



KLIMAAKTIV BUILDING OF THE MONTH 1/2015:

MARIAGRÜN PRIMARY SCHOOL (PASSIVE HOUSE), GRAZ

At the end of September 2014, the newly built Mariagrün primary school was officially opened. It is the first primary school in Graz to meet the passive house standard. The building achieved the klimaaktiv gold standard with 921 points.



Picture 1: the school building of Mariagrün

Needs brought the project to life

The small school has two classes in each year, which has been enough to meet the needs of the families living in the area for a few years now. There were however defects in the building quality. It was no longer possible to ensure high-quality schooling in the existing building. Not only the classrooms themselves, but also the staff room and gym were too small. And group, craft or media rooms did not exist at all. There was no room for exercising either in the school building or outdoors. Converting and extending the existing school was not possible under planning legislation and because capacity was inadequate. Plans were therefore made to relocate the school to the Schönbrunnngasse property where a crèche and nursery school already existed. This location had several benefits:

- Ample space for pupils and teachers
- Large grounds with grass for playing, sport and leisure
- Opportunity to operate a school with day care
- Innovative, energy-saving construction (passive house standard)

21st century school

The first workshop with representatives of both the school and parents was held in June 2008 with the aim of developing basic ideas for a school to meet 21st century needs. These ideas were then taken to the next level in further workshops with school partners, teaching and building experts and pupil representatives. A Europe-wide architecture competition was then held where these preliminary considerations were also taken on board. Architekturwerk Bertold Kalb from Dornbirn/Bregenz won the competition and subsequently built the first Graz primary school with energy efficiency class A++.



First passive house primary school in Graz – sustainable construction

The Graz Energy Agency supported the project with neutral assessment of the energy performance and building physics to optimise the construction quality and building services. Three different types of local wood were used for the timber building: the structure is made of spruce, while the facade consists of fir and larch. When selecting the building materials, they paid particular attention to avoiding PVC and HFC for the interiors. “Haus der Baubiologie” in Graz also supported the project. A pipe supplies the primary school with heat from the neighbouring building. The ventilation system operates with heat recovery, thus achieving an overall efficiency level of 85%. Hot water is heated in a fresh water module. All the building services are controlled using a smart system, which is connected to the city of Graz’s energy monitoring system.

The school’s eight classes now have ample space in rooms with optimised energy performance and a whole gym wing. In the newly developed environment, there is a central learning island for four school classes with homebases allocated to the pupils and teachers. Instead of a staff room, the teachers have work rooms. Dining and leisure facilities for day care were integrated in the existing nursery school building.



KLIMAAKTIV BUILDING OF THE MONTH 2/2015

JOIN IN, MAUTNER MARKHOF GRÜNDE, VIENNA

Intercultural housing project: a total of 90 flats were built to passive house standard in Wilhelm-Weber-Weg. The buildings achieved the klimaaktiv gold standard with 902 and 907 points.



Picture 2: buildings of the “Mautner Markhof Gründe” in Vienna

Completed in June 2014, "JOIN IN – Vielfalt gemeinsam leben" is the name of a housing project launched by Österreichisches Siedlungswerk Gemeinnützige Wohnungsaktiengesellschaft (ÖSW) together with Familienwohnbau gemeinnützige Bau- und Siedlungsgesellschaft m.b.H. to promote community spirit among people from diverse backgrounds. A total of 90 flats were built to passive house standard in Wilhelm-Weber-Weg. The buildings achieved the klimaaktiv gold standard with 902 and 907 points.

Architecture

External distinguishing features are the loggias running round the buildings with balconies in front giving residents more living space. Lightweight timber elements were used for the facade, creating the impression of a textured fabric. The aim was to bring out the urban character of the buildings looking like large pavilions.

Once developed, the project struck a balance between offering privacy, community and public life, which is also attractive for residents with various different needs. All the flats have private balconies and loggias. The two blocks of flats have communal top floors with roof terraces, beds for planting and winter gardens for the residents' use. On the ground floor there are spaces which are part of the common facilities that are however accessible and can be used by the public.

Participation: an integral part of the project

During preparation and planning, the JOIN IN project focusing on embracing diversity in the community provided a wide range of opportunities for those interested to take part, have a say and get to know the neighbours at an early stage. Resident meetings were also arranged where the project and various forms of participation were presented. At the same time, interested parties could meet their prospective neighbours. The floor plans were also finalised together with the team of architects at Tillner & Willinger ZT GmbH.



In addition, after the contract was signed, chaired residents meetings continued to be held where important issues of living together were also discussed. Once the residents have moved in, other meetings will be scheduled to design the communal living space.

The project was developed together with German sociologist Johann Mathis. In terms of energy performance, February 2015's building of the month also has a sound basis. The ventilation system operates with heat recovery and local or district heating supplies the hot water required. HFC-free insulation was also used.



KLIMAATIV BUILDING OF THE MONTH 3/2015

ATRIUMHAUS, 6923 LAUTERACH

A private developer, ATRIUM Warger & Fink GmbH, took the initiative by renovating the former Lauterach town hall, taking social and ecological factors into consideration, and put it to new use.



Picture 3: the ATRIUMhaus in the city of Lauterach, Vorarlberg

Renamed ATRIUMhaus, what was previously Vorarlberg's worst public building in terms of energy efficiency, was completed in 2014 and with 938 points achieved the klimaaktiv gold standard.

The renovation process – development and conversion

In total, the renovations with subsequent change of use took over two years. The first step was to remove the complete existing two-storey building with its distinctive ground floor recessed on all sides and horizontal ribbon windows as far as the primary structure. Given the existing building structure – consisting of a reinforced concrete frame with solid slabs and a central core zone – there was scope for a particularly flexible floor plan and consequently opportunities for new uses. The integral planning team succeeded in developing efficient solutions at the preliminary design stage, which took the architecture, building services and energy concept into account. Two complete storeys were subsequently added to the former town hall. They act as a continuation of the primary structure and have a lift in the core zone to ensure accessibility to all floors also for people with disabilities, which was not previously the case. After the structural work was completed, tradesmen from the region covered the shell with multiple layers of lightweight timber and aluminium-clad wood windows and applied a coat of purely organic materials. Now renovated to passive house standard, the



property called for the building services to be tailored accordingly. The project was rounded off with the exterior design, which also extends to the public square, Montfortplatz, thus further strengthening Lauterach council's corporate identity.

Energy independence and green electricity – comprehensive sustainability concept

Committed to sustainability and environmental protection, the company ensured that renewable regional energy resources and environmentally sound construction materials were used. They are to be found both on the inside and outside of the well-insulated building envelope. A photovoltaic system and the newly designed building services ensure that more regenerative energy is generated than is needed for heating and cooling in the entire building. Green electricity is purchased to supply the remaining operating energy required.

Heat management and energy monitoring

The old gas heating was replaced by a water-to-water heat pump, where the heat is distributed over the whole area with low-temperature underfloor heating instead of high-temperature radiators. During the summer, the underfloor heating system can now be used for keeping the temperature down with "free cooling". The building services are all controlled with a user-friendly bus system while the energy monitoring system installed checks continuously for potential energy savings. All these features guarantee the highest possible level of energy efficiency with maximum comfort at particularly low operating expenses in a 1970s building that still had an energy rating of 458 kWh/m²a a few years ago.



KLIMAAKTIV BUILDING OF THE MONTH 4/2015

RAINBACH NEW MIDDLE SCHOOL RENOVATION, 4261 RAINBACH IM MÜHLKREIS

The complete renovation of the school complex in Rainbach im Mühlkreis was aimed at making the buildings sustainable, energy and resource-efficient.



Picture 4: the school complex of the New Middle School in Rainbach

Dating back to the 1950s and 1970s, they house a New Middle School (NMS), gym, primary school and after-school care centre. Following renovation, the NMS achieved the klimaaktiv gold standard with 955 points.

Initial situation

The former secondary modern school was opened in 1972 and the interior space was actually of good architectural design. In terms of construction, however, it was a typical example of the late 60s and early 70s: high heating costs and structural damage due to condensation forming called for action to be taken. Built in 1950, the primary school had not undergone any appreciable renovation or refurbishment since.

The NMS is a reinforced concrete frame construction with brick infills, some of which are double walled. A layer of Heraklith was applied to the inside for thermal insulation. The uninsulated aluminium windows were flush on the inside, which was not ideal in terms of building physics. From a structural point of view, this type of building with reinforced concrete supports lends itself to renovation with suspended facade systems.

Total expenditure of €7 million for the school complex: an ambitious project demonstrating great innovative power

In order to substantially reduce the energy costs involved (previously around €40,000–50,000/year), Rainbach village council decided to renovate the school to zero-energy building standard. The total investment being €7 million, getting the go-ahead from the Upper Austrian regional government, which assumed a large part of the costs, was a long process.



Action taken

The ecological, thermal bridge-free facade envelope is made of prefabricated wooden elements (suspended facade). All the windows are triple glazed with blinds on the outside. The exterior shades, ventilation system and concept for airing by opening windows during the night ensure the building is suitable for summer.

Given the existing building's age, complete renovation of all the building services, piping, wiring and entire fixtures and fittings was required. The two oversized gas boilers were replaced with a wood chip heating system. Heat is supplied using new radiators with thermostat valves.

To achieve optimum air quality in the classrooms, the CO₂ concentration is monitored in each room. Based on the readings, the ventilation system's supply and exhaust air volumes can be adjusted by low-noise flow control valves with low flow resistance. This control facility enables volumes of air to be moved to where more people are located. As a result, savings of about 50% in unit sizes can be achieved. To generate electricity, a 42 kWp PV system was installed on the roof of the gym.

Lighting is efficient (LED) and controlled in direct conjunction with the blinds. The grounds are designed such that the primary school's entire basement can be used and provides room for after-school care.

A new central hall gives the NMS and primary school more space and acts as a link between them. This hall can be put to varied use as the schools require.

Parties involved

- **Owner:** Verein zur Förderung der Infrastruktur der Marktgemeinde Rainbach
- **Architects:** archEvolution, Ingrid Domenig-Meisinger, Albert Böhm
Planning professionals: archEvolution (engineering physics), Ingenieurbüro für Neue Energie & Gebäudetechnik (building services)
- **Validity checker:** Herbert Leindecker, FH OÖ F&E GmbH



KLIMAAKTIV BUILDING OF THE MONTH 5/2015

FOR FRIENDS HOTEL, 6100 MÖSERN

Overlooking the Inn Valley, the new hotel built to low-energy house standard promises guests sustainable comfort and achieves the klimaaktiv silver standard with 817 points.

The new For Friends Hotel in Mösern is located in the middle of the Austrian region of Seefeld in Tyrol, which has twice hosted the Winter Olympics.



Picture 5: the “For Friends Hotel” in Mösern

A complete energy package

Right from the early planning stages they attached great importance to low energy costs and used Innsbrucker Kommunalbetriebe AG (IKB) as the contractor for designing the energy technology. What was unusual about this project was that IKB was also responsible for the entire swimming pool equipment for this first time on such a contract. Large solar panels on the roof and the tailored energy solution round off the complete energy package delivered. Two wood pellet boilers provide heat and hot water. The heat is supplied through low-temperature panel heaters, floor convectors and radiators, while the hot water is piped from the fresh water systems separately for the hotel and kitchens. Eight supply and exhaust air units complete the services installed.

Design that promotes relaxation

The building is divided into three functionally connected levels flooded with light. Its lowest storeys extend outwards as spacious terraces that blend in with the surrounding countryside and allow sunbathing all day with stunning panoramic views. Despite some parts of the building facing different directions, the bedrooms can be reached from a single access tower.

Ecological and regional

The hotel room furnishings reflect the landscape’s features. Materials such as larch wood, leather, linen and wool underscore the regional nature of the products and create a warm, inviting atmosphere. The ideal orientation of the facade ensures pleasing and, above all, natural, glare-free light in the



various rooms. Round wood details in front of the facade provide perfect protection from the sun. Extensive green roofs were rolled out on all the roof terraces, with only rainwater being used to water them. The water for the entire infinity pool is circulated in only 9 minutes – which means the use of chemicals, in particular chlorine, can be reduced to a minimum.

Climate protection expertise in the middle of Tyrol

Effective protection from the sun, the solid construction and orientation of the large glass elements and entire structure enable the For Friends Hotel to keep their cooling requirements well below the legal limits. With a space heating demand of 27.0 kWh/m² treated floor area (TFA) per year calculated to PHPP, the hotel achieves the overall energy efficiency class A+. The orientation and layout of the structure contribute to the low energy demand: the compact building has all the rooms on one side. While the north facade is in the ground, the hotel opens out to the south with a glass facade.

Parties involved

- **Owners:** For Friends Hotel GmbH (www.for-friends-hotel.at)
- **Architects:** Zeytinoglu ZT GmbH (www.arkan.at)
- **Planning professionals:** ZANON Planung, Statik und Baumanagement GmbH (structural engineering, building physics), Ingenieurbüro Lakata GmbH (building services), Architekturbüro Walch ZT GmbH (on-site supervision)
- **Validity checker:** Peter Feichtinger (Energie Tirol)



KLIMAAKTIV BUILDING OF THE MONTH 6/2015

JASPERN, 1220 VIENNA

The participatory passive house project in Seestadt Aspern achieved the klimaaktiv gold standard with 970 points.

JAspern is a participatory passive house project in Aspern, Vienna's urban lakeside area, featuring the highest energy performance standard, great convenience for residents, an innovative sociocultural approach to living in a community and an ecological building and space concept.



Picture 6: passive house JAspern in Vienna

Unlike the participatory residential projects common nowadays, it was the co-housing community itself as a group of owners that assumed responsibility here for taking all the decisions at their own risk without financial backup from the developers. What made it possible was the combination of project controller, design engineer and co-housing community, based on a special decision-making process.

Cross-generational sustainability concept

The optimised, flexible floor plans for the flats enable changes to be made in room use and reflect the concept of sustainability spanning several generations. This was possible thanks to the ceilings supported at various points and the facade grid. Support grids on the facade allow the windows to be moved within certain limits, ensuring maximum variability in the floor plan. Adding a grid field for windows on each facade gives the designer the option of moving each window's position and therefore making the interior room layout variable.

Architecture

The windows are fitted with a cost-effective sub-frame installed at the same time as the window: a detail that will enable windows to be replaced in the future without impacting the facade. In addition to structurally relevant concrete wall pillars, the majority of the facade consists of Ziegelit panels with a high percentage of recycled brick chippings. They are non-load-bearing and can be replaced with windows or other elements at any time.



The outside facilities are wheelchair accessible from the street and common courtyard and easy to see. In the basement there is a large bicycle/buggy room for the 18 flats providing space for over 80 bikes. A workshop for do-it-yourself or creative activities is also available to residents.

The living spaces are 2.8 m high. This means that the normal conflict between getting enough light yet making the balcony deep enough does not exist and sunshine can get in, even in winter.

Building services

In the central ventilation unit, fresh air first goes through a filter before being preheated in a brine loop subsoil heat exchanger to at least -2°C and then heated by the dissipated heat in the outlet air to 16°C up to 20°C (heat recovery at least 85%).

Vienna's district heating service provides the power for heating and the central hot water supply. The useful heat comes from the transfer station. Heating demand is $14.9 \text{ kWh/m}^2\text{TFA.a}$ (PHPP).

Urban gardening

A high standard of ecological quality is achieved with urban gardening and a high percentage of intensively planted green roofs. On the 6th floor rainwater is collected for watering the raised beds. The excess water is piped into a tank in the garden, which can drain into a soakaway. On the 1st and 6th floors there are communal terraces with raised beds.

Parties involved

- **Developers:** JAspern cohousing community, Fritz Oetl (Website www.jaspern.at)
- **Architecture, design engineering, tender and on-site supervision:** pos architekten (Website www.pos-architecture.com)
- **Planning professionals:** Team GMI (building services), werkraum wien (structural engineering), zwoPK (landscaping), Pokorny Lichtarchitektur (light design), Österreichisches Institut für Bauen und Ökologie GmbH (IBO)
- **Validity checker:** Cristina Florit, Österreichisches Institut für Bauen und Ökologie GmbH (IBO)
- **General contractor:** Ing. Harald Weissel GmbH



KLIMAAKTIV BUILDING OF THE MONTH 7–8/2015:

EUROGATE BAI, VIENNA

Developers BAI and the team at Johannes Kaufmann Architektur used the klimaaktiv building standard as a guide in Vienna's largest inner-city development area.

Testifying to its top quality, this construction project achieved the klimaaktiv gold standard with 930 points.



Picture 7: the BAI block of buildings

Living with views near and far

All four BAI blocks with 323 flats at the EUROGATE site, which covers a total area of 20 hectares, aim to maintain their value in the long term. “We managed to achieve our goal by committing to sustainable construction, state-of-the-art technology, using high-quality materials and working with excellent architects,” says Sonja Donauer-Dums, Marketing Manager at BAI. The residents are pleased to have a home with added value: the layout of the flats is like a windmill, affording views in several directions and into the distance. In addition, the room layouts and sizes also enable variable use. Residents in Building C, for example, use the loggias all year round. Transparent shutters turn the balconies into an additional room, which plays an important role in the overall energy concept, especially as a buffer zone in winter.

Open space brings neighbours together

The grounds with landscaped areas are inviting and popular relaxation zones for all the residents. Several differences in level create an attractive appearance. Grassy play areas, climbing frames, swings, sandpits, water features, seating, streetball court and much more create space for all ages, for having fun and meeting people. And even if it rains, a covered area means the children can still play outdoors. Local residents are also encouraged to use eco-friendly transport: there are many places for parking bikes and rooms for repairing bicycles.

klimaaktiv building standard guarantees value-added architecture

BAI's EUROGATE buildings are further proof that forward-looking, climate-friendly construction indeed pays off and makes housing possible where residents feel at home. In fact, the klimaaktiv



building standard provides ideal guidelines to ensure an energy-efficient, ecological and comfortable environment for living and working, whether in a new build or high-quality renovations. The klimaaktiv building standard is the key to the klimaaktiv Building & Renovation programme, which is part of the Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW) climate protection initiative, and applies throughout Austria as a quality mark for sustainable buildings with special focus on climate protection and energy saving. In addition, klimaaktiv buildings are designed and built to remain largely unaffected by energy price trends. Buildings meeting the klimaaktiv standard already fulfil the demands of the European Union's Directive 2010/31/EU which comes into force in 2021 and requires both residential and non-residential properties to be nearly zero-energy buildings (NZEB).

Parties involved

- **Developers:** BAI Bauträger Austria Immobilien GmbH
- **Architects:** Johannes Kaufmann Architektur
- **Planning professionals:** Schöberl & Pöll GmbH, Schmidt Reuter, ic Consulente, Land in Sicht, Pokorny Lichtplanung
- **Validity checker:** Beate Lubitz-Prohaska, pulswerk GmbH



KLIMAAKTIV BUILDING OF THE MONTH 9/2015

VIERKLEE - LIVING IN GNADENWALD

The main feature of the housing complex is its architecture and generous open space design. All four buildings (3 detached and 1 semi-detached house) meet the klimaaktiv gold standard. The rented houses were designed by frei_raum architektur (Innsbruck) and built by JKR Immobilien GmbH (Fritzens).



Picture 8: the Vierklee homes

When planning them, they opted to use renewable energies and building materials from renewable resources. The sunny location is ideal for solar and photovoltaic systems. Together with the heat pump heating, such systems also ensure low energy costs in the long term. The Vierklee homes have achieved the low-energy house standard by using appropriate insulation for the solid timber structure, heat recovery ventilation systems and high-quality windows. To minimise heat loss, the heat transfer stations are located locally in each house. Expensive blinds to prevent overheating in summer can be dispensed with due to the sophisticated design of the buildings. The front balconies with the additional slats made of solid timber protect the buildings from the sun and provide more privacy.

All the service and utility rooms and all the vehicles are concealed in the half-open parking level, which blends into the surroundings with wooden trelliswork and natural stone walls. The utility rooms and parking level are thermally separated and not heated.

As a result, the project does not encroach on the alpine environment. The flow of Nature and the terrain is embodied both in the design of the outdoor space and in the form of the slightly rounded wooden houses, thus reflecting the surrounding landscape. Even the spatial experience indoors is shaped by this flow.

The consistent use of ecological building materials such as solid wood, cellulose and natural stone can be felt in the warm indoor atmosphere. Framed by gneiss walls, the gardens only contain native plant species that are easy to care for.

Living in Gnadewald, 6060 Gnadewald

- Developers: JKR Immobilien GmbH
- Architects: frei_raum architektur (www.freiraum-architektur.at)
- Planning professionals: Klimatherm (building services)
- Validity checker: Peter Feichtinger (Energie Tirol)



KLIMAAKTIV BUILDING OF THE MONTH 10/2015

BLOCK OF FLATS, EBERLGASSE, 1020 VIENNA

Renovation of the block of flats with ten units dating back to 1888 was planned by Andreas Kronberger management consultants. Schöberl & Pöll were responsible for the building engineering physics.



Picture 9: Block of flats in Eberlgasse, Vienna

Before it was renovated, the small building had ten flats, some substandard with a WC in the corridor. The windows ranged from post-war casements to renovated versions and single tilt-and-turn windows made of white PVC. It was a similar situation with the plumbing and wiring, which had undergone various upgrades with different technologies. The heating requirement was only just under 180 kWh per square metre per year (OIB).

It was ultimately thanks to the owners that this state of affairs came to an end and the building was given a new lease of life. Their objective was to achieve modern building and living standards, renew the service installations and renovate the building into a passive house, with around half of the flats still occupied. An intensive planning and negotiation process with the tenants remaining in the building formed the basis for completing the project so successfully. The owners were supported by Schöberl & Pöll GmbH, Manschein GmbH and the coordinators of the research project “Gründerzeit der Zukunft” at e7 Energie Markt Analyse GmbH dedicated to giving late 19th century buildings a future.

What proved to be one of the greatest challenges was creating as airtight a building envelope as possible. It was not easy to turn the air change rate (n_{50}) from over 4 to levels meeting passive house standards. The new ventilation system installed is a central unit with heat recovery, which is located in the basement outside the thermal envelope. In the unheated basement, the earth floor was replaced with a (slightly insulated) concrete one, the masonry renovated and insulation attached to the underside of the vaulted ceiling to seal the thermal envelope. This involved working with suspended ceiling systems and adding 20 cm thick insulation collars to the top of the basement walls. As around 130 years ago, the new windows are made of wood, but now have aluminium cladding on the outside and triple glazing.

The residual energy for heating is provided by a groundwater well and heat pump, with solar panels on the roof supplementing the power supply. Also to reduce operating power to a minimum, energy-



saving household appliances were installed as standard wherever possible. LED lighting in the public areas additionally reduces energy consumption.

Installing a lift helped to improve the quality of access to the building. When completing the interior, attention was paid to using low-emission materials. All the flats were extensively renovated. On the ground floor, formerly four flats were combined to make two new units, while on the top floor two completely new high-quality units were built. Garage space on the ground floor was deliberately omitted.

Andreas Kronberger: “The Eberlgasse refurbishment goes to show that energy-efficient urban regeneration is possible. From a financial point of view, the high-quality renovation was only possible with appropriate subsidies, including from Vienna’s housing fund, the Ministry of Transport, Innovation and Technology (BMVIT) under its “Haus der Zukunft Plus” programme, rent contributions (art. 18, Tenancy Act, MRG) and with our own capital.”

More about the building:

- „Haus der Zukunft“ (Buildings of the future) website:
<http://www.hausderzukunft.at/results.html/id7142>
- White paper about sustainable building in Austria with the title „Nachhaltiges Bauen in Österreich – tatsächlich und nachweislich“ (only in German):
http://www.monitorplus.at/upload/file/Buch_MonitorPlus_2014.pdf

Block of flats, Eberlgasse, 1020 Vienna

- Design and planning: Andreas Kronberger
- Planning professionals: Schöberl & Pöll GmbH (engineering physics), Ing. Siegfried Manschein GmbH (building services)
- Submission, on-site supervision: Ageres Baumanagement
- Validity checker: Beate Lubitz-Prohaska (pulswerk GmbH)



KLIMAAKTIV BUILDING OF THE MONTH 11/2015

ILLWERKE – NEW DIMENSION IN INDUSTRIAL WOODEN BUILDINGS

Designed by architects Hermann Kaufmann to meet the klimaaktiv silver standard, the Illwerke Zentrum Montafon administrative building is a hybrid timber structure based on an innovative element system.



Picture 10: administrative building of the company Illwerke

Homely atmosphere in open offices with panoramic views

Illwerke Zentrum Montafon (IZM) – the Vorarlberg energy company’s administrative building and visitor centre – was the first commercial building to use a lifecycle tower (LCT) composite system: the lower and ground floors and key connecting elements are made of concrete. The four upper floors consist of a hybrid timber structure, which was built on site in only six weeks. An elongated, five-storey building on supports, it extends over a reservoir and from inside affords stunning panoramic views into the Montafon valley. These views and the clear division between offices and function rooms guarantee high quality for working and hosting events. Markus Burtscher, IZM Project Manager: “Having built the Illwerke Zentrum Montafon, Vorarlberger Illwerke AG has proved it assumes responsibility towards the environment, nature and coming generations. IZM is one of the world’s largest and most modern administrative buildings to be designed as a hybrid timber structure. We thus achieved a milestone in sustainable construction – which reflects our corporate philosophy.”

Working with a view in an ultralow-energy building

The 10,000 m² administrative headquarters were designed as an ultralow-energy building with a heat recovery ventilation system. Cooling water from Rodund, one of Vorarlberger Illwerke AG’s storage power plants, helps to keep temperatures down. In summer, the water at a maximum of 17 degrees is used for cooling the offices. In winter, it serves as the primary energy source for heat pumps with 260 kW power. The heating and cooling system is integrated in the acoustic ceilings. Its individual heating circuits are adjusted to the facade grid in order to allow flexibility in the room layout. In



interior design, they selected particularly eco-friendly materials, which means the whole building is PVC free.

klimaaktiv building standard guarantees value-added architecture

The Illwerke Zentrum Montafon administrative building proves that forward-looking, climate-friendly construction indeed pays off and creates significant added value for people – in this case those working there. In fact, the klimaaktiv building standard provides ideal guidelines to ensure an energy-efficient, ecological and comfortable environment for living and working, whether in a new build or high-quality renovations. The klimaaktiv building standard is the key to the klimaaktiv Building & Renovation programme, which is part of the Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW) climate protection initiative, and applies throughout Austria as a quality mark for sustainable buildings with special focus on climate protection and energy saving. In addition, klimaaktiv buildings are designed and built to remain largely unaffected by energy price trends. Buildings meeting the klimaaktiv standard already fulfil the demands of the European Union's Directive 2010/31/EU which comes into force in 2021 and requires both residential and non-residential properties to be nearly zero-energy buildings (NZEB).

Illwerke Zentrum Montafon, 6773 Vandans

- **Owners:** Vorarlberger Illwerke AG
- **Architects:** Hermann Kaufmann ZT GmbH
Planning professionals: Wärme- & Schallschutztechnik Schwarz (building physics), merz kley partner ZT GmbH (structural engineering)



KLIMAAKTIV BUILDING OF THE MONTH 12/2015

LIND OB VELDEN – SUSTAINABLE HOUSING IN A RURAL AREA

Architects ARCH + MORE ZT GmbH have shown how to strike a balance between architecture and climate protection by designing a block of flats in Lind ob Velden.



Picture 11: Block of flats in Lind ob Velden

High-quality housing in harmony with the environment

Located on the outskirts of Lind ob Velden, the block of flats with 36 housing units in the first phase was built to ultralow-energy house standard. Public facilities such as a nursery school, primary school, playground, and sports field are all within walking distance. Shops selling food and other amenities are to be found within a radius of two kilometres and can therefore be easily reached by bicycle.

The individual buildings are slightly offset, thus creating outdoor space for residents' use and spacious, naturally lit staircases. Optimising the thermal envelope and installing solar components resulted in extremely low energy costs and reduced costs for hot water. Installing heat recovery ventilation systems in the individual flats significantly improves the air quality. In addition, sustainable energy comes from a local wood-fired heating plant. It meets the remaining demand for heat. Architect Gerhard Kopeinig underscores their commitment to sustainability: "In subsidised housing there is and always has been an effort – in broad terms – to make projects sustainable, because only then are the flats affordable in the long term. We achieved this aim in the Lind ob Velden flats with compact structures, sustainable materials, connection to the local heating plant, quality of open space despite proximity to the village, and public transport and education infrastructure within walking distance. The block of flats in Lind ob Velden is thus a prime example of klimaaktiv social housing in a rural area."

The klimaaktiv building standard guarantees value-added architecture



Having met the requirements for the klimaaktiv silver standard, the block of flats in Lind ob Velden proves that forward-looking, climate-friendly construction indeed pays off and creates significant added value for people.

Block of flats in Lind ob Velden, 9220 Velden am Wörther See

- **Owners:** Meine Heimat, Gemeinnützige Bau-, Wohn- und Siedlungsgenossenschaft mbH
- **Architects:** ARCH + MORE ZT GmbH
- **Planning professionals:** ARCH + MORE ZT GmbH