

THERMAL INSULATION ASSESSMENT FOR LNG, LPG, AMMONIA & CO₂ VESSELS

PLAN SMARTER, REDUCE LOSSES, PROTECT ASSETS & LOWER EMISSIONS.



CHALLENGES



Thermal insulation state and performance unknown.



Multiple lines hidden away from clear sight.



Identifying what to replace during drydock to significantly reduce lead time demands.



Increased boil-off rate over time but not directly seen or accepted in cargo loss.



Multiple lines with cyclic loading - high risk of corrosion under insulation (CUI).



Tank wall issues are difficult to identify.



SOLUTIONS



EARLY CONDITION ASSESSMENT

Identify insulation deficiencies during the planning phase, well ahead of scheduled drydock activities. Enable data-driven maintenance decisions and repair planning.



THERMAL IMAGING SURVEY

Detect insulation failures, thermal bridges, moisture ingress, and heat leakage. Identify problem areas even when external condensation is not visible.



TARGETED VISUAL INSPECTION

Inspect critical areas for physical damage, moisture ingress and early stage insulation degradation. Detect potential CUI risks before significant material loss occurs.



PERFORMANCE OPTIMISATION

Quantify opportunities to reduce boil-off rates. Support insulation improvement programmes that lower cargo losses and emissions.



RESULTS & BENEFITS



IMPROVED DRYDOCK PLANNING

- More preparation time before drydock.
- Prioritised scope of work based on actual performance.
- Reduced risk of discovering unexpected issues.
- Improved contractor preparation and training.



BETTER MAINTENANCE DECISIONS

- Comprehensive insulation condition report shared with ship owner.
- Replacement focused on poorly performing areas.
- Long-term monitoring plan for early signs of degradation.



REDUCED SCHEDULE RISK

- Longer procurement windows.
- Reduced material lead time impact.
- Better coordination of repair activities and resources.



INCREASED SUSTAINABILITY

- Lower boil-off rates reduce cargo losses.
- Reduced emissions through improved thermal performance.
- Supports decarbonisation and efficiency objectives.



ENHANCED ASSET PROTECTION

- Early identification and CUI mitigation.
- Reduced risk of structural degradation and unplanned repairs.
- Extended asset life and improved reliability.



TARGET APPLICATIONS

PRIMARY FOCUS

- LNG carriers
- LPG carriers
- Ammonia carriers
- CO₂ carriers

CRYOGENIC
PIPELINE SYSTEMS

TANK
CONNECTIONS

CARGO
CONTAINMENT
SYSTEMS

VALVE
STATIONS



FUTURE EXPANSION



HVAC SYSTEMS



REFRIGERATION SYSTEMS

Methodology can be extended to other temperature-controlled marine assets.



SUSTAINABILITY & EMISSIONS REDUCTION

Thermal insulation performance directly affects energy efficiency, cargo retention, emissions, and asset integrity.



Reduce energy loss, boil-off and cargo losses



Improve energy efficiency



Lower emissions



Protect assets

Contribute to a more sustainable future and support decarbonisation and energy efficiency goals.



ASSESS

Thermal imaging and visual inspection to uncover hidden risks and insulation issues.



ANALYSE

Evaluate insulation performance, quantify losses and identify priority areas.



PLAN

Develop drydock scope, select solutions, plan materials and prepare contractors early.



IMPROVE

Execute with confidence, reduce boil-off, mitigate CUI and improve asset performance.

Identify insulation issues early, reduce boil-off losses, mitigate CUI risks and make informed maintenance decisions that improve asset reliability, sustainability and operational performance.



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