boiler feed water can be heavily treated prior to use within a steam system so can cause issues when needing discharge or in the case of leaks. Steam also requires high pressure to get high temperatures which needs to be carefully managed, usually with certified boiler staff and costly inspection visits.



In contrast thermal fluid heaters operate at much less pressure, need less 'treatment' for their fluid and do not need certified staff to manage them. Production line staff can easily be trained on operations and user interfaces. The better produced control units can guide staff through what they need to do.

taking advantage of the benefits they offer.

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In particular, front of mind has to be customer safety – be it the requirement to mitigate the risk of contamination within the processes or ensure specific temperatures to control chemical reactions or bacterial risks. Thermal fluid units can come with optional food grade, hygienic stainless steel and/or a IP (Insulation Protection) standard of 55 and above to minimise contaminants getting into systems. The flexibility and computing power behind the newer units enable easy ramping or 'recipe control' when complex manufacturing processes are required or highly effective straight line control where the same consistent temperature is vital. In addition the units can also have the functionality to automatically log data about flow, temperature etc to enable easy monitoring, reporting and control of processes.

Short vs Long-term Costs

Finally, down to the bottom line and the key issue of cost, well steam systems are likely to have either been in place for some time (so have no capital costs) or for a new installation could offer a lower initial capital investment BUT ongoing costs including potentially reduced plant insurance premiums, limited maintenance issues, reliability, flexibility and temperature accuracy – all enabling increased production, efficiency and product quality - can often bring overall cost improvements for a customer using thermal fluid over a traditional steam system.

Each customer will obviously have slightly different requirements so the best option if you are looking at a new installation, a re-fit, planning budgets or just investigating new technology options is to talk to a thermal fluid equipment supplier. Get them to show you what they can offer and make sure they introduce you to other customers within your industry who have already swapped to these newer devices and can offer their own views and opinion on this newer technology.

Good suppliers will work with you, really understand your needs and support you in getting the right solutions with site feasibility studies, business cases and ROI justification for a new installation and even offer services like hire to buy for standard kit so proof of concepts can be initiated at little risk.

There are a surprising number of 'big name' processing and manufacturing organisations that have moved to thermal fluid temp controllers and are

