— My goal is energy self-sufficiency for Austria by 2050. An energy industry based on a maximum degree of self-sufficiency can be implemented only by way of a consistent switch to renewable energy sources, improving energy efficiency and making use of innovative green technologies.

We are in excellent shape for this: renewable energy sources are sufficiently available in Austria and our companies’ know-how in the field of environmental and efficiency technologies is in great demand abroad. For example, Austrian passive-house windows, automated biomass heating systems and solar installations are export hits which secure numerous green jobs in our country. Austrian architects and specialist planners are employed in connection with sustainable building technologies worldwide.

Where and how we live and work is among the key factors determining our quality of life. Low-resource-use, high-quality building which harmonizes economic and ecological, social and aesthetic aspects is absolutely essential for this.

The Ministry for the Environment grants the State Prize Architecture and Sustainability for those projects which achieve the most impressive combinations of environmental awareness in action and aesthetics. There is great potential for increased efficiency in the building sector: one third of the energy consumed in Austria is used for heating or cooling buildings and supplying hot water. This clearly shows the importance of sustainable building and renovation.

If you are interested in sustainable building technologies, I invite you to take advantage of Austrian know-how. In this field Austria has a dense network of specialized companies and research facilities.

Niki Berlakovich
Minister for the Environment
Development

In 2012/13 the Austrian Ministry for the Environment awarded the State Prize for Architecture and Sustainability for the third time to projects distinguished equally by their architectural value and by their quality with respect to ecology, energy use, social and economic sustainability. The invitation to submit projects was extended within the framework of the climate protection initiative klima:aktiv. The buildings were graded/classified according to the klima:aktiv building standard (see p. 12).

Energy-efficient buildings play an essential role in climate and energy policies. All in all the large number of submissions for the State Prize illustrate the positive development in the area of sustainable architecture in Austria. Those buildings which attract interest by being nominated for or winning the State Prize are a source of inspiration and count as showcase projects in both fields: architecture and sustainability.

The increase in submissions goes hand in hand with a growing number of competent and promising architectural partnerships and building services consultancies working on these issues. Some years ago only a small circle of dedicated pioneers were involved, while these days the majority of Austria’s best architects are on the list of applicants.

Jury

The jury consists of the following members: Hannelore Deubzer, Technical University Munich, Faculty of Architecture; Roland Gnaiger (State Prize representative of the Ministry for the Environment), University of Art and Design Linz, Department “the architecture programme”; Otto Kapfinger, architect and author, Vienna; Helmut Krapmeier, Energy Institute Vorarlberg, Dornbirn; Robert Lechner, Austrian Ecology Institute, Vienna.

Submissions

A total of 99 project presentations were submitted to the jury, who assessed them as a whole and with respect to aesthetic, functional, ecological, social and economic aspects. The procedure called for considerable commitment on the part of participants. The projects had to be presented not only as architecture but also from the point of view of their sustainability performance.

Submissions - Type of buildings

- 49% nonresidential buildings
- 19% apartment blocks
- 13% detached houses
- 19% kindergarten and schools
— This residential building in the heart of Vienna’s 20th district scores particularly on the quality of life it offers to residents. The slightly jagged exterior of the building provides every flat with ample free space in the shape of a rhombus just outside. Thus the residents can actively participate in shaping the look of the exterior by growing plants. On the south side there is a gap between the block of flats and the next building to let some sunlight through to the flats facing east inside the courtyard even in winter. For shared activities there are a communal room and a large roof-top terrace (partially roofed over). The inner-city location and full access to public transport are additional advantages of this building.

Access to a terrace from any room and plenty of green in the heart of the city. What sounds like a dream was actually implemented by a dedicated promoter and creative architects.

Residential building
U31, Vienna

New build: apartment block (46 units) to passive-house standard

Address: 1200 Wien, Universumstraße 31
Promoter: Heindl Holding GmbH
Architecture: querkraft Architekten ZT GmbH
Planning: Schöberl & Pöll GmbH (building physics), BPS Engineering (building services)

Type of building
→ non-frame construction to passive-house standard, 46 flats, plus offices on ground and first floors

Date completed
→ 2010

Energy consumption rating
→ heating energy demand 6.00 kWh/m²a (energy certificate), 14.2 kWh/m²a (PHPP)

Building services
→ The residual heat input needed is supplied through district heating and a heat pump using water, backed up by ample heat storage tank capacity. The building is ventilated by a central unit with controlled heat recovery.

During the summer months a basic level of cooling is provided via heating/cooling panels; the cooling water needed for this comes from the building’s own groundwater well via heat exchangers.
The Niederösterreichhaus building complex in Krems captivates with its masterly balancing of the new and the historical. The three buildings match their small-scale surroundings on the edge of the old town of Krems, but function as a single entity through the connecting bridge components. The passive house idea was interpreted as holistic concept covering both low resource consumption during construction and energy efficient operation in future. Particular attention was paid to selecting optimal materials and providing high-grade user comfort. The new building houses several government agencies in one location, which makes both intra-administration communication and citizens’ lives easier.

To build a new office building to accommodate several government agencies in the highly segmented old part of town is a challenge in itself. But when the highest ecological demands are made, the result is a showcase project.

Administration building
Niederösterreich Haus, Krems

New build: offices with 10,000 m² of usable floor area

Address: 3500 Krems, Ringstraße 14–16, Drinkweldergasse 14–20, Niederösterreich
Promoter: NO Landesimmobilien GmbH
Planning: DI Walter Prause (building physics), TB ZFG-Projekt GmbH (building services), bauXund Forschung and Beratung GmbH (building ecology)

Type of building
→ non-frame building to passive house standard with nearly 10,000 m² of usable space

Date completed
→ 2011

Energy consumption rating
→ heating energy demand 2.6 kWh/m²a (energy certificate)

Building services
→ The entire office block has controlled (bidirectional) ventilation. District heating supplies residual heating energy. Photovoltaic panels and a heat pump are also on hand. In summer “relief cooling” is in operation (using air chilled in an underground collector).
— In this renovation project a conception encompassing architecture, space, building and materials was successfully implemented, ranging from town planning to the treatment of open space, from building services to furniture. As a result, the functioning of the building was improved and complete accessibility achieved. To adapt the school to new educational elements such as supervision in the afternoons or progressive education, timber storeys were added to the building, existing storeys restructured and access considerably improved. An innovative materials concept yielded excellent ecological results. The school now appears remarkably colourful and lively. It strikes one immediately that this is an unusual school and that teachers and pupils are comfortable there.
— The Messequartier residential project makes an important contribution to the issue of developing high-quality residential districts in a city centre. This large complex emphasizes interesting spaces and perspectives by means of the angled façade, and diversity by means of pronounced functional interleaving. It incorporates a wide range of differing types of flat, assisted living facilities, a student hostel, a kindergarten and commercial space. Halfway along their length the long, wavelike structures are supported on stilts, so there is no barrier at ground level, but an uninterrupted green space. The housing complex is directly linked to the city’s network of cycling routes, and is equipped with a fleet of hybrid and electric cars for car-sharing. The residents also have the use of a roof terrace garden with sauna and swimming pool.

Social sustainability, ecologically sound energy systems and intelligent mobility – those are the targets selected by the promoter and architect for a residential complex focussed on diversity and built according to human measure.

Messequartier housing complex, Graz

New build: housing complex with 195 flats and commercial space

Address: 8010 Graz, Klosterwiesgasse 101a/b, 103b, Münzgrabenstraße 84b/c, Steiermark
Promoter: ENW – Gemeinnützige Wohnungsgesellschaft mbH
Architecture: DI Markus Pernthaler Architekt ZT GmbH
Planning: Vatter & Partner ZT GmbH (building physics), RFG Engineering GmbH (building services), bauXund Forschung und Beratung GmbH (building ecology)

Type of building
→ non-frame construction to passive-house standard, with 195 flats and commercial space

Date completed
→ 2011

Energy consumption rating
→ heating energy demand 9 kWh/m² a (energy certificate)

Building services
→ The planning authority required the complex to be connected up to the district heating grid; to provide hot water and to back the heating system up in spring and autumn, more than 700 m² of thermal solar collectors plus the necessary hot-water storage tanks were installed. A heat pump makes use of the water table, particularly to cool the commercial space in summer; it is also used to prewarm the fresh air for ventilation in winter.
— As a result of schools being merged, it was necessary to enlarge the existing school building (located above the west shore of Traunsee, away from other buildings) considerably. The existing structure has largely been integrated into the new building, which is reminiscent of a typical Upper Austrian Vierkanthof (quadrangular farmhouse), with a simple exterior which is very becoming. As the same kind of wood has been used for floors, walls, ceilings and interior fittings throughout, the building has a peaceful, cozy atmosphere; it also provides spectacular views of the lake and the surrounding mountains. This “farmstead” contains an entire world: apart from the classrooms, there are workshops, kitchen, refectory, library, the boarding home and amply sized dayrooms. Special attention was given to using ecological building materials – along with untreated timber, cellulose and wool were selected for thermal insulation.
**OeAD hostel, Vienna**

New build: student hostel with 194 room, non-frame construction to passive-house standard

**Address:** 1150 Wien, Gasgasse 2  
**Promoter:** Heimbau – Gemeinnützige Bau-, Wohnungs- und Siedlungsgenossenschaft  
**Architecture:** Martin Kohlbauer ZT GmbH  
**Planning:** Vasko+Partner Ingenieure (structural engineering & building services), Schöbert & Pöll GmbH (building physics)  
**Building:** high-quality accommodation, centrally located, for students from abroad. The arcades on the north side act as a buffer zone vis-à-vis the adjoining railway tracks; the rooms face south.  
**Energy consumption rating:**  
HWB 5.9 kWh/m²a (EC),  
HWB 12 kWh/m²a (PHPP)  
**Building services:** district heating, controlled ventilation with heat recovery, photovoltaic equipment

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**Block of flats Am Mühlgrund, Vienna**

New build: residential building (53 flats) with a focus on accommodating several generations side by side, non-frame construction to passive-house standard

**Address:** 1220 Wien, Mühlgrundgasse 3  
**Promoter:** BUWOG Bauen und Wohnen GmbH  
**Architecture:** ARTEC Architekten  
**Planning:** Schöbert & Pöll GmbH (building physics), TB Käferhaus GmbH (building services), Atelier Auböck + Kárász (outdoors)  
**Building:** block of flats on narrow plot of land next to elevated railway. The vertical garden screens the building off and brings greenery inside it.  
**Energy consumption rating:**  
HWB 4.84 kWh/m²a (EC),  
HWB 12 kWh/m²a (PHPP)  
**Building services:** ultra-efficient convenience ventilation with heat recovery, district heating, photovoltaic equipment, solar collectors to help with supplying hot water
**Detached house, Hard**

Nominate project

New build: detached house, lightweight construction to passive-house standard

Address: 6971 Hard, Badgasse 10
Promoter: Martin und Daniela Brunn
Architecture: Martin Brunn und Gerhard Zweier
Planning: Ender Klimatechnik GmbH (building services), automationNEXT GmbH (building automation)

**Building**: detached house in centre of village, can be divided into three flats. Consistent use of ecologically sound building materials.

**Energy consumption rating:**
- HWB 7.26 kWh/m²a (EC), HWB 14 kWh/m²a (PHPP)

**Building services**: wall heating system with solar collector panels and wood gasification boiler. Convenience ventilation with heat recovery, photovoltaic equipment.

**Primary school, Mäder**

Nominate project

Renovating and adding a storey to a school, non-frame construction to passive-house standard

Address: 6841 Mäder, Brühl 4
Promoter: Gemeinde Mäder
Architecture: Fink Thurnher Architekten

**Building**: peaceful, well-lit rooms, fresh air and clear spatial structuring ensure the right climate for learning. Virtually all aspects of sustainable building are taken into account.

**Energy consumption rating:**
- HWB* 2.11 kWh/m³a (EC)

**Building services**: district heating (central biomass facility), controlled ventilation with heat recovery, photovoltaic equipment.
klima:aktiv, a climate protection initiative by the Austrian Ministry for the Environment, promotes sustainable building construction low on resource use. The klima:aktiv building standard provides all the tools and information needed for this.

klima:aktiv
Building Standard—Quality Benchmark for the State Prize

Climate protection initiative klima:aktiv

The main aim of the klima:aktiv climate protection initiative is to launch climate-friendly technologies and services in the market and to encourage their rapid proliferation. Moving our society in the direction of sustainability is a complex and dynamic social process which can succeed only if a growing number of agents actively participate in the change and make sure it is perceived as an opportunity and not just as a threat.

Through its extensive networks, klima:aktiv supports building up social capital for change toward a sustainable society. „Building and renovating“, „saving energy“, „renewable sources of energy“ and „mobility“ are the four areas where new solutions are explained, quality standards set, the agents’ knowledge and competence advanced and advice provided to companies, local councils and households.

Energy-efficient building and renovation are supported by klima:aktiv through tools such as lists of criteria, databases on construction materials and buildings, providing advice and information, plus a broad network of partners within the construction industry.

Qualified employees are essential where climate-friendly technologies are concerned. Green skills are in demand in the labour market. That is why klima:aktiv cooperates with the leading providers of training and vocational skills. Basic training and further education
from klima:aktiv provide professionals such as planners and craftspeople with the necessary know-how for quality construction and renovation.

**The klima:aktiv Building Standard**

klima:aktiv provides a compass in the shape of its quality standards, which makes long-term sense. The best example in this respect is klima:aktiv’s building standard, which provides practical guidance to property developers, planners, construction engineers, housing suppliers, and to anyone building or renovating a house.

Energy-efficient construction and high-quality renovation are the key to climate protection with long-term effects. But klima:aktiv aims at more than just energy efficiency. The klima:aktiv building standard offers a neutral vantage point from which to assess and evaluate the quality of planning and implementation, of building materials and construction, as well as key aspects of user comfort and air quality indoors. The klima:aktiv building standard exists for residential buildings and various types of service industry building, covering the construction of new buildings and renovation.

The klima:aktiv criteria fall into four evaluation categories:

- **A. planning and implementation** (max. 130 P.)
- **B. energy and supply** (max. 600 P.)
- **C. building materials and construction** (max. 150 P.)
- **D. comfort and indoor air quality** (max. 120 P.)

**A. planning and implementation**

Location and lifecycle costs are of equal importance for planning and implementation, as are freedom from air leaks, minimizing thermal bridges, and making provisions for instruments to record energy consumption.

**B. energy and supply**

Compared to average buildings, a considerably reduced energy consumption and fewer CO₂ emissions are essential in order to achieve high-grade klima:aktiv quality. Numerical values may be calculated according to either OIB or PHPP.

**C. building materials and construction**

Building materials particularly harmful to the climate are excluded. Using environmentally sound building materials is rewarded.

**D. comfort and indoor air quality**

Summer climate-worthiness and low-emission interior building materials create comfortable conditions and good air quality indoors. Having a ventilation system with heat recovery is rewarded.
An enormous potential for economic recovery and for green jobs rests with the increase in energy efficiency, energy saving, the consistent further development of renewable energy technologies and with investments in innovative environmental technologies.

Austria was quick to recognize the opportunities available in environmental and energy technologies, and is now an international leader with a competitive edge in climate-friendly technologies. This has beneficial effects on the country’s attractiveness to business, on economic growth and on employment.

**Sustainable building technologies “Made in Austria”**

Austrian cutting-edge technology in the fields of solar energy (for hot water supply and back-up heating, but also for environmentally sound refrigeration and the production of cold from heat), biomass (to generate electricity, and for heat and organic fuels) and ecological construction is used world-wide.

**Passive-house technologies**

Overall, Austria has the highest per capita share of passive houses in the world (there are 2.5 times more passive house buildings per million inhabitants in Austria than in Germany); 45% of all passive houses in the EU are in Austria. In some provinces up to 60% of housing units are built to passive-house standard. Austria has a leading market position in passive-house technologies (e.g. heat pumps, windows).
**Solar energy**

Austria ranks third by number of installed solar heating systems per head, behind Cyprus and Israel. Austrian suppliers of solar energy systems for hot water, space heating and cooling notch up high export figures; in 2011 78% of solar collectors manufactured in Austria were exported. Almost a third of the solar collectors installed in the EU come from Austria. Turnover in solar equipment came to approx. 365 million Euro in 2011, a third of it in the fitting trade. Including servicing and replacing existing solar facilities, the solar field provides 3,600 jobs in Austria.

— Almost a third of the solar collectors installed in the EU come from Austria.

In the field of photovoltaic follow-up technologies (inverters, power electronics) and in the photovoltaic supply industry (protective foil for solar modules) Austrian enterprises have established an international position.

**Automatic biomass heating systems**

Austria has been working on producing heat from biomass efficiently for decades. Our biomass boiler producers’ unparalleled know-how is internationally recognized and appreciated. Exports of wood-chip and pellet boilers make up nearly 70% of turnover.

The Austrian suppliers of biomass heating technologies currently achieve a turnover of approx. 1,000 million Euro per annum, increasing at 20% annually. With 12.5 pellet heating systems per thousand inhabitants Austria tops the European charts, followed by Denmark (11.8), Sweden, (11.1), Finland (4.7) and Germany (2.3).

Further information:

Information about the wide range of Austrian products and systems solutions available in the fields of construction, energy, air, water/wastewater, noise, waste and soil: [www.ecolinx.at](http://www.ecolinx.at)

Data and facts, news items, interviews with experts and examples of good practice from the field of Austrian environmental technology: [www.umwelttechnik.at](http://www.umwelttechnik.at)

Platform for environmental technology, qualifications and professions: [www.greenjobsaustria.at](http://www.greenjobsaustria.at)
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.

Roland Gnaiger, State Prize representative of the Ministry for the Environment