CONCEPT

Facade Engineering Course: Curtain Wall Design, Performance Testing and Installation

14 – 18 December 2026
Barcelona - Eixample district four-star



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Ref: 1575_25317 **Date:** 14 – 18 December 2026 **Location:** Barcelona - Eixample district four-star **Fees:** 23500 SAR

Introduction:

Facade engineering for curtain wall design, performance testing and installation is the subject of this 1-week course for facade, curtain wall, project and consultant engineers on high-rise towers, ending with a Facade Performance Specification with Mock-Up Test and Installation QA Plan. Tower projects lose months when glazed envelopes fail mock-up water tests, panels arrive outside tolerance or cladding build-ups cannot show fire performance late in delivery. Nominees already review facade shop drawings or supervise envelope packages, and teaching is by case study on real tender, test and site records. CoreConcept Training Center delivers this facade engineering course.

Course Objectives:

- Select stick, unitised and rainscreen cladding systems that suit tower height, programme and fabrication constraints
- Define wind pressure, deflection and interstorey drift criteria and check mullion, bracket and anchor design against them
- Specify insulating glass, low-e coatings, warm-edge spacers and structural silicone joints for target U-value and solar heat gain coefficient
- Plan a mock-up testing sequence for air, water, structural and drift performance and judge pass or fail evidence
- Specify non-combustible cladding build-ups, cavity barriers and floor-edge fire stopping for tall facades
- Build a Facade Performance Specification with Mock-Up Test and Installation QA Plan for a case tower

Target Audience:

- Facade engineers responsible for curtain wall and cladding design packages on tall buildings
- Curtain wall delivery engineers responsible for shop drawings, fabrication release and panel logistics
- Project engineers on developer and contractor teams who coordinate envelope interfaces with structure and services
- Consultant engineers who review facade submittals, witness performance tests and certify installed works
- Site quality engineers responsible for anchor setting, tolerance checks and field water testing of glazed envelopes

Course Outline:

Day 1: Facade Systems, Envelope Functions and Tower Project Context

- Curtain Wall Taxonomy of Stick, Ladder and Unitised Framing
- Rainscreen Cladding Ventilated Cavity and Drained Joint Principles
- EN 13830 Product Characteristics for Curtain Walling Kits
- Facade Design Responsibility Matrix Between Architect, Engineer and Contractor
- Tower Envelope Package Baseline Review and Interface Register

Day 2: Structural Design for Wind, Movement and Structural Glazing

- Wind Pressure Zoning and Cladding Design Load Derivation
- Mullion and Transom Deflection Limits Including L/175 Checks
- Interstorey Drift, Slab Edge Deflection and Stack Joint Sizing
- ASTM C1401 Structural Silicone Bite and Thickness Calculation
- Embedded Anchor Channels, Brackets and Three-Way Adjustment Design

Day 3: Glazing Thermal and Solar Performance and Fire-Safe Cladding

- Insulating Glass Unit Build-Ups With Low-E Coatings and Gas Fill
- Frame U-Value, Thermal Break and Warm-Edge Spacer Selection
- Solar Heat Gain Coefficient and Visible Light Transmittance Trade-Offs
- NFPA 285 Fire Propagation Testing for Exterior Wall Assemblies
- Cavity Barriers, Spandrel Insulation and Floor-Edge Fire Stopping Details

Day 4: Mock-Up Performance Testing, Failure Modes and Installation Risk

- Performance Mock-Up Sequence Using ASTM E283, E331 and E330
- AAMA 501 Dynamic Water and Seismic Racking Test Procedures
- Mock-Up Failure Root Cause Analysis and Retest Protocols
- Unitised Panel Hoisting, Stacking and Installation Tolerance Control
- ASTM E1105 Field Water Testing Frequency and Acceptance Rules

Day 5: Case Study on a Facade Performance Specification for a Case Tower

- Case Tower Envelope Brief and Performance Criteria Schedule
- Case System Selection and Glazing Specification Decision Record
- Case Mock-Up Test Programme With Witness and Hold Points
- Case Installation Inspection and Test Plan With Tolerance Checklists
- Facade Performance Specification With Mock-Up and QA Plan Completion

Skills You Will Gain:

- Curtain Wall System Selection
- Wind and Movement Load Analysis
- Structural Sealant Joint Design
- Glazing Thermal Performance Specification
- Facade Fire Strategy Detailing
- Mock-Up Test Evaluation
- Installation Tolerance Control
- Facade Submittal Review

Why Attend This Course:

- Hand a Facade Performance Specification with Mock-Up Test and Installation QA Plan to the project director, facade consultant and envelope subcontractor
- Decide between stick and unitised systems and which glazing build-up meets thermal and solar targets
- Prevent failed mock-ups, rejected panels and late fire evidence that delay tower handover
- Brief design and site colleagues on drift joints, sealant bite rules and field water test routines

Conclusion:

Back at work, the participant gives the project director, facade consultant and envelope subcontractor a Facade Performance Specification with Mock-Up Test and Installation QA Plan for the tower in hand. The design team uses it to fix performance criteria before tender, the contractor uses it to plan mock-up testing and site inspection, and the consultant uses it to witness tests and release works. After the first mock-up, the unit should review test results, retest causes and site nonconformities, then update the specification and QA plan.

Frequently Asked Questions FAQ:

What should participants know before a facade engineering course on curtain wall design and testing?

Participants should already read facade drawings, review envelope submittals or supervise curtain wall works. Basic structural and building physics knowledge helps. Bringing an anonymised facade specification or test report helps during the case study.

How does a facade engineering curtain wall course differ from a building envelope inspection course?

It covers new-build facade design, specification, mock-up testing and installation control. Envelope inspection courses assess the condition of existing buildings and plan repairs, while parametric modelling courses focus on generating facade geometry rather than its engineering performance.

Why is mock-up testing required in facade engineering for curtain wall projects?

Mock-up testing shows that the designed curtain wall resists air leakage, water penetration, wind load and building movement before mass production. Failures found on the mock-up cost far less to correct than failures found after hundreds of panels are installed.

What do participants take back from the facade engineering curtain wall course?

Participants take back a Facade Performance Specification with Mock-Up Test and Installation QA Plan, plus a performance criteria schedule, glazing selection record, mock-up test programme and installation tolerance checklists adaptable to their own projects.