
Building Envelope Assurance: Facades, Roofs and Water Tightness Training Course

16 – 20 August 2027
Tokyo





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Programme Summary

Building envelope assurance for facades, roofs and water tightness is a five-day training course for senior leaders at managerial and strategic level, culminating in an envelope assurance plan for a current or planned building project. Leaks and early facade or roof failure are costly defects that usually trace back to interfaces nobody inspected before they were covered. The approach links owner requirements, inspection hold points and field testing into one assurance chain. Mars Training Centre UK delivers this programme in building envelope assurance.

The Business Case

Envelope defects are rarely visible at handover. Water finds a failed joint months later, damaging finishes and triggering disputes over who pays. Owners who define performance early, witness critical installations and test before acceptance turn hidden risks into recorded evidence.

- Remedial and Warranty Cost: Falls when defects are caught at mock-up and first-installation stages rather than after occupation.
- Energy and Comfort Performance: Improves when air tightness and thermal continuity are verified rather than assumed.
- Dispute and Claim Exposure: Reduces when inspection records and test results show what was accepted and why.

Principles and Evidence Base

- ASTM E2813 Building Enclosure Commissioning: Structures owner requirements, review, inspection and acceptance in Sessions 1 to 4.
- NIBS Guideline 3 Building Enclosure Commissioning Process: Guides the roles and documentation of the envelope commissioning team in Session 1.
- ASTM E1105 and AAMA 501.2 Field Water Testing: Define water penetration checks of installed glazing in Session 3.
- ISO 9972 Air Permeability by Fan Pressurisation: Frames whole-building air tightness testing in Session 3.

Intended Participants

- Leaders who represent the owner in accepting completed building works.
- Senior managers accountable for construction quality on building projects.
- Heads of inspection who set hold points and approve inspection and test plans.
- Consultants who review facade, roofing and waterproofing design and installation.



The programme serves commercial real estate, healthcare and education estates, hospitality developments and government building programmes.

Learning Outcomes

1. Participants will be able to translate owner requirements into measurable envelope performance criteria.
2. Participants will be able to diagnose high-risk interfaces in facades, roofs, waterproofing and air barriers.
3. Participants will be able to construct inspection and test plans with hold and witness points for envelope works.
4. Participants will be able to evaluate field water and air tightness test results against acceptance criteria.
5. Participants will be able to prioritise defects and corrective actions by consequence and cost of delay.
6. Participants will be able to justify envelope acceptance decisions with complete records.

Programme Structure

Day 1: Building Envelope Assurance Foundations

What must the envelope achieve, and who verifies it?

- Envelope Functions: Water, Air, Vapour and Heat Control
- Owner's Project Requirements and Basis of Design
- ASTM E2813 Fundamental and Enhanced Commissioning
- NIBS Guideline 3 Team Roles and Documentation
- Envelope Risk Register for a Building Project

Day 2: Facades, Roofs and Critical Interfaces

Where do envelopes fail, and how are those points found on drawings?

- Curtain Wall and Window Systems: Drainage and Pressure Equalisation
- Roofing and Below-Grade Waterproofing Systems
- Air and Vapour Barrier Continuity Details
- Interface Review at Openings, Parapets and Penetrations
- Submittal and Shop Drawing Review Checklists

Day 3: Field Testing of Water and Air Tightness

Which tests prove performance, and how are results read?



- Visual and Performance Mock-Ups
- ASTM E1105 and AAMA 501.2 Water Penetration Testing
- ISO 9972 Whole-Building Air Permeability Testing
- Roof Flood Testing and Electronic Leak Detection
- Test Sampling, Pass Criteria and Retest Rules

Day 4: Inspection Plans, Defects and Acceptance

How are inspections planned, defects managed and work accepted?

- Inspection and Test Plans With Hold and Witness Points
- Defect Diagnosis: Leak Path Tracing and Root Cause
- Non-Conformance Reports and Corrective Action Tracking
- Acceptance Records, Warranties and Handover Files
- Post-Occupancy Envelope Review

Day 5: Applying Building Envelope Assurance

How are the methods combined into a plan for a participant project?

- Setting Performance Criteria for a Participant Building
- Mapping High-Risk Interfaces on Project Drawings
- Drafting the Envelope Inspection and Test Plan
- Peer Review of Testing Scope and Acceptance Criteria
- Envelope Assurance Plan Presentation

Methodology

The programme uses case analysis of envelope failures from hospitals, offices and hotels, followed by structured exercises in which participants review details, plan inspections and interpret real test records. Each case is traced to the missing check that allowed the defect.

- Suggested activity: Tracing a curtain wall leak to its failed interface.
- Suggested activity: Setting hold points for a roof waterproofing package.
- Suggested activity: Deciding acceptance from mixed water test results.

Capstone Output

Each participant completes an envelope assurance plan for a building project. It sets out performance criteria, a map of high-risk interfaces, the inspection and test plan with hold points, the field testing scope and acceptance criteria, and the records required at handover, ready to issue to the project team.



Frequently Asked Questions

Is building envelope assurance suitable for owners' representatives without a facade background?

Yes. It is designed for directors, owner's representatives and quality leaders who accept building works. It assumes project experience but no facade training.

Which standards underpin building envelope assurance in this programme?

It rests on ASTM E2813 and NIBS Guideline 3 for envelope commissioning, ASTM E1105 and AAMA 501.2 for field water testing, and ISO 9972 for air permeability testing.

How is the building envelope assurance plan used at work?

You issue it to designers, contractors and inspectors so that criteria, hold points, tests and handover records are agreed before envelope works begin.

How does building envelope assurance differ from general construction quality management?

It concentrates on the facade, roof and waterproofing systems that keep water and air out, while general quality management covers every trade and process on site.