Insights

Information from the Hoval Group

No. 1/2014

Hoval

Responsibility for energy and environment

Dear Reader

Do you aspire to mediocrity? At Hoval, we don't. The goals at Hoval are always set quite a bit higher. Here at Hoval we've always been known for taking innovative paths to developing new products. In addition to product development, the sophisticated integration of the best products to create a system has always been a challenge that has particularly appealed to us. That's why, a few years ago, it became apparent that our next evolutionary step was to branch out into local and district heating systems and set new standards by developing our own control technology for these systems in-house.
At the same time, we successfully launched innovative new solutions to the market for highly energy-efficient cooling in data centres and for recovering heat from the exhaust air of machines in production processes. With our expertise, we can meet even the most technically challenging requirements of our customers. This can be demonstrated by the various system reports in this edition of Insights. Hoval offers much more than just innovative products.

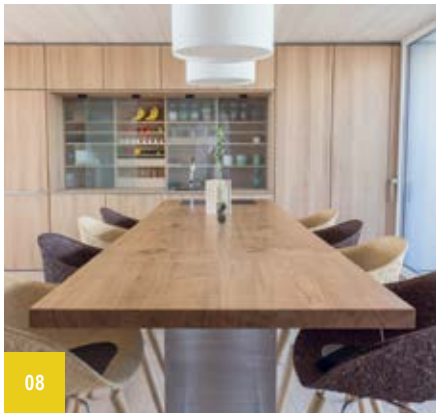
It also makes us very happy when we see how widespread the trust we have built for these solutions now is. Whether in Buckingham Palace in London, in Burj Khalifa – the tallest skyscraper in the world – in Dubai, and shortly also in the tallest skyscraper in Japan, in Tokyo. Or in world-famous football stadiums such as Wembley or the Emirates Stadium in the UK. These are just a few examples of customers who have put their trust in us.

What better evidence could there be of the quality of our sophisticated work than the trust of our customers? We will continue to reject mediocrity and we strive to continually delight our customers with our tailored and integrated solutions.

Peter Gerner,
Hoval Group Management Board/CEO
Heating Technology

Hoval

Insights no. 1 / 2014



View innovations, build relationships, share enthusiasm.

The first trade fairs of 2014 were quite the event. In quick succession, countless hard-working hands built and then dismantled trade fair stand after trade fair stand. The message was the same everywhere – whether in Switzerland, Austria, Germany or Italy: Hoval's systems expertise has a solution for every requirement. And what's more – everything is available from a single source!

SWISSBAU - BASEL

Saving energy and resources is one of Hoval's strengths, especially in the form of a system solution. Visitors to our trade fair stand at Swissbau in Basel managed to see this for themselves. Solar energy combined with heat from ambient energy was one of the highlights on show. It was clear to see that the new Hoval UltraSol solar collector and the Belaria® compact IR with its COP of 4.2 are a dream team.

AQUATHERM - VIENNA

Whether for large or small outputs, Hoval has a solution for everything! At the Aquatherm trade fair in Vienna, visitors were able to get a comprehensive insight into a whole host of system solutions. One of the highlights here too was the new UltraSol solar collector, which can be combined with various systems for new builds or renovations.

CLIMATE WORLD - MOSCOW

One of the largest international trade fairs for ventilation and climate technology – Climate World – recently took centre stage in Moscow. The current state of global climate policy means that the subject of heat recovery is a key concern for many manufacturing companies. Thanks to Hoval, however, visitors to the fair found all the answers they were looking for, as the company was demonstrating one of the most efficient cross-flow plate heat exchangers and the most leak-proof rotary heat exchanger in the industry. These technical developments fulfill Hoval's responsibilities with regard to energy and the environment in every respect.

Foto: BMLFUW/Bernhard Kern

ENERGIESPARMESSE - WELS

Federal Minister Andrä Rupprechter opened the Energiesparmesse trade fair for energy efficiency in Wels, Austria, before taking a tour of the exhibits to see the latest and most energy efficient technologies for himself. In the photograph, the minister is pictured at the Hoval stand with Doris Schulz, president of the Wels trade fair, and Christian Hofer, managing director of Hoval Austria. As a partner in Austria's klimaaktiv climate initiative, Hoval showcased its latest energy-efficient solutions for the visiting experts.

FUTURE-THINKING - FRANKFURT AM MAIN

The focal point of the Hoval workshop was the adiabatic cooling offered by the Hoval ServeLine solution for data centres. In addition to the high level of availability of the Hoval cooling solution, the energy savings and cost reductions associated with adiabatic cooling make it a considerably more attractive option than a conventional cooling system. Professor Martin Kriegel, Head of the Hermann Rietschel Institute at the Technical University (TU) of Berlin, offered his professional support for the Hoval solution as part of an academic lecture. The presentation made use of research carried out in an independent demo data centre to highlight the potential of evaporative cooling and the associated savings to be made.

IFH - NUREMBERG / HALLTEC - KARLSRUHE

Know-how! Which solution is most suited to new builds, renovations, municipal and commercial buildings or industrial applications when it comes to saving money and resources for heating, ventilation or cooling? At the IFH in Nuremberg, trade visitors were able to find out about Hoval's sophisticated system solutions and user-friendly control systems. At the same time, hall ventilation systems were the main event at the Halltec trade fair in Karlsruhe.When it comes to data centre cooling or the efficient use of process air in industrial environments, Hoval's solutions offer not only significant energy savings, but financial ones too.

NEW BUILDING - ITALY

The ground-breaking ceremony for the new Hoval branch in Zanica – in the Italian province of Bergamo – took place in April. This new area will soon offer 700 m² of office space and storage facilities spanning over 1000 m², but the highlight of this minimalistic construction is its climate concept. With energy efficiency class A and sophisticated bioarchitecture and green building principles, the building is a pilot project in its own right.This is due to the fact that the indoor climate control system is based entirely on Hoval technology and even accommodates a training centre with functioning devices. The project emerged from an architecture competition, which stipulated that the building had to reflect the Hoval brand values in terms of both its energy efficiency and overall design. It is scheduled to be completed by end-2014.

MOSTRA CONVEGNO - MAILAND

"Hoval is your energy consultant" was clearly displayed on the trade fair stand at the Mostra Convegno trade fair in Milan. Understanding, learning, discussing and using multimedia to share information between customers and Hoval experts formed the focus of the four-day event. And anyone who couldn't be there in person can still follow all the interviews online at Youtube.com/HovalTV.

DISTRICT HEATING STATIONS FOR LOWER AUSTRIA

EVN Wärme GmbH puts its faith in Hoval technology for the next 2 years. A framework contract has been agreed under the terms of which Hoval will supply transfer stations in the power range from 95 to 1800 kW to EVN Wärme GmbH in three-figure quantities. The stations are being installed in the district heating networks for Baden, Hainburg, Klosterneuburg, Korneuburg, Krems, Mödling, Tulln, Wiener Neustadt and numerous other areas of Lower Austria at the points where the networks interface with the buildings to which power is being supplied.

NEW HOVAL TEAM - DENMARK

On 1 April 2014, Hoval welcomed a new member to its family: the country of Denmark. With its subsidiary in Skanderborg, Hoval now has a direct presence in the Danish market. The Danish government is very much focusing its efforts on renewable energies; its intention is for the heating sector to be CO_2 neutral by the year 2030. This very pioneering approach finds a perfect match in Hoval products and solutions, which make the most efficient use possible of available resources. Heading up the new Hoval team in Denmark are Per Hedegaard (general manager) and Martin Franck (technical director). Welcome to the Hoval family!

REWARDED FOR „GOING THE EXTRA MILE"

The British company Imtech awards its „going the extra mile" prize to companies that are able to do just that where customer service is concerned. Hoval UK proved its capabilities beyond doubt by delivering outstanding levels of customer service to Imtech Meica, enabling the company to adhere to ambitious schedules and complete projects on time. Along with the prize itself, Imtech Meica presented Hoval UK with a cheque for £500. Congratulations!

A TOUR COMBINING THE TECHNICAL AND THE CULINARY

New business premises featuring a Hoval energy centre and a technically advanced training centre are certainly good reason for a celebration. So Hoval Germany did precisely that, inviting customers, the press and partners to take a tour of its new facilities. A very enjoyable day was dedicated to showcasing reference projects and experiencing the product itself, with the experts who were present also being given excellent opportunities for dialogue and exchange. Top chef Alfons Schuhbeck was responsible for the culinary highlights, which included a master class with the man himself – the guests were delighted.

PELLET BOILER FOR SINGLE FAMILY HOMES AND SMALL BUSINESS PREMISES

Hoval UK has entered into a partnership with Devon Eco Energy, an energy company which specialises in renewable energies and now features the Hoval BioLyt with output up to 36 kW in its product portfolio for the Devon and Cornwall region. Hoval UK managing director Adrian Walker believes that the partnership has already received affirmation in the significant levels of interest Hoval's pellet boiler is currently generating amongst private customers. Awareness of the ability of heating with pellets to reduce energy costs and protect the environment is also being promoted with the government's latest incentive scheme for private homes and small business premises. New plans are already afoot to expand the existing successful collaboration with Devon Eco Energy.

Sophisticated!

The term polarises opinions. As a description of a person or a job, “sophisticated” can be viewed either positively or negatively. Depending on your point of view and the context, it calls to mind dimensions such as expectations, requirements, moral values, standards, challenges and expertise. At Hoval, the term is a part of our history and is interpreted in a fairly straightforward and positive way.

For a Hoval employee, sophistication is everything, because each individual aspires to achieve sophistication in their own work, regardless of where they are based and how senior their position. Sometimes sophistication is called for in terms of quality, precision, punctuality or accuracy, and sometimes we require sophisticated and friendly communication or helpfulness in our team. Any activity can be performed with sophistication, as this primarily means delivering above-average, high-quality and exceptional results. Because exceptional results are so recognisable, they set us apart from the crowd and help us leave the competition standing.

Always give a little bit more –

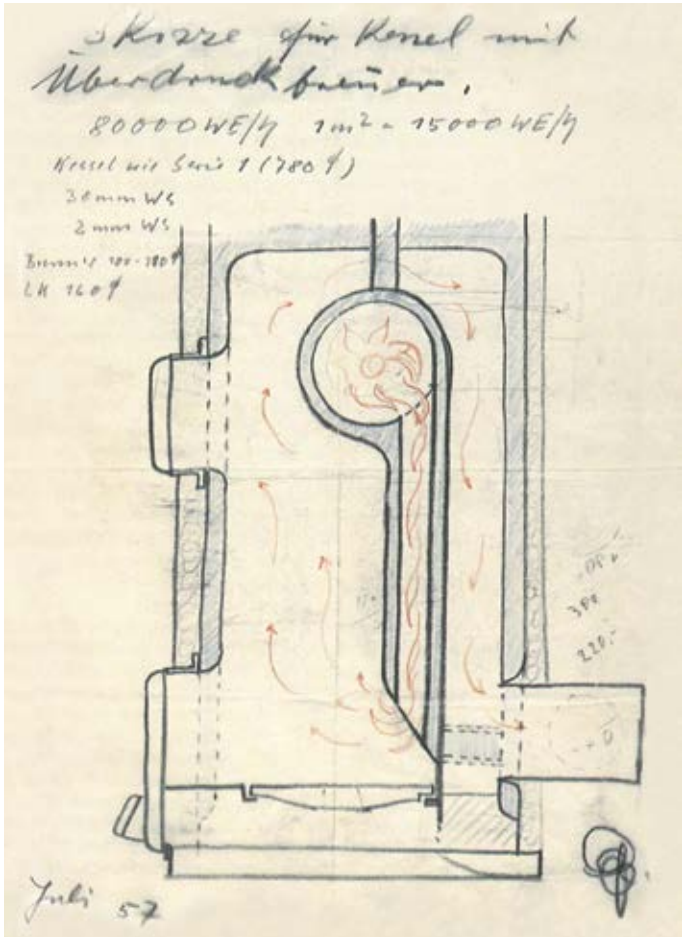
that’s the best way to inspire and enthuse. And this brings us back to the emotion embedded in Hoval’s brand values, which turns customers into fans: Enthusiasm!

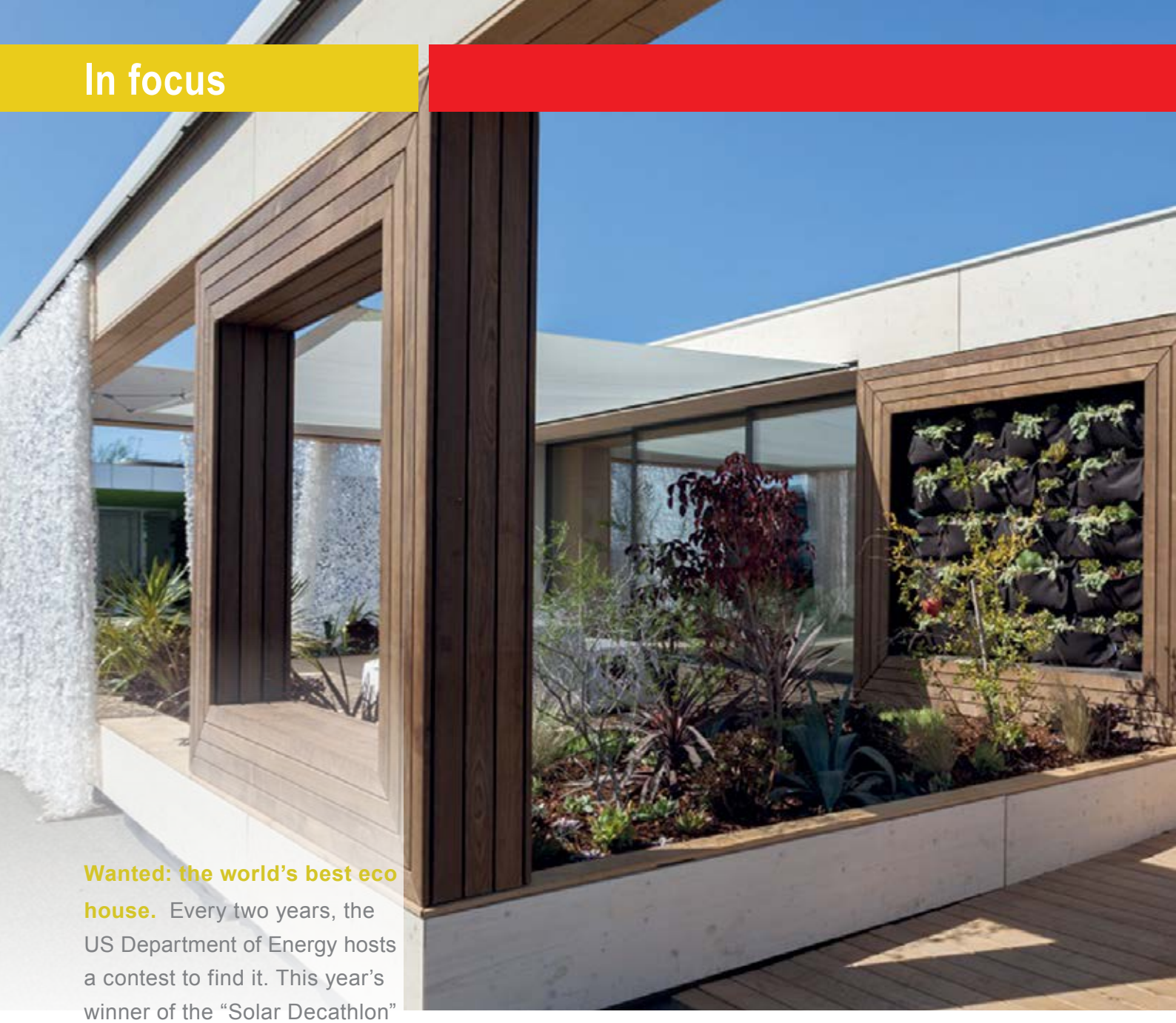
It is a well-recorded fact that the founder of Hoval himself, Gustav Ospelt, made great strides toward sophistication in applications using fire. Or, more precisely, using flames. He is quoted as saying: “I have studied how flames work and how smoke behaves… You can’t bully fire. You have to treat it with kindness.” With this in mind, Hoval engineers and specialists have been studying, conducting research, developing, optimising and inventing for almost 70 years to produce the most sophisticated boilers offering the most efficient combustion. All of this fulfils two requirements: firstly, it allows valuable resources to be used as effectively as possible and therefore protects the environment, and secondly, it helps us save money in heating.

Sophistication is definitely worth it because it offers Hoval customers clear added value. This is evident from every story in this magazine.

“I came up with this drawing for a boiler with a positive pressure burner in July 1957. It turned out to be a crucial sketch for a pioneering new idea: it made it possible to separate the oil-fired furnace from the solid fuels, thereby achieving a higher level of efficiency. The original idea was later implemented in the production process, albeit in a modified form.”

Gustav Ospelt
Hoval founder and heating system pioneer with his sights set high.





Wanted: the world's best eco house. Every two years, the US Department of Energy hosts a contest to find it. This year's winner of the "Solar Decathlon" was a team from the Vienna University of Technology with "Lisi": the cost-effective, solar powered, energy-efficient and attractive house contains Hoval technology.

Of the 160 teams that applied, just 19 were selected by the United States Department of Energy. The teams came from the USA and Canada, including from renowned universities such as Stanford while Europe was represented by the Austrian team from Vienna University of Technology and a team from the Czech Republic.

Key criteria: energy balance

The teams built their houses at a former military air base in Irvine, near Los Angeles. Each team was given one week to complete their house and a jury was responsible for defining the evaluation criteria: in addition to architectural aspects, the building technology, and above all the energy balance were taken into account. Optimal energy production, maximum efficiency, and an excellent design, which is also practical on a day to day

Image top: © LISI – The world's best eco-house with a Hoval solution.

Image left: © LISI – Solar Decathlon Team Austria.

Certified testing station at the Austrian Institute of Technology in Vienna where the Hoval HomeVent® comfort ventilation unit was tested.

basis, had to be combined as perfectly as possible.

The Austrian team took part with “Lisi”. Often heard as an abbreviation for Elizabeth but here it stands for “Living Inspired Sustainable Innovation”.

An optimum indoor climate: we have the figures to prove it

As “Lisi” and the members of the Austrian team also wanted to ensure they scored maximum points for a perfect indoor climate, they chose to install the Hoval HomeVent® comfort installation, which is both economical and efficient and provides the eco house with fresh, clean, pollen-free air.

Constant measurements were made to check whether “Lisi” met the high requirements for a practical and yet environmentally friendly house. The “Comfort Zone” proved to be one of the most challenging criteria: during the entire test period, the temperature had to remain between 22.4°C and 24.4°C – the requirement for an optimum indoor climate – while the humidity had to remain below 60%.

Regulating both temperature and humidity

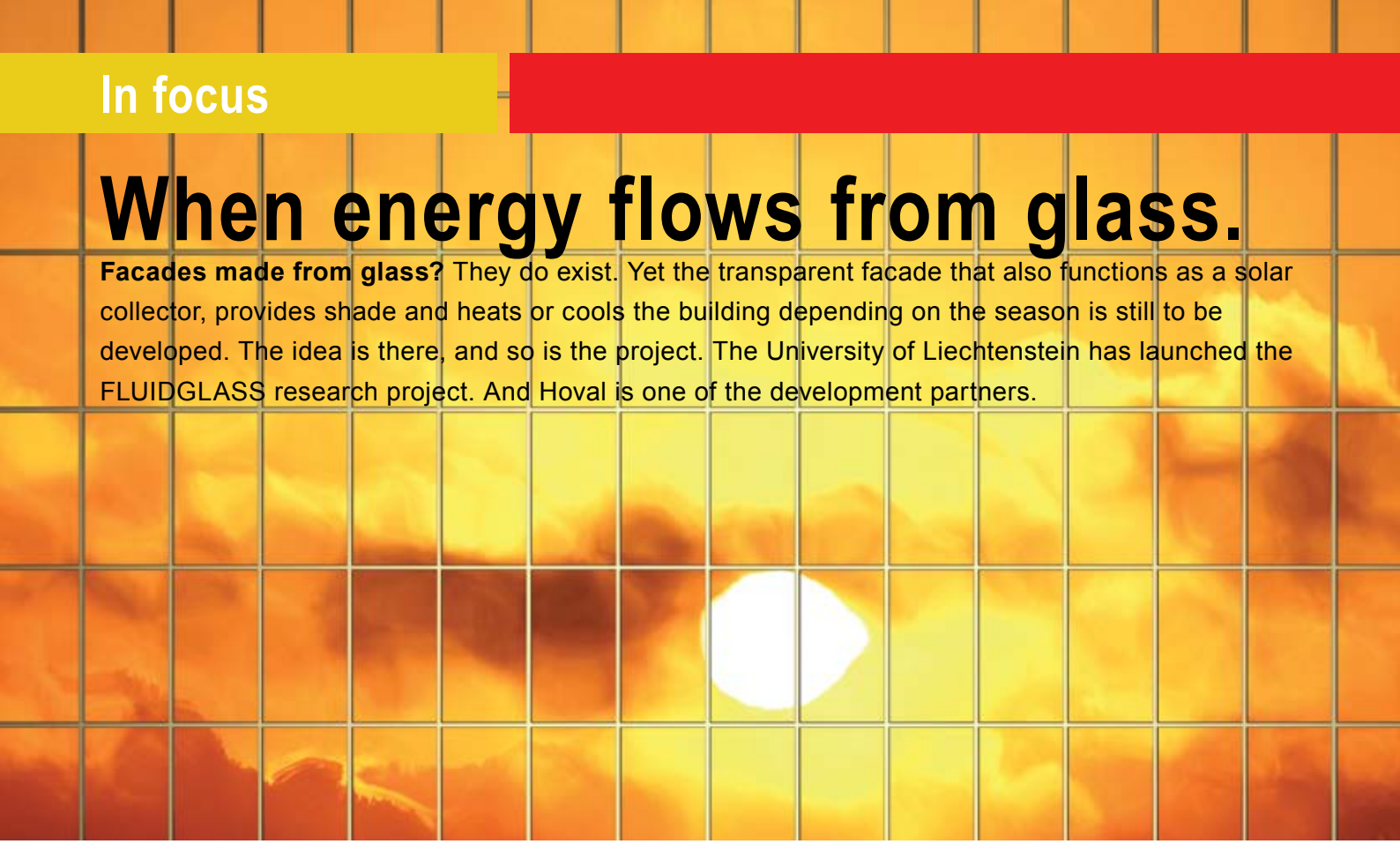
Thanks to clever technology, the Hoval HomeVent® comfort ventilation impressed the jury and helped the Austrian team on their way to victory. Sabrina Novalin, Project Engineer at the Austrian Institute of Technology, sums it up: “We chose a comfort ventilation device from Hoval because they are also perfect for regulating humidity.”

You can find out more about the eco house at www.solardecathlon.at

For further information about Hoval HomeVent® comfort ventilation, see page 22.

When energy flows from glass.

Facades made from glass? They do exist. Yet the transparent facade that also functions as a solar collector, provides shade and heats or cools the building depending on the season is still to be developed. The idea is there, and so is the project. The University of Liechtenstein has launched the FLUIDGLASS research project. And Hoval is one of the development partners.



Markus Telian and Martin Moisi are surrounded by piles of documents, reports, project plans and schedules, quite a few of which have been scribbled all over in tiny, neat handwriting. “We are currently developing a real all-rounder”, declares Markus Telian.

Over the next three and a half years, both men will be working intensively with FLUIDGLASS. Markus Telian is the head of Research and Development for Hoval’s Heating Technology division and Martin Moisi is his assistant. The European Union is supporting the University of Liechtenstein’s ambitious project with a grant of 3.8 million euros. Alongside Hoval, further renowned international companies from Switzerland, Austria, Cyprus and the Czech Republic are also participating in the project. And under the leadership of the University of Liechtenstein, the NTB (Interstate University of Applied Sciences and Technology, Switzerland) and several other universities and public research institutes in Switzerland, Germany and France have also committed to the FLUIDGLASS project.

Water between the glass

Both engineers can already outline how the all-rounder will work. The patent by Dietrich Schwarz, a qualified architect from ETH University, Zurich, member of the Swiss Society of Engineers and Architects and Professor at the Institute of Architecture and Planning at the University of Liechtenstein, can quickly be sketched out: the facade element will be comprised of several panes of glass. On the sunny side of the building, a fluid enriched with particles will circulate between the two outer panes. It will absorb energy and provide shade as and when required, as the particles will determine how much light is to be allowed through the glass.

The glass on the shaded side of the building, which is not expected to need any particles in the fluid, will allow the maximum amount of daylight to enter the interior.

Reduced power demand

The technology will mean that, in summer, the rooms will not have to be completely darkened and lit artificially, as is often the case at present. What’s more, it should reduce the amount of cooling energy required and there should be no need for a cooling unit because the layer of glass inside the room will also be able to be used for cooling in summer. The power demand will certainly be dramatically reduced – by up to 70% according to the project description.

At night, the excess heat from solar filtering and room cooling, which has been temporarily stored in a thermal store, will be dissipated to the surroundings via the outer layer. In winter, the layer inside the room will be used to heat the interior, meaning that radiators should no longer be required.

New key technologies

“The project combines numerous technologies and has just as many interfaces”, states Markus Telian. The new key technologies with the glass elements primarily involve the partners from the universities and institutes conducting basic research and carrying out simulations. Whereas for everything else, existing technologies are being adapted to the new requirements. “We have just defined the requirements for the individual technologies”, reports Martin Moisi.

Hoval – the know-how supplier

The sharing of expertise between the partners is vital for the success of the project. Hoval supplies the know-how

when it comes to the fields of heating and cooling. For other aspects, Hoval has questions for the other project partners where it requires their expertise and know-how.

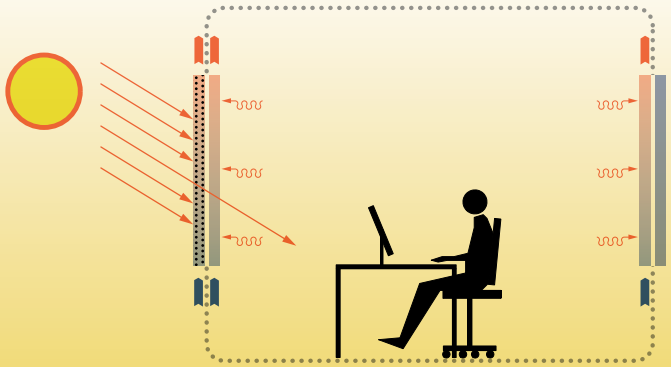
Container-sized prototypes

"Not everything that we need is already available", explains Martin Moisi. This is another area where Hoval will also make a contribution in addition to its research and development work. "The schedule is tight". The project needs to show tangible results by 2015 and 2016. After a laboratory test phase in France, a prototype the size of a shipping container with a heating and cooling system is to be created. The plan is then to test this field-test system for six months in northern Europe and six months in southern Europe.

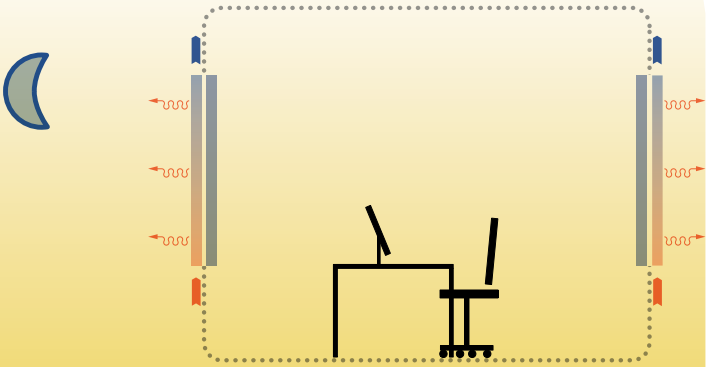
The idea of a glass facade that allows fluid to flow through it involves challenging technical tasks and questions for Hoval – including highly specific requirements in terms of hydraulics, heat transport and storage, and control technology. The challenge is huge: FLUIDGLASS, according to the aim of the project, will combine a solar collector, sun filter, heating system and cooling system all in one product. What's more, it aims to impress from both an aesthetic and architectural perspective, be produced at a relatively low cost and offer a high level of energy efficiency.

"We are currently developing a real all-rounder"

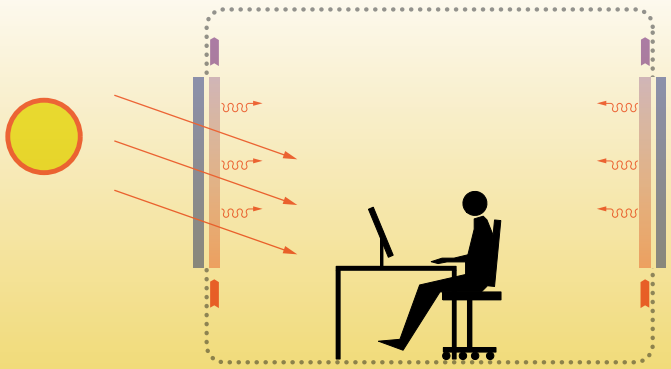
Markus Telian
Head of Research and Development
Heating Technology



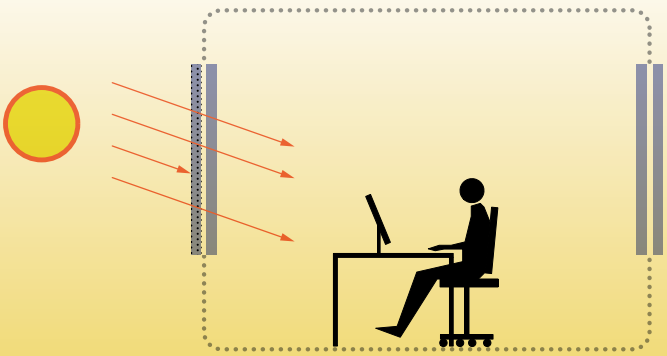
SUMMER – DAYTIME:
Adjustable solar filtering in the outer layer provides the appropriate level of shade to suit your needs for the side facing the sun. As there are no particles in the outer layer on the side facing away from the sun, the maximum amount of sunlight can enter the interior.The interior can be cooled as necessary using the layer inside the room. Surface cooling ensures that maximum comfort is guaranteed.



SUMMER – NIGHT-TIME:
If it has been stored temporarily in a thermal store, it is possible to dissipate excess heat that has built up in the building during the day as a result of room cooling (in the layer inside the room) and indirectly through solar filtering (in the outer layer), via the outer layer into the night sky.In terms of energy efficiency, this method of cooling is better than conventional air-conditioning techniques.Surface cooling even offers significantly greater comfort.



WINTER – DAYTIME:
Maximum insolation is allowed into the building as solar filtering is switched off in the outer layer. The layers inside the room, on the other hand, are used to heat the interior, thereby improving the insolation balance in the room and offering increased comfort.



TRANSITIONAL PERIOD:
In autumn, spring and potentially even on summer mornings and afternoons, it may not be necessary to actively heat a room if solar filtering in the outer layer is minimal or switched off altogether.

Austria. The Bertsch family's enthusiasm for Belaria®.

When a son passes on a piece of advice to his father, there must be something in it. The son tested the new, highly efficient Belaria® compact IR air/water heat pump, then his father installed it. The Bertsch family of Frastanz, Vorarlberg, is so impressed with it that they now want to share this piece of advice with a wider audience.

The old oil heating system is already forgotten. The domestic water heat pump is gone, too. Josef Bertsch has replaced them for the new Hoval Belaria® compact IR air/water heat pump with an integrated buffer storage tank and in monoblock design.

They were particularly impressed with the excellent test results that the Belaria® compact IR achieved in its approval test in the testing centre in nearby Buchs, over the border in Switzerland. The Hoval innovation achieved outstanding results in the tests it underwent to earn the certificate from the European Heat Pump Association (EHPA). At an outside temperature of 2°C and a flow temperature of 35°C, it has a coefficient of performance (COP) of 4.23. "My son works in the testing centre in Buchs", explains Josef Bertsch. "He became aware of the compact air/water heat pump from Hoval because of the excellent results it achieved. That's why for us, there is no longer any question of using a different heat pump for renovating our heating system."

Excellent internal values – with a COP of 4.23 and ultra-quiet operation

The Belaria® compact IR features a special evaporator, a latest-generation fan as well as an electronic expansion valve. The cooling circuit works with the new R 410 A coolant, while the automatic heat pump machine, which is also new and acts as the actual brain of the system, harmonises the individual components to maximum effect. In fact, the automatic machine controls the centrifugal fan, which is already particularly quiet, in such a way that the noise emissions are very low. These internal values help make the Belaria® compact IR one of the most efficient heat pumps currently in the market.

Integrated buffer storage tank

In this system, energy efficiency is the name of the game. To reduce t he need for switching on and off (a process known as clocking), whilst also guaranteeing that the energy required for the defrosting process will always be available, the Belaria® compact IR has an integrated buffer storage tank. To accommodate this, the Hoval developers designed a space-saving double base which also keeps noise emissions low.

Everything in a small space

The Belaria® compact IR clearly proves that superior performance and excellent energy efficiency do not need a great deal of space: in fact, the system only requires a single square metre, something which also makes installation easier. And it's flexible too: the heating flow and return as well as the hose for the condensation process can be positioned on the right or left.

This means that the Bertsch family has gained extra space, which they can put to use for their hobbies. And of course their relatives and acquaintances are also impressed by the new heat pump. ■

The Bertsch family with their new Hoval Belaria® compact IR heat pump with integrated buffer storage tank for indoor installation – a highly efficient system for refurbishments and new buildings alike.

Learn more about the Belaria® air/water heat pump on page 25.

Austria. A simple yet comprehensive solution for indoor climate control and heating.

Can it really be easy to ventilate and heat a production hall covering 2420 m² and a three-storey office block with a floor space of 1260 m²? And economical too? It can. The new build project at 3Con Anlagenbau GmbH in the Austrian town of Ebbs proves it – and provides answers to many more questions besides.

How is the interior of a car actually built? How are the materials cut, the components attached to the dashboards and the plastic parts coated? 3Con Anlagenbau GmbH in Ebbs near Kufstein in the Tyrol region develops and manufactures machines, tools and robots for the global market. These are then used to produce interior car parts.

Recently, the innovative company has spent around 5 million euros building a new production and storage hall as well as a new office block. What's more, the top floor of the office block, which at approximately 20 m covers the entire length of the building, is now the new home of the Company Director. The entire building complex is extremely well insulated, meaning that ventilation is required in all of the rooms.

Everything covered at once

This is where Hoval comes into play: "We can cover everything and offer everything from a single source", replies Markus Schütz. He works at Hoval Österreich's customer centre in Rum as a project manager for both heating and climate technology.

A decentralised climate solution

A central ventilation system was ruled out right from the beginning because the cranes that were to stand and hang in the production hall would not permit any air ducts. Markus Schütz and planner Wolfgang Ferrari from engineering company HFP-Ingenieure therefore opted for a decentralised solution with roof ventilation units, which are much more suitable in terms of energy efficiency: five TopVent® DHV and one RoofVent® LHW units were installed. They recover heat from the room air and are particularly suitable for handling supply and extract air in assembly areas as well as providing recirculation heating and cooling in storage and logistic areas.

Markus Schütz highlights one special feature in particular: "The air in this hall needs to be conveyed over 10 m downwards, but there mustn't be a draught, of course." That's no problem for the Air-Injector, which distributes the air exactly as required – for more details, refer to the information box. The individual operating modes of the roof ventilation units and the Air-Injector setting are controlled by the control panel, which was also provided by Hoval.

A gas condensing boiler too

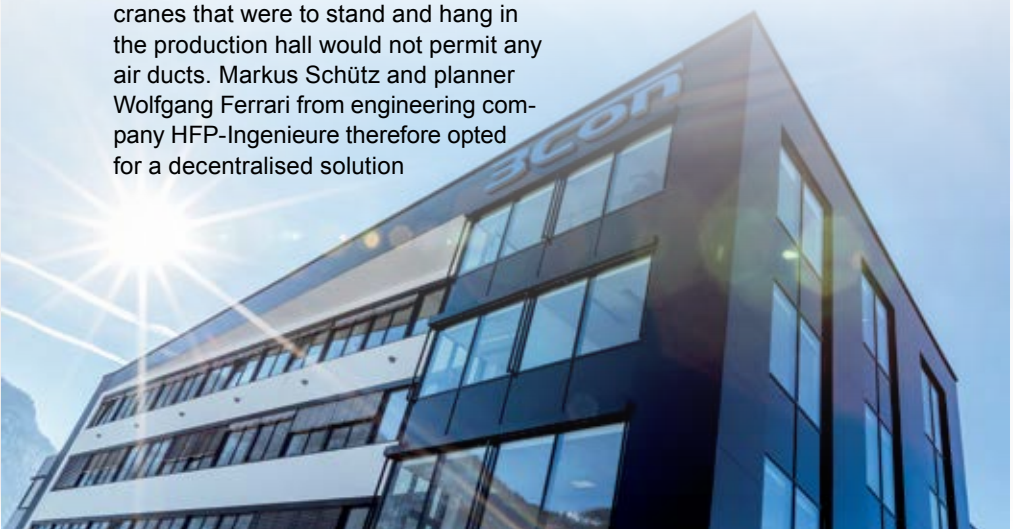
The system is completed with a Hoval UltraGas® (350) condensing boiler, which can be used in modulating operation if required and heats the entire building.

Comfort ventilation for the home

The HomeVent® comfort FR (500) ventilation unit has been installed in the penthouse apartment in the office block. With its nominal air flow rate of up to 500 m³/h, it is perfect for large living spaces. In addition to heat, the comfort ventilation unit also recovers moisture – for more information, see pages 22/23. The installation company Klinger mounted the unit in a central position as planned. Its location means that thanks to low pressure loss, a high output is not required and the unit can operate quietly. ■

"The air in this hall needs to be conveyed over 10 m downwards, but there mustn't be a draught, of course."

Markus Schütz, Hoval customer centre Rum



Fresh air without a draught

The Air-Injector in the TopVent® and RoofVent® roof ventilation units makes the systems extremely efficient compared with other systems. The two Hoval units achieve the same efficiency with around 25 to 30% lower air volumes. Even under changing operating conditions, the Air-Injector always distributes the air in an optimum manner without creating a draught. It adapts the discharge angle automatically depending on the difference in temperature between the supply air and room air and on the volume of air. In addition, less heat is lost: the Air-Injector reduces temperature stratification to 0.15 kelvins for each metre of hall height.

Photo by CuPNet, Peter Mettler

Bicycles have been the main attraction of the Swiss watch-making town Grenchen since the summer 2013: World records will now be set in the new Velodrome Suisse. An arena to showcase maximum performance – in terms of both sport and heating.

She likes to spend her lunch hour "on the track" as she puts it. She switches off, slips her feet onto the pedals of her racing bike, and cycles a few laps around the cycling track which hopes to build a reputation as the fastest in the world.

Michèle Tanner, deputy director of operations at the Velodrome Suisse, is a passionate cyclist. She gives 100% in both her career and her sport. Making the Velodrome Suisse the focus of the cycling world and simultaneously building it into a sustainable economic operation is both exciting and demanding. It is a challenge not just for Michèle Tanner, but also for Peter Wirz (director of operations) and the whole seven-person operations team.

Entrepreneur and cycling enthusiast Andy Rihs already predicts that the cycling track in Grenchen will become the place to set new cycling records. He is the driving force behind the project and chairs the Velodrome Suisse Foundation, which owns all the shares.

A technically attractive functional building

The new national centre for cycling was showcasing maximum performance even before it opened in June 2013. It took just three years for it to be developed from an idea to a completed building. The result is a technically attractive functional building of 70 to 120 metres. It stands on 500 concrete piles and is spanned by timber structures weighing 46 tons.

Olympic standards

At a length of 250 metres, the cycling track corresponds to olympic standards. It is the first category 1 cycling track in Switzerland, and can be used for World Cup and World Championship races. "This means we can play host to the top international competitions," explains Michèle Tanner. "The nearest covered cycling track of this size is in Stuttgart," Peter Schneider adds. He is proud of the velodrome – as are all the inhabitants of Grenchen, which provided the land and is also involved financially in the project. Peter Schneider runs the installation company Schaad + Schneider AG in Grenchen, which – in partnership with Hoval – ensures maximum performance in the building.

Maximum performance in a small space

The central heating system for the track, the 14-room hotel attached to it, the offices, seminar rooms, storerooms and restaurant is located underneath the stands. While up to 1800 spectators take their seats above, the space below them, with sloping walls, is a bit less roomy. But that didn't cause Hoval any problems when installing an EcoTherm EF 200/1000 high-performance boiler with a 200 kW coil and a capacity of 1000 l. It ensures that there is always

enough hot water available for the shower systems used by the athletes.

And everything in line with the Swiss Minergie standard

The velodrome gets its heat from a local heating scheme, which is supplied by the wood-chip heating system of the Solothurn-Grenchen vocational training centre and which is also connected to the school, an industrial building and the swimming pool. The cycling track's central heating system contains an individually designed Hoval TransTherm 200 transfer station and a custom-produced TransTherm Share heat distributor. "The transfer station is designed to cover at least 20% of the total heat demand over the course of a year," explains Michael Ellenberger, who planned and designed the heating system in his role as an employee of Schaad + Schneider AG. This means that the Velodrome Suisse fulfills the Swiss Minergie standard, which states that 20% of heat must be generated from renewable energy sources. The velodrome predominantly uses heat from the local heating system in winter, when the open air pool is closed. The residual heat is supplied by a Hoval UltraGas® (500) condensing boiler, which is used as an emergency and a peak load boiler. The TopTronic® T control unit, which controls and combines the heat from the local heating system and the heat from the condensing boiler was customised by Hoval to meet the individual requirements.

Modules on installation frames

"This means that the Velodrome Suisse has an integral system solution," says Matthias Veyrat, who is the head of the Hoval customer centre in Basel. And yet the system solution has its special features: "The combination of heat from a local heating system and such a high heat demand is not something we see everyday," continues Matthias Veyrat. "The combination of high performance with the limited structural dimensions is also challenging and requires the appropriate sophisticated expertise."

His comment about the pre-assembled nature of the individual units comes into play here: "We supplied the modules on installation frames, which substantially reduced the installation time on site."

Could a new world record be on the horizon?

The heating – and also ventilation – as well as the design of the race track itself play a decisive role in enabling the Velodrome Suisse to host world records: high temperatures reduce wind pressure. Fabian Cancellara, a four-time world champion in individual time trials, praises the velodrome, saying that it is possible to cover a great number of kilometres with very little effort. "There are already rumours," Michèle Tanner reveals, "that he might set a new world hour record in the Velodrome Suisse."

"The combination of heat from a local heating system and such a high heat demand is not something we see everyday,"

Matthias Veyrat,
Head of the Hoval customer centre in Basel

The heating supply for the Velodrome Suisse is taken care of by a Hoval TransTherm 200 transfer station, a custom-produced TransTherm Share heat distributor and a Hoval UltraGas® (500) condensing boiler.

Additional information on the Velodrome Suisse can be found at www.velodromesuisse.ch

Switzerland.

Heat from the tunnels.

The St. Galler Rhein Valley is home to a piece of history from the Second World War, carved deep in the rock: the Magletsch Fort. Today, the fort is open to visitors on guided tours. The Magletsch Artillery Fort Association uses the latest in heating technology - and therefore reduces costs by a quarter.

The upper level of the fighting station is a fortified defence, while the lower contains sleeping and dining quarters including a kitchen. The Magletsch Fort, designed for almost 400 men, even had its own bakery, laundry and a military hospital with 70 beds. Three 200 HP marine diesel motors were used to generate electricity, and two reservoirs stored 1.6 million litres of drinking water.

Those unfamiliar with the 3.8 kilometre maze of tunnels could still get lost today. The former shooting rooms on the upper level are now equipped with the latest technology: a Hoval Belaria® SRM air/water heat pump.

Heat from the tunnels

The Magletsch Artillery Fort Association had been heating the rooms electrically with a 2 kW heating device and recirculating the hot air via existing air ducts using a fan. The electricity costs? 1200 francs per year.

An idea began to develop to heat the rooms with an air/water heat pump and extract the heat needed from the tunnels. The old heating devices installed in the forties when the fort was constructed were still available and could be connected to the heat pump and reactivated.

No sooner had the idea arisen than it was done. The external unit of the heat pump and alongside it the internal unit with heat exchanger, circulating pump and regulator have been installed in front of the rooms.The evaporator of the external unit extracts the heat from the air in the tunnels which is at a temperature of around 12°C. A temperature drop in the tunnels cannot be felt or measured and the fan of the external unit is barely audible.

Deeper humidity

As a positive side effect, this has also considerably reduced the humidity in the tun-nels, along with the electricity costs, which should now fall from 1200 to 300 francs per year. The 4.6 kW heating output of the heat pump would even be enough to operate a hot water boiler. ■

Switzerland.

District heating comes to the convent.

The sisters of the Kloster Namen Jesu convent in Solothurn have total faith in district heating. Although the system is of a modular design, it meets both the requirements of the heat supplier and the needs of the convent.

A place of serene silence and concentrated meditation: going on a retreat to the Namen Jesu convent in Solothurn for a few days gives you the opportunity to make peace with yourself and the world. The nuns who pray there, take care of the garden and bake communion wafers for some 200 Catholic parishes, follow the rules of St. Francis of Assisi and St. Clare of Assisi, a close associate of Francis.

The oldest part of the convent dates back to 1616. The convent church was built shortly after. The most recent – and also smallest – part of the convent, the bakery for the communion wafers, was built in 1937.

400 years later

Enter the boiler room of the convent and leap forward almost 400 years: a Hoval TransTherm PRO (250) transfer station provides the heat required to heat the rooms. The energy comes from the Emmenspitz waste incineration plant in nearby Zuchwil. The Capuchin sisters, always thinking of the environment, have saved between 30,000 and 35,000 litres of heating oil every year since they were connected to district heating network, which has significantly reduced their CO_2 emissions.

Not a centimetre to spare

The space in the central heating system is very tight: “We took advantage of every last centimetre,” says Matthias Veyrat, who is the head of the Hoval customer centre in Basel. The hydraulic lines are routed in such a small space that it was not possible to place the pumps next to each other at the same height and had to be staggered instead.

Tailor-made primary module

Hoval tailored the primary circuit of the system precisely to the requirements of the public company “Regio Energie Solothurn”, which doesn’t only operate the district heating network and supply the energy, but also serves as both contractor and installation engineer. The primary module is equipped with a tube bundle heat exchanger as per the specifications from “Regio Energie Solothurn” and the primary valve, also supplied by Hoval, is free from non-ferrous metal. This means that the return temperature of the specially treated water cannot exceed the specified maximum value of 55°C. The insulation – with a steel jacket and mineral wool – is also in accordance with the customer’s specifications.

Centralised control technology

The secondary circuit operates a substation 65 metres away, in the former vestry of the convent church, via a flow and return. The main and substations are also connected electrically so that they can be controlled with centralised control technology.

Hoval installs strainers in its transfer stations as standard. The balancing valve, which allows the flow rates to be controlled individually, is also installed as standard. In accordance with the customer’s requirements, Hoval also integrated an emergency connector, which the operator can use to connect an oil heating system in the event of an absolute emergency.

Short installation times

“We delivered the entire system, complete with TransTherm Share, in pre-wired, ready-to-connect modules,” explains Matthias Veyrat. “Pumps, drives, sensors – everything was ready to go and had already been checked at the plant.” Each of the three modules – one for the primary circuit and two for the secondary circuit – came on installation frames, which made the installation time even shorter. ■

The space in the central heating system is very tight: “We took advantage of every last centimetre.”

Matthias Veyrat,
Head of the Hoval customer centre in Basel

Switzerland.

A big boiler for backup.

To move a 20 MW oil-fired boiler with a transport weight of 38 tonnes from its manufacturing location in Austria to Switzerland, requires a lorry, even streets have to be blocked off. This colossal boiler is now used at the waste incineration plant in Buchs, St. Gallen as an emergency boiler.

A major effort for everyone involved. The 62.5 t colossus was delivered to its destination by crane.

It was a cold winter's night as the articulated lorry and its low loader set off from Marchtrenk, Austria. A journey of more than 500 kilometres lay ahead, a well-planned route, passing through Austria, Germany, Liechtenstein and Switzerland. The excess width of the transporter with a total weight of 95 tonnes meant that some sections of road needed to be blocked off. A police escort was present for the entire journey in all four countries.

As the incredible transport arrived in Buchs in the St. Gallen Rhine Valley the following morning, it was eagerly awaited at the premises of the waste incinerator plant. One of those awaiting its arrival was Jürg Bossart, Deputy Head of the Heating Division at the Hälg Building Services Group. He had planned the emergency boiler and managed the project. After all the design and planning work, the arrival of the three-pass boiler was a real highlight for him.

Capacity: 24.5 m³

At 7.45 metres long, 3.30 metres wide and with an output of 20 MW, the oil-fired boiler doubles the capacity of the emergency heating system to 40 MW. A 20 MW boiler has been in place since the first upgrade in 2008. The transport weight of the new boiler will increase from 38 t to an operating weight of 62.5 t. It's tank capacity is 24.5 m³.

Hot water for the district heating network

The emergency heating system for the Buchs waste incineration plant heats the hot water for the district heating network in the event of an emergency. During normal operation, the waste incineration plant generates district heating water as well as steam and electricity by incinerating the waste. A total of 42 municipalities from Lake Constance, the Rhein Valley and Liechtenstein to the southern border of the canton of St. Gallen belong to The Association for Waste Disposal, which is run by the waste incineration plant.

Securing supply through investment

The Association for Waste Disposal made a multi-million investment in the construction of the emergency heating system, in order to safeguard supply. The initial supply of extra light fuel oil is protected in two warehouses. At maximum power, the two boilers burn around 4 m³ of oil per hour. This corresponds to two full lorry loads of oil every 10 hours. In the event of a power failure, generators would be used to supply electricity. According to calculations by Jürg Bossart up to 350 kW of power is required per boiler for the ancillary equipment. The emergency heating system has to be manually started on site and is integrated into the control system for further operation.

The colossal boiler

Three-pass boiler from Hoval, equipped with burner technology from Saacke.

Length: 7,45 m
Width: 3,30 m
Height: 3,65 m
Operating weight: 62,5 t
Capacity: 24,5 m³
Maximum output: 20'000 kW
Consumption at maximum power: 2 m³/h

Combustion air fan: 90 kW
Recirculation fan: 37 kW

Flow temperature: 100° C
Return temperature: 60° C

Germany.

The sun means UltraSol and a complete solar system.

When structural engineering and heating technology come together, solar energy can benefit from radiant opportunities.

Hoval and the Frankfurt-based construction company f.m.a. Bau are leading the way along with the Hattersheim housing association: 16 Hoval UltraSol thermal solar collectors make up a complete system.

A decision with consequences: Construction company f.m.a. Bau GmbH in Frankfurt decided a year ago to exclusively use Hoval components for generating energy and domestic hot water. The people in charge at f.m.a. know their stuff, they are specialists in the energy-efficient restoration of buildings, in new builds that don't require a lot of energy and in passive houses.

A case of excellent timing: A few months after f.m.a. Bau made this decision, Hoval launched its own thermal solar collectors, which it had developed in-house: the Hoval UltraSol, with an efficiency level of 0.851, is designed with a construction height of just 54 mm and weighs no more than 39 kg. At the same time, the UltraSol is very strong and completely airtight – thanks to its seamless die-cast aluminium frame. It can be integrated and set up in a pitched roof and is also suitable for use as a free-standing collector for flat roofs.

State-of-the-art technology alongside history

The result of this decision and the timing can be seen in the small town of Hattersheim, which lies along the River Main from Frankfurt. The Hattersheimer Wohnungsbaugesellschaft mbH (Hattersheim housing association) was founded after the Second World War and now owns more than 1700 homes and has had three blocks of flats purpose built. They are located right near the historical mill buildings which gave the Mühlenviertel (literally the "mill quarter") its name and contain a total of 23 two and three-bedroom flats suitable for older people. 16 Hoval UltraSol collectors collect the heat to heat the rooms and provide hot water.

Providing a continuous supply of heat

In case solar energy is ever unable to fully supply the building's needs, there is a Hoval UltraGas® gas condensing boiler with an output of 125 kW which can be switched on as required to meet the heat demand. The two Hoval EnerVal (1500) buffer storage tanks complete the system. They separate the water into layers by temperature with the integrated stratified charging module and thereby provide intermediate storage for surplus energy until the heat is required in the three buildings.

Learn more about the Hoval UltraSol solar collector:

The Hoval UltraSol thermal solar collector stands out in terms of both its performance and its appearance: The Hoval aluFrame aluminium profile is barely visible thanks to its unrivalled slimline design.

16 Hoval UltraSol thermal collectors adorn the roof of the two and three-bedroom flats in the historical mill building in Hattersheim.

Germany.

Hoval treks the rainforest.

Poison dart frogs, chameleons and tropical plants: Small and not-so-small guests alike can now visit 30 square metres of rainforest at the Children's Museum in Nuremberg. Hoval provides support for the rainforest house and the HomeVent® comfort FR (250) ventilation system can also handle tropical humid air.

Anette Beyer from the rainforest house is delighted with the donation awarded by Hoval, which was presented by Peter Bernhard, Regional Manager (Central) and Frank Friedrich, Field Sales.

The harsh climate of the Alps provides both the benchmark and the high demands: it's what Hoval's heating and indoor climate control solutions are geared towards. However, the tropical rainforests are important for the climate all around the world: they stabilise it and regulate the global water supply. The rainforest is the earth's green lungs; it functions as a super-cooling system for the atmosphere. So it's very alarming that every year approximately 13 million hectares of rainforest are destroyed forever.

Children, young people – and adults too – can learn about these relationships in the rainforest house at the Children's Museum in Nuremberg. The exhibit contains hands-on activities – mainly intended for the younger guests – with the motto "Save the rainforest!" The Children's Museum hopes the project will encourage reflection, evoke respect for the rainforest and further calls for its preservation.

Taking responsibility for the environment is also something Hoval aspires to – and its employees take it very seriously: Hoval Deutschland therefore made a donation to support the creation of the rainforest house. As Hoval employees pride themselves on all types of climate awareness, they also knew the best way to ventilate the rainforest house: with a HomeVent® RS (250), which is now known as a HomeVent® comfort FR (250). The system allows infinitely variable control of the heat and humidity.

Hungary.

Heating, cooling and ventilating with the master of energy saving.

MTD, the "Modern Tool and Die Company", has built a new press plant near Lake Balaton.

They were looking for an innovative solution as an alternative to the standard direct gas-fired devices for the new halls. The planner of the environmentally-conscious company found exactly what they were looking for in Hoval.

The installation of 13 Hoval RoofVent® twin pump roof ventilation units has significant benefits for the MTD system operator. Not only with regards to operation, but also in terms of the efficiency and environmentally-friendly nature of the products, as the device elements only use renewable energy.

RoofVent® twin pump – a system with impressive credentials

The system features an air flow rate of 7000 m³/h and consists of a compact ventilation device with high-performance plate heat exchanger as well as a reversible heat pump for heating and cooling. When it comes to meeting the requirements of the German Renewable Energy Heat Act, this combination proves to be twice as advantageous. This act stipulates that a minimum of 50% regenerative energy must be used for building heating and cooling. In this case, this regenerative energy is

supplied by the heat pump. According to the requirements of the heat act, however, only the heating operation may be taken into account, not the operation as a cooling unit. In addition, the heat recovery performance of the unit can be considered part of the alternative energy, as an alternative measure. These requirements are met by the dry heat recovery efficiency of 75% and the performance figure of 13.7, which clearly exceed the required minimum values of 70% and 10 respectively. Depending on the temperature conditions, the recovered power can be up to 78 kW.

The reversible heat pump efficiently uses the air buffer storage tank with a COP value of 4.09 for heating and an EER value of 3.77 for cooling. The RoofVent® twin pump units are controlled with a DigiNet system which was specially developed for the needs of operators of decentralised systems. Maximum satisfaction guaranteed.

Installation of the Hoval RoofVent® twin pump unit on the roof at MTD Hungária Kft.

Hoval RoofVent® twin	
Air flow rate	7100 m^3/h
Heat output	32 - 134 kW
Cooling capacity	28 - 82 kW
Temperature efficiency	84%

United Kingdom.

Efficient hospital heating.

Rampton Hospital near Retford in the county of Nottinghamshire is to get a new energy centre this year. The new system is expected to deliver annual savings of 112,000 British pounds. This equates to around 165,000 Swiss francs or 135,000 euros. Hoval equipment covers peak loads.

A hospital doesn't just need a continual supply of heat, it also demands total reliability. Rampton Hospital requires a very high level of performance: the site has around 1900 employees who take care of mentally ill patients. The hospital is one of three high-security hospitals in England.

Three Hoval SR-Plus steel boilers…

Three Hoval SR-Plus steel boilers, each with an output of 1500 kW, have been specified for use in the new energy centre, which international company Cofely will construct this year and then be responsible for its operation. The burners will work with both gas and oil to ensure continuous provision in the event that the gas supply is interrupted. The use of a buffer storage tank with a capacity of 30,000 litres is also envisaged.

Cofely is also installing a combined heat and power plant with a biomass boiler in the energy centre. The current hot water system, based on high temperatures of 115°C, is to make way for a local heating system with low temperatures of 90°C. This will increase both efficiency and safety.

… complete the combined heat and power plant

The three Hoval boilers, which like the buffer storage tank are to be manufactured in Lincoln in the United Kingdom, complete the combined heat and power plant and will cover peak loads. The buffer storage tank will ensure that enough hot water will be available at all times. This will enable the hospital to efficiently tap into the different heat sources – and save a six-figure sum every year. Paul Rawson, Energy Services Director for Cofely in the United Kingdom commented: "The new energy centre will provide Rampton Hospital with a more efficient, reliable and responsive energy infrastructure that will deliver guaranteed savings with a fast return on investment."

Hoval high-performance boilers provide Rampton Hospital with a reliable supply of heat and hot water.

Hoval HomeVent® comfort FR (300):

Hoval HomeVent® comfort FRS (180): powerful things come in small packages

Not only do the ventilation experts at Hoval thrive on challenge, they can also achieve the seemingly impossible: they have man-aged to pack the power of the HomeVent® RS-180, now renamed HomeVent® comfort FR (180), into a smaller housing. The nomi-nal air volume of 180 m^3/h has remained the same, but the FRS (180) model has shrunk from 1500 mm to just 1100 mm tall. This means it is a whole 40 cm smaller and this “reduction” will allow it to be used in flats to constantly refresh air in a controlled manner and regulate humidity.
Efficient and energy saving.

a huge breath of fresh air.

Fresh air does you good – but only if you can control it to meet your needs. Hoval has extended its successful HomeVent® range for domestic ventilation with a real winner: the HomeVent® comfort FR (300) creates a nominal air volume of up to 300 m^3/h. An all-rounder which offers flexible mounting options.

As the first device in the product range, the HomeVent® RS-250 is already well established. It has proven its worth over a number of years, predominantly in single family homes and is now been renamed as the HomeVent® comfort FR (250). In 2008, Hoval launched the smaller RS-180 model for controlled ventilation in flats. This is now called the HomeVent® comfort FR (180) and is available as a “mini version” with smaller dimensions. For larger properties, such as villas, commercial premises and rooms subject to heavy traffic, including classrooms, Hoval offers the HomeVent® RS-500, now called the HomeVent® comfort FR (500).

Hoval has also now further developed its innovative HomeVent® technology with heat and humidity recovery. With a nominal air volume of up to 300 m^3/h, the latest model, the FR (300), is ideal for single family homes with larger living spaces. It recovers energy even more efficiently. EC DC motors result in a high level of efficiency while saving energy. The HomeVent® FR (300) has an integrated fresh air filter, as does the FR (500), which saves space and makes mounting easier.

The HomeVent® comfort FR (300) with a nominal air flow rate of up to 300 m^3/h.

No condensate, no ice, no drain

The development of the HomeVent® comfort ventilation systems sets standards in the industry. Hoval has skillfully managed to avoid the disadvantages that plague existing competitor devices right from the outset. Hoval focused specifically on the rotary heat exchangers with enthalpy recovery. As the moisture is also extracted from the extract air along with the heat, neither condensate nor ice can arise. Installation costs are kept down as a condensate drain is not required and any installation location can be selected. The device has access panels on both sides which allows for different mounting methods and makes servicing easier.

No need for a humidifier

The filtered and therefore pollen-free fresh air can be warmed and humidified as required using the energy from the extract air. The result? Clean, pleasant air in enclosed spaces. The heat and humidity level can be infinitely adjusted via the rotation speed of the sorption wheel. All of which makes an additional humidifier unnecessary. As it’s also possible to recover the heat energy from the moisture, the HomeVent® comfort ventilation can supply up to 130% of the required heat energy. An incredible value, especially when compared to conventional devices which reach a maximum of 90%.

It goes without saying that the HomeVent® comfort FR (300) sits in the highest energy efficiency class. And thanks to its first-class sound insulation, it is also one of the quietest devices in its performance class. ■

With and without ventilation - what a difference.

A first in Upper Austria: the Pülzl family have recently moved into their new home where they have started to use the first HomeVent® comfort FR (300). The family are impressed by the air quality and energy efficiency. The comfort ventilation device uses approximately only half as much electricity as other devices. It has a compact design and performs extremely well throughout the entire 230 m² living space.

You only switched on your comfort ventilation a month after you moved into your new home. What are your first impressions of the HomeVent® comfort FR (300)?
We can really tell the difference between having the ventilation on and it being off. It's incredible. Without the ventilation, the air was terrible. Whenever we came home, it stunk of parquet adhesive, varnish, paint, new furniture, and yesterday's dinner. The air was humid and it felt unpleasant. Not to mention the air in the bedroom. This is an air-tight new build!

Now that the ventilation is switched on, we only notice one thing when we come home: it's always pleasant inside, even when it's cold out. The air and indoor temperature are perfect. In the bathroom, the window and the mirror no longer fog up, which is great, and the floor tiles dry in no time. There's no risk of any mould. Even in the bedrooms, the difference in the air quality is huge. We sleep a lot better.

How long did it take and much did it cost to install?
It didn't take long for the installer to fit it. The cost was lower than expected.

Do you ever feel any draughts?
The Hoval experts planned it really well - they positioned the air outlets so that there are no draughts. The only thing we notice about the ventilation is how good the air is. The planner from Hoval explained to us that the supply air slowly flows in via the floor grills. So we don't feel it at all.

What advice would you give to a friend who wants to build a house?
Nowadays, houses are built in a way that makes them very air-tight. For this reason, and as we've had such a good experience with ours, we would advise our friends to invest in comfort ventilation. If we were to build a house again, then we would opt for comfort ventilation again. The HomeVent comfort FR (300) also saves us a lot of money as it uses approximately half the amount of electricity in comparison to other devices.

Home and comfort ventilation make the perfect team – both with the very latest technology.

How do you heat your new home?
We could not install a flat plate collector for a brine/water heat pump due to the pronounced hillside location and the stone in the ground. The ideal alternative was the Belaria® SRM air/water heat pump.

Did the Hoval complete solution play a role in your decision?
Yes, definitely. We've also had a Hoval storage tank ESR for 400 l of tap water installed. Everything from a single source and unrivalled customer service for the entire heating and ventilation system - this is why customers choose Hoval. ■

Incredibly efficient with a COP of 4.62 – and yet extremely quiet.

Hoval has launched an air/water heat pump for outdoor use, which scores on three fronts: it boasts above-average efficiency, it's quiet and it won't break the bank.

The new Hoval Belaria® twin A supplies both new and existing buildings with heat, while the Hoval Belaria® twin AR also offers a cooling function.

The Hoval Belaria® twin A supplies both new and old buildings with heat, while the Belaria® twin AR is – as indicated by the R – designed for reversible operation - it can also be used for cooling. The air/water heat pump has a two-stage design with two compressors. At an outside temperature of 2°C and with a heating flow of 35°C, single-stage operation results in an efficiency or Coefficient of Performance (COP) of 4.62. "These are values that could previously only be achieved with brine/water heat pumps", enthuses Martin Woerz, Head of Product Management for Heat Pumps and Storage Tanks at Hoval. The usual COP for air/water heat pumps lies between 3.3 and 3.6. Even at full load, when both com-pressors are in operation, the pump still achieves a COP of 4.05 under the same temperature conditions, he adds.

Large evaporator

As the Belaria® twin A or AR are intended for outdoor operation, it's important that noise is kept to a minimum. "Firstly", says Martin Woerz, "we work intensively with one of the largest fan manufacturers in Europe. We benefit from their specialist knowledge and receive first-class products. And secondly, we have made the evaporator as large as possible. Both of these approaches have allowed us to create a low-noise air/water heat pump for outdoor use."

Individual speeds of rotation

Thanks to the newly developed automatic heat pump device, the fan's speed of rota-tion can be individually set according to the time of day and your needs. This improves the already low noise performance even more. However, Martin Woerz urges caution: "This does not remove the need for a design that meets the requirements of the Swiss noise protection regulations, for example."

Around two years ago, Hoval took the nec-essary steps to drive heat pump technology forward by establishing their own test benches for air/water and brine/water heat pumps. These are among the largest in Europe and have rapidly accelerated the development process. According to Martin Woerz, these in-house testing facilities have been a key step on the road to launching the Belaria® twin A or AR. The Belaria® twin A and the Belaria® twin AR are currently available in three performance classes: 17, 24 and 32 kW. The next stage in their development has already begun: Hoval plans to widen the performance range to 60 kW. ■

How does a heat pump work? Access the Hoval film here:

The confident pioneer

It was one of the first to back air/water heat pumps in Switzerland: "At this latitude we enjoy a relatively mild climate, so why not utilise the heat from the air" - says Rolf Junkert with convincing logic.

As the former managing director and partner of Roth Bautechnik AG in St. Gallen, Austria, he knows all about the excellent insulation values of the houses the company builds. Which is why Roth Bautechnik AG equips all of their houses with an air/water heat pump.

Rolf Junkert retired at the start of the year – and still favours air/water heat pumps: "They are relatively low priced, don't need a bore-hole, and the new models are incredibly quiet."

Now he's become something of a pioneer: The first Belaria® twin AR (17), which Hoval delivered, heats his home in Wienacht-Tobel in the Swiss canton of Appenzell Ausserrho-den along with his hot water.

The oil-fired boiler, which he used previ-ously, is still in the cellar, but the oil tank is pretty much empty. He simply didn't want to be dependent on oil any more. In the living room, he has a tile stove which provides additional heat on cold days to keep it cosy. This is connected to the storage tank with a water coil and supports the heat pump when temperatures plummet. Solar collectors are also fitted to the roof and connected to stor-age tank circuit. Rolf Junkert anticipates that the Belaria® twin AR (17) will cost only half or even just a third of the amount it cost him to run his oil-fired heating.

Hoval UltraGas® (100): more performance but just as compact.

From 90 to 100. The previous UltraGas® (90) condensing boiler has seen the addition of an extra 10 kW. A larger heating surface in the aluFer® heat exchanger increases the total output to 100 kW. Yet from the outside, the boiler is just as compact as before.

How high is the heat demand for a apartment block? It is impossible to work it out exactly in advance. But planners and installers will have no problem finding the right size boiler because Hoval now offers an even better range of boiler outputs with the new UltraGas® (100). The UltraGas® (90) will be discontinued to be replaced with a boiler containing an extra 10 kW, while retaining the same compact design.

For renovations of old buildings

Thanks to small width, height and depth dimensions, the UltraGas® (100) is suitable for both new builds and renovation projects alike. It can be positioned directly on the wall without the need for clearance, as the flue gas connection is located at the top. This easily saves up to 50 cm on the installation depth usually required.

In combination with UltraSol

For new builds in particular, we recommend combining the boiler with the new Hoval UltraSol solar thermal collector. It provides hot water and can also supply heat for the rooms. The collector stands out thanks to its optimum level of quality, maximum efficiency and how easy it is to install. Marking a first for the industry, the product also comes with an ultra-light-weight diecast aluminium frame whose seamless design keeps the collectors firmly in place and enhances their resilience. To increase its efficiency, the Hoval UltraSol collector features a special antireflective coating applied to the solar glass, which blends discreetly into the roof.

Wide modulation range

The higher output of the UltraGas® (100) increases the output of a five-boiler cascade, for instance, from 450 to 500 kW. This also extends the modulation range of this maximum-sized cascade and means that the safety level can be classified as being extremely high.

Nowadays, it is not generally the room heat demand but the hot water demand instead that determines the approximate output required. On the one hand, new builds are better insulated, but on the other, increased hygiene requirements have doubled the demand for hot water from 15% of the total heat previously to a current figure of up to 30%. ■

Same visual appearance with even more performance: the new Hoval UltraGas® (100) has seen the addition of an extra 10 kW.

The two main advantages

Planners and installers are well aware of this otherwise unique advantage: the Hoval UltraGas® and UltraOil® condensing boilers both generally have large water capacities. They work like large buffer storage tanks and are therefore characterised by low water velocities. For this reason, the water in the boiler can be stratified in an optimum manner – the hot water at the top, the cold water at the bottom, and the boiler base remains cold. This ensures ideal conditions for condensation and guarantees that the maximum possible level of efficiency is always achieved.

The condensing boilers are fitted with two returns: the high temperature return at the top, the low temperature return at the bottom. This allows for intelligent hydraulic integration: the mixer circuit with the lower return temperature or, in systems with more than two mixer circuits, the one with the lowest return temperature, is routed to the low temperature return. This increases the condensation rate and therefore also the efficiency of the condensing technology. The efficiency of the system increases by around 6%, consumption and costs for the system operator are reduced and the environment is protected.

This story of the mosaic.

The stone window designed by canon Anton Frommelt had adorned the façade of the Hoval building in Vaduz since 1957. When the staff restaurant was renovated in 2010, the window was preserved and brought back to life in the new reception area. And it's still as radiant as ever...

I feel a strong affinity towards creative architecture – I suppose it's in my nature.After all, I did work as an ornamental metalsmith in the past and I believe this has had a lasting influence. I am attracted to beautiful things and like to surround myself with them: in 1957, I decided I wanted to add something artistic to the canteen at the Hoval factory in Neugut. This was a space that was supposed to be as appealing and pleasant as possible and I wanted the people who ate and spent time there to benefit from something beautiful. I commissioned Father Frommelt – as he was known then – who I had been in contact with for years. In 1957, he created a stunning glass window with a beautiful image. I gave him free rein as far as the design was concerned as long as it made some reference to the activities of the people who would see it on a daily basis.

An extract from the book
"Gustav Ospelt - 80 erfüllte Jahre".

The centre of the tripartite stone mosaic depicts the forge, the anvil, the fire, the ring and two men; one forging and while the other holds the ring. One side displays a mother and child with flowers – a symbol for life; the other side shows a woman bringing the workers something to drink.

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