KEIM THERMAL INSULATION
COMPOUND SYSTEMS

THE DECISIVE SURPLUS VALUE OF KEIM ETIC SYSTEMS
For over 130 years the name KEIM represents reliability and quality in the use of minerals for the preservation of structures worldwide. And for more than 30 years competence and experience in the field of thermal insulation.

During the past decade, construction projects of different types and sizes - homes and housing developments, office and industrial buildings, low-energy and zero-energy houses - were insulated and constructed with ETIC systems by KEIM.

The mineral thermal insulation compound systems by KEIM are of economic value, ecologically responsible and socially acceptable. They are among the best of what the market has to offer.
The worldwide energy problem – it’s a challenge for all

Energy – An economic factor in disrepute?

Energy. No other economic factor is currently more in the spotlight of the international media. Presently, two problems are being discussed by the public with an unprecedented passion. One is the increasing energy shortage and the respective economical side effects, the other is the danger that the use of fossil fuels poses for the world climate.

The generally increasing energy requirements and the immense growth surge in Asia’s national economies continuously are pushing the CO₂ emissions as well as the energy prices higher. Wherever this path will lead us to in future, one thing is perfectly clear: everybody – the industry and private – must drastically reduce the energy consumption and the CO₂ emissions in the interest of a worthwhile future.

Savings potential heating energy

It is perfectly clear that one of the areas with the biggest savings potentials is the heating energy. It is also clear that the type and construction of flats and houses play a decisive role in this context. Therefore, thermal insulation has a key function in this issue.

The goal of this brochure is to offer the responsible and economically thinking owner and planner a guide that assists him to optimally use the enormous energy savings potential of professional thermal insulation thus increasing the value of his home. With the mineral thermal insulation compound system by KEIM.

Efficient saving with a thermal insulation compound system
30% of the final energy consumption in Germany is attributable to space heating. Measured in terms of the total energy consumption used by a private household are, believe it or not, 76% used for heating.

**Insulate instead of wasting**

Hardly anybody knows that half of the energy is lost through exterior walls that are either not at all or only poorly insulated. In other words: 50% of the occurring energy costs are literally senselessly wasted. Whoever wants to curb their expenses for heating energy has no way to pass a thermal insulation compound system.

**Savings and protection with ETICS**

ETIC systems not only save energy, they also provide additional protective functions for the structure and can be diversely constructed.

**Commandment of economic reason**

**ETICS means increasing the value**

The energy-saving as well as the structure-preserving characteristics of a ETICS contribute considerably to an increase in value of the property.

**Quick amortisation**

Naturally, at first each investment costs money. However, in the case of a ETICS costs are already amortised within a few years by saving heating energy.

**Realizing sanitation as a chance**

Especially in the case of a necessary renovation – be it that a new exterior plaster or a coating of the façade is necessary – it makes great sense to invest in a ETICS, because then only the additional costs for the energetic sanitation will be the ones for the ETIC system.
**CO₂ as climate killer**

The latest report of the International Panel on Climate Change (IPCC) brought the CO₂ emissions and other greenhouse gases as cause of the increasing global warming to the attention of the whole world. The central point of the worldwide efforts must now be the reduction of the CO₂ emissions, says the study of the IPPC.

**ETICS reduces CO₂ emissions**

Since 30% of the fossil fuel consumption in Germany are used for space heating offers this the highest savings potential.

Whoever insulates their building optimally, thus reducing the energy consumption, not only proves economic reason but also ecological responsibility.

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**Cold walls are a health threat**

Comfortable and healthy living requires a pleasant and healthy indoor climate. When the exterior walls are not insulated decreases the temperature of interior walls strongly during cold weather. The results are not only an unpleasant airflow, which we realize as “draft”, but also cold interior walls that tend to form condensation water and thus the growth of mould fungi.

**ETICS protects from mould fungi and draft**

In this case, thermal insulation is an effective remedy. The temperature of the surface of the interior wall remains almost at the level of the room temperature. The air no longer circulates downward past the cold wall, but moves evenly within the room. The results are: a comfortable warmth and a healthier indoor climate.
Almost 24 million housing units in Germany do not correspond to the standards of the EnEV (Energy Conservation Regulations) and are up for energetic renovation in the coming years.

ETIC systems are playing a very important role in this matter. They help save heating energy, thus lowering the CO₂ emissions, and contribute greatly to the environment and climate protection.

Saving energy – what the lawmaker demands and promotes

Energy Conservation Regulations
The first Energy Conservation Regulation (EV 2002) became effective on the 1st of February 2002 and regulates not only the energetic minimum requirements for new buildings, but also the ones for the modernization, modification, upgrading and expansion of existing buildings. Together with the Energy Conservation Regulation a heat requirement certificate for new buildings was introduced. As part of the second amendment of the Energy Conservation Regulation in 2007, the energy certificate for buildings became also mandatory for already existing buildings when they are rented or sold. The third amendment of the Energy Conservation Regulation, effective as of the 1st of October 2009, increased the requirements for new buildings and modernization.

Energy certificate
The energy certificate rates the actual energetic condition of a building. Two types are available – the requirement or the consumption certificate. Together with recommendations for modernization it also provides valuable tips for low-cost improvements of the energetic building characteristics.

The energy certificate becomes mandatory staggered-in-time, starting with the 1st of July 2008 for older residential buildings, then, as of the 1st of January 2009 for all buildings by new construction, sales and new rentals, regardless of the year of construction.
The KfW Bank group adjusts their funding programs to the Energy Conservation Regulation (EnEV 2009), which became effective on the 1st of October 2009. The energetic guidelines for new constructions and extensive renovation follow the Energy Conservation Regulations, which is the legal basis of KfW programs for energy-efficient building and refurbishing.

The structure of the funding and the programs themselves remain basically the same. Uniform funding standards for new constructions and renovation is still the “KfW Efficiency House”. The KfW transfers the known funding standards KfW-Efficiency House 100, KfW Efficiency House 70 and KfW Efficiency House 55, which follow the EnEV 2007, to the new respective standards on the basis of the EnEV 2009. However, the energetic requirements remain almost the same.

Basically applies: The higher the energy efficiency of the building, the more attractive is the funding!

**Energy-efficient renovation**

The funding program can be obtained as loan or as subsidy. It serves as low-interest, long-term financing or funding of measures for saving energy and to lower the CO₂ emissions of existing buildings.

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**KfW – Promotional Bank**

The KfW offers low-interest loans for new constructions or sanitation, which have to be applied for at the respective House Bank. Information can be obtained under www.kfw.de or the information hotline of the KfW at the local tariff: +49(0)1801/ 33 55 77

**BAFA – On-site consultation**

The Federal Office of Economic and Export Control promotes an extensive energy savings consultation. Point of contact at the BAFA:

Phone: +49(0)6196 / 908-880
All thermal insulation compound systems save heating costs and increase the property value. Thermal insulation compound systems by KEIM can do more.

**KEIM ETICS: The crucial surplus value**

**Unsurpassed durable and unsurpassed economical**

**Vision saves costs**
The point of view on thermal insulation compound systems have to correspond to the durability of the affected building component. KEIM systems have an unsurpassed durability and are, therefore, also unsurpassed economical.

**Enormously weatherproof**
The high weather resistance of mineral plaster, in connection with a double silicate KEIM coating, ensures an unequalled high durability and, therefore, clearly lower maintenance costs. This saves money.

**Reduced algae risk, low soiling**

**Optimal moisture balance**
Based on their optimal moisture balance mineral plasters and coatings have a reduced risk of growing algae.

**Clean – which is typical for silicates**
KEIM silicate paints are anti-static, non-thermoplastic and their surface stays dry longer. Therefore, thanks to their silicate surfaces, KEIM ETIC systems tend less to soiling.
Velvety-matt surfaces, brilliant and luminous

Only light-fast pigments
The KEIM ETIC systems offer a multitude of creative options. The absolutely light-fast, inorganic colour pigments in the plaster and coating, as well as the enormous UV-stability of the water glass binder ensure brilliant and colour-fast surfaces for generations.

Fascinating appearance
The lively impression of the naturally matt surfaces, with their velvety-bright appearance and pleasant haptic, give the mineral surfaces a very special fascination.

Ecologically unbeatable

Responsibility for nature and environment
Only the one that builds eco-friendly builds sustained, and only the one that builds sustained builds responsible. Based on their mineral nature and their long durability are the KEIM ETIC systems especially recommendable, also under ecological aspects.
KEIM competence in thermal insulation

KEIM ETICS –
The profound competence ensures highest quality standards.

The competence in the mineral building protection has tradition at KEIM’s. Buildings all over the world demonstrate the high quality standards associated with this for decades.

Multiple varieties of systems
KEIM ETIC systems are available for diverse applications – with EPS, MW and mineral insulation panels, with perfected technical detail solutions and diverse surfaces, from fair faced plaster to glaze, and of course with all the system approvals.

Mineral top quality
All KEIM ETIC systems have the following in common – the unique, high mineral quality of adhesives, plasters and coatings. KEIM stands for
- economic,
- durable,
- sustainable,
- light-fast and colour-fast products with
- a low tendency for soiling,
- and an optimal moisture balance.

Sound and experienced
Our expert consultants assist you on-site with their technical know-how, comprehensive consultation and first-class service. Important is: our expert consultants are specialists and also all-rounder.

On request, additionally certified KEIM personnel supports the work at the construction site.

Individual detail solutions are our strength
Object-related performance specifications and active support in finding realizable detail solutions complete our service.

A professional colour scheme as instrument for individually designed façades also opens up an undreamed-of creative variety in the field of thermal insulation.
Learning by Doing
Not only the high quality of KEIM products, but also the professional processing of system components contributes decisively to the successful completion of a thermal insulated façade. We, the A.W. KEIM company, offer our customers the opportunity for further training in terms of ETICS competence, because technology does not stand still, not even in the processing of ETIC systems. We make sure that you remain technically up-to-date.

Mobile construction site
With the mobile construction site (see image above) we were able to further optimize our efficiency concerning the training competence. If you can’t come to us, we will come to you. With the mobile construction site we are spatially flexible and enormously practical. Here you will not only learn about the basics in thermal insulation, but also see tricky detail solutions being demonstrated in practice.
KEIM insulates better
AquaROYAL® Insulation Systems

System components:

KEIM Pulverkleber-90
(Powder adhesive)
for bonding insulation panels

KEIM AquaROYAL-Armierungsmörtel
(Reinforcement mortar)
for reinforcing insulation panels

KEIM Glasfaser-Gittermatte-Medium
(Glass fibre mesh - medium)
6 x 6 mm

KEIM AquaROYAL-Mineralputz
(Mineral plaster with smooth, rough or striated texture)
Grain size 2 + 3 mm

KEIM AquaROYAL-Color
Silica-sol silicate paint, hydrophilic and hydroactive

KEIM AquaROYAL-Lasur
Silica-sol silicate glaze paint, hydrophilic and hydroactive

Algae and fungi infestation – causes and risks

Moisture is the most important prerequisite for an infestation of algae and fungi.

Dew is more critical than rain
Specialist circles rate the moisture exposure through dew far more critical than the exposure to rain. The reason is that the time periods when dew forms based on the climate conditions are much longer specifically on insulated façades than during rainy periods.

Biocides as problem solver?
Today’s customary thermal insulating technology is based on thin layered, often organic and high hydrophobic systems. As a consequence, liquid water in the shape of drops form during thawing periods. With this in mind, biocide equipment became standard.

Biocides are toxins and, as time goes on, are washed out. They take effect only temporary and are harmful to humans and the environment.

Demands on ETIC systems
In the interest of optimum algae prevention the reduction of dew on façade surfaces must be in focus. Furthermore, the periods when the dew point has fallen must be decreased and the soiling reduced to withdraw micro-organisms the basis for growth.

Therefore, product systems have to be formulated so that
• possibly no dew formation takes place in the form of condensation,
• periods of low dew points are reduced and
• surfaces remain clean.

Algae and fungi infestation – construction physics instead of biocides

Yearly moisture exposure of façades

![Graph showing yearly moisture exposure of façades]

Keim-Innovations-Projekt: KEIM AquaROYAL – QM2002
AquaROYAL – hydroactive systems technology for biocide-free algae prevention

The new hydro-active and biocide-free systems technology stands for a precise controlled water absorption of single system components to avoid the formation of drops through the moisture of the dew.

**Principles of hydro-activity**
The moisture is absorbed by the hydrophilic surface of the silicate coating and temporary stored in the coating and plaster of the ceiling. The capillary-active transport of the moisture of the plaster layer and the high permeability of the coating ensure quick drying.

**The future needs responsibility**
The innovative AquaROYAL Insulation System reflects the spirit of today. The increasing trend to sustained building makes manufacturers and users look for alternatives to biocide products. KEIM has already found the solution – with AquaROYAL, hydro-active and biocide-free.
KEIM insulates better
KEIM XPor-System

System components:

KEIM Multipor-Mineraldämmplatte
(Mineral insulation panel)
Massive, fibre-free, mineral and recyclable
Heat conductor class 045,
Format 60 x 39 cm,
Thickness 60 to 200 mm

KEIM XPor-Leichtmörtel
(Lightweight mortar)
One for all. Hydraulic setting, for bonding and reinforcing and as topcoat plaster with a smooth texture

KEIM Brillantputz
Topcoat plaster coating for structured surfaces rough plaster texture 3 mm and striated texture 2 mm.

KEIM XPor-Strukturbeschichtung
(Texture coating)
Silicate-based coating

KEIM Soldalit
Sol-silicate based coating

XPor –
the easiness of insulating

Massive
With the Multipor Mineral Insulation Panel – the core of the XPor thermal insulation compound system by KEIM – a new dimension enters the field of thermal insulation:
A massive insulation material in appearance, haptic and sound.

Ecological
With the massive, but still amazingly light Multipor Mineral Insulation Panel insulating is ecological and biological harmless.

Permeable
The permeable KEIM XPor-System ensures a pleasant indoor climate with a balanced temperature and moisture.

Completely mineral construction
Beginning with the wall structure to the insulation panel to the coating are all components mineral and offer a true alternative to plastic and mineral fibres.

Environment protection
The Multipor Mineral Insulation Panel is manufactured with sand, lime, cement and water, thus preserving resources and saving energy. The rest of the processing materials is completely recyclable. After demounting Multipor can be disposed of as rubble.

Awarded by the IBU
The Multipor Mineral Insulation Panel was rated as biologically harmless and recommended for biologic building by the “Institut Bauen und Umwelt e.V” (Institute for Building and Environment).
Performance characteristics
The special material structure of Multipor Mineral Insulating Panels offers excellent properties. The panels are
• pressure-resistant and dimensionally stable,
• permeable and water-repellent,
• massive and fibre-free,
• recyclable.

Fire protection
The Multipor Mineral Insulation Panels are inflammable, Building Material Class A1 according to EN 13501-1, and ensure absolute safety in case of fire. The insulation material also does not develop toxic gases or smoke at high temperatures.

Sound insulation
The behaviour of Multipor with respect to the sound insulation is also very favourable.

XPor – technical strength
The Multipor Mineral Insulation Panels are easy to handle and light-weight.

XPor – amazingly easy to process
The panels can be cut to size precise and quick.

Only one material is used for bonding, reinforcing and plastering.

This saves time and money.
KEIM insulates better
The classic

System components:

**Insulating panels**
Mineral wool and EPS

**Bonding/Reinforcement compounds**
KEIM Pulverkleber-90 (Powder adhesive)
KEIM Armierungmasse-100 (Reinforcement compound)

**Fibre mesh**
KEIM Glasfaser-Gittermatte (Glass fibre mesh)
KEIM Panzergittermatte (Armoured wire mesh)

**Topcoat plaster**
KEIM Brilliantputz (mineral plaster)
KEIM Indusil (silicate plaster)

**Silicate coatings**
KEIM Soldalit

Mineral structure, low-cost in maintenance

**Durability determines efficiency**
When ETIC systems are selected the continuity of reduced maintenance and replacement costs should be focussed on.

**Optimal building physics**
The mineral coatings of the KEIM ETIC systems have an optimal moisture balance and surfaces dry quickly after exposure to moisture.

Thus the
• risk of algae growth as well as
• the risk of damages due to moisture on the surfaces are clearly reduced.

The consequences are longer renovation cycles and, therefore, lower maintenance costs.

Perfected, proven and safe

**Experience and reliability**
Property owners, planners and processors rely on the perfected ETIC systems by KEIM for over 30 years. Because, what’s true for the paint is also true for thermal insulation. Highest demands on quality and reliability.

Accordingly, the classic systems by KEIM excel
Specifically through their
• perfect coordination of systems,
• perfected product components and
• mineral reliability.

Note
The KEIM Mineral Wool Systems are incombustible according to DIN 4102 – namely from the panel to the coating. This means complete safety.
Clean and beautiful for a long time.
The soiling tendency of façade coatings is mainly influenced by static charge, the thermoplasticity of the binding agent and dew at the surface.

KEIM paints are
- resistant to airborne pollutants, antistatic and non-thermoplastic.
- They have proven not to get moist as other paint types.

Therefore, their surfaces remain clean longer.

Besides, KEIM surface coatings are purely inorganic pigmented and, therefore, absolutely colour-fast.
## KEIM ETICS • System overview/System varieties

<table>
<thead>
<tr>
<th>System designation KEIM</th>
<th>XPor</th>
<th>Classic MW</th>
<th>Classic MW-Plus</th>
<th>AquaROYAL – MW</th>
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<tr>
<td><strong>Number of coatings</strong></td>
<td>XPor-SB (Texture coating) double</td>
<td>Soldalit double</td>
<td>Soldalit double</td>
<td>AquaROYAL-Color double</td>
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<td><strong>Insulating panels</strong></td>
<td>MD (Multipor)</td>
<td>MW</td>
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## BUILDING TYPE

<table>
<thead>
<tr>
<th>BUILDING TYPE</th>
<th>Apartment building and one-family house</th>
<th>High-rise building</th>
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## WALL AND FACADE CONDITION

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<tr>
<th>WALL AND FACADE CONDITION</th>
<th>Walls with plaster</th>
<th>Walls without plaster</th>
<th>Fair faced brickwork</th>
<th>Uneven base</th>
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## WALL CONSTRUCTION COMPOUND

<table>
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<tr>
<th>WALL CONSTRUCTION COMPOUND</th>
<th>Walls, concrete, Lime-sand brick, brick etc.</th>
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## BUILDING PHYSIKS

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<td>Water vapour diffusion</td>
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<td>Dry surfaces, little dew</td>
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<td>UV-resistant</td>
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<td>Soldalit double mineral</td>
<td>Soldalit double mineral</td>
<td>AquaROYAL-Color double mineral-hydroactive</td>
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Also panel materials

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KEIM ETICS – Protection and aesthetics from one hand

Innovative technology, individual systems solutions and an extensive series of mineral top products offer a variety of options for the individual design of façades. KEIM ETIC systems not only help you to save energy and money, but combine protection and beauty at the same time in an impressive way.
KEIM ETICS –
Protection and aesthetics
from one hand