

State Prize 2010

Architecture and Sustainability

Organisation
Austrian Society for Environment and Technology (ÖGUT)

responsible for the State Prize
Prof. Roland Gnaiger – Linz University of Art

Awarding authority
Ministry for Agriculture, Forestry,
Environment and Water Management

Community Centre St. Gerold
Primary School Mauth
Production Hall Obermayr
Passive-House Estate Samer Mösl
HIT ETH Zürich

General Special School Linz
Eine Welt Handel AG
St. Francis Parish Buildings
Freihof Sulz
Housing Estate Fussenau
Municipal Hall Raggal



lebensministerium.at

klima:aktiv



Prize-giving authority

Ministry of Agriculture and Forestry,
the Environment and Water, Department
Environmental Economy and Energy

Administrators of the State Prize

Austrian Society for Environment and
Technology – ÖGUT



Responsible for the State Prize

Univ.Prof. Mag.arch. DI Roland Gnaiger,
Linz University of Art

kunstuniversität linz
die architektur

Editorial Board

Elisabeth Bargmann
(Ministry for Agriculture, Forestry,
Environment and Water Management)
Drⁱⁿ Sonja Bettel (freelance Journalist)
Drⁱⁿ Julia Lindenthal (ÖGUT)
Mag.arch. Clemens Quirin (Linz Univer-
sity of Art)

Texts

Drⁱⁿ Sonja Bettel
(unless otherwise stated)

Translation into English

David Westacott

Copy editing

Mag^a Merle Rüdissler

Photos

Lukas Schaller, excepting:
Samer Mösl (S. 18-21): Hertha Hurnaus
ETH (S. 24-27): Eduard Hueber
Special School Linz (S. 31 u. 32): Photo-
studio Meister Eder, Stadt Linz
and unless otherwise stated

Design

grafisches Büro – Günter Eder,
Roman Breier, Marcel Neundörfer

Printers

Grasl Druck und Neue Medien GmbH

6



State Prize
Community Centre
St. Gerold / Vbg

Cukrowicz Nachbaur Architekten

14



State Prize
Production Hall
Obermayr
Schwanenstadt / OÖ

F2 Architekten

10



State Prize
Primary School
Wels / OÖ

Marte.Marte Architekten

18



State Prize
Passive-House
Estate Samer Mösl
Salzburg / Sbg

Simon Speigner, sps-architekten

24



Special Prize
HIT ETH / Zürich

Baumschlagler Eberle Lochau

This State Prize is a motor and a reflector. It is to be hoped that it encourages and inspires the Austrian spirit of research and invention, and gives the incentives to business and culture that have already borne fruit in the award-winning examples.

Prof. Roland Gnaiger, Responsible for the State Prize

Nomination



31
Special School 6,
Linz / OÖ



33
Eine Welt Handel AG
Niklasdorf / Stmk

4
Interview
Minister for Agriculture and
Forestry Berlakovich / re-
sponsible for the State Prize
Gnaiger

22
Interview
State Prize - Sponsors

43
The Jury

44
klima:aktiv

46
About State Prize 2010



35
St. Francis Parish Buildings
Wels / OÖ



37
Freihof Sulz
Sulz / VlbG



39
Housing Estate Fussenau
Dornbirn / VlbG



41
Municipal Hall
Raggal / VlbG

Editorial Dear Readers,

The State Prize for Architecture and Sustainability was this year awarded for the second time by the Ministry of Agriculture and Forestry, the Environment and Water. The ministry's aim is to support pioneering developments in all areas of life that can ensure a long-term guarantee of the basis of life. Buildings are to a large extent visible elements of our lifestyle and essential parts of our culture. In the context of the State Prize, we honour buildings that are guiding lights for possible future development. High-quality construction with regard for resources, economy and ecology, social awareness as well as art and culture are the aspects that link these buildings in an exemplary way.

In this way, the State Prize magazine aims to put a piece of the future in your hands. All the creators of the buildings would like these projects to be an incentive and a starting point. Role models that show how construction tasks can be solved taking into account all the aspects of sustainability and good architecture often have a greater effect than any theory.

We wish you interesting reading and will be happy if these projects also inspire your work.

The editorial team

We must reconcile architecture and sustainability

Interview with Niki Berlakovich Minister for Agriculture and Forestry, the Environment and Water, and Prof. Roland Gnaiger responsible for the State Prize and head of the architecture department at the Linz University of Art.



State Prize Magazine Minister, everyone is talking about sustainability. What role does construction play in this?

Berlakovich Around a third of the energy in Austria is spent on heating or cooling of buildings and for the provision of hot water. Austria has committed itself to massive energy savings by 2020, to increase the proportion of renewable forms of energy and to cut greenhouse gas emissions. For this, it is primarily old buildings that have to be renovated with regard to thermal energy. In political processes such as climate strategy or Austrian energy strategy, the increase in renovation rates is thus an essential declared objective. New buildings must be built in such a way that they

require the least possible amount of energy and so that areas of the buildings are used for the production of energy. The new EU building guideline here speaks of “almost zero-energy houses”. The appropriate technologies for buildings are available. Building and renovating sustainably is thus an essential step in the direction of energy independence.

State Prize Magazine What does sustainability in building depend on? Is it about energy use or the materials?

Berlakovich Sustainability is a very comprehensive and multifaceted objective. In the first place it is naturally important to use as little energy as possible and to draw the energy from regionally available

and renewable energy sources. This objective is true for the running of a building just as much as it is for the building materials used, otherwise the total balance of the building is wrong again. This approach is right for the environment and protection of the climate, but also for the regional economy and the creation of green jobs.

Gnaiger Material and energy are important aspects of sustainability; they always have been important for architecture – also from the perspective of design and atmosphere. But other aspects are also important: the three-pillar model locates sustainability in the fields of ecology, economics and social affairs. For me, however, culture and art are also part of it.

State Prize Magazine What is the importance of architecture in connection with sustainability?

Gnaiger Sustainability has always been an implicit component of architecture – St Stephan’s Cathedral is probably the most sustainable building in Austria. A sore point, however, is the opposition between representatives of architecture and proponents of sustainability and their mutual often also justified fears and prejudices. However, this is based on the fact that one’s own discipline is seen too narrowly. In my view the main task of the State Prize is this: it must become a “reconciliation initiative”. In a similar way to which economics and ecology are dismantling their fronts and in part beginning to cross-fertilise one another, sustainability must include art and culture and vice versa.

Berlakovich With the prize we want to show that sustainable construction and outstanding architecture are not mutually exclusive, but on the contrary perfectly complement one another. The many submissions to the two previous State Prizes show that both aspects have to be taken into account and optimised. Good architecture of sustainable buildings makes the subject as a whole more attractive



Minister for Agriculture and Forestry
DI Niki Berlakovich

— Good architecture of sustainable buildings makes the subject as a whole more attractive and interesting. If it is a pleasure to build in this way then we are going in the right direction.

and interesting. If it is a pleasure to build in this way then we are going in the right direction.

State Prize Magazin Do architecture and sustainability also have an immediate effect for users, a municipality or trade and industry?

Gnaiger Yes, on a global standard these aspects are often more decisive than the energy consumption of a detached house. A particularly energy-saving house standing on its own, not linked to anything, is also absurd from the sustainability perspective. Municipal development and spatial planning have an influence on traffic flows and regional value creation, and that is where there are the greatest changes of direction.

Berlakovich In particular, sustainable architecture means “building for people”. Sustainable architecture produces multifaceted advantages. This begins with a high degree of living comfort, low running costs, crisis security and a higher quality of the surroundings. In addition, innovative and beautiful buildings bring an extra competitive advantage for a tourist country such as Austria. On top of this, in the last 15 to 20 years Austria has developed into one of the leading countries in the sphere of sustainable building techno-

logies. Here the range extends from windows and air-conditioning units for passive houses to automatic biomass heating and solar units.

State Prize Magazin Are sustainability and high architectural quality also possible in renovations?

Gnaiger Yes! There is no alternative to this in view of our needs and the amount of stock. In some cases demolition and new construction make more sense however.

Berlakovich In the field of renovation in my view there is still a range of developments ahead of us. With the State Prize we hope that we will also be able to provide incentives and contributions to the discussion. We have to find the criteria for when it is better to demolish and when to renovate. We need renovation strategies for building stocks to minimise their energy use and guarantee the utilisation of renewable energies. In addition we need an intensive discussion on renovation strategies for buildings of historical importance. That is an important issue precisely in a tourist country such as Austria.

Of course, it is a very difficult, often emotional discussion. Here I hope to receive interesting contributions and suggestions from the

newly created Austrian Architectural Commission.

State Prize Magazin Minister, do we need additional programmes or activities in order to promote sustainable architecture?

Berlakovich For the integration and implementation of sustainability in new building and in renovation the dissemination of new knowledge is essential for the process of change. Through various activities in the framework of Klima:Aktiv we are attempting to bring new knowledge to the relevant groups of people. An essential element here is the Klima:Aktiv building standards, which are intended to give a clear guide to sustainable construction and renovation. In addition we want to develop the training focus in the framework of Klima:Aktiv in order to be able to offer more further training for construction professionals. We can use the excellent examples from the State Prize very well in these activities.

State Prize Magazin Mr Gnaiger, what is the situation regarding architects’ training? Is sustainability already an issue here?

Gnaiger There is still a lot missing. But the most important thing is there: a change in mentality. The

young architects are asking about the issue. After all, it’s about more than an added extra in the training course. It’s about networked thinking, about responsibility and care – and in all fields of action, not just in architecture.

State Prize Magazin Has the State Prize for Architecture and Sustainability, which after all was first awarded in 2006, already triggered any changes or created more awareness of these issues?

Gnaiger Yes, definitely. Apart from the number of submissions, the quality is spreading. Architects are reducing their reservations. Never have there been so many architects among the applicants, who have long been among the elite within the disciplines.

We have to continue to win these groups for the issue of overall social responsibility. Ecologists are beginning to understand that “sustainable but ugly” isn’t enough. Sustainability is no longer the playground for untalented architects.

— In a similar way to which economics and ecology are dismantling their fronts and in part beginning to cross-fertilise one another, sustainability must include art and culture and vice versa.

responsible for the State Prize
Prof. Roland Gnaiger





Faschinastraße 100, 6722 St. Gerold

Property developer Gemeinde St. Gerold

Architecture Cukrowicz Nachbaur Architekten ZT GmbH, Bregenz

Energy planning Engineering office Werner Cukrowicz, Lauterach

Construction physics Bernhard Weithas, Hard

A small community sets high standards for ecology and sustainability, the architects have a very emotional approach to architecture. The result is a consistent example of sustainability that has become architecture.

Everything that's possible

ST. GEROLD COMMUNITY CENTRE / VLBG

— When the small municipality of St Gerold in the Großes Walsertal decided in 2005 to build a new community centre with local-authority offices, kindergarten, village shop and a multi-purpose centre, they wanted nothing but the best. This did not have anything to do with luxury, however, but with a comprehensive standard of ecology and sustainability. As much wood from the municipal forest as possible was to be used in the construction, and apart from this the building was to be built in an energy efficient way with high-grade ecological materials. After all, the municipality is in the Großes Walsertal biosphere park – a Unesco-award-winning model region for sustainable forms of economy and living.

In order to realise all these demands, from the beginning the municipality engaged the Vorarlberg Environmental Institute, the Vorarlberg Energy Institute and the Spektrum Bauökologie company as consultants for ecological construction and ecologically sustainable procurement. In order to achieve the best architectural solution for the steeply sloping site on the main road and the approach to the monastery, the municipality announced a competition, which was won by the Curowicz Nachaur architect's bureau from Bregenz.

A solitaire as a landmark

The architects developed the community centre as a four-storey solitaire, which together with the listed school building creates a spatial gateway situation at the entrance to the village and with its clear, untreated wooden facade is a landmark for sustainability. The various uses of the community centre are spread over four stories,

although only two storeys can be seen from the upper entrance. At the foot of the building, on level two, an exit leads from the kindergarten directly into a playground sheltered from road traffic.

In the course of the construction a square with fountains, benches and trees was created in front of the entrance at street level, which not only serves as a car park but also as a village square. "It was important for us that with the building of

The village shop: all wood



a community centre we also got a village centre in our street village,” says mayor Bruno Summer.



Local wood

The community centre is a wooden construction; only the supporting walls touching the ground are of reinforced concrete. It is the first four-storey wooden construction in Vorarlberg.

The white pine used in the construction and for the surfaces comes, as called for, largely from the municipality's forests; the saw-mill and joinery work was carried out in the neighbouring village.

The traditional handling of the building materials also ensures the sustainability of the material and the finish. Project manager Stefan Abbrederis: “It was important for us that the timber was felled in the winter and dried in the air.” This improves the durability of the wood and saves the energy that is wasted in mechanical drying of timber, possibly also when it has been felled when it is too moist.

The wood was used in a completely untreated way, even for the floors. These are made of rough-sawn planks that are cut with a slow-moving saw, which gives them a typical pattern and a fine, furred surface. The floor feels like a wooden carpet and is extremely easy to care for, architect Andreas Cukrowicz explains. The “wooden carpet” was also laid in the village shop, which gave rise to some discussion with the responsible authorities. Finally it was possible to convince them that from the point of view of hygiene and the atmosphere in the room, the wood was on a par with a tiled or PVC floor, if not even superior.



St. Gerold Community Centre
Forecourt

Photo: Hanspeter Schüss

Ecological down to the smallest detail

The municipality would not have had PVC in the building in any case. Under the eco-guidelines of the Vorarlberg Environmental Association, all materials had to be free of PVC, H-FCKWs/HFKWs and other hazardous materials (such as heavy metals in paints, for example). Foams, silicon and materials with excessive packaging were not permitted either. The guidelines were adhered to even for electric piping and cabling. Regenerating raw materials such as wood fibre and

sheep's wool were used for insulation. Even the lift, which ensures barrier-free access to the whole building, is made out of wood.

This consistency in the use of the materials has a positive side-effect, as Andreas Cukrowicz notes: “For us it is important that a building smells good and that one likes it” – and in that they have definitely succeeded.



1 Local authority
2 Mayor's office
3 Meeting room

1 Church hall / Kindergarten exercise room
2 Village shop



Creche

Kindergarten



meeting room

Heat from the ground

Of course, a classic example for ecology, sustainability and domestic value creation like the St. Gerold Community Centre also has to be sustainable in everyday running. The community centre is conceived as a passive house and is the first non-residential building in Vorarlberg certified by the Darmstadt PHI. The low heating requirement 14 kWh/m²a (PHPP) is covered by a heat pump with two geothermal probes and a brine cycle.

In addition, the waste heat from the

village shop's cold stores is used. The hot water requirement in the building is so low that an additional solar-power unit is not necessary. In summer the geothermal probe unit is used for cooling. The wooden furniture, largely integrated directly into the building also contributes to sustainability as does the little village shop, which guarantees the local provisions and as well as usual goods also sells regional farm produce.

On their visit, the jury of the State Prize for Architecture and Sustainability was very quickly impressed by the likeable buildings of the St. Gerold Community Centre, and the first impression also withstood closer inspection. The reasons given for awarding the State Prize say, among other things: "With this unique work, the architects are continuing their favourite theme 'wood in architecture', or better, 'architecture in wood'. The total constructive and aesthetic concept is simple, plain and simultaneously perfect. All elements, including the furniture, lighting

elements or lift, are deeply rooted in this concept. The mono-material approach, which characterises the whole work, is not an end in itself but an inspirational framework for the colourful processes that take place in the building."

PROJECT DETAILS

Use

→ local authority offices, kindergarten, village shop, multi-purpose room

Building type

→ new build to passive-house standard

Completion

→ 2009

Energy code

→ heating requirement 14 kWh/m²a (PHPP 2007)

Energy concept and system

→ The low-maintenance house technology concept in the technology room includes a water/brine heat pump with two geothermal probes (160 m) and a brine-earth collector under the base plate. The low hot-water requirement can be completely covered by the heat pump.

Construction biology and user comfort

→ High spatial comfort and air quality through the almost exclusive use of local white pine. Even the lift shaft and the lift are made of wood. Maintenance-friendly construction, regional raw materials for construction and building, insulation and sound-proofing with renewable raw materials such as wood-fibre insulation and sheep's wool. Avoidance of hazardous waste through chemicals management and ecological optimisation on the basis of the OI3 index.



Andreas Cukrowicz,
Bruno Summer, Werner Cukrowicz,
Stefan Abbrederis

Mauth Primary School is a manifesto for the all-embracing responsibility of the town of Wels and proof of the fact that social, ecological and pedagogic sustainability are compatible with the highest architectural demands.

A school as it should be

MAUTH PRIMARY SCHOOL / OÖ



— In Upper Austria, after Linz, Wels is the town with the biggest population influx and has a high proportion of children and young people. For this reason it became necessary to build a twelve-class primary school in the Neustadt district. The fact that this school was to be something particularly brilliant was clear from the beginning. On the one hand, since 2008 Wels had committed itself to construct all new buildings to the passive-house standard, on the other it was to be a “moving school”, because according to the head teacher Monika Wiesmeyr: “Movement is important for children’s development, it is an indispensable form of the acquisition of knowledge and promotes memory powers.”

Apart from this, half of the children at the Wels primary schools come from an immigrant background, so it was important, says the district school inspector Barbara Pitzer “that the school facilitates a great deal of movement and flexibility, because people from different countries and cultures learn differently.”



Classroom with flexible desks

Kopernikusstraße 1b, 4600 Wels
Property developer Stadt Wels – Holding Wels
 Immobilien GmbH & Co KG
Architecture Marte.Marte Architekten
 ZT GmbH, Weiler
Energy planning Engineering office Ing.
 Grillenberger GmbH & Co KG, Perg



A lot of light and air

Inside the almost square building structure orients itself around an open atrium with plastering, two trees and a bench. The corridor area with generous glass surfaces, which in movement breaks is populated by jumping, dancing and playing children, leads around the courtyard. In front of the library on the first floor, the school’s “learning and research station”, there is a terrace for reading facing the inner courtyard. In the sense of the “moving school” there is no rigid timetable but various teaching units that are broken for longer breaks for movement and eating.

Making special features visible

The architects Marte.Marte, who won the EU competition for the Wels-Mauth primary school, have made the special features of the school already visible from the outside. The light, two-storey building with golden windows and sun-yellow blinds stands confidently in the new housing estate area and signals that here one can learn well and happily. An incision in the south-western corner marks the entrance and offers protection and security for waiting pupils. The square in front of and next to the school can be used by the residents of the surrounding houses and is loved by children and young people for skating and bike riding.

The furniture of classrooms, which are arranged around the outer side of the building, also promotes movement: instead of a big blackboard there are five smaller ones which can be slid backwards and forwards as needed. The desks are triangular and have a roller on one leg so they can be put together in the most varied formations. Thus one group in the class can be adding up, for example, while the other is working on a joint poster. This, too, leads to the fact that the pupils have to move more and be more active in the lessons. Between every two classrooms there is a shared common room.

In addition there is a workshop, a school kitchen with a canteen, a gymnasium, the assembly hall which can also be used for events, and spacious rooms for teachers and the school management.

Open rooms, open relations

The light, open rooms support the teaching concept; children (and teachers) can relax in the corridors with a view of the outside, says Monika Wiesmeyr: "In the primary school it is very much about human and social development. We are sure that this works better here than in other school buildings." The satisfaction with the school is correspondingly high and if there are problems they are discussed

openly. The fact that attention was paid to sound insulation in the construction also ensures a high quality of life. This is immediately noticeable to visitors says the head teacher.

The energy details ensure a good climate in many regards: the Wels-Mauth primary school is a passive house. Energy from geothermal probes through heat exchangers and controlled air-conditioning ensure cosy warmth in winter and pleasant coolness in summer. The heating requirement is so low that under-floor heating has only been installed in front of the windows. Each class has its own air-conditioning unit; the CO₂ levels are measured in every room and automatically controlled by the air-conditioning. The maintenance of the air-conditioning units

is done from the corridor so that it does not disturb the lessons. There are centrally controlled exterior blinds in order to prevent overheating on hot days. At the same time, however, they can also be adjusted individually in the classes. A 28 m² photovoltaic unit and a 50 m² solar array produce electricity and hot water.



Atrium, reading balcony on 1st floor

Participation in building and operation

In order to guarantee the best possible maintenance and care for the school, the school caretaker Peter Grebien was involved in the planning from the start. The concept of the "moving school" was part of the architectural competition from the beginning, says Karl Pany, building director of Wels. It is unique that first there was a pedagogic concept and then the school building was planned afterwards, emphasises the district school inspector Barbary Pitzer. The teachers, some of whom are having to get used to the new form of teaching and the concept of the passive house for the first time, were trained in the functioning of the air-conditioning and the blinds.

The pupils, too, are allowed to participate in the discussions and the planning: they paint and make things to decorate the corridors and design the school's nature garden, in which they climb and play but can also plant and harvest vegetables and berries. There is a school bus and a footpath concept of the town of Wels for a safe route to school.

The jury for the State Prize for architecture and sustainability praised the fact that the history of the Mauth primary school started with the political acknowledgement of the town of Wels of its all-round responsibility in the form of sustainable con-

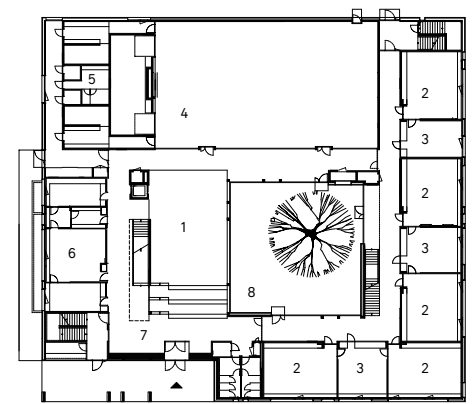


Planners, school team, developers' representative



struction, respectful approach to its immigrants and an openness with regard to the urgent change in direction in educational policy. "Here what a school ought to be and will be is anticipated and spatially manifest: a differentiated world of teaching and learning courses, space for different learning atmospheres, learning speeds and group sizes and for the children's unhindered movement needs that support their experience of the world."

Apart from this, the Mauth primary school proves that a compact form does not have to be boring and the requirements of sustainability may also come up to the highest architectural demands.



ground floor

- 1 Assembly hall
- 2 Classrooms
- 3 Connectable classroom extension
- 4 Gymnasium
- 5 WC / cloakroom
- 6 Office / administration
- 7 Corridor / exercise room
- 8 Courtyard

PROJECT DETAILS

Use

→ primary school, shared use of gymnasium by association

Building type

→ new build to passive-house standard

Completion

→ 2009

Energy code

→ heating requirement 14 kWh/m²a (energy certificate)

Energy concept and system

→ photovoltaic array (28 m²), heat pump with underground probes and solar thermics (50 m², 42% of hot-water requirement). Decentralised CO₂-controlled air-conditioning units. The external blinds are automatically controlled, but can also be regulated manually by the users. Underfloor heating in front of the windows.

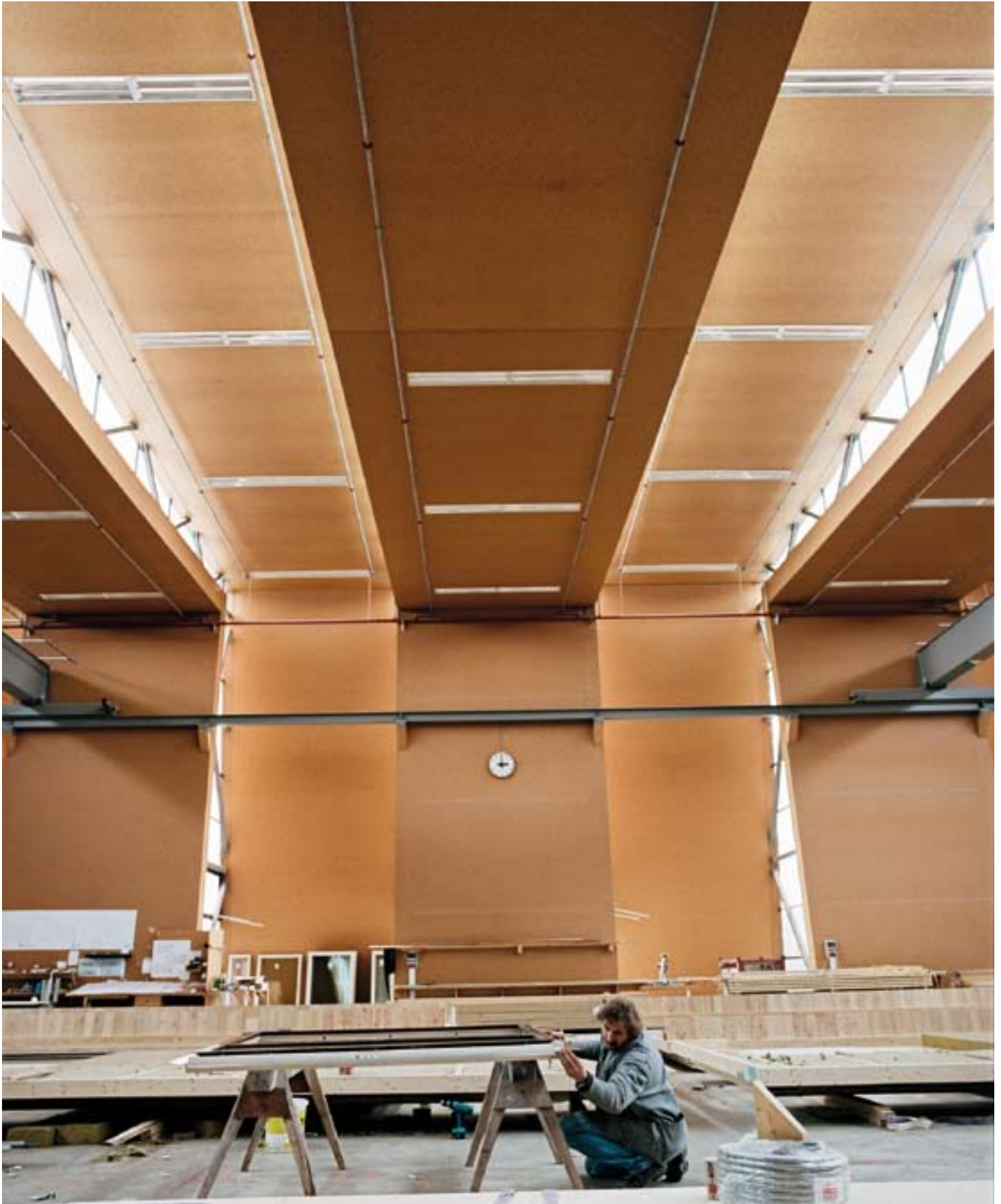
Construction biology and user comfort

→ Low-emission materials, high sound-proofing, a greened roof, school nature garden, terraces, opportunities for open-air play and, not least, classrooms and corridors flooded with light determine the outstanding comfort of this school. The moveable set up of the classrooms is part of the teaching concept.



The school nature garden

Attractive and energy-efficient. These adjectives were not previously usually linked in connection with an industrial building. Together with the F2 architects, however, the Obermayr timber construction company has set a new standard.





— When it's a question of innovative timber-frame building the Obermayr company from Schwanenstadt is usually not far away. For over ten years the company has been manufacturing finished timber components for detached houses, housing estates, sport halls, public buildings, bridges and much more. What was missing in the portfolio was a big production hall built to

passive-house standards. So it was good that in 2004 the Obermayr company itself needed a new-production hall and so was able to create the first prototype. "We experimented and simulated a great deal, because there were no suitable models for it," says Markus Fischer of F2 architects. What came out of it is an architecturally outstanding building that stands in the fields like an exquisite piece of furniture.

Floating, folded construction

The hall was built on a 3,500 square-metre site on the land of the Obermayr timber construction

company in Schwanenstadt. The building is folded plate, which grows out of the ground on the western side, spans the production area and ends, jutting out on the eastern side in an unsupported 18-metre canopy. The five lines of folded plate are glazed on the sides, allow a great deal of light and warmth into the building and so contribute significantly to the low energy requirements of the hall. Over its whole length the folded construction is based on just two internal rows of supports and on the eastern wall. The slanting west walls serve as a stiffening on the longitudinal axis and with glass sides also contribute to the lighting. The untreated larch cladding of the facade and the brown glazed three-ply boards of the folded bands symbolised a sliced-open trunk, says architect Markus Fischer: the dark bands the furrowed bark, the larch cladding the cut edge that greys over time. All the hall's supports are made out of laminated wood and the travelling ceiling cranes are stored on them using consoles. The boards are high-temperature insulated laminated wood elements which owing to cladding on both sides with pressed-wood boards are so stable that no additional construction components are needed for horizontal rigidity.

A prototype as a masterpiece

PRODUCTION HALL OBERMAYR / OÖ

Johann-Pabst-Straße 20, 4690 Schwanenstadt
Property developers Obermayr Holzkonstruktionen GmbH
Architecture Markus Fischer & Christian Frömel,
 F2 Architekten ZT GmbH, Schwanenstadt
Energy planning Oskar Pankratz, designAID, Haidershofen
Lighting concept Hans Peter Ebner & Tanja Kronibus,
 Zumtobel Lighting GmbH, Linz/Dornbirn

Insulation instead of heating

Just like the architecture, the energy concept is also convincing: the walls are insulated with 28 cm of wood shavings, which are the waste product of the production. "Instead of using the wood shavings for heating, as in other halls, we have filled the walls with them," says Hans Christian Obermayr. This is not permissible as insulating material in the roof, so this is insulated with 40 cm of rock wool balls, which accumulate in the



Canopy

production of metal fire-protection panels and are usually disposed of. The glazed supports of the roof and on the west side on the one hand provide the connection between the interior and the outside, and on the other hand let in light and energy, which is actually the only "heat source" in the production hall. Light, reflective roof foil in the lower areas of the folded structure further amplify the light. As a result of the insulation and the airtight shell, the heating requirement is only 13 kWh/m²a (PHPP) in order to achieve the desired room temperature of 15 degrees Celsius. This temperature is sufficient, says Hans Christian

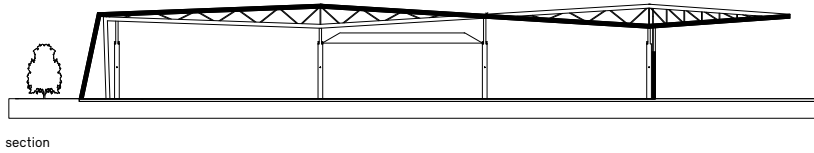


Markus Fischer,
Christian Frömel,
Hans-Christian Obermayr,
Oskar Pankratz

Foto: Jury

Obermayr: "We don't need 20 degrees room temperature, because otherwise the workers sweat too much."

To achieve this temperature the hall would only have needed a small amount of heating, which could not have been economically produced and distributed. For this reason heating was completely dispensed with. Energy planner Oskar Pankratz explains why a constant minimum temperature is nevertheless maintained in the hall: "In the course of the year a warm bubble develops under the hall, which keeps the average annual temperature constant."



Glazed areas let in warmth and light



The soil thus serves as a heat store and insulation at the same time. Even on cold, foggy days it is not under eight degrees Celsius in the hall." The hall's concrete floor is therefore not insulated, only in the working areas, that is, where workers have to stand for a long time, is the floor made of wood with rock-wool insulation. Hans Christian Obermayr says that the lack of heating has a positive side-effect: "The workers dress more warmly as a result and don't catch cold when they go out in the winter." Apart from which they felt more personally responsible for the climate in the hall and shut the doors again quickly. In other halls, which are heated with wood shavings the door frequently remains open. On hot days in summer the hall heats up to some 27 degrees at midday. This is significantly less than in usual industrial halls, according to Oskar Pankratz. If it gets too hot, ventilation flaps are opened at the side and above. Thanks to the adjoining fields the hall cools down again sufficiently at night.



within seven years, says Hans Christian Obermayr. Because electricity prices have risen sharply, this has already paid off after less than five years. The Obermayr industrial hall brand has another advantage: if it is not needed any more one day it can simply be dismantled, used elsewhere, or burnt. Normal halls usually end up as hazardous waste.

So it's no surprise that the State Prize jury judged the production hall as an all-round success: "The height and form of the timber supports follow the course of the forces and the light enhancement and form a roof, ceiling and facade landscape of impressive formal power and radiance. The highest demands on daylight utilisation, support-free manufacturing areas and optimised construction lead to a complete form. Free of any superficial (CI) design, without any need of explanation this construction stands for the cultural efficiency of sustainable construction."

More light, lower costs

The lighting concept ensures minimal running costs. The artificial light in the hall is daylight controlled, as a result of which the energy requirement is reduced to a sixth of the usual. Every individual light is dimmable and supplements the missing daylight, so that the lighting conditions in the workplace remain constant at at least 500 lux in the working area. The Zumtobel company has developed its own lighting for it which has been integrated flush in the roof construction. According to the original calculations investment in this lighting system should have paid for itself



PROJECT DETAILS

Use

→ production hall for timber construction elements

Building type

→ daylight hall without heating, ventilation or air-conditioning units

Completion

→ 2005

Energy code

→ heating requirement 13 kWh/m²a (PHPP 2007)

Energy concept and system

→ Under the hall floor a large underground "bubble" that heats in winter and cools in summer is used to maintain a constant temperature. It is activated through a monolithic (20 cm) concrete base plate.

Construction biology and user comfort

→ The hall is made of wood-sandwich panels insulated with wood chips. The roof is insulated with rock wool, a waste product from the production of rock-wool panels. Large glass areas in the wall and ceiling let in natural light and warmth. Even lighting with glare-free daylight and artificial light at a minimum of 500 lux. The intelligent lighting unit, which turns artificial light on and off variably as required means electricity savings of more than 70 per cent compared to normal hall lighting.

Architecture and sustainability are also possible within the constraints of social-housing construction. The “Samer Mösl” passive-house estate in Salzburg has in many respects set milestones for future house-estate projects.

Diversity on all

SAMER MÖSL PASSIVE-HOUSE ESTATE / SBG



— In north-east Salzburg, in the Gnigl district, there is a small but particularly species-rich moor called Samer Mösl. In 2003 the Salzburg property developer “Heimat Österreich” announced a competition for a multi-storey, timber-construction passive-house housing estate for a site near this nature-protection area. The winner was the project by the architect

Simon Speigner as general planner and Holzbau Meiberger from Lofer as the general project manager. In view of the financial constraints involved in building social housing and the situation on site the task was not easy. The building ground was boggy moorland and lake clay, so deep foundations were needed.



Layout plan



levels



Relationship to the landscape

Simon Speigner's design, however, not only met these demands, but he also drew on the furrows in the ground of the site that had previously run from the river to the moor. He brought this structure back with the crevice-like zones and paths meandering between the three blocks. For him it was important to incorporate the Altbach stream that ran along two sides of the site. The open space to the stream remains porous, so the estate can share in this microclimate.

The lengthwise axes of the slim building structures are oriented in a south-west/north-west direction and so provide every room with sun over the course of the day. This is not only important for quality of life but also for the passive energy contribution. Vehicle traffic remains on the edge of the estate, with the gardens of the ground-floor apartments and the terraces and loggias of the two upper stories being useable without traffic nuisance. Children and pets can spend time between the housing blocks out of harm's way.



Record building time thanks to prefabrication

The Samer Mösl passive-house estate is built completely of timber, with the exception of the foundations and the stairway framework (for fire-prevention reasons). This also facilitated an extremely short building time. The Meiberger Holzbau company prefabricated the ceilings of cross-ply laminated wood panels and the almost 8,000-square-metre timber-frame walls with 8-cm rock-wool insulation in the factory and within ten weeks erected them on the site, where the cellulose insulation (28-cm thick) was blown in. The highly insulated exterior walls, 45-cm thick, and the airtight building shell are essential for the passive-house quality.

The heating requirement of the three buildings is between 5 and 11 kWh/m²a and is covered by an economical and low-maintenance pellet heating supplemented by a 200 m² solar-power unit mounted on the flat roof of the middle block, and by controlled ventilation in the apartments.

The controlled apartment ventilation is an essential part of a passive house, but repeatedly causes problems in apartment buildings.

In a 2008 survey of the Samer Mösl passive-house estate carried out by students from the University of Salzburg, 42 per cent of the residents were satisfied with the heating and 59 per cent with the air-conditioning. Architect Simon Speigner takes a relaxed view of this: "One has to learn how to live with a passive house." It is therefore important to have sufficient information about the air-conditioning unit and the importance of shade in summer.

Margarethe Schörghofer, however, who has been living



Photo: July

Lerchenstraße 7-25, 5020 Salzburg
Property developer Heimat Österreich gemeinnützige
 Wohnungs- und Siedlungsgesellschaft mbH
Architecture Simon Speigner, sps-architekten zt
 gmbh, Thalgau
Energy Planning Dietmar Stampfer, Engineering
 office Stampfer GmbH, Salzburg
Construction physics Karl-Bernd Quiring, Quiring
 Consultants, Aldrans
Timber construction Walter Meiberger, Holzbau
 Meiberger GmbH

in the passive-house estate for three-and-a-half years is very satisfied with the housing quality. "It's light, you don't have to heat and there's always good air in here." True, in summer it can get somewhat hot in the living room and the kitchen on the eastern side, but one just has to bring down the blinds at the right time. If it nevertheless becomes too hot, she can occasionally withdraw to the bedroom or the terrace, as every apartment has rooms on both sides of the house.

Sustainable in many different ways

Alongside the energy aspects, many other special features also contribute to the sustainability of the Samer Mösl passive-house estate: the walls are open to diffusion, there are oiled-wood floors, wood-aluminium window frames and wooden terraces. All three roof areas are planted with extensive greenery, the paths between the blocks are only partly sealed. The rainwater is gathered in a cistern for watering the green areas. The underground garage is naturally ventilated and lighted by light from above, and offers plenty of space for bicycles.

All apartments have their own cold- and hot-water meters, and washing machines and dishwashers have a hot-water connection. The materials used are totally HFKW-free and apart from the electric cables are PVC-free. The bitumen coatings and adhesives are solvent-free, all floor coverings, timber materials and coatings are low-emission.

The facade of the new estate provides for a lasting image of the new estate: the rough-sawn pine cladding was treated with a silver-grey glaze that washes out over time and its replaced by a natural greying of the wood. Instead of the irregular weathering of the first years, a homogeneous overall



Dietmar Stampfer,
 Wolfgang Aigner,
 Josef Seywald,
 Simon Speigner

Photo: July

impression develops from the beginning, which many people find important.

Energy-use monitoring has also been employed, as has the quality-control measuring of soundproofing and the internal air quality after the construction was completed. The wealth of these quality features alone make it clear that the "Samer Mösl" estate leaves almost nothing to be desired with regard to energy technology and the environment. Even the planning of the green area with local trees and bushes had been thought of.

Political significance too

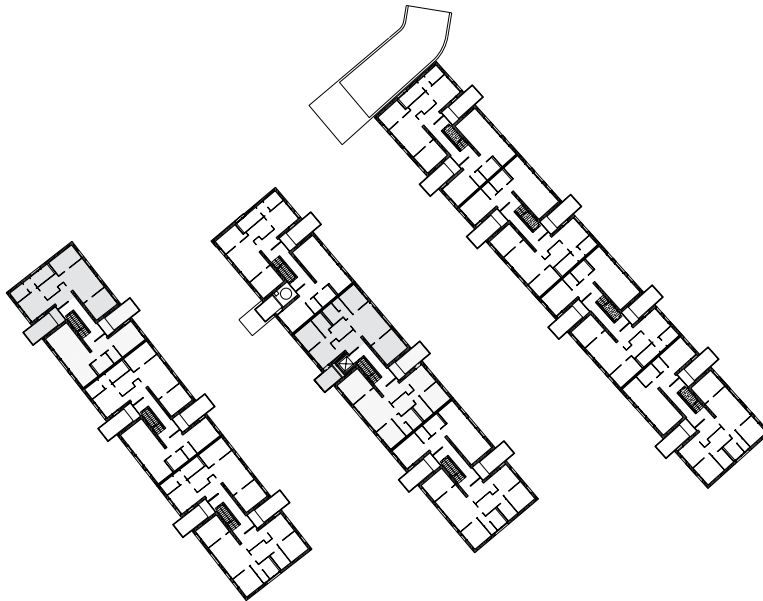
In the jury's view it should be specially emphasised that a large proportion of the population of the "Samer Mösl" passive-house

estate is made up of people with an immigration background: "This successful implementation of this ambitious housing project involving its residents is a further proof of the fact that sustainable construction and socio-cultural demands are not opposites, but can mutually complement one another."

Further, the jury praised the architect Simon Speigner and Holzbau Meiberger as general project manager as having realised a consistent ensemble with a cost guarantee and many elementary innovations that are only evident at a second glance. With their commitment, together with the energy specialist Dietmar Stampfer they have developed and achieved greater room for manoeuvre for future housing estates for the floor-area figures as well as fire-protection and timber-frame building guidelines.



ground plan



PROJECT DETAILS

Use

→ housing estate with 60 housing units in three buildings

Building type

→ new build of a passive-housing estate

Completion

→ 2006

Energy code

→ energy requirement 8 kWh/m²a (energy certificate)

Energy concept and system

→ An economical biomass heating unit (pellets) provides heating for the estate, supplemented by a 200 m² solar array with a 22,000 l buffer-layer storage tank (diameter 1.6 m; height 11 m) and a bare-tube solar heat exchanger with a total surface of 70 m².

Construction biology and user comfort

→ The use of concrete is limited to the basement and the staircase framework. The outer walls are made exclusively of prefabricated cellulose insulated timber-frame elements, the ceilings of cross-ply wood panels. All free roof areas have been extensively planted with greenery, the paths are only minimally sealed and the rainwater is used for watering. Oiled wood floors, wood-aluminium windows, naturally ventilated and lit underground car park. The open areas between the houses are car-free zones; there are large storage rooms for bicycles.

Sustainability is of growing importance

Architecture and sustainability is an issue that affects all areas of construction. This is also evident in the wide range of companies and organisations that have provided financial support for the State Prize for Architecture and Sustainability. The State Prize magazine interviewed them.

State Prize Magazine What is the importance of architecture and sustainability for you?

Binder The term “sustainability” has a very comprehensive, constantly growing meaning in all areas of life. Originally, however, it came from forestry, where at the start of the 18th century a forestry management that ensured continuous yields was for the first time described as “sustainable”. This close connection between sustainability and wood has witnessed the enrichment of the term around ecological, societal and political components. The forest is a domestic core resource. It grows more than it is harvested. The production and processing of wood is environmentally friendly. With an intelligent use, combined with the highest architectural demands, wood has the potential to be the building material of future generations.

Wolschner The rock and ceramics trade association has been arguing for years for the recognition of the equality of the three pillars of sustainability at Austrian and European level. A measure in the construction field does not just have to be ecologically sensible but also economically justifiable and socially acceptable. Ultimately

buildings are there for the people who use them. Present-day and future generations should have the greatest possible advantage from these buildings, with the environment being burdened as little as possible over the whole life cycle of a building and the costs being made transparent in the various life phases.

Koren Sustainable architecture represents a particularly important issue for me personally, as well as for the foreign trade organisation of the Chamber of Commerce, because one can live and work better in general conditions that are ecologically sensitive and with high-quality design and construction. Sustainable construction, an unspoilt natural world and a high level of environmental awareness are among Austria's core competences.

Rainbacher We finance our customers' housing dreams, and naturally that involves high investment. The need for information on questions of high-quality, energy-saving construction is correspondingly great.

Leeb Personally, architecture is important for me because architecture has a massive effect on the quality of the appearance of our

city and our landscape, but naturally also on the living, housing and working quality of every individual. In the long term, we can no longer afford not to build and produce sustainably.

State Prize Magazine Why are you supporting the State Prize for Architecture and Sustainability?

Binder It rewards a pioneering route to a sustainable society. The State Prize for Architecture and Sustainability shows that high-value architecture, ecology and sustainability are interlinked.

Leeb The BAWAG-PSK is supporting the reception for the award of the Austrian State Prize for Architecture and Sustainability because with the Otto Wagner's Post Office Savings Bank building on Georg Coch-Platz, we ourselves are using a building that is a symbolic architectural landmark and in its materials, its building and its structure was even then characterised by sustainability, as it has essentially remained unchanged for over 100 years and is still in fully functioning order.

Rainbacher The subject of ecological, energy-saving building and living has long been assuming a broad space in our communications activities, so we are also quite consciously promoting activities such as the State Prize for Architecture and Sustainability in order to enliven the discussion and create publicity. It is a question of showing new ways to a better way of living at a reasonable price, because living accommodation is one of the most important factors in our quality of life. We ourselves comprehensively renovated our head office building a few years

ago in order to be able to offer our staff modern workplaces and in order to operate the building in a more environmentally friendly and economical way through the use of new technology. In the meantime we have subjected the house to the ÖkoProfit environmental certification, which means that we adhere to stricter standards, for example in waste separation, and have to make continual improvements in the use of resources.

Paulmann As building-materials dealer we are the connection between the property developers, the architects and the production companies. With the State Prize we are offering our customers a platform to submit and show groundbreaking work, and on the other hand we are giving the suppliers a stage on which to present their products.

Koren We are supporting this important State Prize because it makes a very effective contribution to strengthening the awareness for sustainable architecture beyond Austria's borders and with important public and private decision-makers. With this prize we can communicate the expertise of Austrian architecture and planning offices internationally and so generate business for the Austrian construction industry.

State Prize Magazine What do you expect from the State Prize for Architecture and Sustainability?

Leeb A greater focus on quality architecture and sustainable construction with regard to husbanding of resources and the achievement of our climate objectives.

Binder The timber-frame construction projects submitted are

a confirmation that wood can make an essential contribution to sustainability and high-quality architecture.

Paulmann Climate protection and energy savings have pushed significantly into the focus of public interest in recent years. With the commitment to the State Prize we are documenting the great importance of resources and careful construction, and are positioning Quester clearly as a leader in the issue of “sustainable construction”.

Koren Through individual events such as the awarding of the State Prize, platforms that serve the networking, information exchange and research on the subject of sustainable architecture should be more strongly supported. We would like to win planning and construc-

tion contracts for domestic architecture and the property market to a greater extent than before, to lobby for sustainable architecture “made in Austria” and to network the Austrian architecture scene with international business partners.

Rainbacher We are hoping for further inspiration for the issue and precisely in residential building for exemplary projects from all over Austria that will serve as models for our clients. We would like houses that meet the highest technological and artistic standards, and that are financially affordable. After all, sustainable construction must also be financeable.

State Prize Magazine Have you seen a trend to more sustainable building in your area in recent years?

Paulmann Absolutely. We are confronted with the issue of “saving energy” every day. Today however it’s not about reducing energy consumption through building measures. It is much more important not to allow high consumption levels to develop in the first place.

Rainbacher Every year we finance around 10,000 housing units and we are seeing a clear trend in this direction. Passive houses are maybe still a minority programme, but in new builds the low-energy house standard is already the rule – through the granting of housing construction supports. Renovations are also increasing sharply: thus in the Raiffeisen Savings Bank, the proportion of renovation funding, most of which is for thermal purposes, has risen by 50 per cent in the last ten years. This already shows an enormous change in awareness towards greater sustainability. But there is also a lot of uncertainty as to which measures are sensible for one’s own property, and the costs of thermal renovation measures are frequently underestimated. A lot more information work is needed there.

Binder Issues such as climate protection, saving energy and costs, reducing CO₂ emissions are gaining increasing importance in construction, and timber as a building material has the ideal solution thanks to its natural characteristics.

Wolschner Wolschner Precisely in recent years many new concepts of low-energy and passive houses, as well as methods of construction linked with renewable energy sources, have established themselves. The massive building method has advantages here, such as construction-component activation for example.

Koren Environmental technology, sustainable building, architecture and design services from Austria have for years been in ever greater demand from international customers.

State Prize Magazine What do we need in order to promote sustainable architecture even more?

Leeb It is important to sensitise those who ultimately create the architecture to this issue, namely the architects and craftsmen. Support programmes can only have an accompanying effect here.

Paulmann I think we need targeted supports for sustainable construction – of the sort we are familiar with from thermal renovation. The issue should already be a focus in training however. Everyone who is involved in this field could be offered special incentives, such as prizes, scholarships and specific work contracts.

Rainbacher We think that house-building support is very important, because it has the greatest influencing effect. The property developers’ interest in public subsidies is very marked, as we saw last year with the renovation check.

Wolschner We need an awareness-building of what sustainability in building design means. We need new, practical concepts, but it is also a question of the development of criteria for sustainable buildings and their implementation by means of education and training. We are making our contribution to criteria development through the “Nachhaltigkeit massiv” (massive sustainability) research project and the commitment to the European norm process for the “sustainability of buildings”.

Binder If one considers that in other European countries it is permitted to build using timber up to the ninth floor, then in Austria we need a rapid change in the law and more support programmes.

Koren We must also use international platforms for architecture and design, such as the Venice architecture biennale or the 100% Design London, more intensively in order to communicate Austria’s knowledge and competence in this field internationally.



Mag. Rudolf Leeb
head of the Sponsoring & Community Affairs department of the BAWAG-PSK bank.



DI Dr. Bernd Wolschner
vice-chair of the rock and ceramics trade association of the Austrian Chamber of Commerce



DI Ulrich Paulmann
manager of Quester Baustoffhandel GmbH



Dr. Erich Rainbacher
General Director Raiffeisen Bausparkasse bank



Mag. Georg Binder
manager of proHolz Austria, Austrian timber-industry association



Mag. Dr. Walter Koren
head of the foreign trade department of the Austrian Chamber of Commerce

The ETH Zurich wanted to join the “2,000-watt society” at its location in Hönggerberg. The new HIT building is an essential step in this direction and a clear example of how architecture and sustainability can cross-fertilise each other.

Form-setting sustainability

RESEARCH AND SERVICES BUILDING HIT ETH ZURICH / CH





Flexible lounge in the inner courtyard

— The ETH, the Swiss Technical University in Zurich, is constantly in movement. The top university also reacts quickly to scientific and societal changes and is continuously creating new professorships with wide room for manoeuvre for internationally famous scientists. Flexibility and quality were the demands set by the ETH in 2001 in the announcement of a study competition for a new building on the outskirts of Zurich. It was originally intended for areas of the future such as biotechnology and information sciences and was at the same time to provide space for exhibitions and events. From the competition, in which 20 teams applied, the judging commission recommended the project by the Baumschlager Eberle architects' bureau in Lochau in Vorarlberg for further development.

Maximum flexibility

Because the ETH could only secure the funding after five years, the original users had already moved into a different building. So it was decided to turn the HIT into a changing building in which new professors or institutions could be temporarily housed. "Our design already envisaged a flexibly utilisable building; this very much went in the direction of these ideas," says architect Elmar Hasler, managing associate of Baumschlager Eberle St. Gallen.

This openness to constant renewal is immediately apparent when one enters the HIT, the building is inviting. Only on closer acquaintance with the building does one find that the pleasant feeling is a result of the most careful planning, which declared sustainability a principle, from the shape of the building to the light switches.

Wolfgang-Pauli-Straße 27, Hönggerberg, 8093 Zürich
Property developer Gerhard Schmitt und Markus Meier Joos, ETH Zürich Corporate Real Estate and Facility Management, Zürich
Architecture Baumschlager Eberle Lochau ZT GmbH, Lochau
Energy planning Lauber IWISA AG, Naters und HL Technik AG, München



Shade from travertine shields

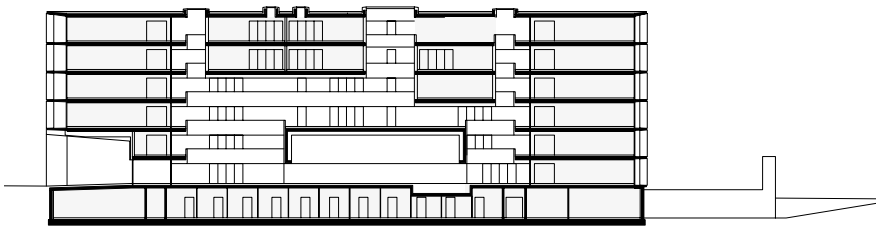


Sustainable in large things as well as small

The basic form of the HIT is a shoe-box, that is, the optimum form for economical energy use. For consolidation and structuring, six seminar rooms were staggered, hanging across different storeys in the courtyard. On the ground floor a yellow box, which can be used as an open lounge or a closed multimedia auditorium invites one in to rest or communicate. The borders of the courtyard are formed by the entrance wings housing the stairways, sanitary facilities, lifts and wiring shafts. Outside are the offices and conference rooms, which as a result of floor-to-ceiling windows are open to the Hönggerberg countryside. Every other glass element is a door, so that all rooms have access to the surrounding balcony.

The work-rooms are laid out in a modular way on a 1.20-metre grid and can be enlarged or reduced as required. The special feature here is that each space unit has its own microclimate. Heating, cooling and ventilation are provided by source-air induction units which are sunk into the double floor in front of the windows. The idea for this, according to Elmar Hasler, comes from the 1970s, but was then dropped because the units produced air flows that were too fast. Baumschlager Eberle have now further developed them for the HIT together with the LTG company. After positive experiences these units are now being produced by several companies. In the HIT the ventilation is also "intelligent": if a user opens a window, a sensor turns off the air-conditioning unit.

The lighting for the work rooms can also be flexibly set up. The ceiling lamps are operated with a wireless light switch, which is simply mounted on the glass wall to the corridor and is programmed according to the number of the lamps in the room. "Pressure on the switch produces the energy it needs to send a signal to the lamp," says Elma Hasler. In addition all lamps have a movement sensor and a daylight sensor, as a result of which optimum comfort is achieved with simultaneous energy efficiency. The heating energy for the HIT is currently drawn from the ETH Zurich low-temperature net on the campus. The building technology, however, is ready for incorporation in the planned provision of energy for the whole campus from geothermal energy. The ETH would like to realise their vision of the 2,000-watt society on the Höggerberg. According to this, a person's energy requirement should correspond to an average of 2,000 watts, instead of the 5,000 to 6,000 watts that is currently usual in Switzerland.



Lounge closed for events

Elmar Hasler



Photo: Thomas Bredenkopf

Photo: Jury



Economical from the start

The compact building, the storage space provided by the construction, the structural sunshade and the fine control of the room climate contribute essentially to the fact that the HIT outperforms the ECO minimum energy standard. Sustainability, however, is not only evident in relation to energy use. Thus, for example, surfaces of glass, travertine and oiled steel ensure reduced care and maintenance work, the placing of piping and cables in shafts and inter-floor space provides easy accessibility.

“For many years Baumschlager Eberle have been working on developing architectural methods in such a way that they essentially co-regulate and guarantee the climate-technology aspects of the building,” the State Prize jury states in recognition. The HIT in Zurich is a successful and in this prominent location a particularly effective example of architecture “that contributes technically from its own resources and in attaining the highest relevant codes nevertheless sets design priorities.”

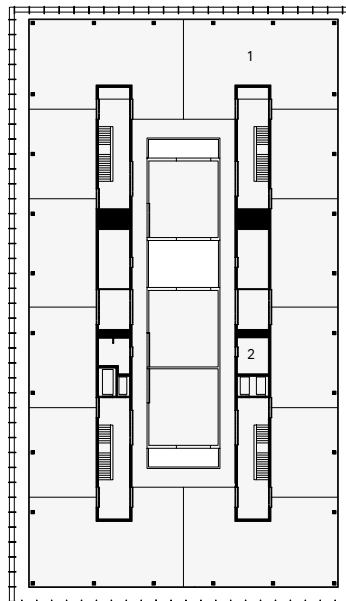
Shadows made to measure

The shading of the floor-to-ceiling glass facade is particularly important for architecture and sustainability. “Users don’t like it if the blinds are closed on a nice summer’s day,” says Elmar Hasler. The end effect is usually that the blinds are opened and the air-conditioning is set at a cooler temperature. Baumschlager Eberle were therefore striving for a user-independent but nevertheless comfortable shading, and considered using moveable glass elements for this. ETH, however, did not want this, because moveable elements have to be repaired too often, which costs money.

The solution – shade from natural stone shields made of travertine – is sustainable and provides the HIT with a striking appearance. For this, the architects simulated the sunshine for the whole building over the course of a year and calculated the optimal size of element for every direction. To break through the resulting grille, there are breaks for entrance areas on three sides and two large windows.

Standard floor

- 1 Offices, laboratories, lecture rooms
- 2 Core functions, stairways, WC



PROJECT DETAILS

Use

→ university building for research, teaching and events

Building type

→ new build to the minimum-energy ECO standard

Completion

→ 2007

Energy code

→ heating requirement 29 kWh/m²a

Energy concept and system

→ The temperature of each room unit is separately controlled by a source air induction system (heating temperatures <35°, cooling temperatures >18°). District heating, dynamic geothermal storage system with “Anergienetz” (non-oil-dependent energy supply), 170 m² photovoltaic unit. The building fittings are arranged on a modular basis. Switches, sensors etc. have wireless communication with the building’s automation and can be freely placed without a network connection.

Construction biology and user comfort

→ A flexible building plan facilitates simple changes in use. The architectural shading of natural stone combines a high degree of efficiency, fitting in well with its surroundings and a minimum risk of user error. Compact building body, high storage capacity of the construction, certified building materials, low-maintenance surfaces. The HIT was the first of the ETH Zurich buildings to be certified with the minimum energy ECO standard.

The submissions for the 2010 State Prize for Architecture and Sustainability have shown where the development of sustainable architecture and sustainability with architectural claims currently stands and where improvements and further developments would be needed.

A forward-looking view from the award-givers.

Submissions as pointers to the future

Reflections on the 2010 State Prize taking account of the jury members' discussions and the contributions from ÖGUT (Austrian Society for Environment and Technology).



— The State Prize for Architecture is the impulse-provider and guiding star for the buildings sector. Energy-efficient buildings play an essential role in climate and energy policy. At the centre of the State Prize are the projects that have been called in front of the curtain by a nomination or the award of the State Prize. They provide an insight into the world of possibilities and they set landmarks.

In the course of the jury members' extensive discussions about the many outstanding buildings, it has also however become evident that the State Prize can also fulfil a further important function. It reveals aspects of the issue and encourages future developments in the sense of all-round sustainability. As the award-givers of the State Prize it is a concern of all of us to mention and praise such aspects.

Regional resources as driving factor of sustainability

The improvement of the economic situation, above all outside large conurbations, is a central issue for people in these regions.

The recognition and utilisation of one's own resources is an essential motor for positive economic development. Precisely this connection leads to the fact that questions like what resources are available and how they can be sustainably exploited and utilised are being given greater consideration in the construction sector. The municipal centres of Raggal and St Gerold in Vorarlberg are outstanding examples of the use of locally produced timber. However, sustainability in building has long not

been limited to timber construction any more. Recently, rather, stone- and ceramic-industry companies ("sustainability massive" research initiative) have undertaken extensive efforts to further develop their products towards comprehensive sustainability. The first results are already apparent in the projects submitted for the State Prize.

Materials and energy that are produced in the region from sustainably useable raw materials are usually ecologically preferable, because less energy has to be spent on transport. In addition there is the effect that one's "own" resources are usually treated with more care in the long term. One gets a better knowledge and appreciation of one's resources. The careful use of materials also involves the aspect of high-value handicraft work. Handworking care

and quality of work lead to a longer useful life of buildings, building components and internal fittings. Longevity is an essential aspect of sustainability.

Roland Gnaiger: "A picture-book example of this is the renovation of the 'Krone' (a restaurant in Hittisau/ Bregenzerwald). The conversion by the architect Bernardo Bader makes a theme of wood as the characteristic (building) material of the region, the finishing of which by the representatives of

the 'Bregenz forest workshop' has brought it to bloom.

The local traditions have been given full range, improved and extended with new finishing techniques and adapted to the expectations of modern hospitality." The sustainable use and working of regional resources can lead to a distinct economic impetus, inasmuch as the value creation remains in the area.



Krone Restaurant
Hittisau /Vlb



house Rauch



s²arch
South Africa

Clay – traditional material used in a new way

Since 1980 considerable attempts have been undertaken in Austria to “rediscover” clay as a construction material in the most varied applications and to reactivate it as a contribution to an ecological, sustainable design for construction and the environment. Essential incentives for the use of clay in modern construction came from the “House of the Future” research project by the Ministry of Transport, Innovation and Technology, in the framework of which technologies were further developed and demonstration projects were set up.

Pressed-clay buildings contain up to twenty times less grey energy than concrete or brick buildings, offer outstanding storage mass and an unbeatably pleasant atmosphere. Clay is particularly absorbent, can absorb steam, if necessary release it again, and thereby regulates the atmospheric humidity completely naturally. Without the use of cement, clay is a hundred per cent recyclable and in this respect is exemplary for a sustainable approach to the natural world.

For the wider use of clay as a building material in our climatic zone, however, further developments are necessary (also in the direction of a compound material) in order to meet the modern demands of heat

insulation characteristics. Dealing with clay in the framework of research projects would contribute to giving this outstanding building material an even more significant role in construction. Clay as a building material was an important theme in the context of the submissions to the State Prize. Otto Kapfinger: “The residential and studio house by Martin Rauch in Schlins, Vorarlberg, should be highlighted. It sets a new yardstick for clay construction, is internationally highly regarded and has received several prizes.”

The school project by the Spittal advanced technical college is exemplary for the use of clay as a building material in southern countries. On the initiative of the s²arch association (socially sustainable architecture) a clay and straw building was built on the outskirts of the Magagula Heights township in South Africa, which represents a real innovation and a successful “piece” of know-how and architectural export.

Social housing: waiting for outstanding architecture

Among the projects submitted it was above all in the field of social housing that there were many buildings, from public and commercial property developers, that had outstanding energy characteristics. Otto Kapfinger: “ ‘Neue Heimat Tirol’ is the biggest property developer in western Austria and at the same time the biggest solar-power-unit operator in the housing sector and leader in the passive-house-quality sector for social housing. On Innsbruck’s former ‘Lodenareal’ with 440 housing units they recently built by far the largest passive-house housing estate – at a standard rental price of €5.32 per square metre! This commitment cannot be praised enough, and from a technical point of view the new ‘Lodenareal’ is undoubtedly an important benchmark project.”

If one looks at international developments in housing construction, for example in Switzerland, it is evident that very ambitious examples of sustainable housing construction have some catching up to do with regard to urban planning and architectural quality. Budgetary reasons are possibly decisive for this.

Often the impression arises, however, that the architectural room for manoeuvre has not been sufficiently utilised.

Commercial and public buildings: mixed feelings

Commercial and public buildings are certainly difficult ground for builders and architects – always fraught with reservations and prejudices in relation to cultural and architectural ambitions.

In the top league of companies, however, there are also some who place the emphasis on good architecture, in the sense of the satisfaction of their employees, perhaps also in the interest of their image. The majority of companies, however, do not pay sufficient attention to architecture. Most people work in “grey office fortresses”, “grey shopping centres” or “grey trading estates”. The good examples from the State Prize show that it does not have to be this way. High-grade architecture is not a luxury and not affordable only for the rich. On the other hand, sustainability is also starting to establish itself from an economic perspective. If one builds sustainably, alongside an improved image and increased employee satisfaction, one also has demonstrably lower running costs. A shining example of this is Energybase in Vienna, which fulfils all aspects of sustainability require-



Lodenareal / Tirol

ments, and even goes beyond them. Some of the technical innovations employed and tested (for example the plant buffer) will hopefully be gratefully taken up by many future projects.

It was noticeable in the submissions for the State Prize in this category that outstanding examples with regard to architecture and sustainability are rather to be found where very special demands are made on the building. In addition the builders tend to come from the



Energybase / Wien

public-sector and from voluntary organisations. Thus among the nominated and the award-winning buildings we find schools, churches and local-authority centres. The companies that have attached importance to architecture and sustainability are all those who also operate in the “green” markets with regard to their products.

For all the success in the construction sector in Austria in recent years, which is reflected in the submissions for the State Prize, one should also not get carried away: there is still a long way to go for a widespread and natural application of architecture and sustainability in commercial and public buildings.

Revival of centres and renovation-central themes of sustainability

Living, work and consumption are shifting out of the town and city centres to ever further surrounding areas, where they are covered with an essentially greater per-capita area provision than would be possible in the denser town centres. On the other hand, new traffic and supply infrastructures have to be built for this. This development has far-reaching consequences for our use of resources. A sustainable development must therefore simultaneously entail a consolidation in the centres and a renovation of old housing stock.

Christiana Hageneder: “From this perspective the initiatives such as the inner-city trading estate of the Fronius company in Wels, Upper Austria, can be seen as exemplary. When the decision was taken several years ago to develop the 1990s trading estate in Wels to an international distribution centre, the first and probably the most important step towards a sustainable development was taken. It scores simultaneously in several areas:



Tschechenring
Felixdorf / NÖ



Fronius
Wels / OÖ

a clear and visible commitment to the town was made, in as much as the unused trading areas were taken over and greatly upgraded through a good, energetic renovation.”

Another renovation project, too, the former “Tschechenring” workers’ housing estate in Felixdorf in Lower Austria, which achieved the maximum reduction in energy requirements and this without changing the listed facades, is thanks to an open-minded mayor as the property developer and the cooperation of an outstanding project team.

Sustainability through purpose-oriented architecture

One principle of ecological evolution is adaptation to the conditions on site. This adaptation on the one hand means a specialisation and perfecting, and on the other hand develops through a particularly efficient approach to resources, because unnecessary ballast is dispensed with. Linked to this is the discussion under way in the specialist world on the reduction of the technology in the building, under the key word “low tech”. Precisely against the background of the reorientation from investment costs to life-cycle costs, this reduction to the essential – in particular of house technology – is gaining new significance.

Some interesting projects submitted for the State Prize were developed on the basis of these kinds of

criteria and provide an interesting contribution to the discussion of future developments.

The Olpererhütte refuge 2,389 metres up in the Zillertal Alps and planned by Hermann Kaufmann was conceived to be run only in summer. Building materials that varied as little as possible were consciously used and all costly house technology was dispensed with. The hut offers only the functions that are necessary for seasonal operation. The radical implementation of this concept guaranteed a very good overall ecological balance for the building.

A further question that arises around the issue of “minimising life-cycle costs” is flexibilisation and reduction. In the construction sector we face the problem that the area requirement per inhabitant is constantly rising. Can the demand for area be reduced by conceiving and creating rooms which suit the different and changing requirements of the daily rhythm?



Elastic Living Unit / Prototyp



Olpererhütte /
Tirol

This is where the “Elastic” Living Unit submitted by Angelo Roventa starts. In an energy-efficient shell to a passive-house standard, there is a special modular piece of furniture which through the shifting of individual modules each time opens up a different room, which is bounded by the functional furniture. The non-used room for other functions shrinks to nil. In this way, a four-room experience of 4 x 18 m² of free area emerges on a 25 m² area, plus the associated areas for furniture for the respec-

tive use (living, eating, working, sleeping).

Helmut Krapmeier: “As a whole this leads to an apartment with an area that feels like 100 m² for one person. Normally, these 100 m² would have a personal heating requirement of 1,500 kWh per year, even if the 100 m² were built to passive-house standards. With the “Elastic” Living Unit concept the same person needs just 375 kWh per year for the room heating.” A wonderful room idea, at the moment above all for singles or couples.

Summary

If one compares the 2006 and the 2010 State Prizes a positive development is particularly noticeable: the number of projects that show outstanding performance in the area of energy efficiency and the use of renewable energy has grown by leaps and bounds. There are passive houses or very good low-energy buildings in almost all categories of building, solar energy has almost become standard, and biomass and geothermal energy rate highly. The “House of the Future” research programme and the dissemination activities in the framework of “Klima:Aktiv” have left clear signs in the market. As far as the energy standard of buildings is concerned Austria is among the top countries internationally. The renovation sector, which is so important for climate protection, is definitely underrepresented in the outstanding projects. This on the one hand certainly has to do with the complexity of good renovation; on the other hand the architect who renovates well cannot create a “monument”. Renovations are thus less attractive and more complex – a bad starting situation. How can the attractiveness of renovations be improved? We have not yet found an answer.

One thing is important for me to note in closing: all the projects that have succeeded in being nominated for the State Prize are outstanding examples and can be proud of this award. The jury set the nomination hurdle very high and each project was really discussed and checked in great depth.

One can look forward to the next State Prize with anticipation.

Others would have knocked the school from the 1970s down. The city of Linz and an ambitious architect, however, have made an architectural and energetically up to date jewel out of the worn out and dysfunctional energy guzzler.

The swan of Flötzerweg

LINZ SPECIAL SCHOOL / 0Ö



Special School
Linz new



— If one did not know the background one would take Special School Number 6 on the Flötzerweg in Linz for a new building. Actually the original building is from the 1970s and until July 2008 it was a pea-green, two-story box with small dark brown windows and a blotchy concrete roof over the entrance.

In just 14 months the ugly duckling was turned into a white swan, that is, a school building that meets all the demands of a special school as well as present-day energy and aesthetic demands.

But let's look back to 2007: When the architect Oliver Dornstädter started the planning, the existing school building had an uninsulated plaster facade and a flat roof with a bitumen covering. Access to the school, which is also used by disabled children, was only possible up three steps and through a swing door. The parapets were too high for the children, many of whom sit on the floor. There was no special room for midday meals and no lift. The stairs were overgrown with plants and the wardrobes were in a state of total confusion.



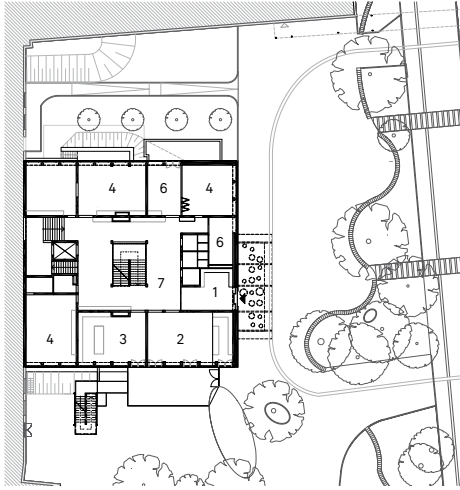
The 1970s building

Foto: Dornstädter Architekten

Bigger, lighter, more practical
 The aim of the refurbishment was an energy-use improvement to passive-house quality and the creation of more space. Oliver Dornstädter managed to increase the available space by adding one floor, which for structural reasons is a timber-frame construction. The whole of the shell of the building was insulated with 30 cm EPS, the warm roof was sealed with rubber sheeting and extensively planted with greenery. The controlled air-conditioning unit with heat recycling ensured a pleasant internal climate, the shortfall in the heating needs is covered by the city of Linz district heating.

The parapets were lowered, the windows are passive-house standard with triple-insulation glass and there is an exterior sun shade to protect against overheating. On the roof, 64 m² of photovoltaic and 26 m² of solar panels produce electricity and hot water. A glass cupola and glass banisters create a light and pleasant stairway instead of the previous concrete walls. The white corridors with colourful elements, parquet flooring in the classrooms, glass windows next to the doors and acoustic shields have made the school building quieter and friendlier.

The forecourt was raised for barrier-free access and a large canopy was built. There is an automatic sliding door and a wheelchair-friendly lift to all floors. For the jury, the refurbishment of Special School Number 6 is a further proof that design ambitions can indeed comply with energy responsibility requirements, but without being compromised.



- 1 Entrance and waiting room
- 2 Servery and canteen
- 3 School kitchen
- 4 Classroom
- 5 Classroom extension
- 6 WC nucleus
- 7 Staircase / common room

Oliver Dornstädter, Claudia Hemetsberger, Johannes Stitz



Photo: Jury

Flötzerweg 61a, 4030 Linz
Property developer Immobilien Linz GmbH & Co KG
Architecture Oliver Dornstädter, Dornstädter Architekten ZT GmbH, Traun
Energy planning Stefan Wasicek, Engineering office HSL, Linz
Construction physics TAS GmbH, Linz Leonding
Art within architecture Manfred Makra, Wien und Josef Schwaiger, Wien



PROJECT DETAILS

- Use**
 → general special school for special-needs children and social-pedagogic classes
- Building type**
 → renovation of existing structure from 1976
- Completion**
 → 2009
- Energy code**
 → heating requirement 13.10 kWh/m²a (energy certificate)
- Energy concept and system**
 → The starting basis was an existing 1970s school building with an uninsulated plaster facade and metal window frames. An extra storey was built onto the existing structure using timber-frame technology. The renovation concept: insulation of the outer shell, passive-house-standard triple-layer glazing with exterior sun protection, insulation of the roof, controlled ventilation, 64 m² photovoltaic and 25.7 m² solar arrays
- Construction biology and user comfort**
 → It was possible to create additional classrooms and rooms for teaching staff and management as well as a school kitchen and canteen. Sound-proofing and the absence of barriers were created, the school became essentially lighter, friendlier and quieter as a result of the renovation.

Poppe*Prehal have developed an innovative timber-module system on the passive-house standard that was used for the first time in Niklasdorf. It fits perfectly with the philosophy of the property developer, the leading trading company for Fair Trade products.

Ecologically squared

EINE WELT HANDEL / STMK



Salesroom

— Karl Pirsch is a fair-trade pioneer. In 1987 with only a few thousand Austrian schillings he founded his company Eine Welt Handel AG in Niklasdorf, today Europe's biggest importer of fair-trade basket goods, and supplied his own shops and major customers with a broad spectrum of fair-trade goods. When the company needed a bigger building for office, training, sales and logistics, it was clear that this had to be sustainable, as board member Marianne Pirsch says: "We couldn't have a concrete hall, that doesn't fit with our philosophy and our products."

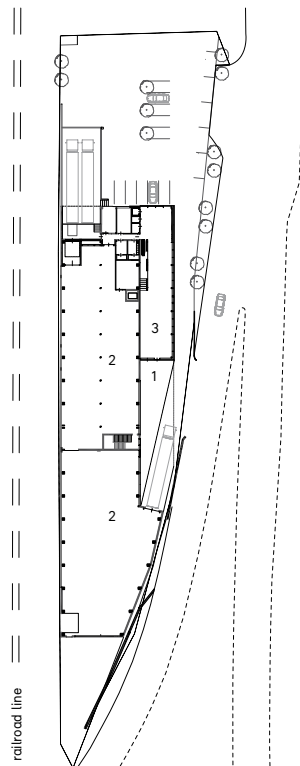
HOLIWOOD in Niklasdorf

The appropriate solution comes from an EU-financed research project called Holiwood, in which 20 partners from 11 countries researched the characteristics of thermally treated wood and developed innovative timber-frame construction solutions. Thermowood is dried in a chamber at over 160 degrees Celsius and as a result becomes as durable as tropical woods. In the framework of Holiwood, together with Obermayr Holzkonstruktionen the Poppe*Prehal architects' bureau from Steyr has developed the eco²building timber-frame modular construction system for trade and industrial buildings.

The planning and calculation software comes from the Profactor company from Steyr. The aims of the development were among other things the use of construction- and cost-optimised standard elements and connectors simultaneously with the highest architectural quality. The module system offers cost security, around one third shorter construction time and energy costs reduced by some 90 per cent in comparison with conventional industrial buildings.



1 Covered entrance area
2 Storeroom
3 Shop



Depotstraße 2, 8712 Niklasdorf
Property developer Eine Welt Handel AG, Niklasdorf
Architecture POPPE*PREHAL ARCHITEKTEN ZT GmbH, Steyr

Model building within the eco²building / HOLIWOOD program



top:
Hannes Fachberger
bottom:
Helmut Poppe

Photo: Jury

competitive costs is provided for. Not least, the architecture, too, is convincing: "The architectural design is without exaggerated gestures and concentrates on the morphology of the main entrance. An important aspect is also the location in the area: the building, whose operation is directly dependent on goods exchange, is located very close to the station and the main road. As a result what was previously waste ground has developed into a meaningful generator for its surroundings."



Economical in building and operation

The eco²building system was first used for the Eine Welt Handel AG in Niklasdorf in Styria. The building consists of elements of the eco²building system with 24-cm rock-wool insulation in the outer wall and 28 cm in the roof. The heating requirement is just 15 kWh/m²a (PHPP) and is covered by a wood-chip unit and a central ventilation system with additional air pre-warming through a geothermal exchanger. Heating costs for a warehouse and commissioning area of 2,200 m² and an office area of 600 m² come to only some €2,000 per year.

The jury particularly highlighted the fact that as a result of the modular construction system in passive-house quality the widespread adoption of this form of construction at

PROJECT DETAILS

Project parties eco²building

→ Profactor GmbH
→ eböck Planung und Entwicklung GmbH, Germany
→ EMPA Eidgenössische Materialprüfungs und Forschungsanstalt Switzerland
→ Obermayr Holzkonstruktionen GmbH
→ IBS – Institut für Brandschutztechnik und Sicherheitsforschung
→ DI Breinesberger Zivilingenieur

Use

→ heated and unheated logistics centre, sales rooms, seminar room and office

Building type

→ new build to passive-house quality

Completion

→ 2009

Energy code

→ heating requirement 14.8 kWh/m²a (PHPP 2007)

Energy concept and system

→ pre-heated air with geothermal exchanger and the use of renewable energy for heating (wood-chip heating)

Construction biology and user comfort

→ The company building for the Eine Welt Handel AG is a demonstration building of the first passive-house timber-module system eco²building for trade and industry buildings, which was developed in the framework of the Holiwood international EU research project. The Holiwood project explores the application possibilities for Thermowood. Avoiding PVC use, use of certified construction materials, general resource-husbanding and ecological construction methods. The location of the building directly on the railway line facilitates CO₂-saving goods logistics.

The parish of Laahe is an unusual municipality with exceptional commitment. In its unusual church, sustainability is understood not just with regard to energy, resources, economy and social affairs but also spiritually.



Church foyer with bar

A church as a power house

ST. FRANCIS PARISH BUILDINGS / OÖ

– There has been a lively influx of people to the Wels district of Laahe for many years, which is why in 1997 a new pastoral care centre was founded, the rectory of St Francis. The first house for the parish buildings was designed as a timber-frame construction by the architect Georg Kirchweber and largely erected by the parish com-

munity itself. Soon the space in the church was too small again, however. A competition was announced for the extension in 2001, out of which came the project of the Wels architects Max Luger and Franz Maul. The existing building and part of the new one blend in to the surrounding countryside through a ready-greyed larchwood facade, the actual church rises above it as a black cube.

Building for Creation

With the new building the parish wanted to build in the sense of St Francis, with consideration for resources and saving energy. Luger and Maul integrate the existing object, adopt its structure and make sparing use of the area. The new building was developed on the passive-house standard, in which 72m² photovoltaic panels that produce electricity for the rectory and the surrounding municipality are integrated into the glass facade and the roof.

The remaining heating energy is provided by a solar unit, a wood-pellet heating and a subterranean geothermal channel that cools the airflow in summer and preheats it in winter. The locals have already christened the building the “church power station”, says assistant priest Franz Schrittwieser. Inside, visitors are surprised by red wooden panels on the floor, wall





St.-Franziskus-Straße 1, 4600 Wels
 Property developer Röm. Kath. Pfarre Wels-
 St. Franziskus
 Architecture Luger & Maul ZT Gesellschaft OG
 Energy planning Christoph Muss, Team GMI

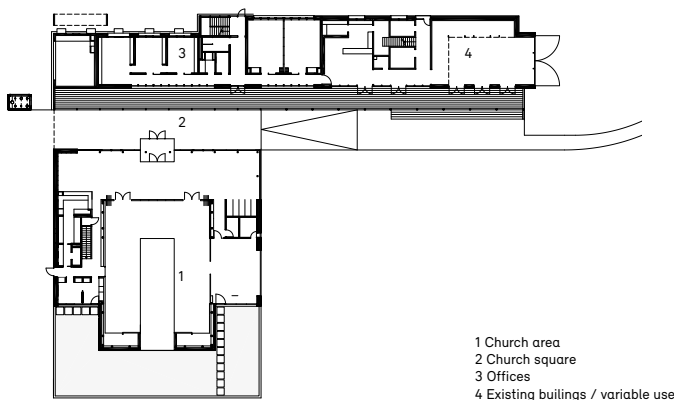
and ceiling and a wide glass slit reaching from the floor to the ceiling. In the design they were inspired by the association with a glowing lava block that bursts open and radiates warmth and light on its surroundings, says architect Max Luger. The room looks like a valuable casket that can be staged in various ways by back-lit portals. When they are opened one looks directly onto the outside, where at the moment a “garden of encounter” is taking shape.

Further special features are the multifaceted architectural and artistic references to the Canticle of the Sun by Francis of Assisi and the spatial flexibility: the hall, devotional room and foyer can be combined in different ways for church and secular celebrations through full-length sliding walls. In the entrance area there is also the bar, which is an inviting meeting place after the service. Another special feature is that the parish community was comprehensively involved in the design of the new building. For the jury it was also noteworthy that the veranda and the adjoining ball-game pitch offers children and young people a place to play and “hang out”: “Through this the parish sustainably strengthens and secures its new generation in the municipality.”



Fotos: Jury

left: Max Luger
 right: Franz Schrittwieser



PROJECT DETAILS

Use

→ Catholic church with adjoining parish centre

Building type

→ new build and incorporation of existing structure from 1997

Completion

→ 2005

Energy code

→ heating requirement 14.47 kWh/m²a (energy certificate)

→ heating requirement 22,3 kWh/m²a BGF (energy certificate)

Energy concept and system

→ 72 m² of photovoltaic elements are integrated in the facade of the church room. The energy gained is fed into the system and can provide for 45 households. Hot-water provision with solar collectors, pellet heating. According to the time of year, the air sucked in through a generously proportioned ventilation heat exchanger is cooled or preheated. Controlled ventilation with heat recovery.

Construction biology and user comfort

→ The total structure is built using timber-frame technology. For the floor-covering and painting the emphasis was on low-emission products. The natural lighting conditions in the church can be changed through large, atmospheric sliding elements on the wall and ceiling. The exemplary multifunctionality for a church contributes to the user comfort.





NOMINATION

The Freihof Sulz shows impressively that sustainability is not just a matter of energy figures or building materials but also relates to the approach to social, cultural and economic resources.

Gently awakening Sleeping Beauty

FREIHOF SULZ / VLBG



— For at least 160 years the Freihof in the municipality of Sulz in Vorarlberg's Rhine Valley may have been a central provisions and communications site. The vaulted cellar dates from the year 1796, its appearance largely comes from around 1900. The proud guest house, however, with rooms to let, a theatre, bakery, general store and schnapps distillery missed the boat in the 1950. First the summer visitors stayed away, then the restaurant was closed, in the mid-1970s the bakery too. In the end only one guest room remained as a residence. When Lydia

Zettler-Madlener and her siblings took over the desolate house after the death of their parents the big question was: what is to be done?

Raising the treasure

“The guest house looked like Sleeping Beauty's castle,” the architect Beate Nadler-Kopf recalls from her first impression. Together with the owner, they plunged into the venture of awakening it from its sleep and reviving the old guest-house culture.



Schützenstraße 14, 6832 Sulz
Property developer Lydia Zettler-Madlener
Architecture Beate Nadler-Kopf, Hohenems
Energy planning Gebhard Bertsch
 Ökoberatung, Ludesch

The restaurant,
 preserved in its
 original condition



The sceptical craftsmen (“You don’t want to keep that old stuff!”) were ultimately infected by the owner’s enthusiasm and revived old techniques such as painting with beer dyes, using wood cement for the floors and plastering with clay and straw. Every room was carefully ecologically refurbished, where possible rooms were insulated with wood-fibre boards.

The heating systems, too, were individually selected: there are old tiled stoves, wall heating, ceiling heating and radiators. Waste heat from the cold stores, solar panels and wood-pellet heating are used to provide hot water. The 100-year old wood oven plays an important

role, providing bread and rolls on weekdays and a Sunday roast for the guest house. “The baker does not pay any rent for the bakery and in return we use the warmth,” as Lydia Zettler-Madlener explains the simple model. Since 2006 the Freihof Sulz has again been a meeting place for the municipality – with an organically managed guest house, bakery, organic shop, wine cellar, seminar rooms and therapy offers for the body and soul.

Heating requirements after the refurbishment are some 57 kWh/m²a, previously it was 165; the waste heat from the wooden oven reduced the heating requirement by 10 to 15 kWh/m²a says energy planner

Gebhard Bertsch, apart from which the seminar rooms are heated only when needed. The Freihof is in any case a clear sign of the fact that sustainability is not just a question of heating energy. From the jury’s point of view what is decisive is “that the property developer has made a committed contribution to the maintenance of the cultural heritage and to the provision of an attractive infrastructure in the rural area.” Apart from this, the revitalisation is an example of the deep respect with regard to the history of everyday life.

PROJECT DETAILS

Use

→ restaurant, bakery, and village shop (all organic), seminar and events rooms, health services

Building type

→ renovation of a listed restaurant building with bakery and general store (1796 – 1927)

Completion

→ 2007

Energy code

→ heating requirement 57.77 kWh/m²a (energy certificate), use of waste heat from the historic bakery oven reduces the heating requirement by approx. 10 to 15 kWh/m²a.

Energy concept and system

→ Despite the sparing thermal renovation (owing to the listed building) the heating requirement was significantly reduced (from 160 to 57.77 kWh/m²a). Solar array for hot water, hot-water recovery from restaurant cold stores, waste-heat utilisation from the wooden oven. Individual heating solutions for different rooms, with tiled stoves, radiators, ceiling or wall heating. The seminar and events rooms are only heated when needed.

Construction biology and user comfort

→ The “OBOX” product declaration database of the Vorarlberg Energy Institute was used as the basis for the choice of products. Surfaces lime and clay plaster, oiled-wood floors, restored wood-glue floors. Where possible, the outer walls were insulated inside with wood fibre. Old wood panelling, murals, doors, switches and furniture and fittings were retained as far as possible and as far as necessary restored or supplemented.

before
 renovation



Gebhard Bertsch,
 Thomas Gstach,
 Lydia Zettler-Madlener,
 Beate Nadler-Kopf



NOMINATION

All over Austria, social housing projects from the 1970s and 80s are waiting for refurbishment. The Fussenau housing estate shows how the path from run-down energy guzzler to attractive passive-house can be successfully undertaken in an environmentally friendly way.

Less energy and more quality of life

FUSSENAU HOUSING ESTATE / VLBG



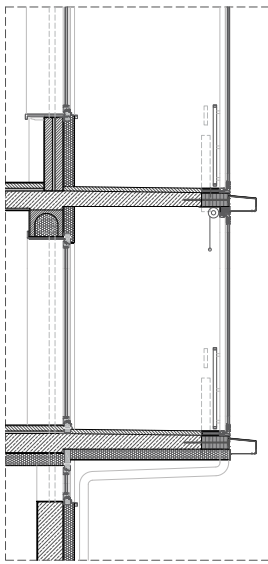
before renovation

— “The winter garden is the best!” says Hildegard Heinzle in answer to the question on what it’s like to live in the renovated Fussenau housing estate on outskirts of Dornbirn. She spends a lot of time there, she says – talking with visitors, doing handicraft or just looking out of the window. To understand this happiness one has to know what the Fussenau housing estate looked like before the renovation. The estate, with five blocks and 54 housing units, which was built in 1980 by the Vorarlberg housing association Vogewosi, was already somewhat run down in 2004. The beige facades were blotchy, the reddish-brown windows and balconies were faded, the green awnings were inappropriate.

Reduction by a factor of 10

So in 2004 the inhabitants wanted a renovation of the appearance. The proposal to carry out a thermal improvement at the same time was unanimously agreed by the tenants. The task was a reduction of the



Facade,
balcony section

heating requirement by a factor of ten, that is, from 250 to 25 kWh/m²a. In the end it was possible to reduce the requirement even to 11kWh/m²a (according to the OIB); the remaining energy needs for hot water and heating is provided by solar collectors and natural gas. The energy saving was achieved by comprehensive measures: insulation of the outer walls, the upper-storey ceiling and the cellar roof with polystyrene, the installation of triple-insulated passive-house wooden windows and the insulation of the previous shutter boxes, installation of an air-conditioning system with heat recycling and the glazing of the balconies with two-layer insulation glass.

Balconies in a glass overcoat

The jutting out balcony slabs were cold conductors and it would probably have been the best just to cut them off and install new, free-standing balconies.

This could have caused problems, however, because the peat soil in Fussenau sinks. So it was decided to enclose the balconies in glass, which works as a thermal cushion. So that the apartments are not too closed in, half of the glass is a sliding door. According to the jury, the renovation of the Fussenau housing estate impressively demonstrates how energetic refurbishment of problematic housing stocks from the 1970s and 80s can be successfully carried out and can serve as

an example for other buildings of this type in Austria. It is also pleasing that the property developer's open information policy won the tenants' agreement to the renovation work within the shortest time.

Manfred Koller,
Heinz Broger

Wieden 90–98, 6850 Dornbirn
Property developer VOGEWOSI – Vorarlberger
 gemeinnützige Wohnungsbau- und
 Siedlungsges.mbH, Dornbirn
Architecture Helmut Kuëss, Bregenz
Energy planning Planungsteam E-Plus
 Kaltheier & Kraus GmbH, Egg



Glazed balconies

PROJECT DETAILS

Use

→ housing estate with 54 housing units in five buildings (two to three storeys)

Building type

→ renovation of a 1980s housing estate

Completion

→ 2008

Energy code

→ heating requirement 15 kWh/m²a (energy certificate) and 23 kWh/m²a (PHPP 2004)

Energy concept and system

→ Thermal renovation, balconies were enclosed in a glass shell, because the balcony slabs were cold conductors. Heating and hot water are provided by gas boilers and a hot-water solar array (53% of the hot water and 18% of the heating energy). Central air-conditioning units with heat recovery for all apartments are housed under the roofs of the buildings.

Construction biology and user comfort

→ The renovation measures took place in close consultation with the residents. As well as the thermal renovation particular attention was given to the renovation of the buildings' appearance. As a result of the enclosure of the balconies the apartments have gained an additional living room in the form of a winter garden.

The maintenance of traditional crafts, regional value creation, short distances and maximum utilisation with minimum use of space – this too determines sustainability. Raggal Municipal Hall shows how one can combine all this.



Respect for the landscape

RAGGAL MUNICIPAL HALL / VLBG

— The village of Raggal is on a high terrace at the entrance to the Großes Walsertal. From the square in front of the church one can enjoy a panorama of the valley and the mountains. When a municipal hall was to be built to the north-east of the church for the local authority, the tourist agency and the music association, there were two instructions for the planners,

says mayor Hermann Manahl: “Use a lot of local wood and don’t block the view over the village square.” Johannes Kaufmann, the planner, achieved both in exemplary fashion. The timber even comes from the municipality’s own forest. On the basis of the detailed plan, together with the joiner and the saw mill, first a timber register was drawn up, because as Johan-

nes Kaufmann says: “I am someone who likes to see what the developer has, and then we make something out of it.” A precise quality standard was defined for each component, all the timber components were measured on the basis of exact section drawings on the round wood, as a result of which there was hardly any waste.



Raggal municipal hall, with mountain view

Regional value creation

In handicraft, too, Johannes Kaufmann relies on regional value creation and short distances. Working together even brought craftsmen together who previously would hardly talk to one another," the architect says with a grin. White pine boards, which the carpenter sourced locally, were used for the interior. The Raggal Municipal Hall thus also takes account of the principles of the Großes Walsertal biosphere park, namely the sustainable use of the natural world as capital for the development of tourism, the economy and the quality of life.

Respect the mountains

For the municipality's second instruction, not to block the clear view of the valley, Johannes Kaufmann developed a clear building structure that is one-storey high along the street and rises to the north in order to create a place for a meeting room on the first floor. The tourist agency and the municipal authority office are next to one another on the ground floor, because both offices are not open all day. At the end of a light central corridor is a cosy kitchen with a view over the valley, which serves for work breaks, discussions and



Johannes Kaufmann,
Hermann Manahl

Photo: Jury

as a waiting room for parent-child consultancy. In the basement there is a rehearsal bar for music with its own entrance, workshops and the house technology room. The municipal hall is built using passive-house technology but because of the shaded situation it requires additional heating. The biomass heating unit, fed with woodchips from the municipality, also serves seven nearby houses. The jury noted positively that as a result of this – in addition to the comprehensive sustainability in construction and operation – old boilers have been shut down and there has been an improvement in the local environmental situation.

Municipal Hall



6741 Raggal 220
Property developer Gemeinde Raggal
 Immobilienverwaltungs GmbH & Co.KEG
Architecture Johannes Kaufmann
 Architektur, Dornbirn
Energy planning Thomas Hammerer,
 Planungsteam E-Plus GmbH, Egg

PROJECT DETAILS

Use

→ Use local-authority offices, tourist agency, rehearsal room for the music association

Building type

→ new build

Completion

→ 2006

Energy code

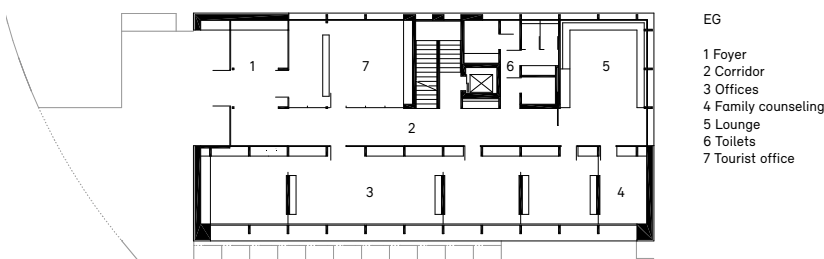
→ energy requirement 27,7 kWh/m²a BGF (measured, site-related data)

Energy concept and system

→ The biomass unit (wood chips) inside the house not only provides for the municipal building but also for some of the surrounding residential buildings. As a result several old and inefficient oil-heating units have been replaced.

Construction biology and user comfort

→ The exterior and interior planking are exclusively of deal and white pine from the municipality's own forests. Coordination between the timber stocks, planners, sawmill and the joiner meant there was little waste wood. The wooden interior walls and furniture come from a local carpenter and are coordinated. The offices are daylight-lit with generous openings. There has been a complete avoidance of PVC, installations are with low-emission construction materials.



Both facets are equally important in the State Prize for Architecture and Sustainability. Correspondingly, the jury was composed equally of experts from architecture and sustainability.

The view from both sides



The jury on a visit to St Gerold

Roland Gnaiger (Chair)

Univ.Prof. Mag.arch. DI, born. 1951, architecture degree at the Academy of Fine Art in Vienna and the Technical University of Eindhoven / Netherlands; bureau in Bregenz since 1979, professor at the Linz University of Art since 1996, numerous prizes and awards, including the Vorarlberg Architecture Prize (twice), the Austrian Property Developer Prize (four times); regular jury and lecturing activity at home and abroad.

Christiana Hageneder

Dlin MSc, born. 1967, architecture degree at the Technical University of Vienna and the École d'Architecture "La Villette" Paris, Master in Facility Management at the Danube University, Krems; involved in the field of building and innovation of the ÖGUT (Austrian Society for Environment and Technology) since 2005, subject coordinator in this field since 2008; jury membership for the Municipal Architecture Prize.

Otto Kapfinger

Born 1949, architecture degree, member of Missing Link and Partnership with A. Krischanitz, architecture critic for "Die Presse", lecturer at the Vienna University of Applied Art and the Linz University of Art, member of the design advisory committee for the city of Salzburg, author of numerous books and initiator of many exhibitions on contemporary architecture in Austria.

Helmut Krapmeier

Prof. DI Arch., born. 1951, architecture degree at the Technical University of Vienna, degree in energy and environmental management at the Technical University of Berlin, since 1990 head of solar architecture at the Vorarlberg Energy Institute, project head of Cepheus Austria, visiting professor at the Danube University, Krems, lecturer at the Linz University of Art, Eurosolar prize-winner for architecture and urban development.

Robert Lechner

Born 1967; scientific worker at the Austrian Ecology Institute since 1989, manager since 2004; project management, strategy development, political consultancy and numerous publications in the fields of urban and regional development, mobility and transport, climate protection, construction and living, integrated evaluation systems – total-quality building; management of Agenda Wien Sieben.

Henrieta Moravčíková

Doc. Dr. Ing. arch., born 1963, architecture degree at the Slovakian Technical University, Bratislava; architecture theoretician and manager of the architecture department of the Slovakian Academy of Sciences, previously editor-in-chief of the magazine "Arch"; various publications and jury activities.

Bernd Vogl

Mag., born 1967, working at the Ministry for the Environment since December 1992 in the department for energy with the focus on energy and construction; mentoring of pilot projects; project management of Klima:Aktiv; jury activity for various environmental and energy prizes, e.g. Energy Globe

Vorprüfung

Architecture
Mag.arch. Clemens Quirin
Energie und Ökologie:
Dlⁱⁿ Beate Lubitz-Prohaska

The voluntary measures of Austrian climate strategy are bundled under the brand name of klima:aktiv. In this way, the Ministry of the Agriculture, Forestry, the Environment and Water has been successfully supplementing laws, regulations and supports in the field of climate protection since 2004. klima:aktiv also supports the activities and commitment of partners from other countries and from commerce.

klima:aktiv Standard – the surveyor’s pole for the State Prize



Drⁱⁿ Martina Schuster

klima:aktiv construction and renovation

The construction sector is not only responsible for more than a third of all of Austria’s CO₂ emissions, it also has enormous potential for energy saving. Good planning, high-quality building materials and energy-conscious construction can significantly reduce the energy requirements of a building and raise the quality of life of its residents.

Martina Schuster, the head of department in the Ministry of Agriculture and Forestry, the Environment and Water: “The construction sector is essential to meeting climate-protection targets and raising the share of renewable energy.” Good planning, high-quality building materials and energy-conscious construction can significantly reduce the energy requirements of a building and raise the quality of life for its residents. The klima:aktiv building standard has been developed in order to give an appropriate incentive to the market.

klima:aktiv building standard

Since 2005 there has been a neutral Austrian mark of quality that helps to assess and compare the most varied building qualities with one another: the klima:aktiv building standard. It distinguishes houses that meet particularly demanding challenges: low energy or passive-house quality is the basis. Beyond the qualities with regard to energy efficiency, however, the use of renewable energy, planning and execution, building materials and construction as well as comfort and atmosphere are evaluated.

Buildings are assessed on the basis of a 1000-point system. The points are awarded for all areas that are essential to environmentally friendly construction. The greatest weight is given to energy efficiency and use of renewable energy sources.

A klima:aktiv house scores at least 700 points; a Klima:Aktiv passive house scores at least 900 points.

klima:aktiv and the State Prize for Architecture and Sustainability

The judging of the objects submitted for the 2010 State Prize for Architecture and Sustainability is based on two pillars: on the one hand the architectural quality and on the other the quality in the sense of sustainability. The latter was judged on the basis of the klima:aktiv building standards.

Thus in the preliminary assessment, all the projects were assessed according to klima:aktiv criteria as far as possible on the basis of the details and supporting proofs submitted and thus made comparable with one another.

The assessment criteria laid down in the submission form represent a selection of the klima:aktiv quality criteria applied for the assessment of buildings. These quality criteria were developed for residential buildings (new build and renovation) as well as for service buildings. The complete catalogue of criteria can be found at the klima:aktiv website: www.bauen-sanieren.klimaaktiv.at

The State Prize winners and nominations for the 2010 State Prize for Architecture and Sustainability can be found at: www.klimaaktiv-gebaut.at.

Planning and execution – maximum 120 points



Important planning and execution aspects such as lack of barriers, minimisation of thermal bridges, and airtight efficiency are taken particular account of in the catalogue of criteria.

The main aim of klima:aktiv is the introduction to the market and the rapid dissemination of climate-friendly technologies and services in the fields of construction and renovation, mobility, energy saving and renewable energy. klima:aktiv has got things moving at decisive points: with advisory and qualification offensives in various sectors, with transparent standards in building and renovation, with quality control measures and with active motivation and networking of relevant partners from business and administration.

If you and your enterprise would like to participate in the klima:aktiv network and build klima:aktiv houses, please get in touch with our contact partners.

Energy and supply – maximum 600 points

The heating requirement of klima:aktiv passive houses is at least 80 per cent below the requirements of traditional new builds. klima:aktiv houses score additional points for efficient and environmentally friendly heating systems such as solar-power and photovoltaic units

Building materials and construction – maximum 160 points

The assessment concept for building materials and construction is based on four pillars:

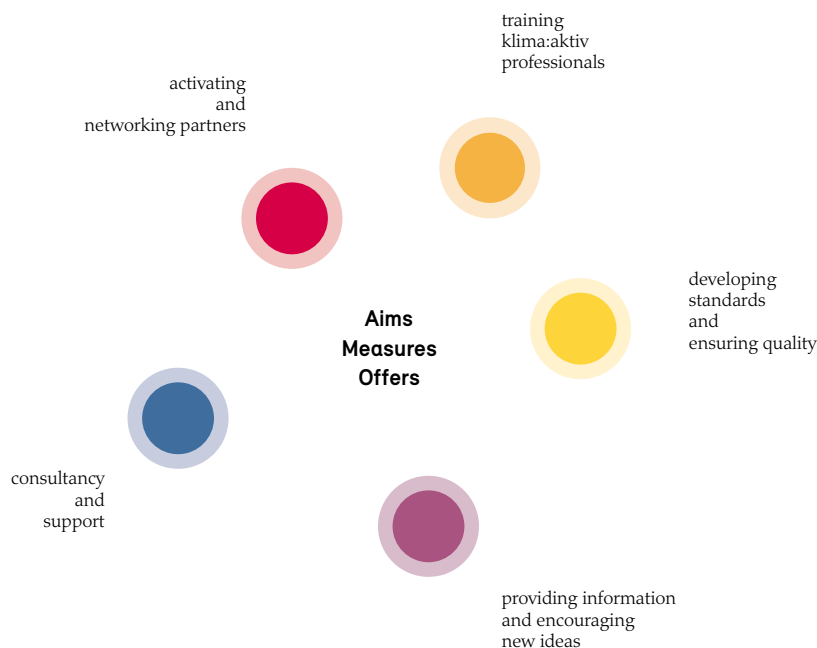
- building materials that are particularly hazardous for the environment are prohibited
- building materials with a short life cycle are avoided
- ecological building materials are used
- the energy expenditure involved in building the house is minimised.



Air quality and comfort – maximum 120 points



Characteristic of houses with the klima:aktiv mark is excellent air quality and a high level of residential comfort. Klima:aktiv houses have fresh-air air-conditioning units or comfort ventilation with heat recovery. The building materials relevant to the internal atmosphere are low-emission. The maintenance of agreeable room temperatures in the summer must be guaranteed.



Strategic overall coordination

→ Lebensministerium Dept. for environmental economics and energy Dr Martina Schuster, Mag. Bernd Vogl

New-build contact

→ ÖGUT – Austrian Society for Environment and Technology, Hollandstraße 10/46, A-1020 Wien
Tel: +43 (0) 1 / 315 63 93 - 28
E-Mail: klimaaktiv@oegut.at

Renovation contact

→ Österreichische Energieagentur – Austrian Energy Agency, Mariahilfer Straße 136, 1150 Wien
Tel: 01 / 586 15 24 - 0, Fax: 01 / 586 15 24 -340
E-Mail: klimaaktiv@energyagency.at

State Prize 2010

Architecture and Sustainability

The State Prize

The office of the Ministry for Agriculture, Forestry, Environment and Water Management responsible for awarding the State Prize commissioned the Austrian Society for Environment and Technology (ÖGUT) together with Univ.Prof. Roland Gnaiger from the Linz University of Art as the representative for realising the prize and all building programmes represented in it in the framework of the Klima:Aktiv initiative. The core of this cooperation between Klima:Aktiv and the Linz University of Art is a central idea: the combination of challenging architecture and sustainability is possible.

The implementation

The foundation stone of a functioning concept was laid down by Robert Lechner, the manager of the Ecology Institute, in close cooperation with the person responsible for the State Prize, Univ.Prof. Roland Gnaiger. The ÖGUT (DI Julia Lindenthal) assumed the announcement and processing of the State Prize and functioned as the submissions and coordinating office. It was supported in this by the Klima:Aktiv team of the Austrian Energy Agency and the team of the architecture course at the Linz University of Art.

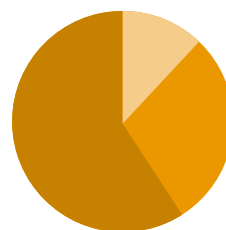
Submissions phase

The submission for the State Prize for Architecture and Sustainability has demanded considerable commitment and effort on the part of the participants. Apart from the usual submission of a project folder and a project presentation, they also had to present their project's energy, ecological, social and economic performance. In view of this we would like to thank all 90 candidates for their commitment and are all the more pleased that the State Prize has attracted such great interest from the experts.

Provincial distribution

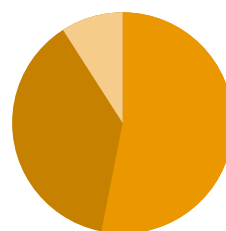
The call for applications for the State Prize was nationwide. Submissions were taken from all of the federal provinces. Vorarlberg made up the largest group, with 19 per cent of all projects submitted, followed by Upper Austria and Vienna (18 per cent and 17 per cent respectively). Measured by size of the province, too, the largest number of submissions comes from Vorarlberg. The result underlines this: one State Prize holder, the architects' team of another State Prize and three nominations come from Vorarlberg. Only Upper Austria is equally well represented: two State Prize holders and two nominations.

Submissions by building type



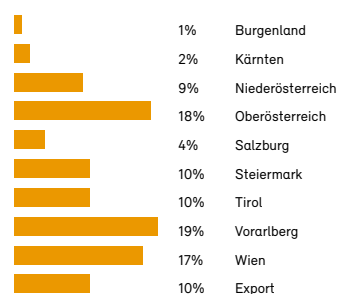
29% residential buildings
59% services
12% detached houses

Submissions by construction type



38% timber
53% massive construction
9% other (mixed construction, steel etc.)

Submissions by federal province



Imprint

Proprietor
Ministry of Agriculture and Forestry,
the Environment and Water,
1010 Vienna

Publisher and publishing house
Österreichischer Wirtschaftsverlag
GmbH, 1050 Vienna

Copyright 2010



lebensministerium.at



Photo: Petra Blaumensteiner

v.o.n.u.: Elisabeth Bargmann,
Clemens Quirin, Julia Lindenthal,
Sonja Bettel

The Editorial Team

All participating institutions have worked together and equally hard in the production of this magazine. The editorial team is composed of Elisabeth Bargmann (Ministry of Agriculture and Forestry, the Environment and Water), Sonja Bettel (freelance journalist), Julia Lindenthal (Austrian Society for Environment and Technology, ÖGUT) and Clemens Quirin (Linz University of Art). Special thanks are due to the journalist Sonja Bettel, who wrote most of the texts and enriched the editorial team with her journalistic knowledge and expertise.

Sonja Bettel

Born 1964, Dr.phil, degree in journalism, communication and theatre studies at the University of Vienna, freelance journalist specialising in science, since 2004 freelance worker for Radio Ö1.

Media partner



Sponsors



State Prize implementation



kunstuniversität linz
die architektur

The honoured and nominated projects of the 2010 State Prize for Architecture and Sustainability are clear evidence: the connection between demanding architecture and sustainability is feasible.

