KELIT COPTIMIZER

ENERGY SELF-SUFFICIENT
RADIATOR BOOSTER

KE KELIT®
INNOVATIVE PIPE SYSTEMS

CONTENTS

THE PROBLEM

WHY OLD RADIATORS ARE SLOWING DOWN THE ENERGY REVOLUTION

Our cities and municipalities are faced with a major task: we need to be using energy more efficiently to achieve climate targets. However, one of the biggest challenges arises specifically in the building stock. Millions of apartments in Europe are still equipped with traditional radiators that were designed for high flow temperatures, as was common in systems with old boilers.

Modern heating technology works differently. Heat pumps and low-temperature district heating generally work most efficiently if they are operated at the lowest possible flow temperatures. But this is exactly where conventional radiators quickly reach their limits. They often cannot give off enough heat at low temperatures. The result is that rooms stay cold, heating takes too long and residents lose the level of comfort they are used to.

At first glance, the solution would appear to be replacing all the radiators completely. In practice, however, this presents some enormous challenges. Replacement is expensive, generates a lot of dirt and dust and is almost impossible to carry out in inhabited buildings. This is because replacing radiators usually requires the heating circuit to be opened up. In addition, a power supply must be provided via sockets. Construction work on underfloor heating systems in floors or ceilings mean unavoidable interventions in the building structure and often entail significant inconvenience for the residents.

In addition, in many cases it is not just a simple case of replacing radiators. Pipes often need to be relocated or additional construction measures carried out for the new system to work at all. In older buildings in particular, this means an enormous cost burden, combined with noise, dust and extended periods of construction work. This type of renovation is extremely inconvenient for tenants and often not economically feasible for owners.

This creates a vicious circle: even though there is potential for modern heating systems such as heat pumps to work much more efficiently, they often cannot be used in existing systems because the radiators are not suitable for these systems. This is precisely what is threatening to stall the move towards renewable energy in the existing building stock, which is ultimately where the biggest driver for energy savings and CO_2 reduction lies.

THE SOLUTION

EFFICIENT RETROFITTING INSTEAD OF EXTENSIVE REFURBISHMENT

With the KELIT COPTIMIZER, KE KELIT presents an innovation that solves exactly this dilemma. Instead of replacing old radiators, they are upgraded quickly and easily. This means that the existing system stays in place and is at the same time upgraded to the latest heating system technology.

At the heart of the KELIT COPTIMIZER is its capability to increase performance by up to 40 percent via ventilation of the existing radiators. It is entirely self-sufficient in energy, requires no power connection or additional power source, and is installed in just 15 minutes. No need to open up the heating circuit, no construction site, no dirt and dust, an immediate increase in heating output, more even heat distribution and noticeably greater comfort at home, and all the while the residents do not have to move out or move to a hotel during the retrofit.

The KELIT COPTIMIZER really reveals its strengths when combined with heat pumps and district heating. It permits operation at lower flow temperatures, improves efficiency and reduces return flow temperatures. This both maximizes energy savings, and supports the longevity of the entire heating system. Operators benefit from lower operating costs, and residents enjoy greater comfort at the same time.

The KELIT COPTIMIZER is more than just a retrofit module, though. It is an energy optimisation system that makes buildings future-ready. Upgrading existing resources not only saves energy during operation, but also reduces the use of materials in renovations. This lessens the ecological footprint both when the heating is running as well as early on during the renovation phase.

Whether in a single-family home, in large residential complexes, in hotels or in industrial buildings – the KELIT COPTIMIZER adapts flexibly to the requirements at hand. For builders and owners, this means predictable investments, plannable implementation and immediately visible results. For residents, it means no construction sites lasting for weeks, no restrictions to everyday life, and simply noticeably greater warmth and comfort.

The KELIT COPTIMIZER turns the traditional radiator into an active player in the move towards eco-friendly heating options. Fast, efficient and sustainable – with no compromises for residents or operators. It combines two things that seemed almost mutually exclusive: keeping what's already there and the requirements of a climate-friendly future.

KELIT COPTIMIZER

PATENTED, DESIGNED & MANUFACTURED BY KE KELIT AUSTRIA

ABOUT US

THE MARKET LEADER FROM AUSTRIA

KE KELIT is a leading Austrian family business, based in Linz on the Danube river, that has been involved in the development, manufacture and sale of innovative pipe and air conditioning systems for over 80 years. Products coming out of Linz are in use worldwide. The company stands for quality, reliability and technical competence, and has established itself as a permanent fixture in the European pipe industry.

Founded in 1945 as an installation company, KE KELIT has become one of the world's leading pipe manufacturers and system suppliers. With over 170 patents, a clear focus on sustainable innovations and more than 700 employees worldwide, KE KELIT has secured its place as a technology and quality leader. Sustainability, energy efficiency and easy assembly are at the heart of this.

The range includes drinking water, heating, cooling, waste water, underfloor, wall and ceiling heating and air conditioning solutions, as well as compressed air, solar technology, cooling, district heating and district air conditioning.

Today, KE KELIT has production sites in Austria and Malaysia, and works closely with strategic partners. Proximity to their customers on-site facilitates in-person support and rapid implementation of projects of any size.

KE KELIT combines innovation, family values and top quality, representing Austrian technical expertise worldwide without losing its roots in Linz.

AN INNOVATIVE PIONEER

More than 170 patents and utility models demonstrate KE KELIT's in-house development expertise, which contributes significantly to its success. KE KELIT is regarded as an innovation and quality leader, especially in forward-thinking connection technologies such as tool-free plug-in connection or induction welding. An outstanding example of this is the KELOX protec CLIX, the world's best tool-free, plug-in fitting, protected by numerous patents, which impressively underscores the company's leading role in developing modern connection technologies.

The latest innovation drivers are the constantly evolving area of CLIMATEFIX ceiling heating & cooling, as well as the energy self-sufficient KELIT COPTIMIZER in the heating sector. Numerous innovations in these sectors are "made by KE KELIT".

Whether it's largescale projects such as hospitals, hotels or skyscrapers, residential buildings, single-family homes, industry, district heating or district cooling, KE KELIT products are used everywhere.

From left to right: Karoline Morawetz-Egger, Karl Egger, Karl Egger, Kristine Egger

THE BENEFITS OF KELIT COPTIMIZER

GREATER EFFICIENCY, GREATER COMFORT, SMALLER OUTLAY

The KELIT COPTIMIZER combines numerous advantages for residents, energy suppliers and the environment.

Greater efficiency, greater comfort, smaller outlay – and with it, existing heating systems become fit for the future. The KELIT COPTIMIZER not only improves heating performance, but also permits the resource-friendly use of existing radiators without the need for expensive conversions.

Independent tests at the HVAC Institute in Stuttgart show that the heating capacity of existing radiators can be increased by up to 40 percent. This allows rooms to be heated reliably and comfortably even at lower flow temperatures – an important step for the efficient use of heat pumps or in the district heating network. The optimised heat distribution means that less energy is required, leading to significant heating cost savings.

The KELIT COPTIMIZER is fully self-sufficient in energy. It draws its energy directly from the heat of the radiator – no external power connection is required. The system works reliably in the background with no need for user intervention. The control automatically adapts to different heating loads and ensures optimum efficiency at all times.

A radiator can be retrofitted in just 15 minutes, with no conversion work or dirt. Thanks to its modular design, the KELIT COPTIMIZER can be used universally and fits almost all standard flat radiators – ideal for residential buildings and commercial properties.

For residents, this means more even heat distribution, faster heating times and greater comfort and convenience overall. The robust, maintenance-friendly design ensures that the system will provide reliable operation for many years.

The KELIT COPTIMIZER is also compelling in terms of its sustainability credentials: existing radiators are upgraded rather than replaced, extending their life cycle. At the same time, energy consumption and CO_2 emissions are significantly reduced during ongoing operation.

The KELIT COPTIMIZER therefore offers an ingenious, future-proof solution that optimises operation with modern heat generators, reduces heating costs and makes heating systems future-proof for decades to come.

BENEFITS

- Reduces energy consumption and significantly lowers heating costs
- Modernises existing radiator systems without structural intervention – quickly and cleanly
- Permits lower flow temperatures, thus improving the efficiency of heat pumps
- Energy self-sufficient operation – no power connection required
- Easy retrofitting: Installation in around 15 minutes per radiator
- Suitable for almost all standard flat radiators
- No dirt, no caulking or painting required
- Ensures even, comfortable heat distribution in the room
- Extends the service life of existing radiators and reduces CO_2
- Optionally also with cooling function for greater comfort in summer

BENEFITS IN THE DISTRICT HEATING NETWORK

MORE EFFICIENT. MORE FLEXIBLE. MORE SUSTAINABLE. MORE CAPACITY FOR THE DISTRICT HEATING NETWORK

District heating is one of the most efficient forms of heat supply. Crucially however, its actual efficiency depends on the return flow temperatures in the network. This is exactly where the KELIT COPTIMIZER comes in: it ensures targeted lower return temperatures, thereby improving the efficiency of the overall system and creating stable, optimised operating conditions – for both energy suppliers and end customers.

By precisely controlling heat transfer at the radiator, more energy can be utilised in the system and at the same time the return flow can be cooled more efficiently. This increases the overall performance of the network, and also reduces losses along the pipes.

This makes district heating systems future-proof:

- Lower return temperatures increase heat generation efficiency
- Greater heat extraction at the same flow temperature
- Lower pipe losses and higher energy yield in the network
- Reduced load on the central heat generation and extended service life of the system components
- Improved integration of renewable sources such as biomass, geothermal or industrial waste heat

The lower return temperatures mean that the primary energy utilised can be exploited more efficiently. This makes district heating not only more efficient, but also more sustainable. Network operators benefit from lower operating costs and greater stability of the overall system – while end customers can expect lower heating costs and a reliable heat supply.

The result is a sustainable district heating network that conserves resources, reduces operating costs and paves the way for a sustainable energy supply.

THE BENEFITS OF HEAT PUMPS

MODERN HEATING USING EXISTING TECHNOLOGY

Heat pumps achieve their highest efficiency at low flow temperatures. This is often a challenge in existing buildings, however, as these radiators are designed for higher temperatures. The KELIT COPTIMIZER solves exactly this problem: it optimises the heat dissipation on the existing radiators, reduces the required flow temperature while also ensuring uniformly comfortable room heat.

This allows the heat pump to operate under optimal conditions – with higher COP value, less power consumption and a longer service life. The system uses the existing heating infrastructure efficiently with no need for structural changes.

Benefits at a glance:

- Reduced flow temperature with consistent, comfortable warmth
- Significantly improved COP value and lower energy consumption
- Less load on the heat pump – longer service life and greater reliability
- Ideal for use in existing buildings without conversion work or radiator replacement
- Even heat distribution even at low outside temperatures

Thanks to its intelligent, self-regulating operating principle, the KELIT COPTIMIZER automatically adapts to changing heating loads. This ensures a stable indoor climate and optimum efficiency – even in the event of sharply fluctuating outside temperatures.

This makes the combination of heat pumps and KELIT COPTIMIZER a crucial step in making existing buildings more efficient and climate-friendly. It combines modern heating technology with existing infrastructure, providing an economical, future-proof solution.

The result is greater efficiency, lower heating costs and sustainably comfortable warmth, without having to carry out work on the existing heating installation.

THE OPERATING PRINCIPLE

HOW THE KELIT COPTIMIZER WORKS

The KELIT COPTIMIZER takes advantage of a physical effect that has been known for over a hundred years: the Seebeck effect. Here, a temperature difference is converted into electrical energy. While the radiator is hot on its surface, the ambient air remains significantly cooler. This delta value produces the voltage that the KELIT COPTIMIZER needs to operate its fans; with no power connection, batteries or additional electricity costs.

With the energy obtained, the built-in cross-flow fans start automatically. These impact the natural air flow of the radiator and actively conduct the heat into the room. While a traditional radiator dissipates its heat almost only upward – with the well-known result that the heat collects near the ceiling and floor area remains cool – the KELIT COPTIMIZER distributes the air evenly and horizontally. As a result, the entire room heats up more quickly, temperature differences disappear and a comfortable level of warmth is established.

The principle is self-regulating: the higher the radiator temperature, the stronger the power generation and the more intense the air flow. Even at high speeds, the fans specially designed for this application remain unobtrusively quiet. For users, this means that the KELIT COPTIMIZER works invisibly in the background, without intervention, without being switched on, and without additional cost.

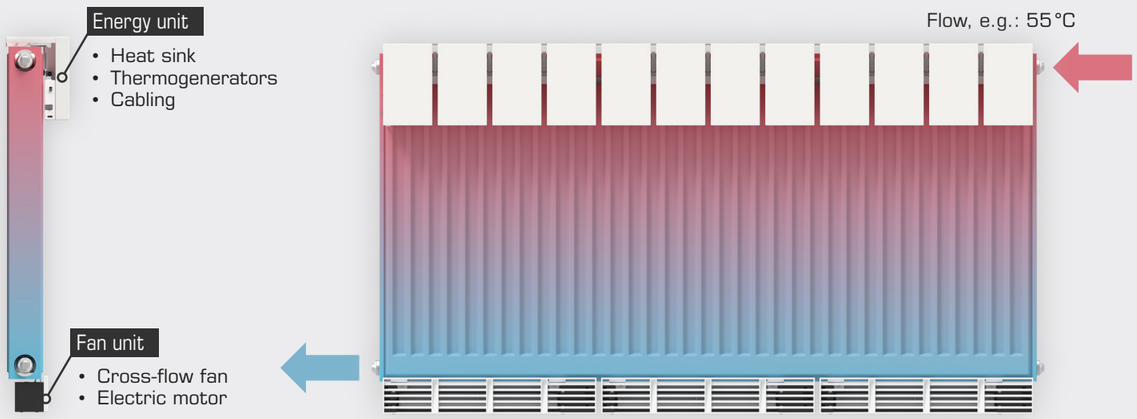
When the radiator heats up via the heating circuit, the process begins: the energy unit integrated into the KELIT COPTIMIZER uses the temperature difference between the hot radiator surface and the cooler ambient air to generate electricity. Using this energy, the built-in cross-flow fans start automatically.

These fans pick up the natural warm air flow, which would otherwise mainly rise upward, and actively direct it into the room. This distributes the heat not only faster, but also more evenly. Instead of hot zones directly near the radiator and cooler areas in the rest of the room, a pleasant, even temperature is created.

The result is comfort you can really feel: rooms become more warmer faster and achieve the desired temperature even at lower flow temperatures. In this way, the KELIT COPTIMIZER not only ensures greater warmth and quality of living, but also increases the efficiency of modern heating systems.

More information online!

SECTIONAL VIEW



The radiator convection is increased due to the room air flowing actively into the radiator. This means the radiator can give off more heat into the room, as well as the flow temperature giving off heat to the room by this factor and achieving the same heating output at a lower flow temperature.

THE SEEBECK EFFECT

ENERGY FROM TEMPERATURE DIFFERENCES

Back in the early 19th century, the German physicist Thomas Johann Seebeck made an observation that would later form the basis of an entire technology: when two different metals are connected to each other and different temperatures are in force at their contact points, an electrical voltage is generated. This process became known as the Seebeck effect and is still the basis of thermoelectrics – a technology that allows heat to be converted directly into electricity.

A lot has happened since this discovery. In space travel, thermoelectric generators have been used for decades to reliably supply space probes with power. In industry, they are used to generate electricity from waste heat. And there are also applications in everyday life: sensors, meters or small energy sources that operate independently of the power grid.

The basic principle remains unchanged: wherever there is a temperature difference, electrical energy can be obtained. The greater this difference between "warm" and "cool", the higher the voltage generated.

HOW THE SEEBECK EFFECT WORKS IN THE KELIT COPTIMIZER

It is precisely this principle that the KELIT COPTIMIZER makes use of. The radiator forms the warm side, fed by the heating water. The cooler room air on the other hand provides the necessary temperature difference. Between these two zones sits a thermoelectric generator consisting of many tiny semiconductor elements that function like mini power plants. Each element generates a small electrical voltage – and all in all, that's enough to create a reliable power source.

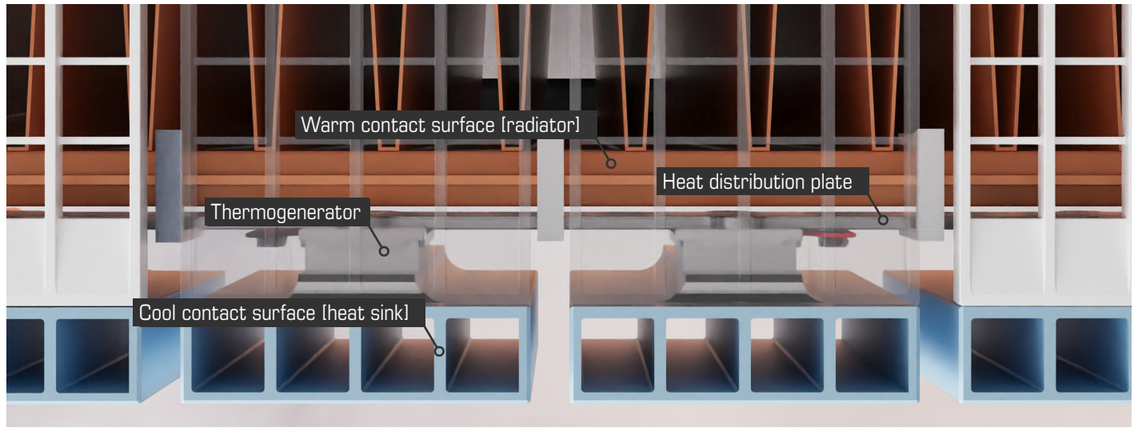
To ensure that the heat from the radiator is transferred evenly and effectively to the thermogenerator, a heat distribution plate is used. It ensures a constant supply of heat on one side, while the other side remains in contact with the room air. The naturally occurring convection on the radiator in heating mode additionally ventilates the heat sinks. This creates a stable temperature difference, which the generator continuously converts into electrical energy.

What makes it special: this process is completely self-sufficient. No power connection and no batteries are required. When the radiator warms up, electricity flows automatically – so reliably that the fans integrated into the KELIT COPTIMIZER start up immediately. These begin to actively transport the warm air into the room, increasing the heating output and distributing the heat more evenly. The greater the temperature difference between the radiator and the room air, the more energy is generated – and the harder the fans work. The KELIT COPTIMIZER is therefore completely self-regulating, depending on the respective operating state.

WHY THIS IS CRITICAL

Utilising the Seebeck effect in the KELIT COPTIMIZER means that existing heating heat is used twice: once to heat the room directly, and then to provide a simultaneous supply of electricity for active heat distribution. This means no additional energy consumption is generated – in fact, quite the opposite: the existing heat is used more intelligently.

This significantly increases the output of existing radiators without having to make any changes to the heating system. Comfort and efficiency rates improve, and the radiators become an active player in the climate change revolution. Thanks to this clever use of traditional physics, yesterday's radiators will become tomorrow's energy system – self-sufficient, reliable and sustainable.



View of a radiator from above with KELIT COPTIMIZER

OPTIMAL HEAT DISTRIBUTION IN THE ROOM

UNEVEN HEAT DISTRIBUTION WITH CONVENTIONAL RADIATORS

A conventional radiator works according to a simple principle: it heats the air directly on its surface. This air rises upwards, collects under the ceiling and slowly cools down again there. This creates the typical temperature stratification in the room. While the temperatures at head height or just below the ceiling remain pleasant, the floor area stays cool. For residents, this means that their feet are cold even though the radiators have been running for hours.

This imbalance is particularly noticeable in larger rooms as well as in old buildings with high ceilings. A traditional radiator is simply not able to distribute heat evenly in the room. Although it heats up, the level of comfort falls short of expectations and the flow temperature often has to be increased unnecessarily to achieve the desired warmth level. This is exactly where a conflict of goals arises: either rooms become unevenly warm or an unnecessary amount of energy is consumed.

UNIFORM HEAT AND GREATER EFFICIENCY

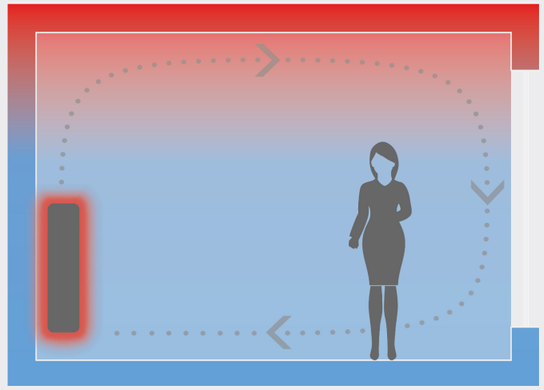
The KELIT COPTIMIZER breaks this cycle. Its integrated fan unit actively interacts with the natural air flow of the radiator. Instead of letting the heat escape upwards in an uncontrolled manner, it directs it specifically into the room. A horizontal, even flow of air is created, distributing the heat where it is really needed: across the entire room area, from the floor to the ceiling. As a result, the frustrating temperature stratification disappears and rooms heat up much faster.

Another benefit is efficiency. As the heat is distributed in a more targeted manner, even a lower flow temperature is sufficient to achieve the same level of warmth. This is particularly important when used with heat pumps or low-temperature district heating, which only provide full efficiency when they are operated at the lowest possible temperatures.

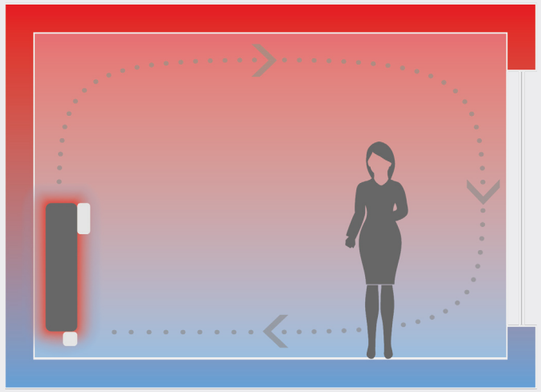
The system is completely self-sufficient. The cross-flow fans do not require an external power supply, and instead generate the necessary energy themselves via the radiator. Operation is quiet, unobtrusive and fully automatic. Users do not have to switch anything on or adjust anything – the KELIT COPTIMIZER reacts automatically to the temperature of the radiator and adapts its performance to actual needs.

This results in a win/win: residents benefit from an evenly tempered room where cold corners and overheated zones are a thing of the past. In addition, the efficiency of the entire heating system increases because the flow temperature can be lowered and the energy consumption reduced. The KELIT COPTIMIZER turns a traditional radiator into a modern, intelligent heating system that balances comfort and sustainability.

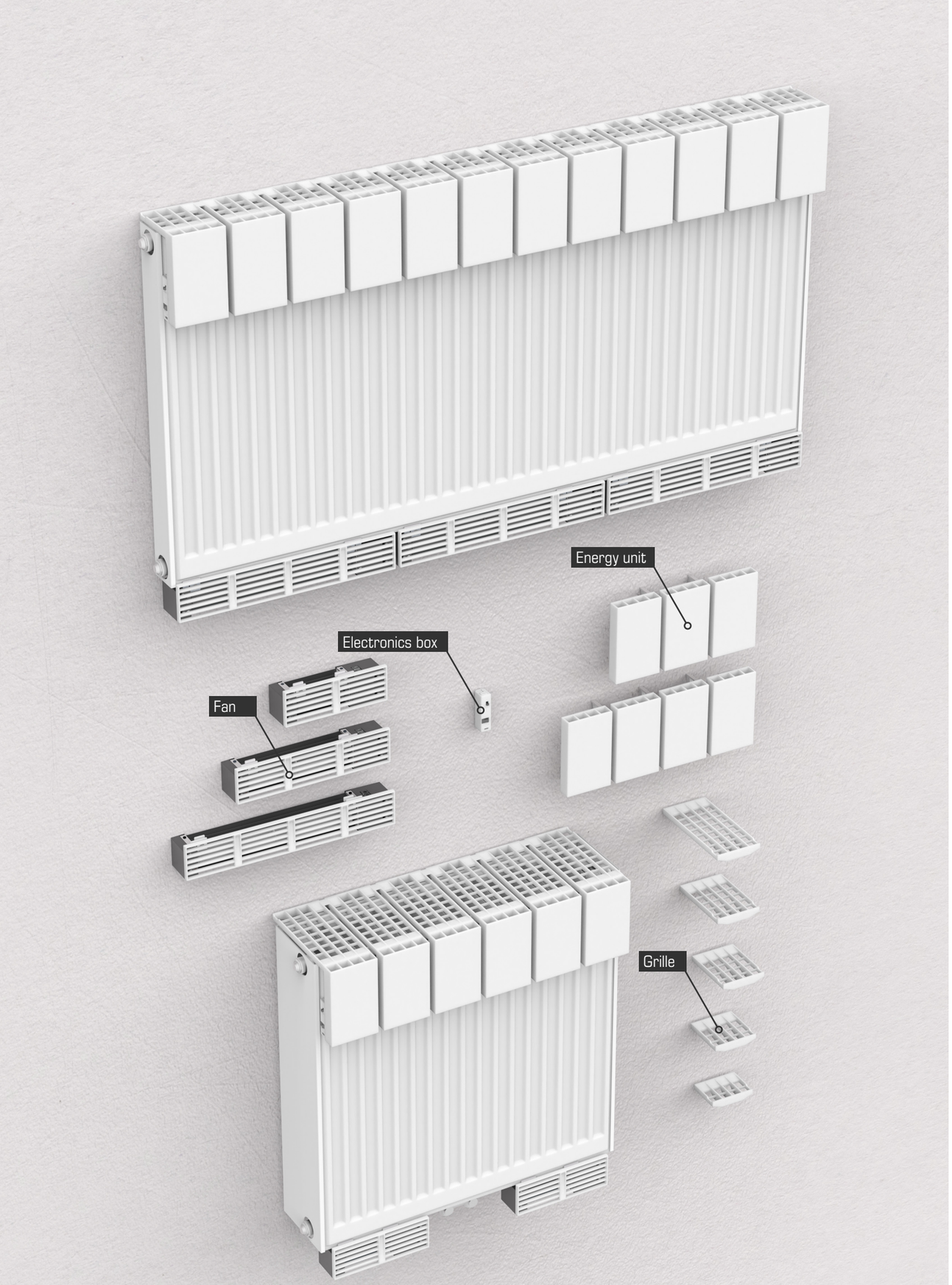
In addition, the improved heat distribution with the KELIT COPTIMIZER opens up new possibilities for interior design and the long-term use of existing buildings. Furniture can be positioned more flexibly because there is no longer a concern that certain areas of the room will remain cold. At the same time, the service life of the radiators is extended, as they work at more efficient low-temperature operation and are subjected to less thermal stress. For residents, this means a significant increase in quality of living, for operators and owners an investment in the future that not only brings noticeable gains in efficiency in the short term, but also strengthens the value of the properties in the long term.



Conventional radiator



Conventional radiator with KELIT COPTIMIZER



ONE SOLUTION FOR ALL RADIATORS

UNIVERSAL. FLEXIBLE. EXACT-FIT.

Radiators are available in countless variants: sometimes narrow, wide, low or high, with central connections or side connections. This is of no importance for the KELIT COPTIMIZER. Thanks to its intelligent, modular design, the system can be easily adapted to almost all standard flat radiators – regardless of size, width, height or connection type. This makes every radiator configuration easy to control without the need for a special system for each type.

THE PRINCIPLE OF MODULARITY

The KELIT COPTIMIZER works according to the principle of an ingeniously designed modular system. The fan unit consists of individual segments, which can be lengthened or shortened depending on the width of the radiator. This allows precise adaptation to the respective radiator size – from very narrow to extremely wide models. This modular structure creates maximum flexibility during installation, meaning almost any radiator can be covered.

The system is always attached to the front panel of the radiator. Different grille variants permit flexible adaptation to different radiator depths. It doesn't matter if the radiator has a central connection or a side connection – the KELIT COPTIMIZER works reliably in both cases. The position of the heating pipes is also irrelevant, which significantly simplifies planning and permits flexible applications in almost all building types.

FUTURE-PROOF SOLUTION

Another significant advantage of the KELIT COPTIMIZER is its long-term usability. Even when replacing a radiator, the system can be easily disassembled, adjusted and reinstalled. The modules can be transferred to the new radiator in just a few steps. This not only saves money, but also makes the KELIT COPTIMIZER a sustainable solution that both meets current requirements and easily supports future changes. In this way, the investments pay for themselves in the long term and the existing system remains in use.

FACTS – MODULARITY

- Compatible with all standard flat radiators of types 10 to 33
- The width is variably adjustable between 300 and 3,000 mm, permitting the precise coverage of almost any radiator
- The height is also flexible and can be used for all radiators of 300 mm and over
- No restrictions on connection type: centre and side connections are reliably supported

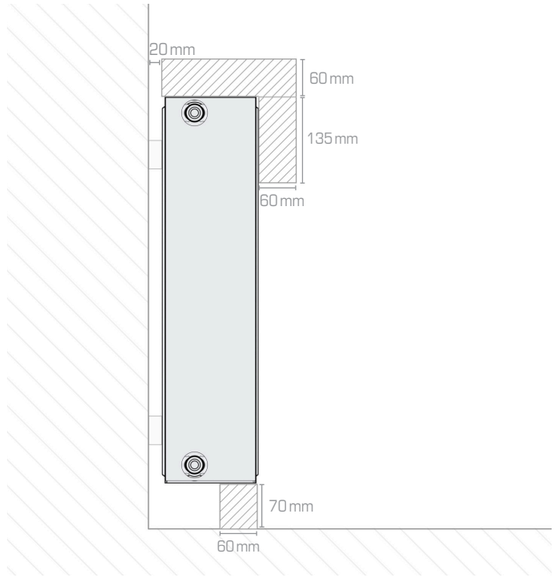
YOUR BENEFITS AT A GLANCE

The KELIT COPTIMIZER eliminates the need to maintain a special system for each radiator type. The modules are available in different widths and can be connected in series as required, making planning and installation much easier. Thanks to the modular design, all components interlock with precision, meaning assembly can be carried out quickly and precisely. The result is a flexible heating system that adapts optimally to any situation and at the same time represents a sustainable investment that can be used multiple times over the years.

INSTALLATION NOTES

For the KELIT COPTIMIZER to be able to perform at its full capacity, sufficient clearance around the radiator must be ensured during installation. For optimal air circulation and trouble-free operation, certain minimum distances must be maintained both above and below the radiator.

These distances ensure that the intake air can flow unhindered through the radiator and be discharged evenly into the room. Correct installation according to these specifications ensures maximum efficiency and even heat distribution. The technical diagram below gives the recommended installation dimensions to make planning and installation as simple and safe as possible.



Minimal space requirements for KELIT COPTIMIZER elements

KELIT COPTIMIZER

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SIMPLE INSTALLATION

SIMPLE INSTALLATION – FAST, CLEAN, UNCOMPLICATED

Installing the KELIT COPTIMIZER on a radiator is so simple that it can be carried out in a matter of minutes. No complicated conversion work, dirt or special tools are required. These were precisely the key considerations during development: the KELIT COPTIMIZER fits all standard flat radiators, regardless of their size or design. Thanks to various grilles, it can be easily mounted on radiators with different depths – no intervention in the heating installation is necessary. The system works without an outlet, clean, quiet and without causing stress to residents.

In practice, this means the installation engineer does not need any special tools. In just a few steps, the energy unit is hung on the top of the radiator, the fan unit is clamped onto the bottom and the two are then connected to one other via the cabling. After that, the system is immediately ready for use. On average, a complete retrofit takes no longer than a quarter of an hour per radiator – and can therefore be implemented in a short period of time even in large residential complexes. After installation, no further setting or adjustment work is required. The KELIT COPTIMIZER starts automatically as soon as the radiator warms up. The system does not require any controls other than the on/off switch on the electronics box – it works in the background and is only noticeable by the fact that rooms become warm faster and more evenly.

LONG-LASTING, EASY-CARE AND SUITABLE FOR EVERYDAY USE

Even during ongoing operation, the outlay remains minimal. The ventilation unit grille is designed so that it can be easily removed by hand. If necessary, it can be simply wiped down or vacuumed – nothing else is needed. This allows the KELIT COPTIMIZER to remain efficient, reliable and virtually maintenance-free for many years.

Easy installation and maintenance are key benefits not only for installers, but also for residents and operators. There is no prolonged construction work, no noise and no dirt. Even in inhabited properties, retrofitting can be carried out quickly and simply – a crucial point when entire buildings or even districts are being modernised. For operators, this means rapid implementation, happy users and an investment that pays off without significant outlay.

The result is that the KELIT COPTIMIZER is a prime example of 'plug & play' in building technology – universally applicable for almost any flat radiator, quickly installed, immediately effective and efficient and reliable for many years.

INSTALLATION SYSTEMS

The KELIT COPTIMIZER stands for efficiency and ease of retrofitting: radiators can therefore be modernised quickly, safely and flexibly.

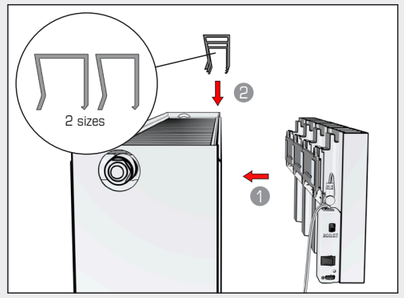
1. The right hooks for the energy unit
The energy units are attached using the supplied hooks. As radiators have different depths, these hooks come in two different sizes. This means that the energy unit can be attached safely and stably to all standard flat radiators. The simple fixing method means that the unit can be easily removed or repositioned if necessary.

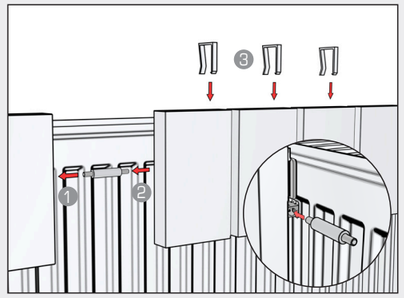
2. Connector for connecting multiple energy units
Connectors are used so that multiple energy units of a radiator can be connected to each other. They electrically connect the energy units to each other and ensure that sufficient current is generated for the fans. This creates a consistent system that provides uniform heat and has an appealing, standardised look. The plug-in connection is stable and durable, so that the units remain reliably connected for years and can be quickly expanded or adapted if necessary.

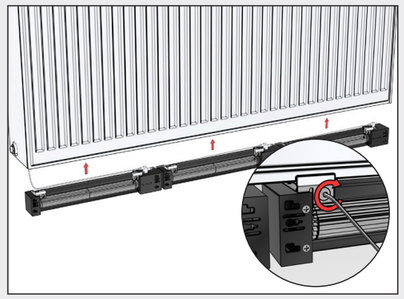
3. Installing the fan unit
The fan unit is attached to the bottom of the radiator. A special mechanism made of two rubberised metal plates ensures that the unit automatically adapts to the radiator rebate when tightened with a hexagon socket wrench – the tighter the screws, the more securely the fan will hold, regardless of the radiator thickness. The fan unit is stable and can be easily removed for maintenance or cleaning at the same time. It works quietly, distributes the air efficiently and ensures that the room warms up faster and more evenly.

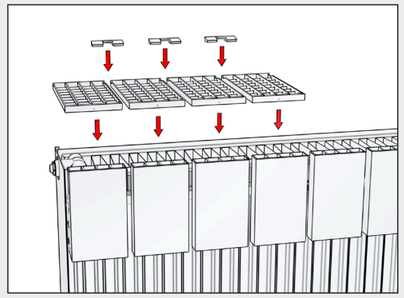
4. Connecting the grille covers
Lastly, grille covers corresponding to the radiator depth are fixed to the radiator at the top using the connectors. They give a clean, even appearance and ensure that the energy units are aligned correctly. The covers protect the components from dust and contact, support the air flow and help ensure that the heat is optimally conducted into the room. This creates a coherent overall look.

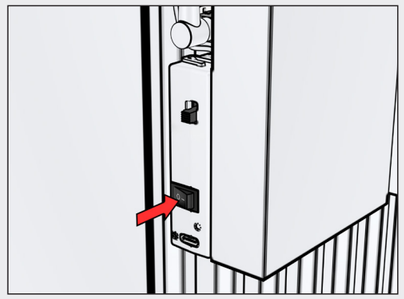
5. Electronics box with on/off switch
The electronics box forms the control centre of the system. It is attached to the side of the radiator and ensures that the energy units and fans work together reliably. The system can be switched on or off manually if necessary via the easily accessible on/off switch. The box has a robust construction, is compact in design and fits discreetly into the overall look of the radiator. Connections for the energy unit as well as any potential extensions are easily accessible, simplifying servicing and maintenance. The COPTIMIZER can also be used for cooling, provided that the radiators are charged with cold water. In this case, an external power supply must be provided via USB-C. The cooling capacity can be additionally increased with the BOOST slider. During cooling operation, it must be ensured that temperature does not fall below dew point, depending on temperature and humidity. By plugging in the USB-C connection, the COPTIMIZER runs continuously. Automatic mode is deactivated during this time.











COMPELLING TECHNOLOGY

RETHINKING HEATING TECHNOLOGY

The performance of the KELIT COPTIMIZER was tested at the accredited Institute for Heating, Ventilation and Air Conditioning (HVAC) of the University of Stuttgart according to strict scientific criteria. Standardised test benches were used, which are also standard in European radiator certification. The same radiator models were operated under identical conditions – both in their original state, and retrofitted with KELIT COPTIMIZER. The results were impressive: at a typical flow temperature of 55 °C, it was possible to increase the radiator output by around 27 percent. The effect was particularly evident at lower temperatures, which is of relevance when combined with heat pumps or low-temperature district heating. At 45 °C flow, a power increase of over 35 percent was measured, and in peak times, the retrofitted radiators even achieved 40 percent more heating power compared to the reference radiators without KELIT COPTIMIZER.

The test results led to a clear conclusion: KELIT COPTIMIZER significantly increases the thermal performance of existing radiators, especially in the low-temperature range, and provides reproducible, independently tested evidence of its technical effectiveness. The system combines increased continuous power, efficient heat distribution and dynamic benefits in everyday life, making existing radiators ready for the requirements of modern, energy-efficient heating systems.

Bericht über die Prüfung eines Raumheizkörpers

Referenzprüfstelle

Universität Stuttgart

Institut für Gebäudeenergetik, Thermotechnik und Energiespeicherung (IGTE)

Pfaffenwaldring 6

70569 Stuttgart / Germany

Prüfbericht

Test report / Rapport d'essai / Protocollo di prova

Nr., no.: A24 C1.221.6793

Handelsbezeichnung des Antragstellers: Type 22-600-1200

Bezeichnung der Bauteilliste: Type 22-600-1200

Reference test reports from HLK Stuttgart on KELIT COPTIMIZER

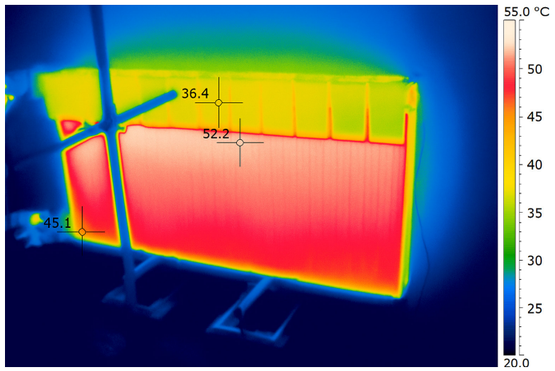
PERFORMANCE MEASUREMENTS

Radiator type	Overall length	Temperatures Flow/return flow/ room temperature	Output without KELIT COPTIMIZER	Output with KELIT COPTIMIZER	Output difference	Relative output deviation
Type 11	612 mm	55/45/20 °C	569 W	803 W	+234 W	41 %
Type 20	610 mm	55/45/20 °C	534 W	701 W	+167 W	31 %
Type 21	612 mm	55/45/20 °C	836 W	1078 W	+242 W	29 %
Type 22	612 mm	55/45/20 °C	1046 W	1361 W	+315 W	30 %

Output measurement results - HLK Stuttgart

EVERYDAY THERMOGRAPHY AND EFFICIENCY

The thermographic images from the test facility make the effect of the KELIT COPTIMIZER clearly visible. The image clearly shows the temperature difference between the radiator and the heat sinks of the KELIT COPTIMIZER, forming the basis for the function.



Thermography output measurement, KELIT COPTIMIZER HLK Stuttgart

The dynamic measurements also confirm the practical benefits: rooms with KELIT COPTIMIZER radiators reached the target temperature up to 50 percent faster, which means shorter heating times and greater comfort. At the same time, the flow temperature can be lowered without compromising comfort, saving energy and providing optimal support for modern low-temperature heating systems such as heat pumps.

HVAC Stuttgart concluded that the KELIT COPTIMIZER significantly increases the thermal performance of existing radiators and provided independent proof of its technical effectiveness. The system combines greater continuous power, more efficient heat distribution and dynamic benefits in everyday life and makes radiators ready for modern, energy-efficient systems.

SUCCESSFUL ALTERLAA PROJECT

A DISTRICT AS A REAL-LIFE LABORATORY FOR THE SUSTAINABLE HEATING REVOLUTION

The Alterlaa residential park in Vienna, an architectural icon of the 1970s with over 3,000 apartments and almost 10,000 residents, exemplifies the significant challenges of converting to sustainable heating solutions in existing buildings. As was customary at the time, the existing radiators were designed for high flow temperatures. When switching to modern, energy-efficient systems, however, it quickly became apparent that they would often no longer give off enough heat at lower flow temperatures. This would lead to lower comfort levels or reduced efficiency in heat pumps.

In a pilot project, the effectiveness of the system was tested in a large-scale field trial. Two almost identical residential towers were compared – a test tower with more than 120 apartments and over 700 upgraded radiators as well as a reference tower without KELIT COPTIMIZER. Over 300,000 measurement points were recorded, accompanied by social science surveys of the residents.

The results clearly demonstrate the effect of the retrofit. In the test tower apartments, it was possible to lower the flow temperature by an average of five to eight degrees without the residents feeling any loss of comfort. At the same time, the return flow temperatures fell significantly, which is a direct indication of the same heat dissipation at a lower temperature. Residents reported that rooms reheated more quickly after airing, that heat was distributed more evenly, and that cold zones disappeared. Many stated that they did not consciously notice the technology in everyday life – it was simply the improved level of comfort that stood out to them.

The central goal of the project was therefore not only achieved, but exceeded: operation at significantly lower flow temperatures became possible, combined at the same time with increased comfort. Alterlaa thus provided compelling evidence that the KELIT COPTIMIZER is a tried-and-tested, economical and sustainable solution that can be easily implemented in everyday life.

Instead of the costly process of completely replacing radiators, a fast, clean and cost-effective retrofit can be realised – with benefits for residents, operators and the environment. Alterlaa proves that the move to sustainable energy is feasible when technical innovation, smart retrofitting and intelligent resource management work together.

SUSTAINABILITY THAT WORKS

MORE THAN JUST EFFICIENCY

Sustainability means much more than just saving energy during operation. Among other things, it means preserving existing resources, avoiding unnecessary waste and keeping products in circulation for longer. This is exactly where the KELIT COPTIMIZER comes in: instead of replacing old radiators, they are upgraded and reused. This not only reduces costs, but also saves valuable materials and energy for producing and transporting new heating systems, while at the same time avoiding the disposal of old components.

RECYCLING, NOT WASTE

The KELIT COPTIMIZER turns an existing radiator into a future-proof system. Radiators that are no longer current in terms of the latest technology are given a significantly longer service life through retrofitting. At the same time, less material is used: there is no need to manufacture (active) radiators or dispose of old ones. Steel, copper and aluminium remain in circulation and are used sustainably. The renovation itself is minimally invasive – it requires no elaborate conversion work, no construction site, no dust and causes only a fraction of the CO_2 load that a major renovation would entail.

SAVING ENERGY IN COMPANIES

The lasting effect of the KELIT COPTIMIZER is not only evident in production and use of materials, but above all in daily operation. Thanks to the more uniform heat distribution, lower flow temperatures can be achieved, and this significantly reduces the energy requirement. Heat pumps work more efficiently, electricity consumption is reduced and optimised district heating leads to lower grid losses. This results in direct CO_2 savings in every household – year after year.

The KELIT COPTIMIZER makes sustainability tangible: existing resources are conserved, energy is saved and CO_2 emissions are reduced. At the same time, residents enjoy greater convenience than before – more efficiently, more cleanly and more sustainably.

KE KELIT GmbH
Ignaz-Mayer-Straße 17
A-4020 Linz

Phone +43 50 779-0
office@kekelit.com

www.kekelit.com