

The Thermal Insulation Guide

Professional solutions from specialists

“Guide”
series,
no. 1



 **BASF**
The Chemical Company

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System solutions

HECK MultiTherm (EIFS)

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Corporate vision and mission

Colfimit Rajasil GmbH & Co. KG, with its two strong brands Rajasil and HECK MultiTherm, is one of the leading producers of special-purpose construction materials for building refurbishment and heat insulation systems. Based in Marktredwitz, Colfimit Rajasil has been active on the market for 100 years now. Colfimit Rajasil is part of the BASF group, the world's largest chemical company.

Our forward-looking corporate policy aims at generating returns that will then be invested in ensuring long-term job security and competitiveness.

Open-mindedness, fairness, cooperation, tolerance, reliability and loyalty as well as a positive attitude towards our state and our society are the core values guiding us as we conduct our day-to-day business. We acknowledge the social responsibility we have towards our partners and our employees.

We profess to uphold the ecological values and objectives of protecting the environment and our natural resources. In doing so, we assume responsibility for future generations today.



Thermal insulation of buildings

The thermal insulation of buildings forms the basis of a comfortable room climate. By insulating outer walls or basement ceilings, for example, a building's energy requirements can be lowered drastically, thus reducing a building's maintenance costs and benefiting the environment. In addition, External Insulation Finishing Systems provide a cost-efficient means of renovating facades within the existing building stock.

The thermal insulation of buildings is part of energy conservation regulations in most countries.

This brochure is a guide to our extensive range of systems. Using different substrates as examples, applicable system solutions will be recommended.

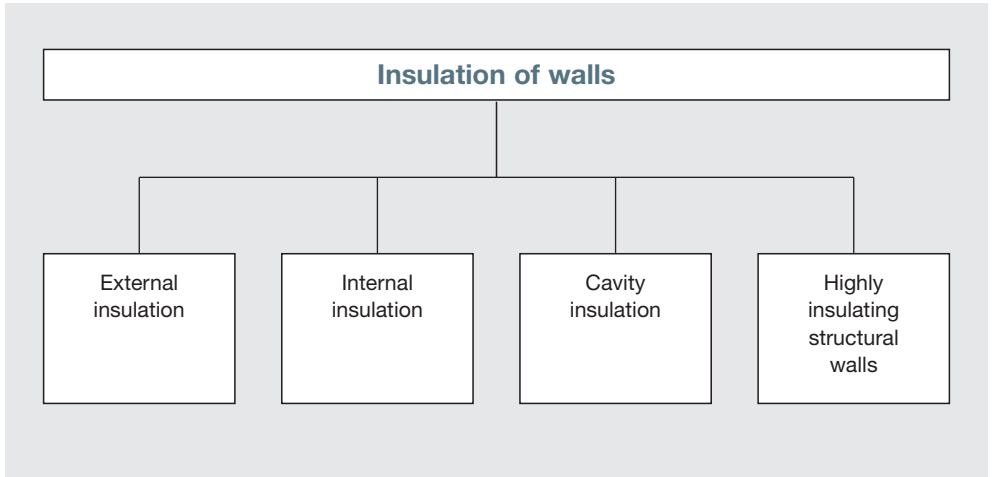
Please note:

1. Explanations of specific terms can be found in the glossary (pages 18/19).
2. For object-specific advice, both our expert advisors in the field as well as our construction consultancy staff will be happy to assist you.

You can reach us by phone at +49 92 31 / 8 02-0 or on the Internet at www.wall-systems.com

All recommendations contained herein are based on our best knowledge; however, they are to be considered informational only. For planning and application, please always refer to the products' valid Technical Data Sheets.

Thermal Insulation Guide



Advantages of External Insulating Finishing System:

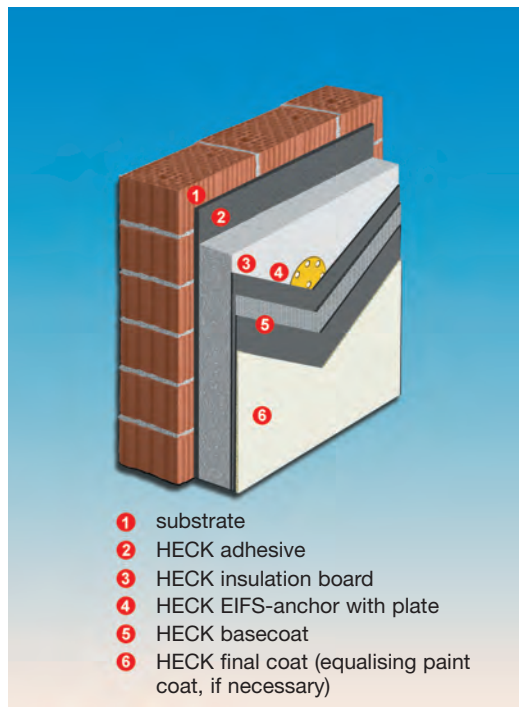
- **Economic efficiency**
- **Longevity**
- **Protection of building structure from environmental pollution**
- **Wide choice of facade designs**
- **Reduction of external wall thickness (larger effective area)**
- **Healthy indoor climate**

HECK MultiTherm (External Insulation Finishing Systems)

HECK MultiTherm (EIFS) are comprised of the following main components:

- adhesive layer; where applicable; also mechanical fixing only (special anchor Stellfuchs)
- insulation board; additional mechanical fixing where applicable
- mesh-reinforced basecoat
- final coat (decorative layer)
alternatively: high-quality ceramic cladding (only with systems that are both adhesive bonded and mechanically fixed)

Cross-section of the system:



System description

HECK MultiTherm EPS – our standard systems

Excellent price/performance ratio and suitable for use on conventional masonry, concrete, and substrates in frame constructions. Also available with highly sound-insulating boards. With newly-built constructions, no mechanical fixing is necessary in general. With uneven, problematic substrates, application is executed as guide rail or special anchor system (Stellfuchs).

HECK MultiTherm MW – mineral system

With highly water vapour permeable insulation boards made from (non-combustible) mineral wool (MW), and mineral system mortars. Has convenient sound-insulation properties. Universally applicable on conventional masonry and concrete, from single-family homes to high-rise buildings.

With uneven, problematic substrates, application is executed as guide rail or special anchor system (Stellfuchs).

HECK MultiTherm L-MW – mineral system with no mechanical fixing

With highly water vapour permeable, lamellae-shaped insulation boards made from (non-combustible) mineral wool (MW), and mineral system mortars. Universally applicable on conventional masonry; efficient to install (adhesive can be applied directly onto wall).

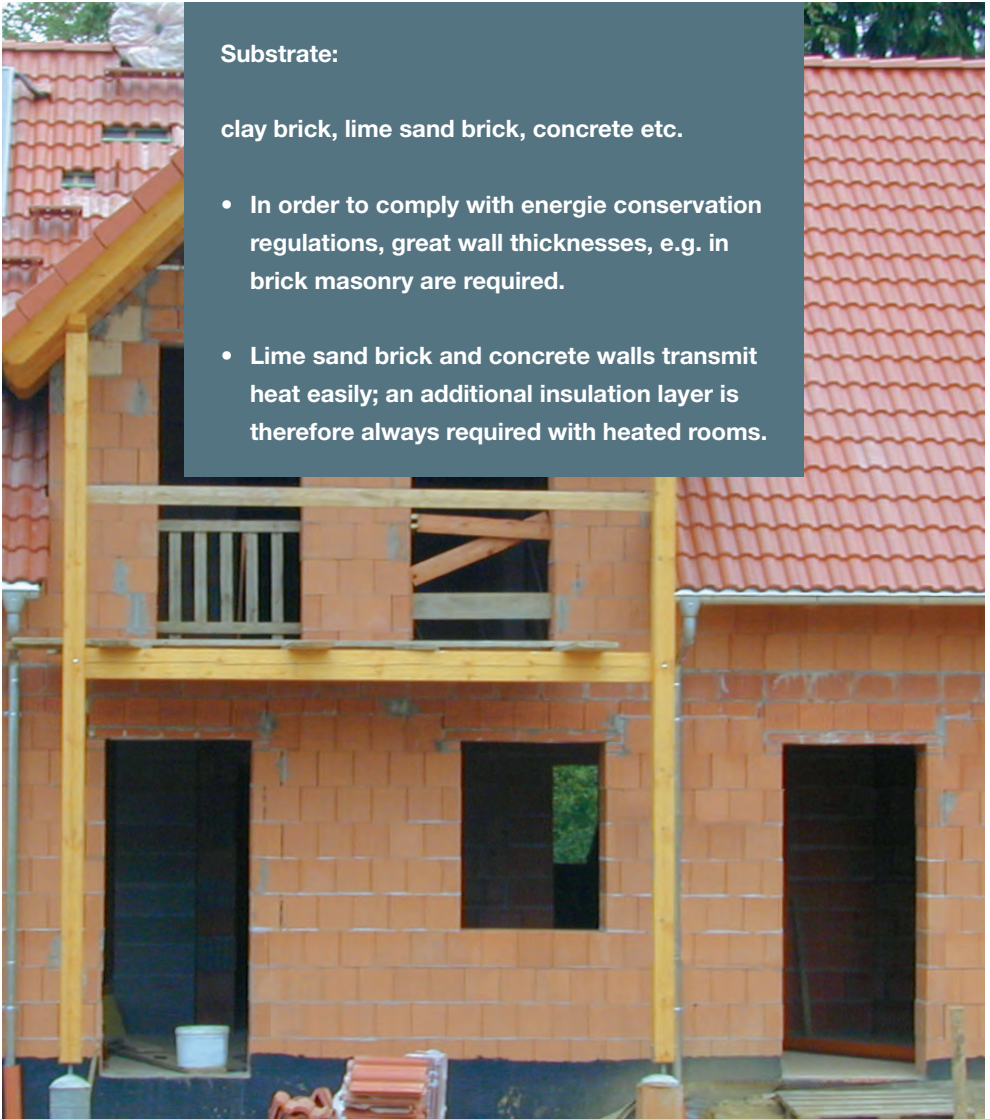
Thanks to the unique insulation material design using “upright fibres”, this system is very-well suited for the insulation of curved elements.

New buildings – masonry, concrete

Substrate:

clay brick, lime sand brick, concrete etc.

- In order to comply with energie conservation regulations, great wall thicknesses, e.g. in brick masonry are required.
- Lime sand brick and concrete walls transmit heat easily; an additional insulation layer is therefore always required with heated rooms.



The solution:

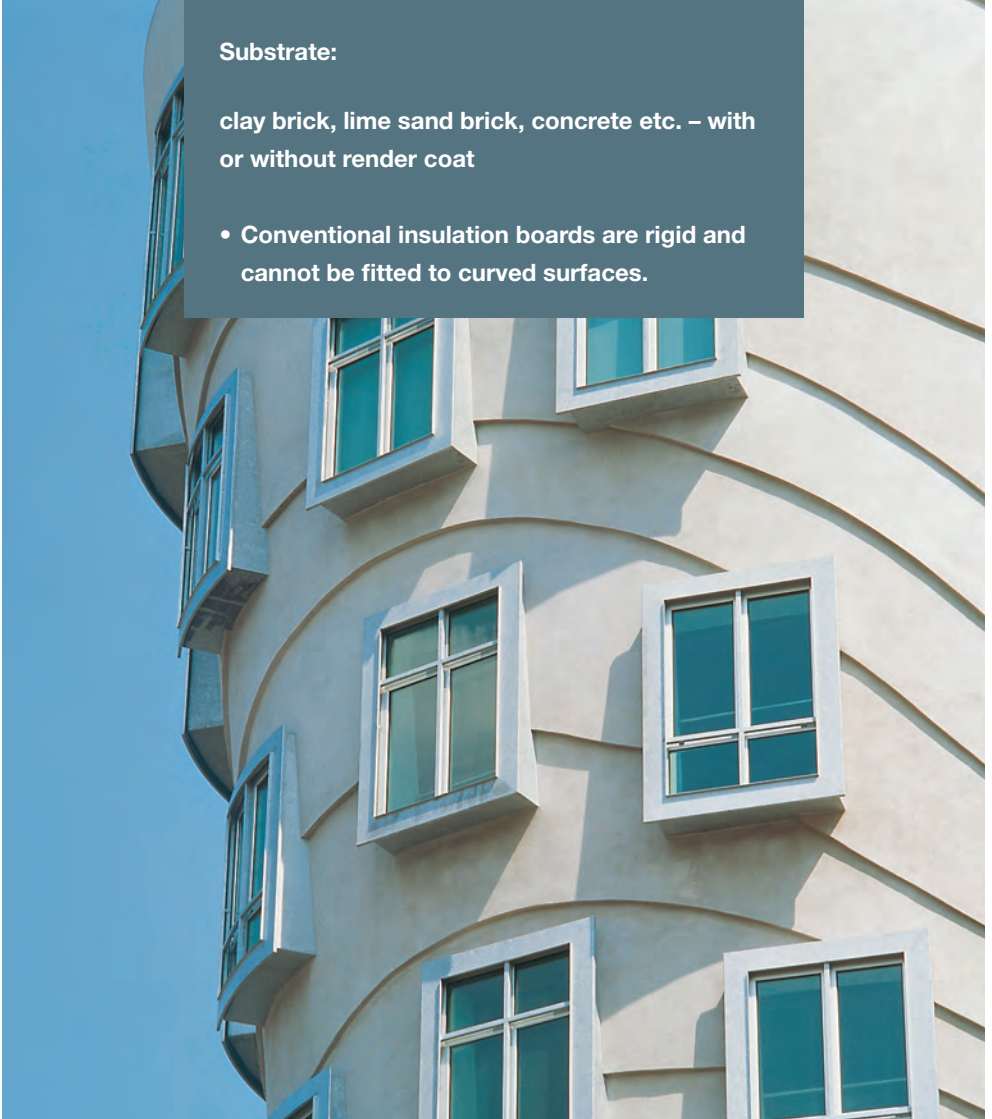
<u>Systems</u>	HECK MultiTherm EPS, HECK MultiTherm EPS-ZF	HECK MultiTherm L-MW
Fire protection	flame resistant	non-combustible
<u>System build-up</u>		
Substrate	clean, even, structurally sound	
Adhesive mortar	HECK K+A / HECK K+A PLUS	
Insulation boards	HECK EPS-Dämmplatten (expanded polystyren)	HECK MW-lamellae (mineral wool)
Mechanical fixing	not required	not required
Basecoat with mesh	HECK K+A / HECK K+A PLUS HECK Armierungspachtel ZF (HECK K+A ZF) HECK Armierungsgewebe (mesh)	HECK K+A / HECK K+A PLUS HECK Armierungsgewebe (mesh)
Finishing coat	HECK Strukturputze (HECK STR) HECK Edel-Dekor (HECK ED) HECK Silikatputze (HECK SIP) HECK K+A PLUS	
	mineral	
	organic	
Equalising paint coat (if required)	HECK Ausgleichsfarbe (HECK AGF) Rajasil Siliconharzfarbe (RAJASIL SHF) HECK FF Uni	

New and old buildings – curved elements

Substrate:

clay brick, lime sand brick, concrete etc. – with or without render coat

- Conventional insulation boards are rigid and cannot be fitted to curved surfaces.



The solution:

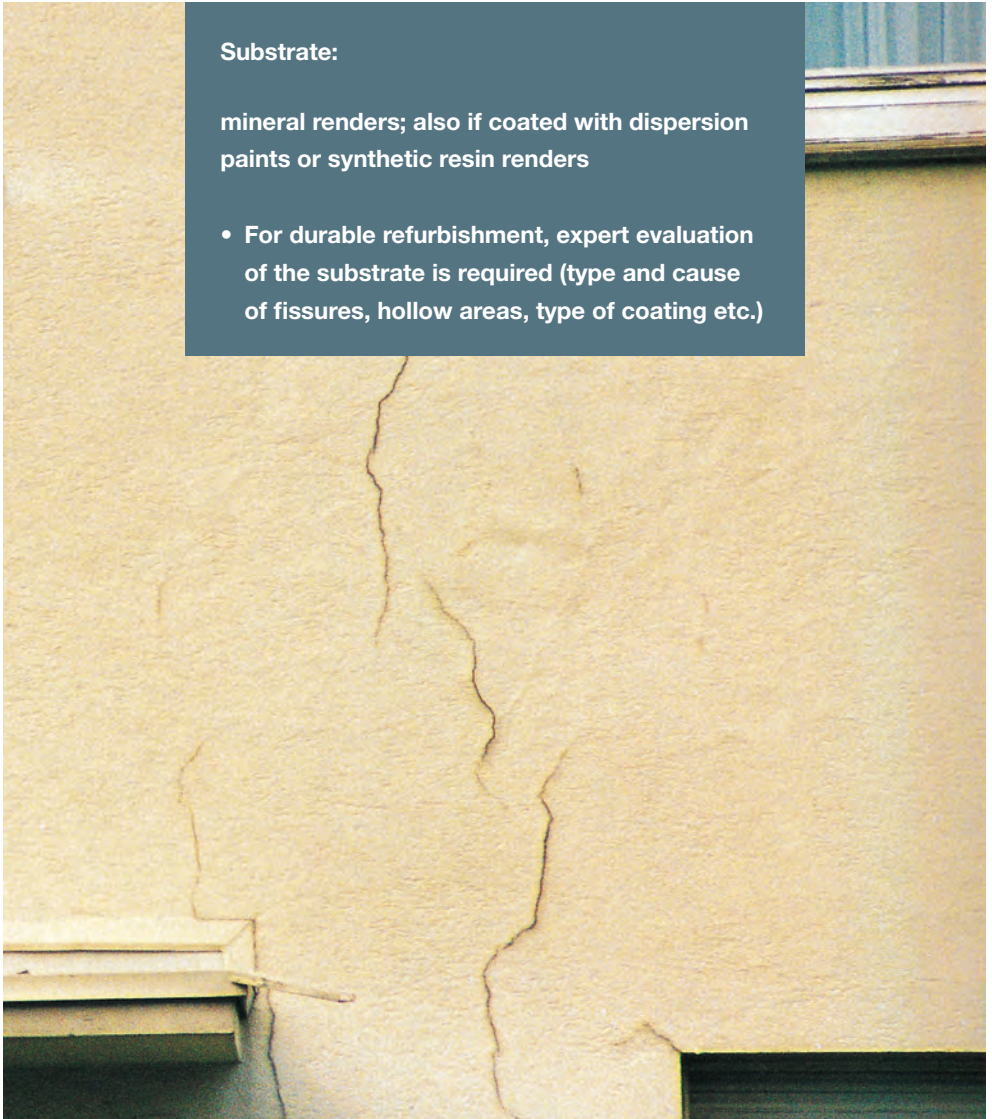
<u>Systems</u>	HECK MultiTherm L-MW
Fire protection	non-combustible
<u>System build-up</u>	
Substrate	clean, even, structurally sound
Adhesive mortar	HECK K+A / HECK K+A <i>PLUS</i>
Installation boards	HECK MW-lamellae (mineral wool)
Mechanical fixing	not required *
Basecoat with mesh	HECK K+A / HECK K+A <i>PLUS</i> HECK Armierungsgewebe (mesh)
Finishing coat mineral	HECK Strukturputze (HECK STR) HECK Edel-Dekor (HECK ED) Rajasil + HECK Edelputze WD (HECK SIP) HECK K+A <i>PLUS</i>
Equalising paint coat (if required)	HECK Ausgleichsfarbe (HECK AGF) Rajasil Siliconharzfarbe (RAJASIL SHF)
Note	* only valid for substrates in new buildings and a wind suction force of up to 1.6 kN/m ²

Old buildings – cracked renders

Substrate:

mineral renders; also if coated with dispersion paints or synthetic resin renders

- For durable refurbishment, expert evaluation of the substrate is required (type and cause of fissures, hollow areas, type of coating etc.)



The solution:

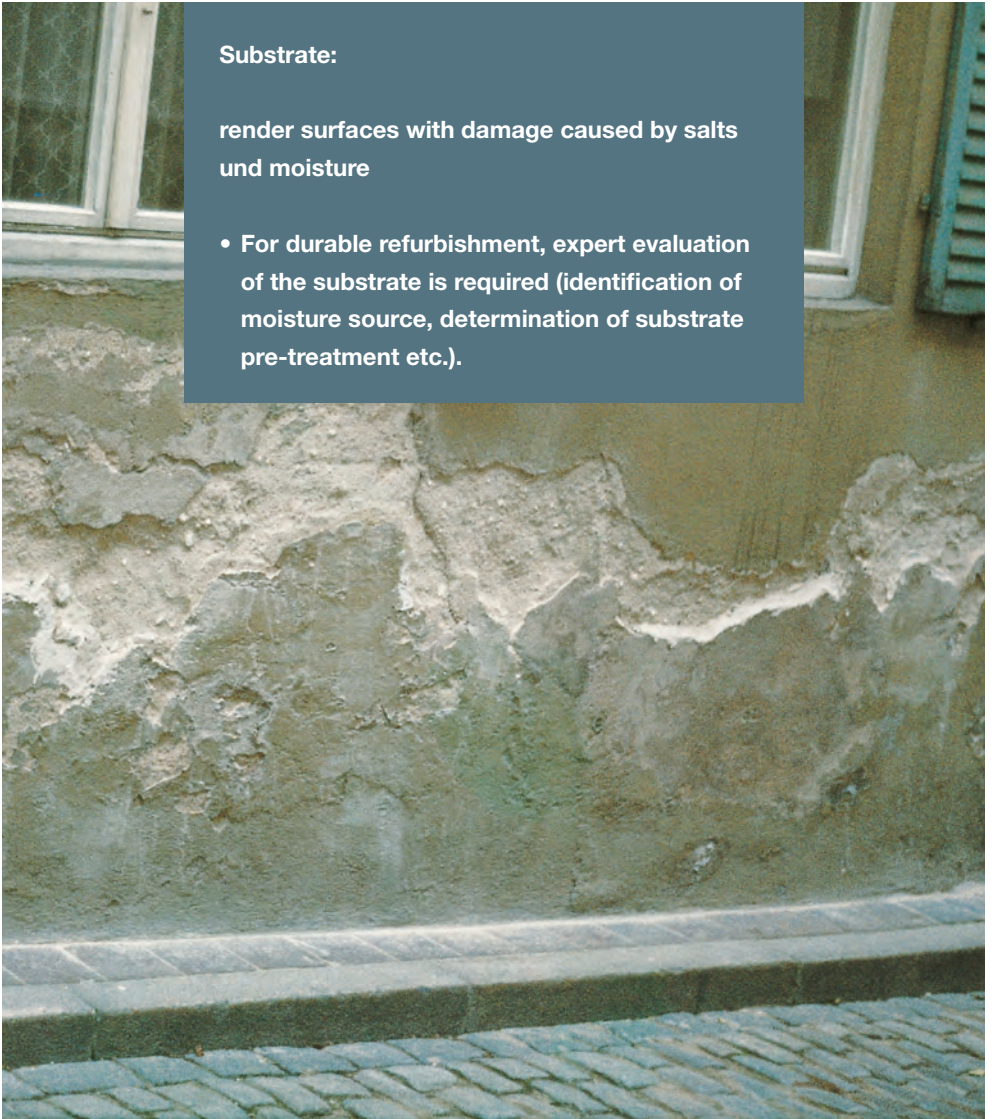
<u>Systems</u>	HECK MultiTherm EPS, HECK MultiTherm EPS-ZF	HECK MultiTherm EPS
Fire protection	flame resistant	non-combustible
<u>System build-up</u>		
Substrate	clean, even, structurally sound	
Adhesive mortar	HECK K+A / HECK K+A PLUS	
Insulation boards	HECK EPS-Dämmplatten (expanded polystyrene)	HECK MW-Dämmplatten (mineral wool)
Mechanical fixing	structural, or approved by building inspection authority	approved by building inspection authority
Basecoat with mesh	HECK K+A / HECK K+A PLUS HECK Armierungsspachtel ZF (HECK K+A ZF) HECK Armierungsgewebe (mesh)	HECK K+A / HECK K+A PLUS HECK Armierungsgewebe (mesh)
Finishing coat	HECK Strukturputze (HECK STR) HECK Edel-Dekor (HECK ED) HECK Silikatputze (HECK SIP) HECK K+A PLUS	
	mineral	
	HECK Kunstharzputze (HECK KHP) HECK Siliconharzputze (HECK SHP)	
Equalising paint coat (if required)	HECK Ausgleichsfarbe (HECK AGF) Rajasil Siliconharzfarbe (RAJASIL SHF) HECK FF Uni	
Specific	<ul style="list-style-type: none"> · Substrate pre-treatment method depends on results of evaluation, e.g.: <ul style="list-style-type: none"> – removal of non-adhering, non-stable render areas – levelling of areas where render surface was restored – clearing of substrate, e.g. with pressurised water jets – priming with consolidating primer 	
<u>Important!</u>	<ul style="list-style-type: none"> · Wherever possible, align insulation boards centrally above cracks. 	

Old buildings – salts, moisture

Substrate:

render surfaces with damage caused by salts und moisture

- For durable refurbishment, expert evaluation of the substrate is required (identification of moisture source, determination of substrate pre-treatment etc.).



The solution:

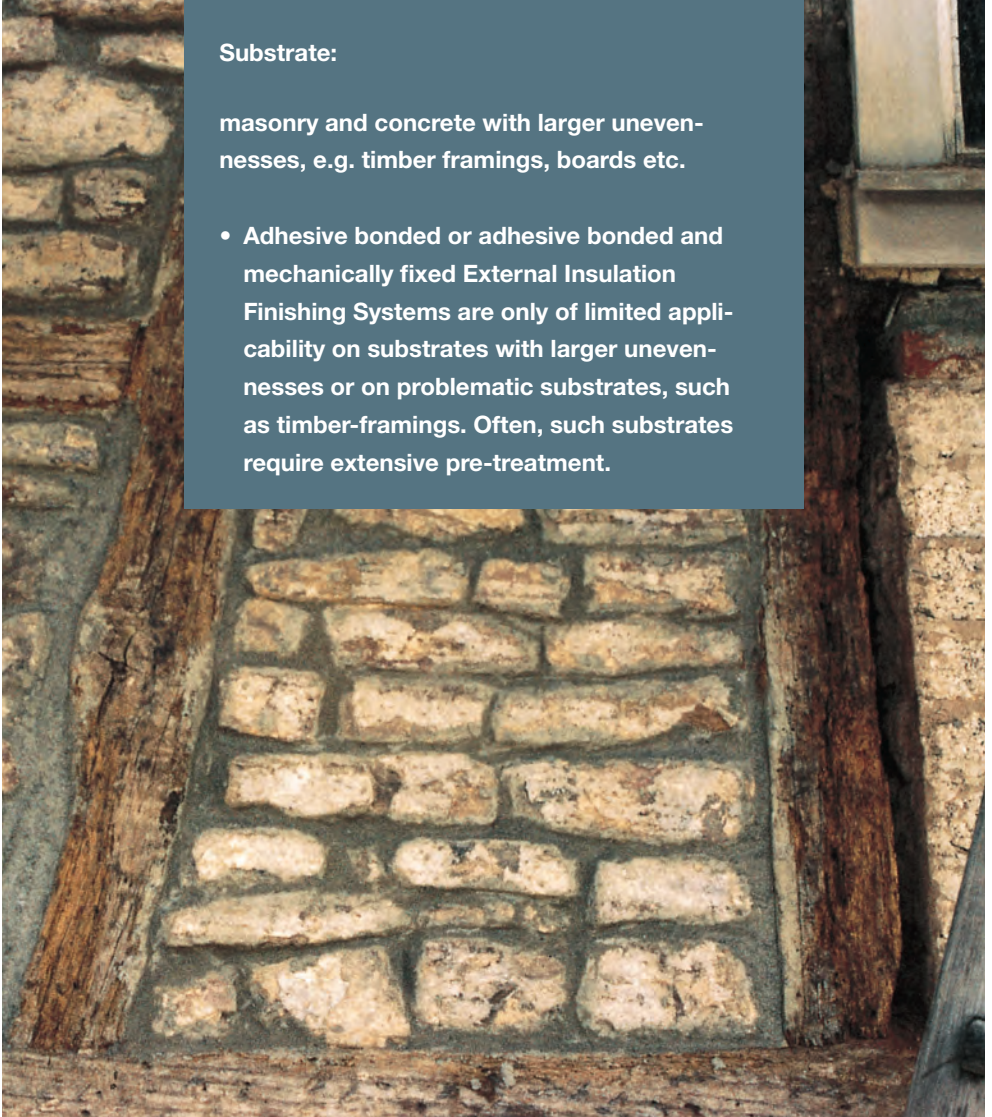
<u>Systems</u>	HECK MultiTherm EPS HECK MultiTherm EPS-ZF	HECK MultiTherm EPS
Fire protection	flame resistant	non-combustible
<u>System build-up</u>	clean, even, structurally sound	
Substrate	clean, even, structurally sound	
Adhesive mortar	HECK K+A / HECK K+A PLUS	
Insulation boards	HECK EPS-Dämmplatten (expanded polystyrene)	HECK MW-Dämmplatten (mineral wool)
Mechanical fixing	structural, or approved by building inspection authority	approved by building inspection authority
Basecoat with mesh	HECK K+A / HECK K+A PLUS HECK Armierungsspachtel ZF (HECK K+A ZF) HECK Armierungsgewebe (mesh)	HECK K+A / HECK K+A PLUS HECK Armierungsgewebe (mesh)
Finishing coat	HECK Strukturputze (HECK STR) HECK Edel-Dekor (HECK ED) HECK Silikatputze (HECK SIP) HECK K+A PLUS	
	mineral	
	organic	HECK Kunstharzputze (KHP) HECK Siliconharzputze (SHP)
Equalising paint coat (if required)	HECK Ausgleichsfarbe (HECK AGF) Rajasil Siliconharzfarbe (RAJASIL SHF) HECK FF Uni	
Specifics	<ul style="list-style-type: none"> Remove cause of moisture intrusion first, e.g. by installing a vertical or horizontal damp-proof barrier. Remove render up to at least 80 cm above the affected area. Clean substrate; apply Rajasil Spritzbewurf (Rajasil SPB) Level/restore exposed areas using Rajasil Porengrundputz (Rajasil PGP) in a layer thickness of at least 10 mm. 	
<u>Important!</u>	<ul style="list-style-type: none"> In areas above insulated wall bases <u>always</u> use HECK MW-insulation boards up to a minimum of at least 80 cm above the affected area, even if a HECK MultiTherm EPS is used. 	

Old buildings – large unevennesses, special substrates

Substrate:

masonry and concrete with larger unevennesses, e.g. timber framings, boards etc.

- Adhesive bonded or adhesive bonded and mechanically fixed External Insulation Finishing Systems are only of limited applicability on substrates with larger unevennesses or on problematic substrates, such as timber-framings. Often, such substrates require extensive pre-treatment.



The solution:

<u>Systems</u>	HECK MultiTherm M-EPS und M-EPS-ZF	HECK MultiTherm M-MW
Fire protection	flame resistant	non-combustible
<u>System build-up</u>		
Substrate	¹ substrate unevennesses of up to 3 cm ² substrate unevennesses of up to 7 cm	
Installation	¹ HECK Montageschienen PVC (mounting rail) ² HECK Stellfuchs HSF-FV	¹ HECK Montageschienen Alu (mounting rail) ² HECK Stellfuchs HSF-FV
Additional adhesive bonding	HECK K+A / HECK K+A PLUS ² not applicable	
Insulation boards	¹ HECK EPS-Dämmplatten M ² HECK EPS-Dämmplatten N+F (expanded polystyrene)	¹ HECK MW-Dämmplatten M ² HECK MW-Dämmplatten 040 (mineral wool)
Mechanical fixing	¹ approved by building inspection authority ² not applicable	
Basecoat with mesh	HECK K+A / HECK K+A PLUS HECK Armierungsspachtel ZF (HECK K+A ZF) HECK Armierungsgewebe (mesh)	HECK K+A / HECK K+A PLUS HECK Armierungsgewebe (mesh)
Finishing coat	HECK Strukturputze (HECK STR) HECK Edel-Dekor (HECK ED) HECK Silikatputze (HECK SIP) HECK K+A PLUS	
mineral		
organic	HECK Kunstharzputze (KHP) HECK Siliconharzputze (SHP)	
Equalising paint coat (if required)	HECK Ausgleichsfarbe (HECK AGF) Rajasil Siliconharzfarbe (RAJASIL SHF) HECK FF Uni	

Glossary of terms

Term	Explanation
approved by building authority	—> see also “mechanical fixing” Official procedure for the verification of usability of non-regulated (e.g. by DIN standards) construction materials of the Deutsches Institut für Bautechnik (DIBT; German institute for construction technology) in Berlin. Certificate: “Allgemeine bauaufsichtliche Zulassung” (AbZ, national technical approval). In accordance with the AbZ certificate, the mixing of components from different manufacturers when installing External Insulation Finishing Systems is not permitted. Failure to comply will invalidate the AbZ certificate.
water-vapour permeable	Water-vapour permeation is the travelling of water vapour within construction elements, e.g. from the inside to the outside. Materials with a high level of water-vapour permeability improve the drying properties of a construction element.
mechanical fixing	Structural mechanical fixing of External Insulation Finishing Systems, normally done using hammer set anchors, may be performed with Insulation boards of sufficient tensile strength, e.g. expanded polystyrene or mineral wool lamellae, if they are installed on substrates of an adhesive tensile strength of at least 0.08 kN/m ² . The mechanical fixing using anchors approved by the building inspection authority (“bauaufsichtlich zugelassen”) is called statically relevant (“statisch relevant”) mechanical fixing. With External Insulation Finishing Systems using HECK mineral wool insulation boards this installation method is officially required from the system’s lower edge upwards, with HECK mineral wool lamellae insulation boards only in new buildings with wind suction forces of 1.6 kN/m ² upwards. For more on this see HECK Installation Guidelines.
capillary active	Capillaries are microscopic canals in building materials that transport, or can transport, water in liquid form.

U value (formerly k value); overall heat transfer coefficient [W/m ² K]	The U value specifies the amount of thermal energy flowing from the warm end to the cold end within a construction element. The smaller the U value, the better the thermal insulation of the construction element.
structural	—> see also „mechanical fixing“
finishing coat	HECK Strukturputze (HECK STR), HECK Edel-Dekor (HECK ED), HECK Silikatputze (HECK SIP), HECK Kunstharzputz (HECK KHP), HECK Siliconharzputz (HECK SHP) are thin-layer decorative renders available in different variants and grain sizes, e.g. Kratzputz (scraped finish) or Reibeputz (float finish). Rajasil + HECK Edelputze WD are thick-layer renders for the use on External Insulation Finishing Systems; they are available in many variants, such as Kratzputz (scraped finish), Kellenwurf (roughcast), Münchner Rauputz (traditional Munich-style grooved render) etc.
sound insulation properties	The correction factor for the evaluation of the sound insulation index R'_w (in accordance with DIN 4109) in External Insulation Finishing Systems depends on various factors, e.g. the type of insulation board, the installation method, render layer thickness etc.
condensation water	Condensation water may form when warm air comes in contact with cold surfaces, as the water vapour absorption properties of air decrease with decreasing temperatures.
room climate	Cold outer walls cause the heated air inside rooms to cool down, which results in an unpleasant draught.

On the installation of HECK MultiTherm

The proper installation of the various thermal insulation systems is a task for qualified professionals. The application of self-contained systems that have been approved by the building inspection authority or comply with valid standards as well as the installation by qualified personnel means safety for the building owner while at the same time constituting the basis for warranty on the systems.



Intelligent solutions by BASF Construction Chemicals

Rajasil Bausanierung

Masonry restoration - sealing and injection, brick linings, jointings, renovation render systems

Stonework restoration, internal coating, lime renders, ecologically sound systems

Facade coating - substrate preparation, renders and mortars, render reinforcement, coating, waterproofing

HECK MultiTherm

Exterior Insulation Finishing Systems - mineral, synthetic resin bonded

Insulation render systems, primers, decorative renders, coatings

Colfirmit render systems - renders for interior/exterior use

CoRaMix - paint and render mix technologies for construction material suppliers

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