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STATE AWARD 2017  
FOR ARCHITECTURE  
AND SUSTAINABILITY

Implementation:



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# SUSTAINABLE ARCHITECTURE – A STORY OF SUCCESS AND A STRATEGY FOR THE FUTURE

**Sustainable construction to high standards plays a decisive part in climate protection AND contributes significantly to improving the culture of building in Austria. The State Award for Architecture and Sustainability – advertised for the fifth time since 2006 – connects the issue of energy-efficient, ecological construction with the world of architecture in a most impressive way. The six short-listed projects and the five recipients of the State Award in 2017 demonstrate once again that high-class architecture and implementing the energy transition in the building sector are fully compatible.**

With the Paris Agreement of 2015, governments around the world committed themselves for the first time to limiting the global warming caused by greenhouse gases to significantly less than 2 °C – if possible, to 1.5 °C – in relation to pre-industrial times. Each government has undertaken to contribute to the joint struggle against global warming; this aim is effectively a remit to decarbonise worldwide. The building sector is one of the key areas as regards achieving this climate goal, as space heating and cooling, and supplying hot water, consume energy on a large scale. The quality of the buildings which we erect or renovate today makes a dramatic difference to tomorrow's greenhouse gas emissions, so constructing and renovating buildings to the highest possible standard is urgently necessary. The quality of architecture and the care of our architectural heritage are part and parcel of improving and maintaining the Austrian culture of building.

With the “Guidelines for a culture of building” published in 2017, the Republic is committed to safeguarding and further developing the quality of planning and construction in Austria. The projects honoured with the State Award for Architecture and Sustainability reveal how both dimensions – architectural quality and quality with respect to sustainability – can be given a common denominator.

The Austrian Federal Ministry for Agriculture, Forestry, Environment and Water Management has for years now promoted the accelerated market penetration of sustainable building technologies by means of the climate protection initiative klimaaktiv and funding activities. With the State Award for Architecture and Sustainability – the Republic of Austria's highest award for sustainable construction – the Environment Ministry honours outstanding architectural projects, encourages innovators to go on developing, and motivates others to imitate them.



*neunerhaus  
Hagenmüllergasse,  
Vienna*



*Energy-surplus office building and  
cultural power station oh456,  
Thalgau, Salzburg*



*Montforthaus Feldkirch,  
Vorarlberg*



*Renovation council offices  
in Zwischenwasser,  
Muntlix, Vorarlberg*



*Primary school in Edlach,  
Dornbirn, Vorarlberg*

# ACHIEVING GOALS TOGETHER

Advertised for the fifth time since 2006, the State Award for Architecture and Sustainability is among the most important awards in both fields. The jury is made up of architects and experts on energy-efficient and ecological construction in equal proportions. The architect Professor Roland Gnaiger, co-ordinator of the State Award and chair of the jury, and Robert Lechner, head of the Austrian Institute for Ecology, on successes and shared concerns.

**Since the first State Award for Architecture and Sustainability, more than ten years have passed. What has been achieved since then?**

**Roland Gnaiger:** The State Award's main achievement is to have established the issue of sustainability in the realm of architecture. From the very start, the award-winners were top-notch both in architectural terms and as regards sustainability. But in earlier years, the gap between the very good projects and the bulk of the submissions was much wider than today. The quality of the field has improved considerably.

**Robert Lechner:** In the meantime the Paris Climate Agreement has been adopted, making the environmental policy assignment even clearer, while getting the content of the State Award into focus: climate protection must have top priority. In the case of the State Award, we find that in the early years plenty of projects were submitted that were very good from the energy angle but architecturally mediocre, or vice versa. These days projects like that are just not submitted.

**Antagonism between the architecture and ecology scenes – earlier quite noticeable – seems to have diminished substantially today.**

**Lechner:** This antagonism was probably due to chaotic developments in the early years, for instance in the passive-house scene; buildings were planned without an architect, and that is how they then looked. Today all those involved are much more knowledgeable. In addition, the state has legislative influence. But I notice that the pendulum which once swung far over

toward energy self-sufficiency is now inclining toward minimising costs. Convincing people that it pays to invest in energy efficiency when we consider life-cycle costs is going to take a lot of doing. And for this we need actual buildings to prove the point in practice.

**Gnaiger:** Yes, people on both sides of the fence are much more in the picture, and the State Award has up to now been a project for making peace between architecture and ecology. Today we have highly uniform tools and methods of calculation. The good thing about that is that communicable know-how has accumulated at a very high level. A possible drawback is that we have committed ourselves to ONE method only. Is it conceivable that in future quite different approaches will also be possible, that cannot be identified with current ways of calculating?

**You are alluding to how sustainability is often reduced to quantitative indicators. How much chance would one have of winning the Award without providing hard data obtained with the officially approved methods?**

**Gnaiger:** The klimaaktiv criteria provide a clear framework. Maybe someone will hold that against the State Award one day if outstanding projects that do not comply with the rules currently in force are ignored. Both architects and energy specialists on the jury must be in agreement. So the successful projects are not necessarily those with the very best architectural or ecological marks, but those that score excellently in both fields.



Robert Lechner



Roland Gnaiger

**Lechner:** As a scientist, I'm delighted whenever concrete numbers and facts are on hand. These hard facts can be deployed in argument in various ways. As long as they are assessed comprehensibly, credibly and consistently across all projects, I see no problem. However, there are also aesthetic and social planes of assessment, i.e. non-quantitative ones. That's just what makes this discussion, fuelled by differing motives but always respectful in tone, so fascinating.

**Aren't essential quality criteria in architecture, such as fitting in well with existing buildings or the landscape, long-term functionality or convenience, in any case also criteria of sustainability?**

**Lechner:** Yes, exactly! But the fact is we have a built environment that to a great extent has not been planned to meet criteria of climate protection and energy efficiency, nor in line with the requirements of urban or rural development. The way this award procedure is focussed is meant to draw attention to this. Should it ever come about that the architects and promoters take care of that themselves, it would be ideal and a huge success.

**Gnaiger:** Non-specialists are design-aware, too, and if need be, decide more on aesthetic than ecological grounds. So we must link these two worlds together. Even among the specialists, awareness of space and ensembles, of how to tie projects into a perspective of urban or rural development, is underdeveloped. Improvements in this respect are vital – a challenge to people from all walks of life.

**Where is there room for development from an ecological perspective?**

**Gnaiger:** So far, nothing has been more effective than thermal insulation, but it should be carried out with renewable raw materials. Our descendants will be faced with staggering tasks when it comes to disposing of unecological construction materials. Whatever we do, the entire life cycle is involved.

**Lechner:** About disposing of construction materials: here we need to invest quite some brainpower, otherwise problems we could in principle avoid will threaten us in the medium to long term. The Paris Climate Agreement clearly defines a duty to erect carbon-neutral buildings. The winners of the State Award are on a very lofty path; but a great deal more must be possible here. Any number of buildings that largely achieve energy self-sufficiency have been submitted – but in many cases they were architecturally unconvincing. Here there are technological tasks to be dealt with, such as developing elements which do justice to both sets of requirements.

**How could one encourage that?**

**Lechner:** For instance, we need contests in designing photovoltaic elements. As long as these look the way they do at the moment, we will not make much progress on the design front. When the architects get going, things suddenly happen that one would not have thought possible.

**Gnaiger:** I have personal experience of the collision case in which one has to choose between what is unquestionably sustainable and what looks good. At the

end of the day I tended to decide against ugly designs; but I was never at ease with that kind of choice, and always hoped – and am today confident – that this conflict can be resolved.

**Two-thirds of the projects submitted for the State Award are new buildings, just under a third – more than in previous years – are renovation projects. How do you interpret this?**

*Gnaiger:* That obviously mirrors the situation throughout the built environment. However, one must confess that it is harder for renovation projects to satisfy the State Award's technical criteria. Of course we need a change of heart, such that existing buildings and renovation are taken more seriously.

*Lechner:* Renovation is certainly not a favourite topic, neither from an architectural nor from an energy perspective. Here, the construction industry brings economic arguments to bear: building two new buildings is preferable to renovating a single existing building. It would make a difference if the lawmakers provided more powerful incentives. But I must admit that I sympathise with a more progressive approach; if something is unsatisfactory both architecturally and energy-wise, it's better to replace a ghastly old building with a good new building.

**Most of the submissions and award winners are from Vienna, Vorarlberg and Tirol. How much has that to do with regional differences in awareness?**

*Gnaiger:* At the political level, awareness of the issue is certainly most developed in Vienna and Vorarlberg. In the past there were several ambitious public buildings in Lower Austria, but this year this province is inadequately represented, as is Upper Austria.

*Lechner:* I wouldn't make too much of that. In Vorarlberg's "linear city", in Vienna with its rapid growth and in places "on the rim", awareness of resource efficiency is naturally greater than where there is plenty of space. It also makes a difference whether – as in Vienna and in the case of public buildings in Vorarlberg – adequate quality assurance instruments are on hand.

**If you had a wish free for the State Award's anniversary, what would you wish for?**

*Gnaiger:* My wish is addressed to us ourselves: that we once again discuss the issue of how to handle special-case submissions which do not cover the entire spectrum specified, as required and tested in the klimaaktiv programme. I'm thinking of the uncompromising use of sustainable construction materials, or of experimental approaches that are not yet on a firm foundation at all levels. How can we support and appreciate this kind of aspect and contribution more effectively? I would very much like to find a way in time for the next State Award.

*Lechner:* Courage and an open mind! To rise above one's own limitations, one must listen to and grasp other people's arguments. Apart from that, I believe that Austria is small enough for a single building code. One can live regional identity out in other areas, but not where the economy is involved. Austria has committed itself to climate neutrality; that's binding, there should be no further need to conduct negotiations with the Provinces.

# JURY PROCESS AND MEMBERS

An international jury assessed the 76 projects submitted comprehensively by aesthetic, functional, ecological, urban planning, social and economic criteria in a multi-stage process. The klimaaktiv building standard has established itself as an instrument for assessing sustainability.

Beate Lubitz-Prohaska (pulswerk GmbH, a subsidiary of the Austrian Institute of Ecology) and Clemens Quirin (University of Art and Design Linz) previewed the online submissions.

On the basis of this, advance sifting the jury selected the projects for the State Award excursion. After inspecting the buildings in question, the members of the jury discussed their qualities in detail and decided on short-listings and the State Awards.



Left to right: Maren Kornmann, Roland Gnaiger, Annette Spiro, Gabu Heindl, Christian Steininger, Robert Lechner

## **Roland Gnaiger, chair of the jury**

B. 1951, degree in architecture at the Academy of Fine Arts, Vienna, and Eindhoven University of Technology. Since 1979, office in Bregenz. Since 1996, Professor at the University of Art and Design Linz, in charge of the architecture courses there, initiator of BASEhabitat – architecture for development and of the überholz Master Class. Numerous awards and distinctions, including Vorarlberger Landesbaupreis and Österreichischer Bauherrenpreis. Frequent juror and lecturer in Austria and abroad. Member of several consultative committees on community aesthetics.

## **Gabu Heindl**

Degree in architecture at the Academy of Fine Arts, Vienna, and Princeton University. Since 2004, own architectural office in Vienna with special focus on buildings for cultural, educational and social purposes, altering existing buildings and urban development. Numerous lectures, exhibitions and publications. On the faculty at Graz and Delft Universities of Technology, currently at the Academy of Fine Arts, Vienna, and in the überholz Master Class. Repeatedly member of consultative committees on community aesthetics and architecture. Since 2013, chair of ÖGFA – the Austrian Society for Architecture.

## **Maren Kornmann**

B. 1974, degree in architecture and urban development in Aachen. Member of management of ENCO AG/Switzerland. Board member and international auditor of European Energy Award. Long-term consultant to local councils on the issue of energy efficiency, renewable sources of energy and sustainability. In charge of certification unit "2000-Watt-Areale" (Schweizer Bundesamt für Energie) and member of Operative Steering Group and Technical Commission for that label. Visiting lecturer at Bournemouth University, UK.

## **Robert Lechner**

B. 1967, course in spatial and regional planning at Vienna University of Technology. Head of Austrian Institute of Ecology and CEO of pulswerk GmbH. Co-founder and chair of the Austrian Sustainable Building Council. Member of steering committee for klimaaktiv Building and Renovating. Member of consultative committee for Aspern, Vienna's Urban Lakeside. R&D projects in sustainable building and forward-looking urban and regional development. Strategy development and policy consultancy in the fields of sustainable development, society and lifestyles.

## **Annette Spiro**

B. 1957, degree in architecture at ETH Zürich. Since 1991, architectural partnership in Zürich with Stephan Gantenbein. Numerous implemented projects, publications and lectures. Extensive teaching activity at Fachhochschule beider Basel, HTA Luzern, the international universities in Baeza and El Escorial in Spain; since 2015, head of the department of architecture at ETH Zürich. Member of townscape commission for Uster (1999–2009) and Baden (since 2016); since 2010, member of steering committee for Stiftungsrat Sitterwerk St. Gallen.

## **Christian Steininger**

B. 1962, degree in process engineering at Vienna University of Technology. Since 1981, employed in several planning agencies for building services. Since 1997, own engineering consultancy. Since 2000, with Vasko+Partner Ingenieure, setting up section on technical building equipment and building services project planning, e.g. for the Vienna University of Economics and Business campus and the Raiffeisen Klimaschutz high-rise building. Lecturer on technical building equipment at Vienna University of Technology and Salzburg Polytechnic. Chair of section on technical building equipment in ÖIAV (Österreichischer Ingenieur- und Architekten-Verein).

**Architecture can certainly not improve the world unaided, but it can help to make life pleasanter even in difficult circumstances. In a Viennese hostel for the homeless, this succeeds admirably in passive-house quality.**

# ARCHITECTURE AS SOCIAL PROGRAMME

neunerhaus Hagenmüllergasse, Vienna



Quite some years ago Vienna was proclaimed “world capital of the passive house”. By now, thanks to appropriate funding schemes, various examples (some of them architecturally excellent) are to be found in the Austrian capital even in large-scale accommodation. neunerhaus Hagenmüllergasse is one of these. The neunerhaus association, launched in 1999, has taken on the task of helping homeless people to help themselves. In the association’s view, a secure dwelling in which a self-determined life is possible is the first step to social integration. The association runs three complexes and 80 units in which 500 people live, free of the restrictions usual in accommodation for the homeless, which often lead to people without a dwelling living on the street or as “undercover homeless” with relatives or acquaintances. The most recent project is located where,

in 2000, the newly launched association moved into rented premises in a corner building in Vienna’s third district, opposite the church of Don Bosco designed by Robert Kramreiter in the 1950s. But the building had serious defects, and it was soon a question of either complete renovation or a new building. Renovation was too expensive, but a new building was not possible as long as the property owners refused to sell. In the end the Wohnbauvereinigung für Privatangestellte, which had already implemented neunerhaus Kudlichgasse, intervened to conclude bridging agreements with the Salesians of Don Bosco and the neunerhaus association (the latter will ultimately become tenants of the former).

## NOT BY THE BOOK

The basis for the architecture design contest, ultimately won by pool Architektur’s project, was a defined programme of supervision free of spatial directives. “Our aim was to provide a sphere of privacy while making communication and neighbourly relations possible, so as to avoid hospitalisation effects”, neunerhaus manager Markus Reiter explains. The team of architects thought hard about this, and then developed a spatial structure





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**Promoter:** neunerhaus – Hilfe für obdachlose Menschen,  
WBV-GPA Wohnbauvereinigung für Privatangestellte

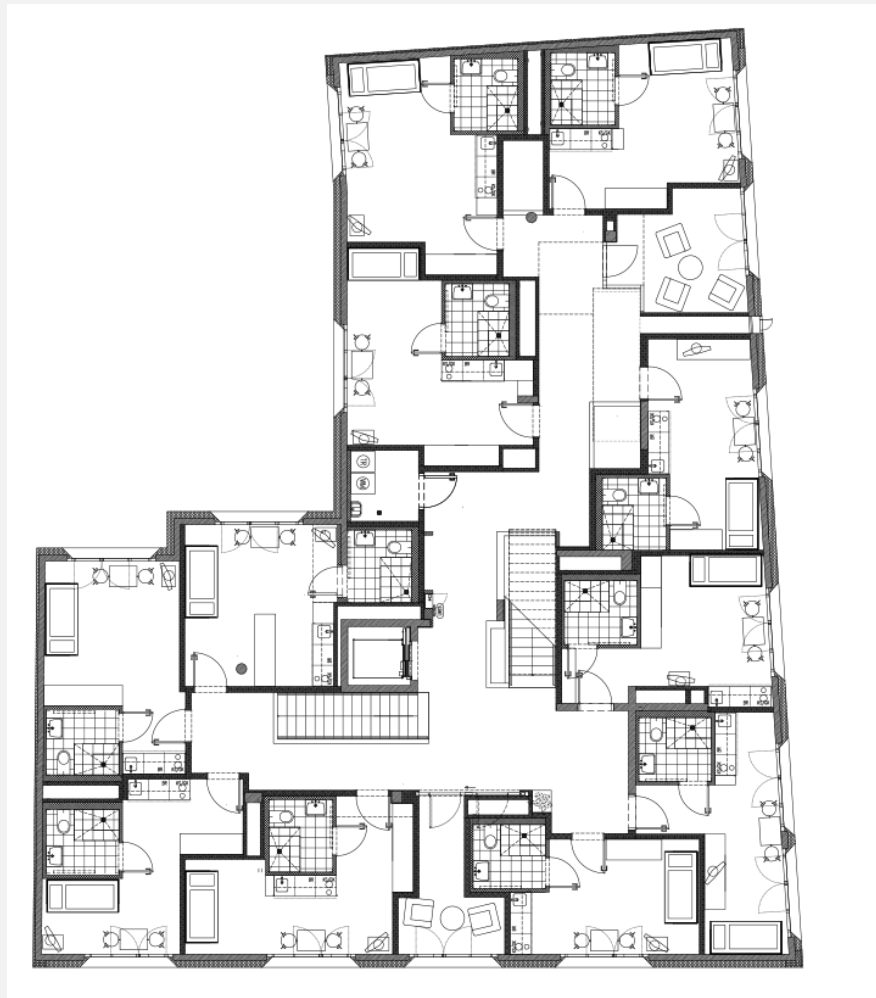
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**Architects:** pool Architektur ZT GmbH

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**Specialised planning:** teamgmi Ingenieurbüro GmbH (energy),  
DR. PFEILER GmbH (building physics), ste.p (structural engineering),  
Rajek Barosch Landschaftsarchitektur (landscaping)

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that ensured exactly that without falling back on the usual scheme of access (minimal, to save money) – private flat (all identical, thus cheaper) – common-room (often involving an element of compulsion). The team felt that what normally counts as appropriate would be all wrong in this particular case, and tackled the assignment with great sensitivity vis-à-vis the purpose and the future occupants.

The heart of the building, and a real showpiece, is the staircase. Instead of a vertical setup, it criss-crosses through the entire building. Together with the courtyard and the café (which the association runs with the occupants participating), it forms a generously scaled zone of meeting and communication linking all floors together and providing all sorts of possibilities, including withdrawal outside one's own flat, but free of compulsion. It is a variegated vertical promenade which widens out into diverse common-rooms, such as

a library. The administration, a doctor's surgery and the rooms for the social workers and support staff are on the ground floor. Supportive help is on hand around the clock – the building contains not only transitional units for individuals and couples, but also long-term sheltered accommodation for handicapped people.

#### **SPATIAL VARIETY**

No two of the 73 units are the same. At 25 to 27 square metres they are certainly compact, but equipped with well-thought-out modular furniture – which the occupants can add to as they wish. An oven and an icebox can't be taken for granted in accommodation for homeless people; but in the *neunerhaus* they are regarded as important for an autonomous life. Controlled ventilation in every unit makes sense not so much from the energy angle as because it is essential,



Left to right: Christoph Lammerhuber, Annerose Perera, Markus Reiter, Gerald Wiener



### FACTS:

**Type of building:** new hostel for the homeless (transitional accommodation) and the handicapped (sheltered accommodation), 73 different living units, café co-run by occupants

**Completed:** 2015

**Conditioned GFA:** 3,861 m<sup>2</sup>

**Energy consumption ratings (as per PHPP):**

Heating energy rating 10.7 kWh/m<sup>2</sup><sub>TFA</sub> a

Primary energy rating 97 kWh/m<sup>2</sup><sub>TFA</sub> a

Carbon dioxide emissions 10.6 kg/m<sup>2</sup><sub>TFA</sub> a

**Supply facilities:** Vienna district heating, heat delivered via radiators with individual control in the units, centrally regulated ventilation system with heat recovery

**Construction materials:** reinforced concrete with composite thermal insulation system, no PVC throughout

**Quality assurance:** blower door test

given the dense occupancy, to dispose of excess humidity. As architect Christoph Lammerhuber insists, “The point is to define what might seem superfluous or senseless, to embed it in the purpose-related context and to extend the latter – outside purely economic considerations – to include something that cannot really be calculated.” Whereas there is a tendency,

in construction for “charitable purposes”, to match precarious social circumstances with gaunt architecture, the emphasis here is on spatial variety, which, far from lacking a purpose, responds sensitively to the occupants’ needs and promotes living together in harmony. In short, a complex assignment has been brilliantly handled – in terms of design, ecology and function.

In a creative development process, inherited structures and new approaches yield a unique location for working, reflecting, cultural exchange and disseminating knowledge – a deeply satisfying combination.

# EXPERIMENTAL LABORATORY FOR ENERGY

Energy-surplus office building and cultural power station oh456,  
Thalgau, Salzburg

Simon Speigner is convinced: “If you advertised that you were looking for a plot on which it is permissible to erect a power station alongside an office building, the search would certainly lead nowhere.” It must have been providence that made it possible for him to realise the unplannable – acting as investor, architect and user. It all started with the search for new premises for him as an architect. With a full order book, the tiny office in one of the small terrace houses which he had put up at the start of his career was quite inadequate. Originally, Speigner had given this early project, located on the Fuschler Ache (a small river), the name oh123, in line with local tradition; oh is not an expression of surprise here, but a dialect form of the word “river” (“Ache” in German), the digits stand for the three houses in the terrace.

## A POWER STATION TO START WITH

While hunting for office space, the architect accidentally stumbled on a closed-down sawmill just outside Thalgau. The plot was large enough for an office building – but the owner initially refused to sell any land. However, he did tell Speigner of his plans, back in the 1980s, to erect a small-scale hydropower station; though planning permission had been granted, the plans had never been implemented. Well, one thing led to another,

and the ecologically motivated and business-minded architect and the sawmill owner first jointly erected the power station, made up of a simple timber building with a pitched roof on a weir with a fish ladder and a turbine house made of exposed concrete facing the road.

## CULTURAL INCUBATOR

And then Speigner did acquire the plot between the power-station structures, where he was able to put up his energy-surplus office building. The whole complex (electricity generation plus workplace) was christened oh456. It is amazing what becomes possible when someone with commitment and unshakeable optimism takes things in hand. The unpretentious exterior of the three-storey office building conceals an unorthodox experimental laboratory for ecological construction techniques, and a focal point for culture and interdisciplinary exchange – facilitated by funding from the programme “Building of the Future Plus”.





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**Promoter:** sps-architekten zt gmbh & co kg

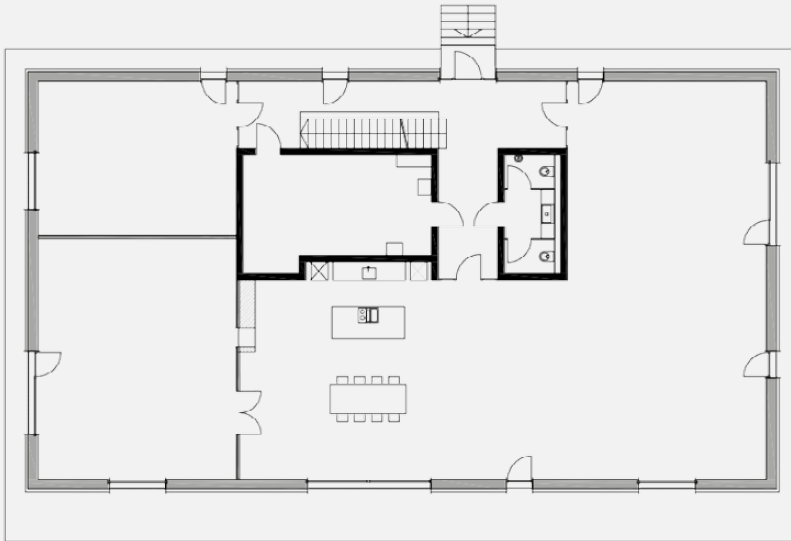
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**Architects:** sps-architekten zt gmbh

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**Specialised planning:** Zivilingenieur-ARGE Lukas & Graml (building physics),  
e+ engineering . Ingenieurbüro . Sieberer GmbH (building services),  
Blitz Power GmbH (hydropower), ernst muthwill (colour scheme),  
Reibenwein-Forsthuber ZT GmbH (structural engineering)

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The ground floor, with a spacious kitchen and library, has developed into a cultural centre for the region where all sorts of things happen – from discussions about building culture, through concerts to tango sessions. On the upper floors, two more firms have settled in alongside sps-architekten, and two flats are on hand for co-workers and guests.

Structurally, the building is a blend of old-established, almost archaic-seeming construction methods and materials with modern techniques and components, some of them developed by Speigner himself. Inspired by the old sawmill's hand-mixed concrete walls, Speigner erected a solid core of plain stamped concrete as thermal storage. The exposed-concrete floors extending out from the core are continued over most areas by solid cross-laminated timber floors which cantilever out, forming balconies (deeper on the south side than elsewhere) with several functions: protecting the cladding (larchwood shingles split by hand) of the outside walls from the weather and providing access for repair work, and also preventing fire from spreading from one floor to another.

### SOME FURTHER DEVELOPMENTS

The fixed glazing, which goes the full height of the rooms, is based on an Austrian window manufacturer's existing system, enhanced with a pioneering insulation material. Tested here on a large scale, the system is thus ready for series production. With this new material, windows going right down to the floor can be structurally integrated in the façade without a

frame, with no thermal bridges. The frame elements are invisible in the wall, dissolving the barrier between indoors and outdoors, and satisfying both energy-efficiency and architectural requirements – very much in line with the aims of the State Award. The wall heating system integrated in the clay plaster is another special feature. Applied in repeating vertical stripes, this element interrupts the otherwise dominant timber surfaces and supplies comfortable warmth with its look and feel. With its own hydropower station, which supplies the electricity for space heating, hot water and electric cars in conjunction with the PV modules embedded flat in the roof (product development took place in this case, too), the building is self-sufficient in terms of energy. Excess electricity is fed into the grid and “subsidises the local power suppliers”, as Speigner puts it, alluding to the low feed-in tariff.

The Fuschler Ache, which drains Fuschlsee into Mondsee, has played a vital part in the region, with sawmills, watermills and smithies. Together with his project partners, including the artist Wilhelm Scherübl, who has left what might be mistaken for offhand traces on the turbine house and in the office building, Simon Speigner has reinvigorated this tradition, providing new ideas in a location full of atmosphere.





Simon Speigner

#### FACTS:

**Type of building:** new office building with shared-use rooms and two flats

**Completed:** 2014

**Conditioned GFA:** 1,369 m<sup>2</sup>

**Energy consumption ratings (as per OIB 2011):**

Heating energy rating 2.1 kWh/m<sup>3</sup><sub>GFA</sub> a

Primary energy rating 110.2 kWh/m<sup>2</sup><sub>GFA</sub> a

Carbon dioxide emissions 17.5 kg/m<sup>2</sup><sub>GFA</sub> a

**Supply facilities:** regulated ventilation system with heat recovery, storage heaters under clay plaster for residual heat, fireplace on ground floor (biomass), PV facility, private hydropower station

**Special features:** research project with funding from the Austrian Research Promotion Agency FFG ("Building of the Future Plus" programme); small-scale power station on site

**Construction materials:** prefabricated timber façade elements with cellulose insulation, solid stamped-concrete core, use of low-emission products (internal product management), no PVC throughout, no hydrofluorocarbons throughout

**Quality assurance:** blower door test, energy consumption monitored, soundproofing monitored, air quality indoors measured

**Assessment of building:** klimaaktiv Gold, ÖGNB (813 out of 1,000 points), listed as passive house to Passive House Institute's specifications

**When a large centre for functions is expected to cope with every possible requirement, urban architecture and ecology are often left out in the cold. There's no need for that, though, as Feldkirch demonstrates with its new multifunctional centre.**

# TOWN HINGES ON ECOLOGICAL WINNER

## Montforthaus Feldkirch, Vorarlberg

With just under 33,000 inhabitants, Feldkirch, the second largest town in Vorarlberg, is simply a smallish town. But with its tradition as a centre of culture and commerce, it definitely has urban flair – and not only thanks to the vibrant old town, which goes back to the Middle Ages. The new cultural and congress centre, named after the Counts of Montfort who originally founded Feldkirch, might well make quite a splash in much larger towns, too, in every respect.

### A HOUSE FOR ALL SEASONS

The new Montforthaus stands just outside the old town on the spot where the Festival and Market Hall planned by Clemens Holzmeister was erected in the 1920s. In 1973, that building burnt down; it was replaced in rather a hurry with an architecturally unexciting building planned by civil servants. Some 30 years later, the replacement was clearly no longer up to requirements; various conversion scenarios were investigated, and the conclusion was reached that a new building would make the most economic sense. The project was advertised throughout the EU; the winning proposal came from a consortium made up of the Berlin partnership of Hascher Jehle and the Bludenz architects mitiska wäger. Right from the start, people were impressed with the supple way in which the building fits into the space around it; for two years now it has contributed to Feldkirch's atmosphere. In functional terms, the Montforthaus is a versatile building, accommodating

proms, trade fairs, congresses, symphony concerts and theatrical performances, plus the well-known series of events Montforter Zwischentöne ("Montfort Nuances") – indeed it has room for any and every kind of event. It is open daily to the people of Feldkirch and to visitors; the tourist information centre is on the ground floor, and up above there is a restaurant with a rooftop terrace.

### AN EXCELLENT FIT

To resolve the previous spatial confusion, the architects designed a kidney-shaped building; just here, in the otherwise clearly structured town, squares, alleys and buildings had been juxtaposed indecisively. South of the site, the massive office/hotel/residential complex Illpark (dating back to the 1970s) dominates Leonhardsplatz, to the east, part of the historic town wall obtrudes, Montfortplatz (previously Rössleplatz) leads to Rösslepark and the Ill gorge, and the courtyard of the grammar school lies to the west. The elegantly curved building stands alone, acting as a hinge aligned with the surrounding buildings and revealing the town wall and ways to the neighbouring alleys in the old town. Harmony with the surroundings was also a reason to select light-coloured Jurassic limestone for the façade; here, ribbon glazing places the interior on view, while reflecting the panorama of the surrounding landscape. The impression of suppleness is maintained indoors, where the horizontal spatial continuum that merges exterior and interior continues in the vertical dimension.





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**Promoter:** Feldkirch corporation

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**Architects:** HASCHER JEHLE Architektur, mitiska wäger architekten

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**Specialised planning:** IPJ Ingenieurbüro P. Jung GmbH (building simulation/building physics), DICK + HARNER/BHM Ingenieure (building services), LDE (lighting and stage equipment), Bernard & Brunsteiner (structural engineering)

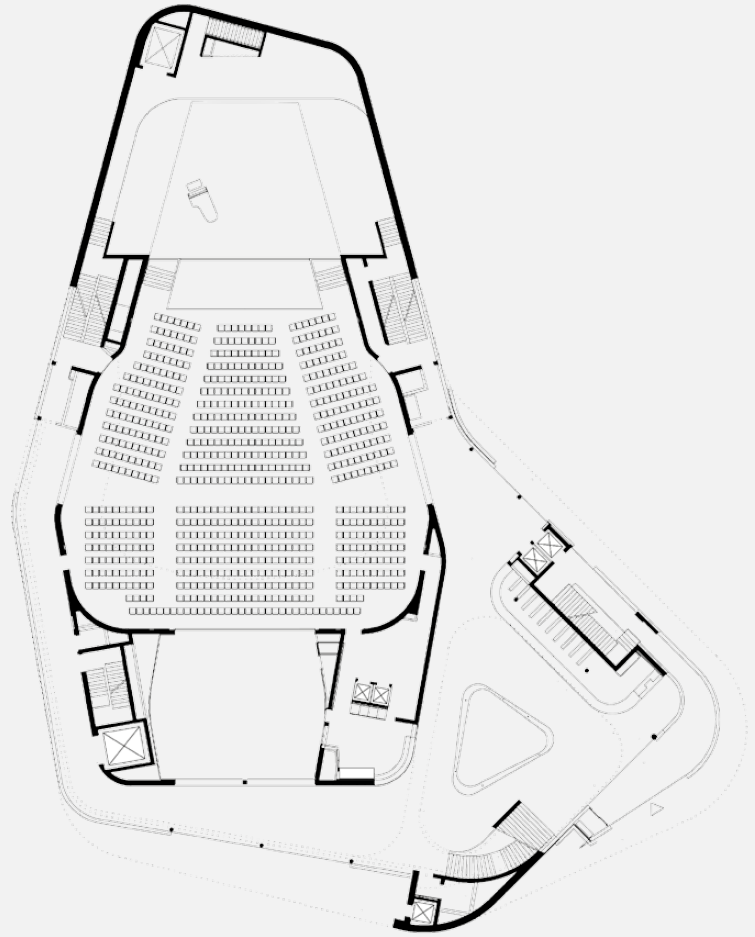
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The key element here is the eye-catching curved staircase – its supple quality is brought out by the uniform white of stairs, balustrades and soffits. On the first floor, it leads to the gallery of the main hall, which is panelled in local pearwood, to the small hall and to the seminar rooms; further up, it provides access to the restaurant and rooftop terrace. Mobile partitions and podia in the halls make it possible to configure them in various ways with diverse seating arrangements so as to cope with varying requirements. The foyer and the spectacular staircase form the setting for seeing and being seen during the intervals. To give the balustrades a pleasant look and feel, they have been surfaced with a filling of quicklime and Marseille soap.

### SUSTAINABLE ALL ROUND

Apart from the clever way the building is set in its surroundings – no new building land was needed for this – the State Award jury was particularly impressed by the comprehensive approach to sustainability. There was general agreement that similar assignments in other towns had not been tackled in nearly such an ambitious way. From the consistent multifunctional design to the building's high ecological standard – a wealth of features make the Montforthaus a flagship project, in a town deeply committed to climate protection. Comprehensive product and chemicals management, consistent use of waste energy – for instance, braking



the lifts generates electricity which is fed into the building's internal grid – and a level of thermal insulation twice as high as that required by law: these are only a few of the aspects that make this reinforced-concrete building an exceptional performer in terms of sustainability, particularly for a multipurpose centre. From the award of the contract to the three-day opening festivities, local people were involved in the planning and construction process by way of citizens' fora, publications and guided tours of the site, and kept informed. No wonder that the centre has been warmly welcomed, and people see it as "their house".



Left to right: Stephan Untertrifaller, Jürgen Hafner, Markus Mitiska

### FACTS:

**Type of building:** new multipurpose centre for functions

**Completed:** 2015

**Conditioned GFA:** 8,554 m<sup>2</sup>

**Energy consumption ratings (as per OIB 2011):**

Heating energy rating 6.2 kWh/m<sup>3</sup><sub>GFA</sub> a

Primary energy rating 141.4 kWh/m<sup>2</sup><sub>GFA</sub> a

Carbon dioxide emissions 23.5 kg/m<sup>2</sup><sub>GFA</sub> a

**Supply facilities:** controlled ventilation system with heat recovery, heating/cooling by brine/water heat pump

**Construction materials:** non-frame reinforced concrete, façade in Jurassic limestone, aluminium windows, external product management

**Special features:** significant improvement to the setting on the edge of the old town – the town wall (a listed structure seven metres high) has been preserved and made accessible.

**Quality assurance:** blower door test, energy consumption monitored, indoor air quality measured

**Assessment of building:** klimaaktiv Gold, Green Location seal of ecological approval

**For decades, the council building dating back to the 1930s had hardly been changed. And the most recent modification did not impair its character. Nonetheless, modern, barrier-free service rooms and workplaces with exceptionally good energy values resulted.**

## PRESERVE AND MODERNISE – PERFECTLY COMPATIBLE

Renovating council offices in Zwischenwasser, Muntlix, Vorarlberg

On the way to the new council offices in Zwischenwasser, expectations are running high; by now the community (named after its location between the rivers Frutz und Frödich) has an international reputation for

architectural culture. It consists of three villages, Batschuns, Dafins and Muntlix, has a mere 3,100 inhabitants, and boasts more award-winning buildings than most small towns in Austria.

But there is more to a culture of building than just satisfying architecture. Developing settlements in a resource-efficient way is part of it, as is a fair, transparent and quality-oriented contract awarding procedure. Zwischenwasser was ahead of its time here, and has set an example for other councils. A consultative committee on community aesthetics was set up 25 years ago; as long ago as 1989, a first civic participation project was implemented – the solar school in Dafins. Many other exemplary buildings followed in the public and private sectors. In 2014, the new kindergarten in Muntlix won the State Award for Architecture and Sustainability. Now the council offices right next door have been converted – the same architect was responsible here as for the kindergarten – and are

open to inspection. “Of course, architectural design contests are standard procedure here,” mayor Kilian Tschabrun points out – no need to ask whether the council had simply contracted with a previous partner “for the sake of convenience”.

### ROBUST DECADE AFTER DECADE

Though the council building (originally put up in the 1930s) had housed a variety of other users – such as primary school, kindergarten, clubrooms and a branch of a bank on the ground floor – in addition to the council offices, its design had changed very little over the years. No one wanted to demolish a building in good shape technically that had proved so robust and had come to stand for local identity (though not actually a listed building). And the supporting structure turned out to be flexible enough to accommodate more ample spatial arrangements for today’s needs. The task could be summarised as converting the building into a modern, barrier-free communal service centre while leaving its character unchanged, and renovating it in energy terms with a sensible compromise between energy savings and investment in insulation. “In the old days, people just went straight to the desk of the council employee concerned”, Tschabrun explains. Today reception is in the service centre, which is accessible barrier-free from the forecourt.

In the part of the building without a basement, the design involved lowering the floor level, enlarging the





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**Promoter:** Zwischenwasser council

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**Architecture/ overall planning:** HEIN Architekten

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**Specialised planning:** DI Bernhard Weithas GmbH (building physics),  
TB Werner Cukrowicz Ingenieurbüro (building services),  
Bauphysik und Bauökologie Lerchbaumer (construction ecology),  
SSD Beratende Ingenieure ZT GmbH (structural engineering)

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window openings and equipping them with “eyebrows”, which provide shading but do not interfere with communication between indoors and outdoors, as sunshields would.

#### **MORE WOODWORK UP ABOVE**

On the ground floor, where there is more coming and going, only the furniture is made of local silver fir; wood is used more extensively up above. On the top floor, despite compartmentalisation, intelligent treatment of space presents the entire storey as an ample continuum. A kind of walk-in cupboard wall providing storage space for office utensils, files and coats separates the access zone from the offices. While the offices are divided by panes of glass with the same spacing as the window axes, they are closely linked together by doors the full height of the rooms (and visually through the transparent glass). Here the floor is in silver fir, too – untreated, mind you, but it looks great. “Particularly on the top floor, it was a stroke of luck that the carpenter employed had trained as an organ builder”, the architect, Matthias Hein, jokingly points out. For under the old roof timbering – the rafters are still exposed today – patience and precision craftsmanship were needed to create a homogeneous, chest-like character. Here there are also two meeting rooms, used not only for official business but also for music lessons, choir rehearsals and events.

#### **EXEMPLARY RENOVATION**

Setting an example in terms of function and design, while very largely preserving the existing building: does that leave much leeway for ecology? Oh, yes – renovation was highly successful in this respect, too, with the project scoring 980 out of a possible 1,000 points when assessed for the Vorarlberg public building certificate (the best score ever to date). Energy is supplied by the council’s own CHP plant and the PV facility on the roof of the kindergarten. Instead of a composite thermal insulation system on the outside, heating energy consumption is kept down by means of calcium silicate panels with clay plaster on the inside. Night cooling and transverse ventilation, plus a convenience ventilation system with heat recovery, help to ensure a satisfactory indoor climate in conjunction with non-polluting local construction materials.

Entirely without histrionics, but bringing old and new together in a seemingly quite natural design, it has emerged as an open, up-to-date building for everyone, close to other important public buildings. As there is more to developing a centre than just designing it, though, the council is active on the land-management front and has secured almost all the plots nearby with an eye to further development potential in the centre.



Left to right: Bernd Niehoff, Werner Cukrowicz, Kilian Tschabrun, Gernot Thurner, Matthias Hein

### FACTS:

**Type of building:** renovating and converting council offices

**Completed:** 2015

**Conditioned GFA:** 732 m<sup>2</sup>

**Energy consumption ratings (as per OIB 2011):**

Heating energy rating 9.5 kWh/m<sup>3</sup><sub>GFA</sub> a

(previously 35.4 kWh/m<sup>3</sup> a)

Primary energy rating 230.3 kWh/m<sup>2</sup><sub>GFA</sub> a

Carbon dioxide emissions 28.7 kg/m<sup>2</sup><sub>GFA</sub> a

**Supply facilities:** controlled ventilation system with heat recovery, district heating from neighbouring biomass CHP plant, dynamic building simulation

**Construction materials:** local silver-fir timber, windows renewed with three-in-one glazing, no PVC throughout

**Special features:** conversion to barrier-free; Smart Grid cross-linking to school and kindergarten to make direct use of surplus electricity from PV facility

**Quality assurance:** blower door test, energy consumption monitored, indoor air quality measured

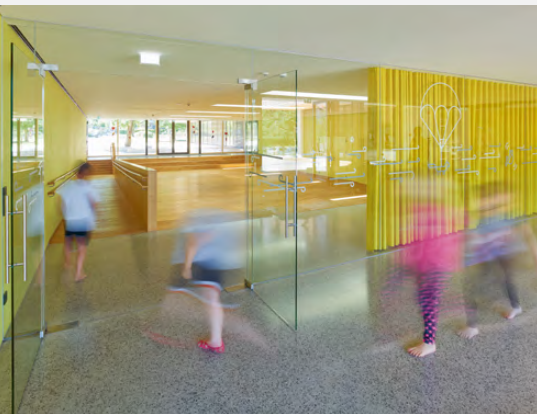
**Assessment of building:** klimaaktiv Gold



The original plan was simply to convert a primary-school building dating from the 1960s. But the decision in favour of a new teaching strategy, which requires a different treatment of space, has provided modern, stimulating surroundings for the children of Dornbirn to learn in.

## ENLIVENING ATMOSPHERE

Primary school in Edlach, Dornbirn, Vorarlberg



A few minutes after eight o'clock, when school starts, the school yard is empty; the children are still in class with their teachers. Later, they will leave the classrooms for

individualised or project-based learning, collect a book from the library or dash out into the open to play in the schoolyard or the school garden, or to plant something in the raised beds there. Gardening goes on indoors, too – lettuce grows in recycled PET bottles on the walls of the expansive loggia that extends the class cluster's common area into the open. Who knows how much of that would have been possible if the original project for converting the primary school in Edlach had been implemented.

### FROM STOPGAP TO NEW BUILDING

Back in the 1960s, the primary school had been put up as a temporary measure in Edlach, north of the city centre; in 2012, with the school bursting at the seams, an architectural design contest was advertised for expanding it. The contest was won by Dietrich | Untertrifaller Architekten. However, the existing

building, with rooms only 2.80 m high, was unsuitable for really new spatial concepts that do justice to modern methods of teaching and all-day school. Hard thinking led to the town's policy-makers deciding to organise the school in learning clusters, i.e. to group the classes around shared, multifunctional spaces – which gave the project an entirely new direction. Instead of the earlier interim arrangement, a new school resulted; only the gymnasium was left as it stood.

### DESIGNED FOR LIVING

The gymnasium (comprehensively renovated) is joined to the new two-storey school building by a single-storey central hall; with its ample glazing, the latter connects the rearranged playgrounds in front of and behind the school physically and visually, creating a sense of linkage to the urban surroundings on both sides. Vis-à-vis ground-floor level, the main hall is somewhat lower; it is bridged by a ramp and has stepped seating on both sides. While saving on built volume, this provides a spacious, versatile function room, cosy enough (thanks to its wood surfacing) to serve well as a dining room.

The main building, 70 metres long and aligned parallel to the gym, accommodates the pre-school facilities, special classrooms, the head teacher's office,





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**Promoter:** Dornbirn corporation

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**Architects:** Dietrich | Untertrifaller Architekten

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**Specialised planning:** DI Bernhard Weithas GmbH (building physics), TB Werner Cukrowicz Ingenieurbüro (building services), Heiss Farbe & Design (colour scheme), gbd ZT GmbH und pnstatik - DI Peter Nagy (structural engineering), stadtländ Dipl. Ing. Thomas Loacker Ingenieurbüro für Landschaftsökologie und Landschaftspflege (landscaping)

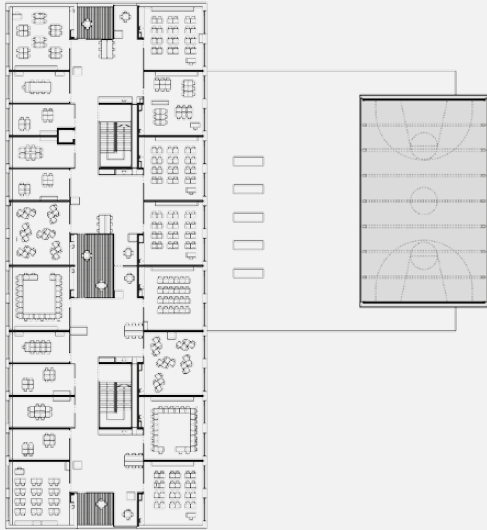
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staffroom, conference room, cloakroom and school library at ground level. Special care was taken with the sequence of rooms on the upper floor, where the four clusters are grouped on both sides of the two staircases. Each cluster consists of three classrooms, two group rooms and a central shared-use zone. Roofed-over loggias fitted into the built volume provide ready access to fresh air next to each cluster. Skylights and glass classroom walls let plenty of daylight into the central zone, which can be configured in leisure and learning areas as the need arises. The colour scheme was developed together with Monika Heiss, a colour designer. A soothing, soft blue in the classrooms, and green and yellow where there is more going on, differentiate an environment otherwise mainly characterised by wood surfacing. Specialists were also called in for signage. The system provided by Sägenvier combines lettering, pictograms and illustrations – to some extent on coloured penants – to help with finding one's way around the building; it has already been short-listed for the European Design Award 2017. The gymnasium was comprehensively renovated. With the new ribbon glazing, which makes the best use of daylight, outside silver-fir cladding and indoors walls and ceilings in light-coloured birchwood, it no longer seems like an old building.

#### **ECOLOGICALLY SUSTAINABLE, AESTHETICALLY APPEALING**

Great importance was attached to employing ecologically sound, healthy construction materials. A mechanically controlled ventilation system with heat recovery ensures favourable conditions for learning: carbon dioxide does not accumulate indoors, and energy consumption is ultra-low. Heating is taken care of by the district heating grid; a PV facility supplying 22% of the school's electricity consumption has been placed on the roof. Since 2011, the Vorarlberg public-building certificate has provided incentives for comprehensive measures to achieve sustainability. Provided that the building scores at least 600 out of a possible 1,000 points in the categories process and planning quality, energy and supply systems, health and convenience and construction materials and design, the provincial administration allocates more funds to the project; the higher the score, the more the share of funding goes up. So it's no surprise that council buildings in Vorarlberg usually perform very well in this respect. And if such buildings are aesthetically appealing, too, so much the better.



**FACTS:**

**Type of building:** new school building complementing an existing gym

**Completed:** 2016

**Conditioned GFA:** 4,087 m<sup>2</sup>

**Energy consumption ratings (as per OIB 2011):**

Heating energy rating 4.2 kWh/m<sup>3</sup><sub>GFA</sub> a

Primary energy rating 157.6 kWh/m<sup>2</sup><sub>GFA</sub> a

Carbon dioxide emissions 20.8 kg/m<sup>2</sup><sub>GFA</sub> a

**Supply facilities:** controlled ventilation system with heat recovery, district heating, heat pump, night cooling, PV facility

**Construction materials:** external product management, reinforced concrete with timber façade and air space behind, wood-frame windows, no PVC throughout

**Special feature:** the existing gymnasium was renovated to new-build standard.

**Quality assurance:** blower door test, energy consumption monitored, indoor air quality measured

**Assessment of building:** klimaaktiv Gold



Peter Nufbaumer



# ARCHITECTURE FOR CLIMATE PROTECTION

The Paris Agreement was a milestone in the struggle against climate change; in December 2015, the partners in the United Nations Framework Convention on Climate Change reached agreement on a new world climate agreement. To limit global warming, using fossil fuels must be phased out completely by mid-century. This challenging goal can be achieved only if decarbonisation is pursued much more vigorously in all fields. In Austria, though, climate protection is being implemented in many ways – and not just since the Paris Agreement, either. A key partner here, with plenty of experience, know-how and the right tools, is **klimaaktiv**, the climate protection initiative of the Federal Ministry for Agriculture, Forestry, Environment and Water Management.

## **Energy-efficient construction as a contribution to climate protection**

The building sector is responsible for roughly a third of worldwide greenhouse gas emissions, which makes it a vital factor in achieving the climate goals. Between 1990 and 2014, annual greenhouse gas emissions from the building sector in Austria were successfully reduced by more than 40%. All the same, the building sector is nowhere near climate-neutral. Space heating and cooling, and supplying hot water, consume energy on a large scale. In the EU member states, the building sector accounts for around 40% of total energy consumption, in Austria for some 27%.

Every single building that is erected or renovated today will influence the greenhouse gas balance sheet right into the second half of this century. So the goal of decarbonisation will require continuing efforts from the building sector. Only sustainable, climate-protective buildings will enable us to achieve the climate-protection goals. In comparison with other sectors, such as transport and industry, it is fairly straightforward to bring about extensive decarbonisation in the building sector. Surveys for the European Commission come to the conclusion that by 2050 the building sector's greenhouse-gas emissions can be reduced by roughly

90%. Austria is in an excellent position to profit from these developments on a large scale; our country has accumulated very extensive know-how in the fields of environmentally-friendly, energy-efficient construction and heating systems. One-third of the solar facilities in the European Union come from Austria. There is convincing evidence of the innovative power of Austrian firms and research institutes in the field of sustainable energy and building technologies. Austrian architects and specialist planners are at work with great success around the world in the field of sustainable building technologies. With the State Award for Architecture and Sustainability the Environment Ministry pays tribute to outstanding examples of this.

## **The climate protection initiative klimaaktiv**

Ever since its launch in 2004, the Environment Ministry has used the climate protection initiative **klimaaktiv** to push ahead the introduction and rapid dissemination of environmentally-friendly technologies and services throughout Austria, so as to reduce carbon dioxide emissions and promote wider use of renewable sources of energy. This wide field of activity is divided into four thematic clusters: building and renovating, saving energy, renewable sources of energy and transport. Here it is important to transmit so-called “green Skills” to specialists such as energy consultants, craftsmen, planners and architects by way of initial and on-the-job training.

## **klimaaktiv building and renovating**

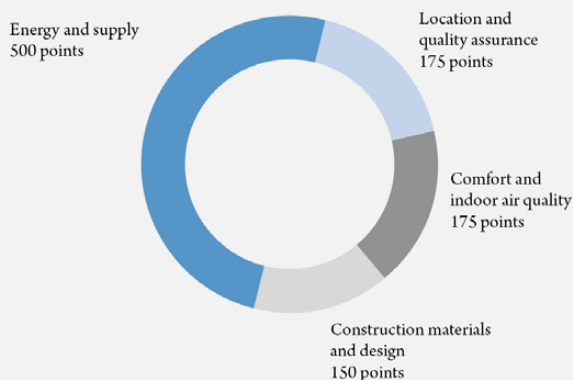
The **klimaaktiv** building and renovating programme is a key element in the climate-protection initiative when an energy-efficient new building or high-standard renovation is involved in Austria. Imaginative planning, high-quality construction materials and energy-efficient construction can lower a building's energy consumption significantly and improve the users' quality of life and work. With its quality criteria, the building standard developed as part of **klimaaktiv** provides helpful orientation, making long-term sense. It is of real value

to property developers, planners, builders, housing corporations and the Austrian provinces' housing grants departments, along with anyone building or renovating a house. With the energy efficiency building standard, the quality of planning and implementation, the quality of the construction materials and design, plus key points concerning comfort and indoor air quality, are all assessed and evaluated objectively.

The klimaaktiv building standard exists for residential and service buildings, in each case for new builds and renovation. Each catalogue of criteria is based on a 1,000-point system with which buildings can be assessed and compared. Depending on the points scored, a given building may be eligible for one of three quality levels, gold, silver or bronze. Any building that satisfies the klimaaktiv criteria can be labelled a "klimaaktiv building" free of charge.

### klimaaktiv criteria – allocation in 2017

Distribution of points by sectors (1,000 points)



### klimaaktiv sets new standards for the carbon-neutral building sector

Within Europe, Austria is a front runner in assessing buildings with special reference to climate protection and energy efficiency. To date, roughly 500 buildings in all categories of use have been assessed to the klimaaktiv building standard of quality assurance. In relation to the population, no other system anywhere in Europe is more successful in putting demanding quality assurance tools to work in real life. This success entails a responsibility: the existing tools are constantly being developed further, to maintain this lead in the long term. In 2017, activities are focussed on the issue of carbon neutrality – and

therefore on excluding petroleum completely, and using natural gas as little as possible, as a source of energy for heating.

### The klimaaktiv standard as a yardstick for the State Award

Assessing the buildings submitted for the State Award for Architecture and Sustainability involves two dimensions: architectural quality and degree of sustainability. The latter is evaluated by means of the criteria laid down in the klimaaktiv building standard. At the preview stage, all the projects were evaluated against the klimaaktiv criteria as far as possible, using the information and evidence of conformity provided, so as to make comparisons possible. The criteria incorporated in the online tool correspond to the quality criteria employed by klimaaktiv to assess buildings.

The climate protection initiative klimaaktiv at [www.klimaaktiv.at/english](http://www.klimaaktiv.at/english)

Building & renovating to klimaaktiv standard and State Award for Architecture and Sustainability at [www.klimaaktiv.at/bauen-sanieren](http://www.klimaaktiv.at/bauen-sanieren) (in German)

Comprehensive collection of examples from the klimaaktiv building database at [www.klimaaktiv-gebaut.at](http://www.klimaaktiv-gebaut.at) (in German)

Network of klimaaktiv partner and skilled craftsmen at [www.klimaaktiv.at/maps](http://www.klimaaktiv.at/maps) (in German)

Factual check on sustainable building at [www.klimafonds.gv.at/service/broschueren/faktencheck-nachhaltiges-bauen](http://www.klimafonds.gv.at/service/broschueren/faktencheck-nachhaltiges-bauen) (in German)

### Programme management of klimaaktiv Building and Renovating

ÖGUT GmbH – Austrian Society for Environment and Technology

Inge Schrattenecker, Franziska Trebut

Hollandstrasse 10/46, 1020 Vienna, Austria

Tel. +43 (0)1 315 63 93 0, e-mail: [klimaaktiv@oegut.at](mailto:klimaaktiv@oegut.at)

**Hard to beat: this housing project scintillates in terms of ecology and energy use, and is one of the Urban Lakeside's architectural highlights.**

# RATIONAL DIVERSITY

Timber residential complex in Aspern, Vienna's Urban Lakeside



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**Promoter:** EBG - Gemeinnützige Ein- und Mehrfamilienhäuser Baugenossenschaft, reg.Gen.m.b.H.

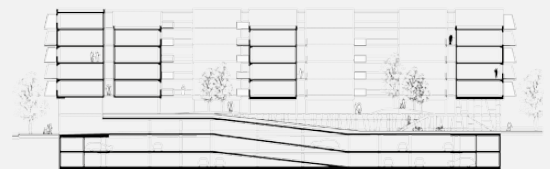
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**Architecture:** Berger + Parkkinen Architekten, querkraft architekten

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**Specialised planning:** Technisches Planungsbüro DI (FH) Leo Obkircher (building services), Holzforschung Austria (building physics), LC Buildings GmbH (planning of timber façade), Idealice Landschaftsarchitektur (landscaping)

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Two teams of architects with one promoter – that was the contest rule for the 80 x 80 metre plot D12. Instead of dividing the cake up and bequeathing two distinct styles to the occupants, Berger + Parkkinen and querkraft decided to join forces. “How can we successfully merge the interior courtyard with the public space?” had been one of the key issues, according to Alfred Berger, one of the architects. Building to achieve spatial diversity at a reasonable cost and not accidentally leaving behind places where people would feel uneasy, and the broad scope of sustainability were the other major issues.

To link up with the surroundings, a “canyon” over the garage ramp was driven through the plot; this connects the inside of the block to the outside world at street level, can be used on foot and by bicycle, and provides a versatile arena for play and leisure activities. At a higher level there are green courtyards where private gardens and shared-use zones are unobtrusively separated by changes in level plus differing heights of vegetation. In conjunction with path layout, the open space acquires a more intimate character here than in the “canyon” cutting down below. The flats are accommodated in four to seven-storey blocks, slightly offset on both sides of three access ways which link staircases to centre aisles, arcades and bridges. Together with cantilevered balconies and loggias in concrete, this results, in spite of the no-nonsense basic layout, in a living and attractive three-dimensional matrix.

Long-term flexibility in use is ensured by a design based on hybrid timber/concrete construction with prefabricated, well-insulated outside walls clad in larchwood. The reinforced-concrete frame makes floor plans and space allocation behind the façades flexible.

## FACTS:

**Type of building:** new residential complex with 231 flats, business and shared-use zones

**Completed:** 2015

**Conditioned GFA:** 19,080 m<sup>2</sup>

**Energy consumption ratings (as per OIB 2011):**

Heating energy rating 15.6 kWh/m<sup>2</sup><sub>GFA</sub> a

Primary energy rating 87.4 kWh/m<sup>2</sup><sub>GFA</sub> a

Carbon dioxide emissions 13.9 kg/m<sup>2</sup><sub>GFA</sub> a

**Supply facilities:** controlled ventilation system with heat recovery, solar heating, PV facility, multi-source heat-pump system using water table, solar heating, soil and waste air from garages

**Construction materials:** hybrid timber/concrete construction (mobile concrete batching plants on site), prefabricated timber elements with rock wool insulation, external product management

**Special aspect:** research project with special funding (ASCR – Aspern Smart City Research) involving tenants in extensive monitoring

**Quality assurance:** blower door test, energy consumption monitored, indoor air quality measured

**Assessment of building:** klimaaktiv Gold, ÖGNB (855 out of 1,000 points)

“Like slices of salami of varying thickness, differing sizes of flats can be cut to size here,” explains the architect Peter Sapp from querkraft; the approach aims at structural sustainability over decades.

The complex’s energy consumption is handled by an intelligent system, using a mix of various renewable sources of energy. It is being investigated by ASCR – Aspern Smart City Research in an energy research project; the users participate in the associated monitoring to a considerable extent – in a kind of playful contest they are made more aware of the issue of economising on energy.



Left to right: Robert Hammerling, Florian Janny, Peter Sapp, Manfred Pagler, Alfred Berger

Well-thought-out floor plans plus attractive open spaces that can be used in a variety of ways result in a residential setting well worth living in, in spite of severe limitations on cost.

## A FEAT OF SPATIAL DESIGN

SMART Wohnen – Sonnwendviertel II, Vienna




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**Promoter:** HEIMBAU Gemeinnützige Bau-, Wohnungs- und Siedlungsgenossenschaft

**Architects:** Geiswinkler & Geiswinkler - Architekten ZT GmbH

**Specialised planning:** Woschitz Group GmbH/RWT Plus ZT GmbH (building physics, structural engineering), Auböck + Kárász Landschaftsarchitekten (landscaping)

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The flat-building programme SMART Wohnen aims to achieve affordable rents, modest construction costs – and therefore very compact flats. In Viktor-Adler-Strasse, close to Vienna’s main station, SMART Wohnen was the subject of a contest open to promoters for the first time ever. Out of 148 subsidised flats, 116 were designed to satisfy criteria of thriftiness. Kinayah Geiswinkler finds it an interesting challenge to create something great in spite of the flats being so small. The Geiswinklers, who have plenty of experience in designing flats, decided in favour of floor-plan modules and a structure of access and ancillary spaces with more to them than just being a corridor or a balcony. To maximise flexibility, none of the interior walls bear loads. With differing final layouts, a 55 square metre flat, for instance, which would normally have only one bedroom, can feature an additional closet; with 70 square metres, two child’s rooms are feasible instead

of one. All the flats go the full depth of the building, and so get light from both sides. “The essential thing in residential building is to create possibilities,” Markus Geiswinkler points out; that succeeds excellently here at the transition zones to public and shared-use spaces. Facing the street, a skeleton of prefabricated concrete elements with air spaces and balconies of varying depth acts as a in-depth filter vis-à-vis the street space. A kind of stacked array of allotments provides space for individual arrangements and ideas. The ground floor is rented to a kindergarten, a pizzeria and various service companies. In Vienna, subsidised residential buildings must include shared-use zones, usually placed at ground level; here they have been placed next to the arcades facing the garden on differing floors. Six brightly coloured boxes accommodate laundries, play areas and room to store bicycles and prams. The corridors are wider at some





points, where people can appropriate them in various ways; this encourages planned and accidental contacts, making them interesting places to spend time. Low-cost residential building need not entail an architecture of deficiency – here this has been proved beyond doubt. With its compact structural shell, the building performs well in energy terms. A controlled ventilation system is provided for the ground floor, but not for the flats above; here the windows on both sides, plus the casement doors from the kitchens to the arcades, make it possible to air each flat properly.

#### FACTS:

**Type of building:** new multi-storey, subsidised block of 146 flats (116 of them in the SMART Wohnen programme) with shared-use zones on several levels, and business and service premises on ground floor

**Completed:** 2016

**Conditioned GFA:** 13,745 m<sup>2</sup>

**Energy consumption ratings (as per OIB 2015):**

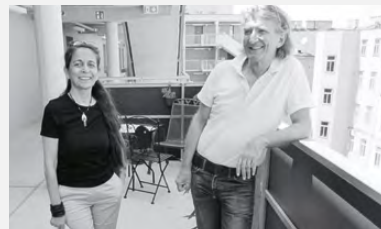
Heating energy rating 20 kWh/m<sup>2</sup><sub>GFA</sub> a

Primary energy rating 130.5 kWh/m<sup>2</sup><sub>GFA</sub> a

Carbon dioxide emissions 10.6 kg/m<sup>2</sup><sub>GFA</sub> a

**Supply facilities:** Vienna district heating grid

**Construction materials:** non-frame reinforced concrete, wood/aluminium windows



Left to right:  
Kinayah Geiswinkler,  
Markus Geiswinkler

A kindergarten and a gymnasium were to be built in confined surroundings close to the centre of the village. As a bonus the entire community benefits from a large open space.

# HARMONIOUS ENSEMBLE

Extension of primary school, Absam-Dorf, Tirol



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**Promoter:** Absam council

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**Architects:** Schenker Salvi Weber Architekten

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**Specialised planning:** IBO - Österreichisches Institut für Bauen und Ökologie (building physics), Moser & Partner Ingenieurbüro (building services), merz kley partner ZT GmbH (structural engineering), DnD Landschaftsplanung (landscaping)

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Left to right: Florian Darnhofer, Arno Guggenbichler, Angelika Flöck, Eva Thiem, Hartmut Gelmini

Apart from a new kindergarten, the sport-minded community of Absam, which has already produced several Olympic medallists, needed a proper gymnasium for schoolchildren and clubs, as well as new facilities for the music school. Roughly 5,000 square metres east of the cemetery and south of the listed primary school were available for this. Each of the new buildings should function independently, be fully accessible from the school, but not interfere with its long-range effect. Mayor Arno Guggenbichler describes the requirement (advertised in an EU-wide architectural design contest) as “serviceable architecture which knows its place”; the task was also a challenge in terms of communal planning. The partnership of Schenker Salvi Weber won the contest with the suggestion that the gymnasium go completely underground. With this breakthrough there was no need to cramp the existing (listed) building, while there would be room above ground for an open space accessible round the clock.

Where school and cemetery had previously existed side by side, close to the centre but on the fringe of things, adding the detached kindergarten yielded an ensemble that made more of the location both functionally and aesthetically. A masterstroke of orchestration, the way the view from the head of the steps leading down to the open space below takes in the tower of the St. Michael basilica, while the space itself – new, friendly and full of light – widens to the south toward the village. With its white sgraffito and the offhand arrangement of larger and smaller openings with smoothed-off plaster surrounds, the plain cube of the two-storey kindergarten blends in

## FACTS:

**Type of building:** new kindergarten and three-in-one gymnasium as extension to a listed primary school

**Completed:** 2016

**Conditioned GFA:** 3,908 m<sup>2</sup>

**Energy consumption ratings (as per PHPP):**

Heating energy rating 12 kWh/m<sup>2</sup><sub>TFA</sub> a

Primary energy rating 118 kWh/m<sup>2</sup><sub>TFA</sub> a

Carbon dioxide emissions 31 kg/m<sup>2</sup><sub>TFA</sub> a

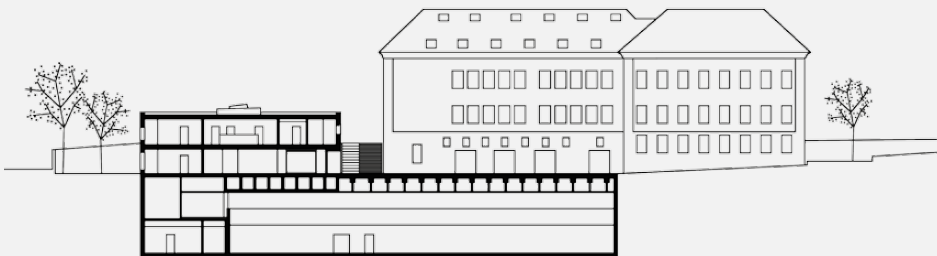
**Building services:** controlled ventilation system with heat recovery, heat pump

**Construction materials:** light-frame timber construction plastered, wooden windows, oak parquet, underground gymnasium in reinforced concrete

**Quality assurance:** blower door test

well with the rural setting. Because it was vital to save weight on top of the underground gymnasium, the mineral façade conceals a timber structure. Implemented to passive-house standard, with controlled ventilation and heat recovery, it satisfies all the criteria of comfort applying to a modern school building. Ecologically sound materials and the timber interior, plus the attractive hand-crafted furniture (much of it designed with great empathy by the architects), result in a pleasant atmosphere and indoor climate.

Though the three-in-one gymnasium – the actual court is surrounded by wood – is not visible from outside, it is not isolated from the world above. A shaft with rungs connects the “underworld” with the kindergarten; along with a continuous bench, the overhead ribbon glazing marks the space off. With apparent ease, the architects achieved extra value while complying with the rigid requirements applying. The initial plan to put the music school in the new building was changed, and it is now located in the converted attic of the primary school, leaving room for an additional playgroup in the kindergarten.



Bringing buildings dating from the 1950s to 1980s up to date as regards building physics and energy consumption is a challenging assignment, requiring not only technical know-how but also creative inventiveness.

## A NEW FACE TO GO WITH TOP-CLASS RENOVATION

Renovating the Faculty of Engineering Sciences  
at the University of Innsbruck, Tirol



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**Promoter:** BIG Bundesimmobiliengesellschaft m.b.H.

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**Architects:** ATP architekten ingenieure

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**Specialised planning:** Passivhaus Institut – Standort Innsbruck (building physics), TB Rothbacher (sound), e7 Energie Markt Analyse GmbH and Grazer Energieagentur GmbH (scientific support)

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Laid out as an American-style campus outside the city from the 1960s according to plans by Hubert Prachensky and Ernst Heiss, the Faculty of Engineering Sciences at the University of Innsbruck is a child of its time architecturally. In 2009, the Bundesimmobiliengesellschaft advertised a two-stage architectural design contest EU-wide for a renovation project for both the Faculty's buildings on campus.



The target was to modernise the buildings thoroughly in terms of physics, energy consumption and safety, while redesigning them in line with today's needs. The winning project came from ATP architekten ingenieure and proposed giving the two buildings (differing in height but otherwise very similar) contrasting countenances. The building for architectural studies received a more open structure, reminiscent of when it was originally built (even though completely modernised). The submission for the State Award concerned the octagonal tower of the Faculty of Engineering Sciences. As a research building with different spatial requirements it was given the look of a typical office block with flush façade; this new look has less to do with "architecture parlante" than with energy-related improvements, namely an 85% savings in energy consumption. The renovation, incorporating several technical innovations, is part of a research project in the programme "Building of the Future Plus".

To free the façade up for improvements, the fire escape (previously outdoors) was relocated indoors, and the cantilevered balconies removed. Since the concrete parapets were not up to the loads involved, the new ribbon windows were attached to a skeleton made of rectangular tubing in front of the façade by means of timber crossbeams. Novel top-hung windows with built-in shading and central control provide automatic ventilation and take care of night cooling. Thanks to specially developed soundproofed overflow elements, the fresh air reaching the office rooms circulates through

## FACTS:

**Type of building:** renovating and extending a university building dating from the 1970s

**Completed:** 2014

**Conditioned GFA:** 12,529 m<sup>2</sup>

**Energy consumption ratings (as per OIB 2011):**

Heating energy rating 4 kWh/m<sup>3</sup><sub>GFA</sub> a

(previously 21.7 kWh/m<sup>3</sup><sub>GFA</sub> a)

Primary energy rating 163.4 kWh/m<sup>2</sup><sub>GFA</sub> a

Carbon dioxide emissions 21.6 kg/m<sup>2</sup><sub>GFA</sub> a

**Supply facilities:** night setback, controlled ventilation system with heat recovery, district heating

**Construction materials:** reinforced-concrete wall (existing), insulation with 24-cm rock wool (Heralan), built-up aluminium façade, rubber flooring

**Special features:** thermally top-insulated façade with specially developed window design; research project partially funded by the Austrian Research Promotion Agency FFG in "Building of the Future Plus" programme

**Quality assurance:** blower door test, energy consumption monitored, noise-abatement measurements, indoor air quality measured

**Assessment of building:** klimaaktiv Gold, ÖGNB (917 out of 1,000 points), certified to EnerPHit (Passive-House Institute)



Left to right: Christian Volgger, Bertram Knoflach, Paul Ohnmacht, Michael Hofstädter, Arnold Tautschnig

the whole building before being exhausted from the core zone. But apart from enough oxygen being supplied, ample expanses of glass create an airy atmosphere, too. The energy-efficient lighting system, which reacts to daylight and movement, is helpful in reducing end-use energy consumption. In reaching passive-house standard (as per EnerPHit), the building is exemplary not only as a result of its performance in energy terms but also as regards the intensive and productive interdisciplinary collaboration between numerous participants.

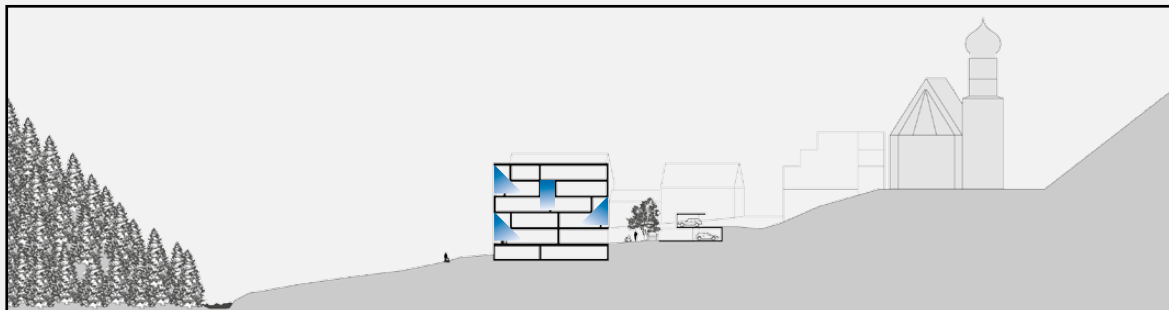
**In rural areas, high-quality subsidised multi-storey residential building is in short supply. An ambitious project in Montafon demonstrates that there are possibilities even on a tight budget.**

## CATCHING THE LIGHT IN A SHADOWY GLEN

Block of flats in St. Gallenkirch, Vorarlberg

Even in places with plenty of tourists in winter as in summer, emigration is an issue. One strategy to counteract it is attractive, affordable accommodation. Back in the 1990s, the promoter had projected a block of flats in St. Gallenkirch in Montafon that was never implemented because the council did not report a need for it. By the time the council changed their mind, the project was outdated, and a new approach to passive-house standard was required – and found (by way of a contest by invitation) in the shape of a cube, extremely compact outside, but surprisingly full of variations inside, from Dorner\Matt Architekten. The six-storey building stands below the Silvretta road, at the lowest point in the settlement but close to the village, with the church tower in view. Architect Christian Matt explains the setting: “Montafon is a deep V-shaped valley. So the

sun is far above most of the time. People settle down below, the sunny slopes belong to the cows.” So the task is to get as much light as possible into the flats. The height of the building is an advantage here – because it stands so far down, it does not intrude into the silhouette of the village as a whole, and the flats have been dovetailed into each other in a very clever way. Thermal mass is provided by the reinforced-concrete service core with stairway and attached plumbing units. Between the solid core and the outer shell there is thus room to manoeuvre, which the architects utilised to achieve variety (rather than more of the same) with a wide range of flats, and particularly to create traps for daylight. And so fourteen of the twenty flats that have glazed loggias (partly at the sides, too) also came by a two-storey air space in their living area.




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**Promoter:** Alpenländische Heimstätte

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**Architects:** Dorner\Matt Architekten

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**Specialised planning:** DI Bernhard Weithas GmbH (building physics),  
E-plus Planungsteam GmbH (building services),  
Mader&Flatz Ziviltechniker GmbH (structural engineering)

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Left to right:  
Wilhelm Muzyczyn,  
Christian Matt

Unavoidably, the flats are not especially large (mainly two and three-room units), but the tall windows not only let more daylight in and provide a view of the mountains, they also generate a feeling of spaciousness: an extra that only the compact, cost-effective design made possible, as Wilhelm Muzyczyn, CEO of Alpenländische Heimstätte points out.

The building qualifies as a passive house; it is heated by pellets and has a controlled ventilation system with heat recovery. There are no solar panels, since the solar yield – largely in the shadow of the imposing mountains opposite – would not have justified investing in them.

#### FACTS:

**Type of building:** new (subsidised) block of 20 flats with shared-use areas on ground floor

**Completed:** 2016

**Conditioned GFA:** 1.858 m<sup>2</sup>

**Energy consumption ratings (as per OIB 2011):**

Heating energy rating 13.6 kWh/m<sup>2</sup><sub>GFA</sub> a

Primary energy rating 114 kWh/m<sup>2</sup><sub>GFA</sub> a

Carbon dioxide emissions 9 kg/m<sup>2</sup><sub>GFA</sub> a

**Supply facilities:** biomass heating, controlled ventilation system with heat recovery

**Construction materials:** solid reinforced-concrete core for access, lightweight timber façade with 26-cm rock wool, windows free of PVC

**Special features:** modular concept of switchable rooms that can be allocated to various different adjoining flats as need arises, two-storey air space in 14 flats

**Quality assurance:** blower door test, energy consumption monitored

**Assessment of building:** klimaaktiv Gold



In the small community of Brand in Brandnertal, people take tradition and ecology seriously. And the future, too – as this new, extremely energy-efficient multi-purpose building reveals.

# GETTING IT TOGETHER

Primary school and kindergarten in Brand, Vorarlberg



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**Promoter:** Brand council

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**Architects:** ARGE zottele . mallin architekten and Bruno Spagolla

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**Specialised planning:** Umweltverband Vorarlberg (coordination of specialised planning), DI Bernhard Weithas GmbH (building physics), amiko bau consult (structural engineering)

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The new timber building in the centre of Brand carries the word “Zemmako”. That sounds exotic, but has no connexion with the Far East – it’s Vorarlberg dialect and was the winner in a contest among the local people to find a suitable name. It stands for “Zusammenkommen” (coming together). The multi-purpose building accommodates not just the children in the kindergarten and primary school, but also the music school and the choir. Along with the “movement room” available for events, this ensures that the building is in use in the school holidays, too. “After two years’ operation, we are very happy,” says Michael Domig, the young mayor of this 700-inhabitant community, which is gaining in population in spite of being on the fringe of things – and the all-day child-care facilities certainly make a difference here.

From outside you would scarcely guess that there is so much going on inside this straightforward-looking building. According to architect Christian Zottele, existing buildings in the immediate vicinity provided stimuli for the design. In the so-called Walser ensemble, consisting of the old school building, a typical local farmhouse, the vicarage and the church (which Leopold Kaufmann, Helmut Eisentle and Bernd Haeckel extended with a timber structure in the 1960s), traditional and modern elements blend together well. In the tradition of the old carpenters the solid timber structure stayed visible – now, of course, using not logs but cross-laminated timber. With so many functions combined in one building, soundproofing is an issue; to minimise sound propagation, the structure is made up of six separate boxes structurally independent of each other.

In 2016, Brand became an e5 community; so it was clear that ecologically sound materials are employed, and that the building is implemented to passive-house standard. The timber is from local sources; sheep’s

## FACTS:

**Type of building:** new primary school plus kindergarten

**Completed:** 2015

**Conditioned GFA:** 1,358 m<sup>2</sup>

**Energy consumption ratings (as per PHPP):**

Heating energy rating 13.6 kWh/m<sup>2</sup><sub>TFA</sub> a

Primary energy rating 86.2 kWh/m<sup>2</sup><sub>TFA</sub> a

Carbon dioxide emissions 22.5 kg/m<sup>2</sup><sub>TFA</sub> a

**Supply facilities:** controlled ventilation system with heat recovery, heat pump (borehole 1,000 m deep) with thermal wheel

**Construction materials:** non-frame timber structure with 24-cm rock wool, external product management

**Quality assurance:** blower door test, energy consumption monitored, indoor air quality measured

**Assessment of building:** klimaaktiv Gold, listed as ultra-low-energy house with PH components in 2015

wool and cellulose are used as insulation. Residual energy consumption – very little in a passive house – is covered by a brine heat pump. In conjunction with a PV facility on the roof of the adjoining building yard, this will help to achieve the aim of making the community self-sufficient in energy. A controlled ventilation system supplies fresh air; a thermal wheel ensures that the air indoors does not get too dry even in cold winters. As the main rooms are lit from two sides, and with a combination of shed and flat roof, the interior receives plenty of daylight. Large windows provide perspectives toward the church and the valley or the mountains. Though the functions are clearly separated, spatial dovetailing contributes to the family atmosphere of the school; for instance, the “movement room” on the lower floor extends upwards into the ground floor, and ample fixed glazing ensures visibility here. Glass wall segments open onto wide expanses with plenty of space for play. A mini-cluster school as an example to some larger ones.



Left to right:  
Michael Domig,  
Christian Zottele

# STATE AWARD FOR ARCHITECTURE AND SUSTAINABILITY 2017

## The Award

In 2017, for the fifth time, the Austrian Federal Ministry for Agriculture, Forestry, Environment and Water Management (BMLFUW) honours projects of outstanding worth, in terms of architectural quality and of sustainability, with the State Award for Architecture and Sustainability, thus encouraging further development and innovation in the world of construction projects.

The Award was initiated by Roland Gnaiger (University of Art and Design Linz) as chair of the Jury in 2006, on behalf of the Environment Ministry. In subsequent years (2010, 2012 and 2014), the Award was established in collaboration with the Austrian Society for Environment and Technology (ÖGUT) and the Austrian Institute of Ecology.

## Organisation and procedure

The State Award is advertised within the framework of the Environment Ministry's climate-protection initiative **klimaaktiv**.

Overall responsibility for this lies with the Department of Energy and Economic Policy within the Environment Ministry; the Austrian Society for Environment and Technology handles organization and realisation. University of Art and Design Linz and pulswerk GmbH, a subsidiary of the Austrian Institute of Ecology, provide support in special areas.

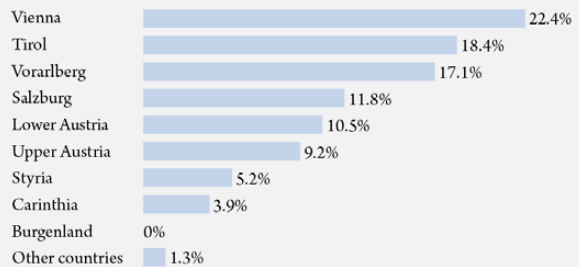


The organisers (left to right): Hanna Brugger-Dengg (Grayling Austria GmbH), Inge Schrattecker (ÖGUT), Franziska Trebut (ÖGUT), Beate Lubitz-Prohaska (pulswerk GmbH), Elisabeth Bargmann (BMLFUW), Clemens Quirin (University of Art and Design Linz)

## Submissions

76 submissions come from eight of Austria's nine provinces; one project had been implemented abroad. As in previous years, the east and west of Austria were strongly represented.

### Distribution by province



### Distribution by type of building



### Distribution by category



**Carinthia (3)**

Haus Sternberg,  
Velden am Wörthersee (renovated)  
Velden music school,  
Velden am Wörthersee (renovated)  
Nationalparkdirektion Hohe Tauern,  
Großkirchheim

**Lower Austria (8)**

District administrative centre,  
St. Pölten  
Kremszeile grammar school,  
Krems (renovated)  
Protestant church,  
Mitterbach (renovated)  
Detached house, Grafenegg  
Refugium Kloster Hochstrass Hotel,  
Stössing (renovated)  
St. Georgshaus, Bad Traunstein  
Hochsitz residential building,  
Purkersdorf  
Spinnerei housing complex,  
Teesdorf (renovated)

**Upper Austria (7)**

Anton Bruckner Private University,  
Linz  
Hof O, Kematen an der Krems  
Timber housing in Rosenstrasse, Linz  
HTBLA, Hallstatt  
Culture centre Rossstall,  
Lambach (renovated)  
Mayr in der Wim, Garsten (renovated)  
The House,  
Baumgartenberg (renovated)

**Salzburg (9)**

Alpine restaurant Schmiedhof Alm,  
Zell am See (renovated)  
Salzburg prison, Puch bei Hallein  
**oh456 energy-surplus office  
building and cultural power  
station, Thalgau**  
Winklhof agricultural college,  
Oberalm  
MPreis, Piesendorf  
MPreis, St. Martin

ÖAMTC Stützpunkt Nord, Salzburg  
Sankt Cyriak old people's home,  
Pfarrwerfen  
Liefering sport centre, Salzburg

**Styria (4)**

Faculty of Biomedical Engineering  
at Graz University of Technology  
(renovated)  
Raiffeisenbank,  
Irdning-Donnersbachtal  
Erika Horn nursing home, Graz  
Minerroom student hostel, Leoben

**Tirol (14)**

Büro am Anger, Zirl (renovated)  
Congress Centre, Alpbach  
Dolomitenbad, Lienz (renovated)  
Dorfhaus, Steinberg am Rofan  
Egger Stammhaus, St. Johann in Tirol  
**Faculty of Engineering Sciences,  
Innsbruck (renovated)**  
Hof Neuhäusl, Scheffau (renovated)  
Hornsteinhaus, Reutte  
Kranebitten kindergarten, Innsbruck  
Umbrüggl Alm, Innsbruck  
**Absam-Dorf primary school,  
Absam**  
T416 housing complex Schnann,  
Pettneu am Arlberg  
Wohnen im Speckgürtel Innsbrucks,  
Sistrans (renovated)  
Hostel Olympisches Dorf, Innsbruck

**Vorarlberg (13)**

Crossing-keeper's dwelling,  
Bregenz (renovated)  
Gemeinsames Wohnen am  
Kolpingplatz, Bregenz (renovated)  
**Council offices,  
Zwischenwasser (renovated)**  
Haus am Berg, Sulzberg  
Kapelle Salgenreute, Krumbach  
**Montforthaus, Feldkirch**  
Music school and library, Wolfurt  
Omicron Campus, Klaus  
Wolf ski lodge, Lech am Arlberg

Strohbox, Andelsbuch (renovated)  
**Primary school and kindergarten,  
Brand**  
**Edlach primary school, Dornbirn**  
**Housing complex, St. Gallenkirch**

**Vienna (17)**

AKM office block,  
Vienna (Landstrasse) (renovated)  
Aspern Urban Lakeside's educational  
campus I, Vienna (Donaustadt)  
D23 housing complex,  
Vienna (Donaustadt)  
Erdgeschoßzone Kleine Pfarrgasse,  
Vienna (Leopoldstadt) (renovated)  
Research Institute of Molecular  
Pathology, Vienna (Landstrasse)  
Timber/clay attic conversion, Vienna  
(Rudolfsheim-Fünfhaus) (renovated)  
**Timber residential complex in  
Aspern, Vienna's Urban Lakeside  
(Donaustadt)**  
Hörbiger company campus,  
Vienna (Donaustadt)  
University of Technology institute  
building at Getreidemarkt,  
Vienna (Mariahilf) (renovated)  
**neunerhaus Hagenmüllergasse,  
Vienna (Landstrasse)**  
PopUp Dorms, Vienna (Donaustadt)  
Schottenring 19,  
Vienna (Innere Stadt) (renovated)  
Green House student hostel,  
Vienna (Donaustadt)  
**SMART Wohnen**  
**Sonnwendviertel II,  
Vienna (Favoriten)**  
Housing complex and hostel Am  
Kabelwerk, Vienna (Meidling)  
Housing complex Breitenfurterstrasse,  
Vienna (Liesing) (renovated)  
Housing complex Schickgasse,  
Vienna (Donaustadt)  
**Other countries (1)**  
50Hertz Netzquartier, Berlin,  
Germany



MINISTERIUM  
FÜR EIN  
LEBENSWERTES  
ÖSTERREICH

klimaaktiv



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