

What causes moisture ingress into an insulation system?

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A quick guide



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Design that is not fit for purpose

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Mechanical systems that are to be insulated must be compatible with the insulation system.

An insulation system that is not fit for purpose will increase the chances of moisture entering the system.

Consideration needs to be given so that the cladding can provide adequate protection to the underlying asset.


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Low quality fabrications

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Low quality cladding fabrications will lead to problems during the installation of the insulation system and throughout its following life cycle.


If sheet metal fabrications don't fit correctly, it will lead to the joints in the cladding surface being left open; allowing moisture to freely enter the system.



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Poor quality installation

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Poor quality work during the installation of the insulation system will result in the system not being water tight.

Not following cladding best practice during both the design and installation of the insulation system can actually encourage water ingress.


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Mechanical damage

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Insulation systems can become damaged, allowing moisture ingress, due to a range of reasons:


- In transit to site from fabrication facilities
- Accidental / purposeful damage during installation, inspections, and maintenance
- By personnel footfall when transitioning near the system
- By the workforce when working near the system: erecting scaffolding for example.



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Operating conditions

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Moisture ingress unavoidably occurs within an insulation system as part of operational demands, including:

- Continuous and cyclic conditions / temperatures
- Changes / differences in operating and ambient air temperatures
- Short / significant spikes in operating temperatures
- Steam-out cleaning



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Not maintaining the system

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An insulation system has an expected life cycle and is subject to extreme operational demands.

If the insulation system sustains damage, this could result in openings of the cladding seams and/or penetration of the cladding surface - causing moisture ingress.

Not inspecting and maintaining the insulation system will allow problems to occur through wear and tear.




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Poor

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reinstatement



Following inspections and maintenance, a common problem during the removal of cladding and insulation is the insulation material slipping.

This will result in poor reinstatement of the system and the opening of cladding seams; leaving the system subject to the surrounding environment, allowing moisture to enter.



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Learn more about how to prevent, track, and mitigate CUI

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Help with Corrosion Under Insulation
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