KE KELIT®
CLIMATE CONTROL SYSTEMS

VOGEL&NOOT

LOW-TEMPERATURE RADIATOR.

KE KELIT NZ LTD EXCLUSIVE DISTRIBUTOR IN NEW ZEALAND

reddot design award
winner 2013

heatingthroughinnovation.

E2 Technology

CONTENTS .

OUR STANDARDS.

Ground-breaking in Europe

Ground-breaking in Europe Across Europe **VOGEL&NOOT** is the leading technology partner that sets the standard. Their wide range of products covers radiators, under-floor heating systems and chimney systems.

With their consistent innovation strength in energy-efficiency and distinctive design concepts, **VOGEL&NOOT** products are not only very popular with planners and heating installers, but also with the people who use the heated spaces.

This is what **VOGEL&NOOT** stands for:

The highest degree of energy-efficiency
As a trailblazer in innovation **VOGEL&NOOT** provides forward-looking heat-emission technology for thermal comfort that is climate-friendly.

Trend-setting heating design
With their unique surface concept, the broad range of **VOGEL&NOOT** design radiators give a creative touch to modern living spaces because they are not just heaters but pieces of furniture that can be individually designed.

Full range of products & service
As an across the range supplier, **VOGEL&NOOT** guarantees not only a wide choice of top-quality products for optimal heat-emission solutions, but also excellent advisory expertise and outstanding service.

heatingthrough**innovation.**

THE NEW SOLUTION.

Efficient, economic and aesthetic low-temperature heat emission

A unique concept

The ULOW-E2 low-temperature radiator's E2 technology is a unique product concept development, making possible efficient, economic and aesthetic low-temperature heat emission.

Powerful and intelligent

On the one hand, the ULOW-E2 gives a high proportion of radiant heat thanks to its water-filled panels, whilst on the other, it provides optimised, on-demand convection. Intelligent control, switches between static and dynamic operation and ensures quick heat emission and short reaction times, with high efficiency and a maximum of thermal comfort at supply temperatures of 40° C and less.

Beauty and economy in one

An avant-garde design meets all the demands of a modern interior and stylishly enhances any living space. Because of the small additional investment costs needed for the ULOW-E2's higher efficiency, it quickly pays for itself. Manual temperature control in each room makes for maximum comfort in every one of them.

reddot design award
winner 2013

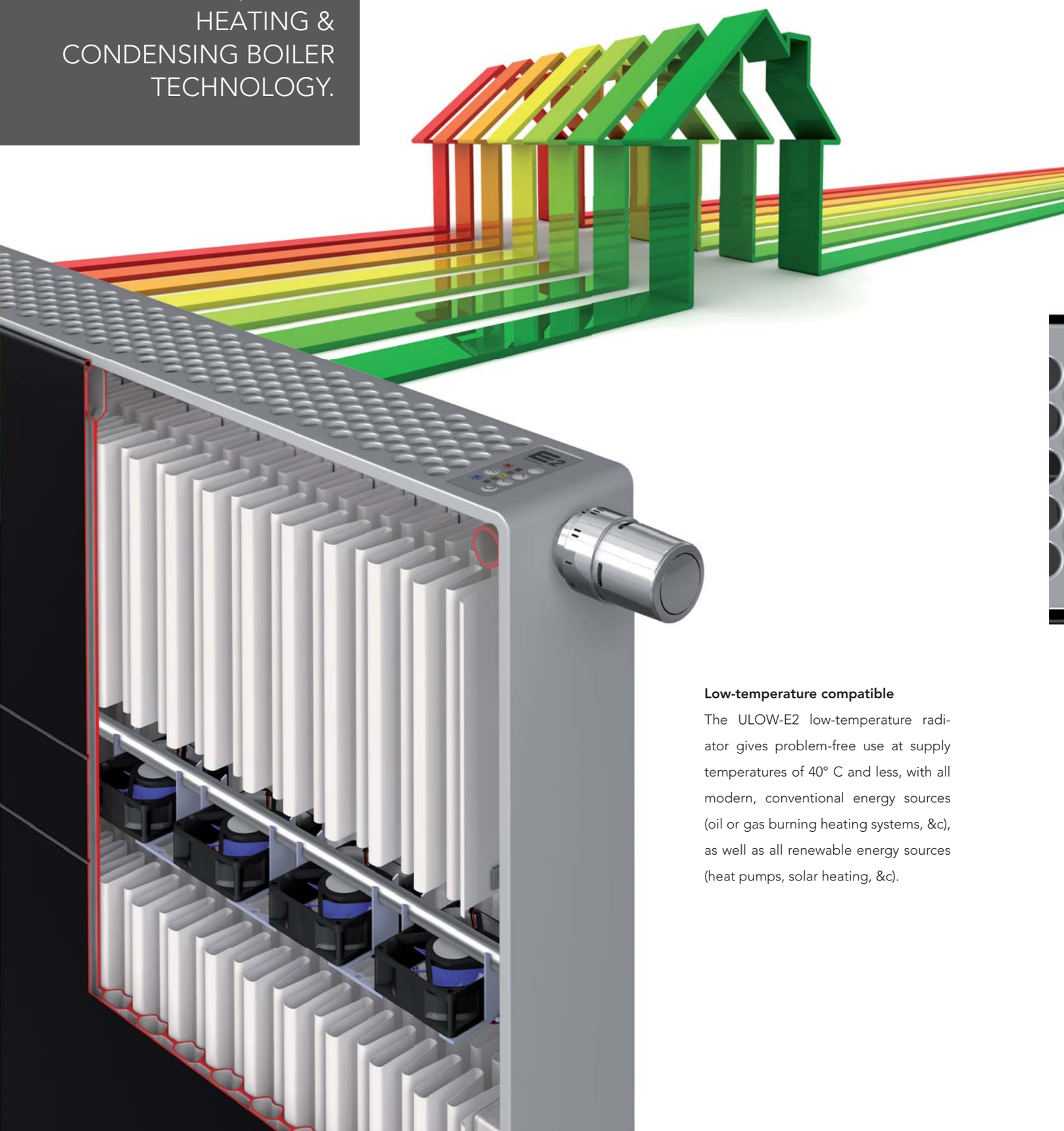
And the reddot award 2013 goes to ...

... ULOW-E2 from **VOGEL&NOOT**! The visionary design of the ULOW-E2 with E2 technology received the 2013 reddot award for product design at the beginning of March. This coveted international trophy is awarded every year to innovative design products. Outstanding beauty inspires!

E2 Technology

- Low-temperature compatible
- High savings potential
- State-of-the-art design
- Intelligent control
- Heat emission in next to no time and short reaction times
- Tried and tested central-connection technology
- A high proportion of radiant heat
- Ideal for renovations and new buildings
- Versatile electrical connection
- Extremely easy installation
- System compatibility
- Living in comfort all year round

COMPATIBLE WITH HEAT PUMPS, SOLAR HEATING & CONDENSING BOILER TECHNOLOGY.



Low-temperature compatible

The ULOW-E2 low-temperature radiator gives problem-free use at supply temperatures of 40° C and less, with all modern, conventional energy sources (oil or gas burning heating systems, &c), as well as all renewable energy sources (heat pumps, solar heating, &c).

E2 Technology

INNOVATION FOR RENEWABLE ENERGY.

With the ULOW-E2 today you are already using the radiator technology of tomorrow.

Intelligent control

What makes the ULOW-E2 so special is that it is fitted with fans that enhance natural convection, combined with an intelligent control system that can switch between static and dynamic operation either fully automatically, or according to the user's operating requirements. The fans serve as a supplement and are only switched on when needed, as this equipment provides high basic performance even in static operation.

HIGHER EFFICIENCY, ENSURING A PERFECT FEEL-GOOD AMBIENCE.

Example:
A direct cable connection, with on/off switch.

System compatibility

Operating in combinations in new buildings, the ULOW-E2 is perfectly compatible with other low-temperature heat emission systems, such as under-floor heating, under-floor convectors, wall heating, &c. As the ambient operational temperatures are mutually consistent, it is possible to install both on a single heating circuit.

Heat emission in next to no time and a short reaction time

Because of its high proportion of radiant heat and its on-demand fan-optimised convection, the ULOW-E2 ensures fast heat emission and short reaction times. In winter any night-time drop in temperature or heat loss resulting from airing the room can be compensated for, no problem, in next to no time.

High savings potential

Choosing it in preference to other products currently available on the market can give you huge energy savings, because of the significantly lower ambient operational temperatures. With E2 technology operating the heating system is much more energy-efficient.

Versatile electrical connection

Connecting the ULOW-E2 to the power supply, can be done in a variety of ways and can fit in with every structural and architectural condition.

A high proportion of radiant heat

The ULOW-E2 gives a high proportion of radiant heat thanks to its water-filled front and rear panels.

A MULTI-TALENTED PERFORMER THAT KEEPS YOU WARM.

Living in comfort all year round

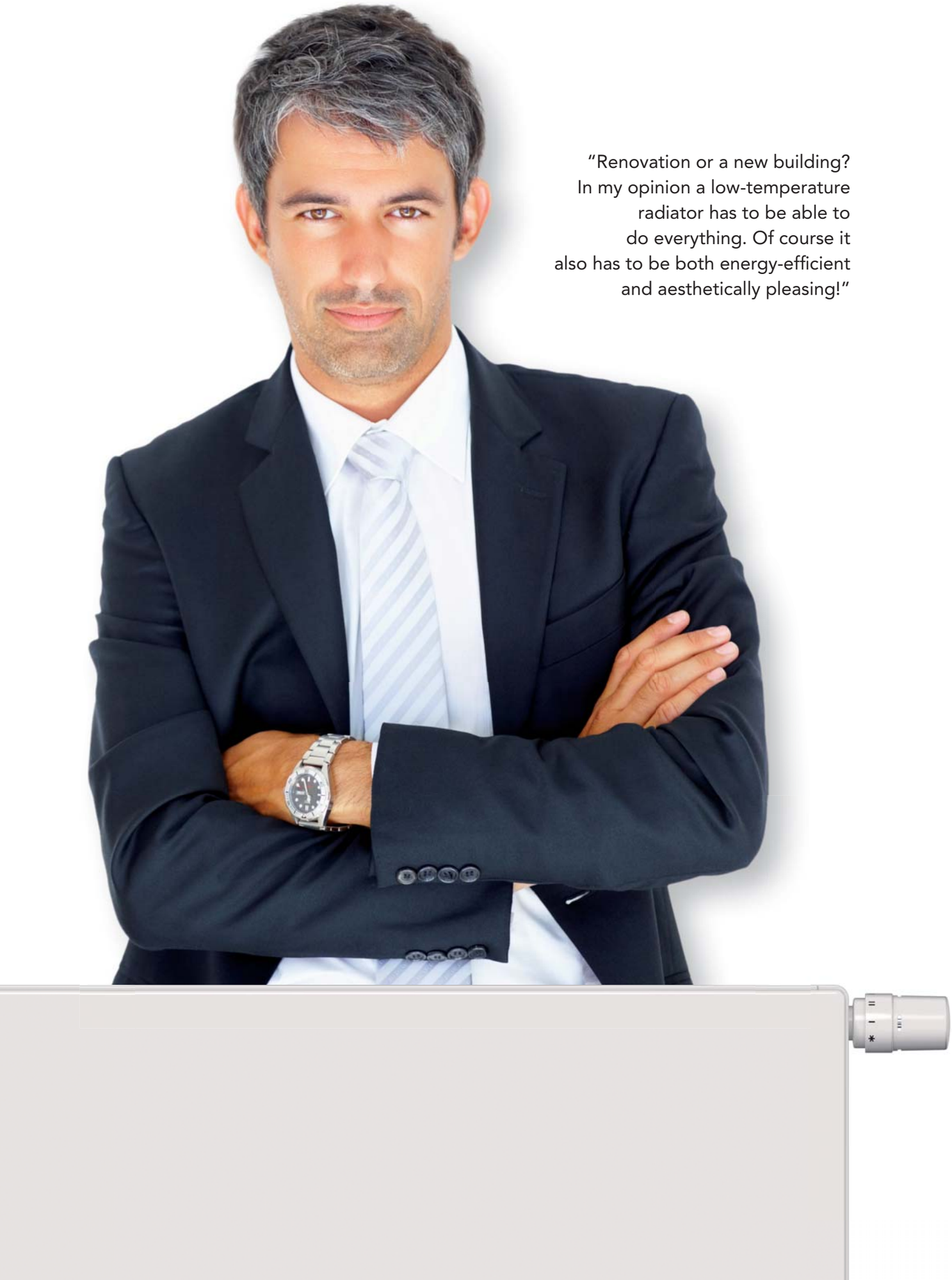
In winter the ULOW-E2 works as an efficient low-temperature radiator, with high-level control quality, to give perfect heating comfort. And then the summer breeze-effect ensures that on hot days the atmosphere in your living area is pleasantly cool thanks to gentle movement of the air. With just a few adjustments in the heating room, comfortable dry cooling is possible.

Extremely easy installation

The ULOW-E2 is delivered as a ready to connect product, and can be installed just like any standard radiator – it's easy, efficient, flexible and inexpensive. Particularly with renovations this is very important.

Tried and tested central-connection technology

In today's flexible building industry pre-piping has become indispensible. In this respect central-connection technology contributes significantly to reductions both in installation time and costs and in susceptibility to faults. It also ensures maximum freedom in planning and installation.



"Renovation or a new building? In my opinion a low-temperature radiator has to be able to do everything. Of course it also has to be both energy-efficient and aesthetically pleasing!"

RENOVATION, A NEW BUILDING
OR SIMPLY GREATER THERMAL COMFORT.

With renovations: monovalent operation

Provided thermal renovation ensures a good standard of insulation, or a modern heating source has been fitted, the conditions for installing the ULOW-E2 are ideal. Operation with all energy sources (oil, gas, firewood, pellets, district heating or a heat pump, &c) at a supply temperature of 40° C and less is perfectly possible.

In new buildings: combined operation

In modern style new buildings good standards of thermal insulation already apply and modern reduced-temperature heating systems (oil- or gas-fired) are installed, or renewable low-temperature energy sources are used (firewood, pellets, and/or district heating or heat pumps). The ULOW-E2 with supply temperatures of 40° C and less is compatible with these heat sources.

"I say what I like.
I make no compromises
when it comes to design
or quick thermal comfort!"

FORWARD-LOOKING HEATING DESIGN.

reddot design award
winner 2013

Visibly state-of-the-art

It's not just the telling performance data but also the highly successful, distinctive design that show the advantages of E2 technology. Here we have a high-tech heat emission system that heralds a new era. It represents the next generation in heat emission.

State-of-the-art design

The ULOW-E2's extremely elegant plane optics and its futuristically reduced artistic style appeal to persons with a sophisticated awareness of their furnishings, whilst the rounded soft-line edges exude stylish harmony. **VOGEL&NOOT** are trend-setting trail blazers with their completely new round-aperture optics – another prominent feature is the classy looking, intuitive touchpad control panel.

WITH RENOVATIONS: MONOVALENT OPERATION.

Temperature pairings of out-of-date heat emission apparatus			
70/55/20 °C			
55/45/20 °C	55/45/20 °C		
	45/35/20 °C	45/35/20 °C	
		40/35/20 °C	40/35/20 °C
ULOW-E2 temperature pairings			35/30/20 °C

Saving energy thanks to reduced supply temperatures

The ULOW-E2 gives you a huge savings potential because of its low supply temperatures, for the same thermal comfort.

The ULOW-E2 in monovalent operation

When in monovalent operation the ULOW-E2 is a veritable energy saver. In comparison to out-of-date heat emission apparatus it requires much lower supply temperatures for the same heat output.

The ULOW-E2 allows you to have the standard temperature pairings, but reduced by one or even two increments. That means that the whole heating system can be operated with greater energy efficiency.

COST AND ENVIRONMENTAL BALANCE IN THE RENOVATION OF OLD BUILDINGS.

E2 Technology

Renovation using E2 technology:

Particularly in renovations the E2 technology has compelling advantages:

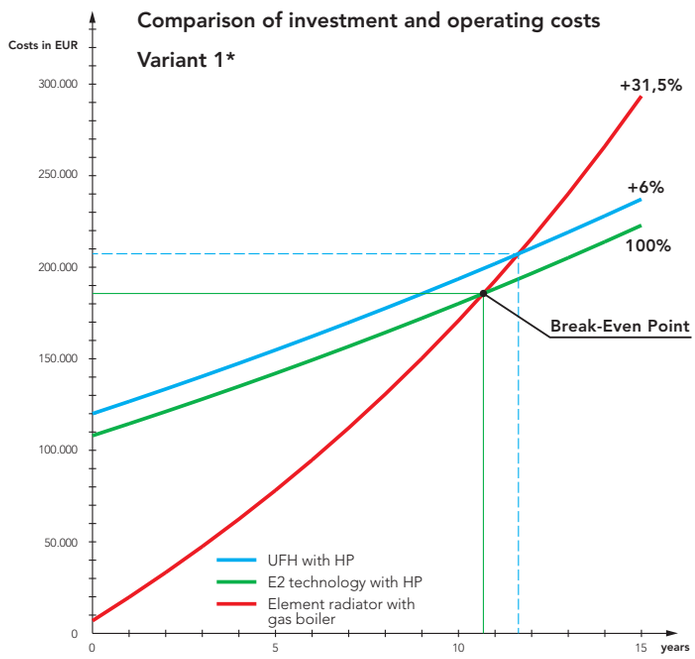
- Efficiency-increasing with all modern energy sources
- Significant reductions of system temperatures are possible
- It is economical regarding investment and operating costs
- Flexible and cost-effective installation
- Climate protection due to CO_2-reduction

Calculation basis *:

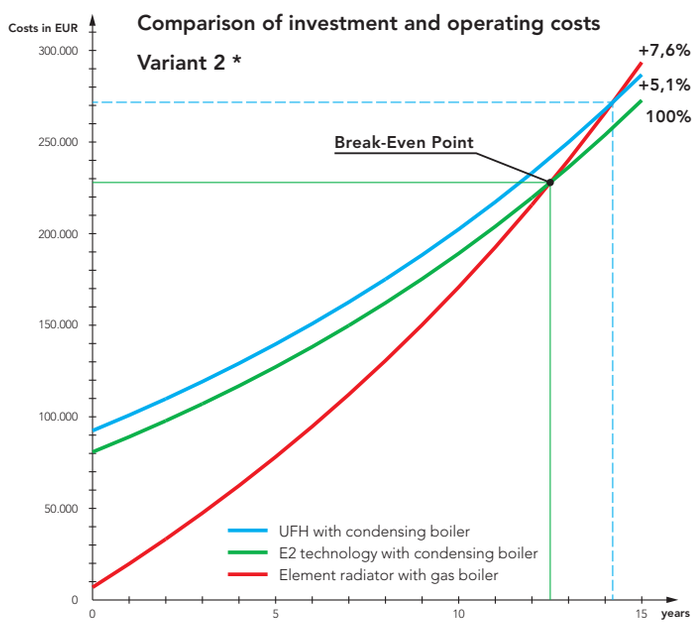
- 12 residential units with a heat demand of 40 KW, calculated in compliance with EN 12831 (incl. renovation of structural shell)
- Comparison of the 3 systems/use (ULOW-E2, under-floor heating and element radiator)
- Cost listing based on a sample tender text
- Energy-related evaluation and calculation of economic comparisons

Investment costs/balance - definitions

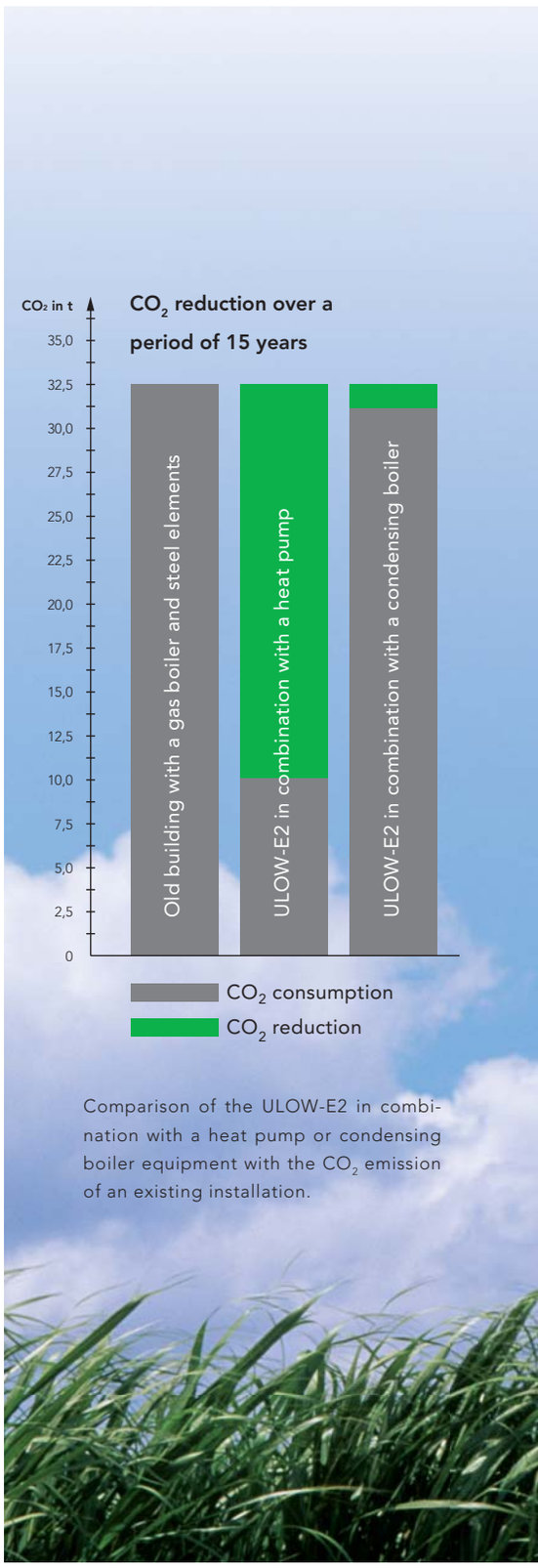
- Investment costs:
  Based on sample tender texts for renovation of old buildings, for installing under-floor heating construction costs are not included (wet installation/floor covering, &c)
- Maintenance costs:
  Includes factors for service and maintenance that push up prices, following ÖNORM M 7140
- Operating costs:
  Includes factors for gas and electricity that push up prices (observation period: 15 years)
- Calculation of cost losses:
  Empirical values from projects with optimisation of energy-generating, distribution and control technology (savings potential)



Heat pump versus gas boiler adaptation/steel elements.
Investment and operating costs over a period of 15 years



Condensing boiler versus gas boiler adaptation/steel elements.
Investment and operating costs over a period of 15 years.



Comparison of the ULOW-E2 in combination with a heat pump or condensing boiler equipment with the CO_2 emission of an existing installation.

* These findings are based on consultation with Technisches Büro Hammer, in co-operation with Fachhochschulstudiengänge Burgenland GmbH / Forschung & Technologietransfer Pinkafeld GmbH

NEW BUILDINGS:
Single-storey low-energy house,
with a total living space of 138 m^2,
fully underbased.

IN NEW BUILDINGS COMBINED OPERATION.

CROSS-SECTION PERSPECTIVE: ground floor: 69 m^2
HEATING: air heat pump + solar thermal system
HEAT EMISSION: ULOW-E2 in combined operation with under-floor heating

Combined operation with the ULOW-E2

For sure, the ULOW-E2 can in principle also be economically used for monovalent operation in new buildings. However, combined operation with other low-temperature heat-emission systems, such as under-floor heating, under-floor convectors, wall heating, &c is particularly recommended. Here the ULOW-E2 in combination with surface heating systems provides the best balance between energy-efficiency and comfort. Combined operation with the ULOW-E2 is recommended for spaces that are for example only used periodically, that require fast room heating and short reaction times (such as bedrooms, bathrooms and spa areas, cloakrooms, fitness rooms, working rooms, &c).

COST BALANCE AND COMPARATIVE STUDY IN NEW BUILDINGS.

E2 Technology

E2 technology used in new buildings:

When used in new buildings E2 technology also offers many advantages:

- Solo operation with the ULOW-E2 is fundamentally economical
- Solo operation with the ULOW-E2 is ideal for spaces that are only temporarily used and/or require increased control quality
- Combined operation provides maximum comfort and cost advantages
- Compatible with surface heating because the ambient operational temperatures are mutually consistent

Calculation basis *:

- 12 residential units with a heat demand of 70 KW, calculated in compliance with EN12831
- Comparison of the 3 systems/use (ULOW-E2, under-floor heating and combined operation)
- Cost listing based on a sample tender text
- Energy-related evaluation and calculation of economic comparisons

Investment costs/balance - definitions

- Investment costs:
  Based on sample tender texts for new buildings, for installing under-floor heating construction costs are not included (wet installation/floor covering, &c)
- Maintenance costs:
  Includes factors for service and maintenance that push up prices, following ÖNORM M 7140
- Operating costs:
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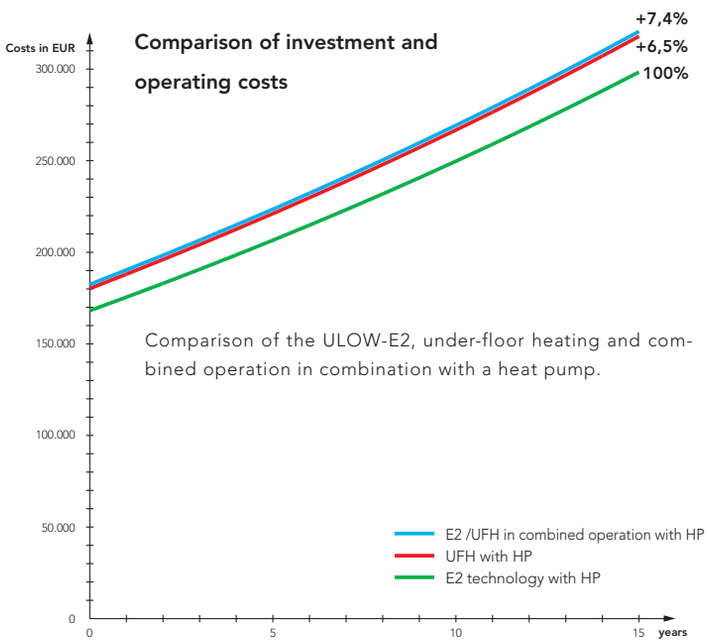
- Calculation of cost losses:
  Empirical values from projects with optimisation of energy-generating, distribution and control technology (savings potential)



Comparison of the ULOW-E2, under-floor heating and combined operation in combination with a heat pump.

Comparative emotional study

Installation situation

E2 technology
Under-floor heating
Combined operation

Reaction time

E2 technology
Under-floor heating
Combined operation

Ease of operation

E2 technology
Under-floor heating
Combined operation

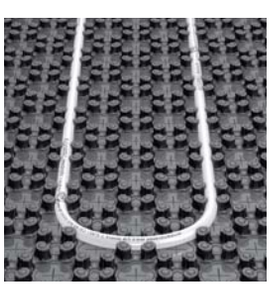
Costs / energy-efficiency

E2 technology
Under-floor heating
Combined operation

Overall result

E2 technology
Under-floor heating
Combined operation

E2 technology



Under-floor heating

Combined operation

* These findings are based on consultation with Technisches Büro Hammer, in co-operation with Fachhochschulstudiengänge Burgenland GmbH / Forschung & Technologietransfer Pinkafeld GmbH

A NEW MILESTONE IN CLIMATE PROTECTION.

„wir sind“ Klimabündnis Betrieb

E2 Technology

Our responsibility for the future

One of the most efficient ways of saving energy is to use radiators that can be operated with low supply temperatures and that are compatible with heat pumps, solar energy and photovoltaic technology, in addition to all standard types of operation. We regard the ULOW-E2 as the answer to changing environmental conditions and as our contribution to a reduction in CO_2 emissions.

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