

Article - TICA

Secondary Heat Networks - insulating our way to better outcomes



Heat networks will form a central plank of our national drive towards Net Zero Carbon. A key element of heat networks in large communal residential projects is of course the secondary heat network. Secondary heat network systems can be defined as “the pipes within the buildings, and up to each dwelling in residential blocks”.

It is in the secondary heat network systems that we face so many of the issues that can undermine confidence in heat networks as an efficient space heating delivery mechanism. Overheating in communal corridors and increasing energy costs are two of the most significant problems associated with secondary heat networks. And yet, in many cases, a cursory glance at the thermal insulation system installed on the heating pipework is all that is required to diagnose the problem.

Recognising poor insulation specification and installation practice is one thing. Putting robust practices in place to ensure that thermal insulation of secondary heat network pipework is fit for purpose is another. Thankfully, there is now a real recognition of the importance of thermal insulation in the heat network market – and the momentum is building. TICA (the Thermal Insulation Contractors Association) also recognise the intrinsic link between

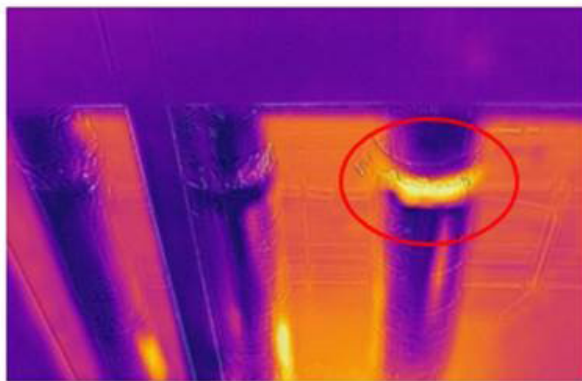
thermal insulation and high efficiency heat networks and we have been collaborating with key stakeholders in the heat network market to improve quality and standards.

So, the big question is how do we insulate our way to better outcomes? I would like to answer this question in two stages. First of all, we will look at early design and specification requirement. Secondly, we will look at quality assurance and installation/post installation best

Specification

Different insulation systems have differing thermal conductivity values (lambda values) and will result in differing levels of heat loss reduction when installed at the same thickness. Different insulation thicknesses may also be required for different pipework service temperatures.

CP1 offers good general guidance for pipe insulation. However, the published thickness tables are minimum insulation thicknesses and may have little bearing on what is actually required from an insulation system to meet the targeted 100W/dwelling heat loss figures. From the number of dwellings to the length of pipe runs, every project is different. Every project requires a specific heat loss calculation based on the following:



Gaps in the insulation system can promote heat losses

- Pipe Diameter
- Flow and return temperatures of LTHW pipework
- Thermal conductivity (lambda value) based on specific service temperature information
- Proposed Insulation thickness

Reputable Manufacturers should be able to provide a W/m heat loss figure based on the above information and offer comparisons showing how increased/decreased thickness of their insulation product will affect the W/m heat loss figures. This information can be used by the specifier/designer to ensure that the insulation system can help to meet the targeted 100W/dwelling heat loss figures. It is of course essential that the project specific calculations are incorporated into the specification at the earliest possible stage.

Pipe insulation cannot be considered as a stand-alone product - the whole system should be considered. Load bearing insulated pipe supports should be clearly specified to control heat transfer through the support system. Valve jackets/insulated covers should also be specified for all valves on the system - a general rule of thumb being that one valve is equivalent to 1M of uninsulated pipe in terms of W/m heat loss.



Heat Network plant room with phenolic pipe insulation and mineral fibre jackets covering valves.

Installation/Post Installation

There is of course no point in tightening up specifications to ensure they are fit for purpose if we do not police the specification through the installation stage.

All too often insulation is an afterthought, with contracts awarded to either the cheapest price or the contractor who can provide labour more quickly than their competitors. Specification compliance is not always the prime consideration for the M&E Contractors awarding the thermal insulation contract and in truth, many M&E Contractors may not immediately recognise a good Thermal Insulation Technical Submittal from a bad one. Early engagement between M&E Contractor and Thermal Insulation Contracting specialist is therefore key to ensuring specification compliance and allowing for co-ordination on key trade intersections such as load bearing pipe supports and fire wall penetrations. It will also allow the Thermal Insulation Contracting specialist to gear up for the project with skilled and qualified labour and to secure material where bespoke insulation thicknesses are required.

Quality assurance should run through the project like a golden thread of course. Before the Thermal Contractor has even insulated a run of pipework, checks should be made to ensure that the load bearing pipe supports are of the correct material and thickness and installed to the correct standard (thermally inefficient wood blocks should not be used).

Throughout the pipe insulation installation process, the Thermal Insulation Contracting specialist should be able to demonstrate specification compliance and a good standard of workmanship. TICA would encourage clients and contractors to employ only Thermal Insulation Contracting specialists who can demonstrate competency and compliance - particularly where third party quality assurance schemes are stipulated.

It is also worth considering what a post

commissioning inspection and maintenance scheme will look like. Will insulation be inspected at regular intervals and replaced when damaged? Will valve covers be installed back on to valves after they have been taken off?



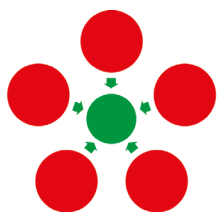
Fully insulated LTHW and CWS pipework including load bearing pipe support inserts at fixing points on communal residential project

In conclusion, thermal insulation of pipework will play a key role in reducing heat losses on secondary heat network installations and ensuring that heat networks are an attractive and effective option in our bid to reach our Net Zero goals by 2050.

TICA represents an industry with the skills, experience and competence to meet the challenge, but we also need to ensure that the wider contracting industry recognises the value our members can bring - early engagement, contract awards based on competency, and a continued focus on quality assurance are key. TICA are keen to play our part in ensuring that best-practice is observed in the Heat Network market and we look forward to working in collaboration with the UKDEA going forward.



Chris Ridge is the Technical Policy Manager for TICA – the Thermal Insulation Contractors Association. TICA is the sole UK Trade Association representing contractors involved in the application of hot and cold Thermal Insulation. Chris can be contacted at cridge@tica.uk.com



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