HOUSEPLANSDIRECT TECHNICAL GUIDES

EXTERNAL WALL INSULATION (EWI) EXPLAINED

A complete guide to insulating solid and cavity walls from the outside

A coordinated EWI system wraps the wall while resolving openings, roofs, services and the wall base.

NINE-PART PUBLICATION EDITION

Principles · Systems · Moisture · Anatomy · Design · Installation · Compliance · Defects · Inspection

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Contents

Part	Subject
Part 1	What Is External Wall Insulation?
Part 2	EWI Systems and Suitability
Part 3	Heat, Moisture and Existing Walls
Part 4	Anatomy and Critical Junctions
Part 5	Design and Installation
Part 6	Junctions, Fire and Workmanship
Part 7	Building Regulations, Fire and Approvals
Part 8	Common Design and Installation Defects
Part 9	Inspection Checklist, FAQs, Glossary and Further Reading

About this guide

This guide explains external wall insulation (EWI) for existing and new low-rise homes in England. It covers suitability, surveys, system build-ups, moisture and thermal performance, fixings, openings, roofs, services, fire, installation and inspection. EWI is a complete tested or assessed system: the project design, substrate survey, manufacturer's specification, statutory approvals and installer requirements always take precedence.

SCOPE EWI is a complete system and whole-building intervention. Survey, moisture, fire, wind, fixings, interfaces, approvals and certification are project-specific. Figures are explanatory and must not be scaled.

Part 1 – What Is External Wall Insulation?

A complete insulation and weathering system applied outside the existing wall

EWI fixes insulation to the external face of a wall and protects it with a reinforced render or supported cladding finish. By wrapping structure and junctions, it can improve U-value, internal surface temperature and airtightness while retaining internal floor area. It also changes rain, vapour, drying, fire, roof-edge, opening and boundary conditions, so it must be designed as a whole-building intervention.

Figure 1 — Whole-house EWI with principal junctions and insulation continuity exposed.

1.1 Principal components

Component	Primary role
Insulation layer	Provides the main resistance to heat flow through the envelope.
Structure	Supports the building but may bypass insulation at junctions.
Openings / junctions	Create linear heat-flow paths requiring detailed coordination.
Fixings / penetrations	Create point or local bridges and interrupt air-control layers.
Airtight / vapour layers	Control air and moisture movement independently of conduction.

1.2 Benefits and limitations

- Can greatly reduce heat loss through suitable solid walls and improve cold internal surfaces.
- May protect the existing wall from driving rain when the complete weathering system is correct.
- Changes façade thickness, appearance, eaves, sills, services and boundaries and may need permission.
- Poorly assessed walls, trapped moisture, weak fixings or incomplete fire detailing can create serious defects.

KEY PRINCIPLE Repair the wall first, then wrap it with one compatible system whose insulation, weathering, fixings, fire barriers and junctions remain continuous.