

energy innovation austria

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Current developments
and examples
of sustainable energy
technologies



Federal Ministry
Republic of Austria
Climate Action, Environment,
Energy, Mobility,
Innovation and Technology

Climate-neutral city

Strategies and examples
for sustainable
urban development

Whether its reducing the energy consumption of buildings, developing clean mobility solutions or creating an integrated waste and recycling system, cities face many challenges today and are positioned as central players on the path to climate neutrality. Austrian cities and communities collaborate with research institutions to develop pioneering solutions and put them into practice.

Photo: stock.adobe.com



On the path towards climate neutrality

Cities in the fight to save the climate

Over half of the world population now lives in cities or population centres. In Europe, this figure is already at 75 %, and the trend is rising around the globe. Cities have a central role to play in the fight against the climate crisis. They cause about 70 % of global CO₂-emissions and are responsible for an equally large share of global energy consumption.¹ The impacts of climate change, such as air pollution, hot spells and extreme weather events, are particularly pronounced in urban areas.

At the same time, cities have tremendous potential to become pioneers in the area of climate protection and adaptation to climate change thanks to their roles as economic centres and sites for research, innovation and technology, making them a powerful force for driving economic, environmental and social change. Innovative solutions can be tested in urban spaces under real conditions as the basis for a wider roll-out. Strategies for decarbonising buildings and entire neighbourhoods, urban energy and mobility systems as well as industrial operations are critical for the transition to a resource-conserving, climate-neutral economy and way of life.

How can European cities achieve the goal of climate neutrality? Which instruments and activities must be supported? And what can other cities learn from the pioneers? The city of the future needs integrated, digital and circular solutions for buildings and transportation systems as well as supply and disposal infrastructure. In fact, many cities are already leading the way in climate protection and resource conservation, such as by planning and building positive energy districts, developing low-carbon transport systems or establishing an integrated waste and recycling system.

EUROPEAN AND NATIONAL STRATEGIES

The European mission “100 Climate-neutral Cities by 2030 – by and for the Citizens”² has set the ambitious goal of helping large, medium and small European cities become climate-neutral by 2030. As fields for experimentation and innovation, these cities will demonstrate suitable strategies and measures, allowing them to serve as models for other European cities. The mission is making an important contribution to the European “Green Deal” and the EU’s commitment to achieving climate neutrality by 2050.

National research priorities and programmes were oriented around the European mission early and created the necessary (learning) environment for the development and implementation of innovative solutions in Austrian cities. These included the RTI programmes “City of Tomorrow” and “Mobility of Tomorrow” run by the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK) as well as the “Smart Cities Initiative” of the Climate and Energy Fund. In recent years, some cities and towns in Austria have developed “Smart City strategies” that help point the way to a climate-neutral future. Numerous initiatives in the area of research, technology and innovation (RTI) show how successful pilot projects can become trend-setters.

In this issue, we present a number of pioneering Austrian projects and activities relating to the topic of the “climate-neutral city” that offer innovative concepts and solutions for urban spaces.

¹ www.climate-kic.org/wp-content/uploads/2022/05/DRAFT-D13.1-Report-on-city-needs-drivers-and-barriers-towards-climate-neutrality.pdf

² research-and-innovation.ec.europa.eu/knowledge-publications-tools-and-data/publications/all-publications/100-climate-neutral-cities-2030-and-citizens_en

Due to usage density and short distances, urban spaces offer great prospects for conserving resources and saving the environment. Photos: stock.adobe.com



MISSION “CLIMATE-NEUTRAL CITY”

The Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK), in cooperation with the Climate and Energy Fund, has established the mission “Climate-neutral City” as a new, urban RTI focal point to drive forward the rapid implementation of climate goals in Austrian cities and municipalities. Extensive research activities and accompanying measures will act as “enablers” in the coming years and help identify suitable strategies. The goal is to rapidly develop practical solutions in the mobility and energy sectors and to apply the principles of circular economy as widely and effectively as possible.

The national mission “Climate-neutral City” follows directly on the preparations from the previous “Fit4Urban Mission”. The nine largest Austrian cities and urban regions received assistance in building up the knowledge required to move towards climate neutrality and in developing strategies for implementation measures, especially in the energy and mobility sectors. As part of the “Pioneer City – Partnership for Climate-Neutral Cities 2030” call, public-public cooperation agreements are now being concluded with ten Austrian pioneer cities. These cities agree to focus their municipal governance on achieving climate neutrality by 2030 and to begin initial implementations in at least one climate-neutral pilot district.

The cities are also called upon to bring additional climate neutrality concepts to fruition already before 2040. The pioneering cities will serve as a learning environment to demonstrate the effectiveness of solution components that can be adopted by other cities as well. The goal is to build up a wealth of experience that will simplify the eventual path to climate neutrality for all cities and municipalities in Austria.

CUSTOM SOLUTIONS

Many of the national and international activities in the coming years will also be oriented around the needs of the pioneering cities. This work will be accompanied by extensive parallel support activities to provide effective and targeted assistance to Austrian cities on the path to climate neutrality. The funding programmes will be expanded in future to smaller cities with 10,000 to 50,000 residents. These cities can develop their own solutions to meet the needs of specific target groups or take up the results from the RTI projects of the pioneering cities and adapt them to their local conditions. Corresponding projects for smaller cities will be supported within the framework of the “Smart Cities initiative” of the Climate and Energy Fund.

- nachhaltigwirtschaften.at/en/sdz/topics/mission-climate-neutral-city.php
- smartcities.at/en



“Wir inHAUSeR” Salzburg

Model renovation and redensification project in subsidised housing



Photo: Christof Reich



Photos: www.vogl-perspektive.at

When it comes to the renovation of residential areas and urban quarters, the goal is not merely to increase the energy efficiency of the buildings and lower the energy consumption. Achieving climate neutrality requires a comprehensive concept that also includes the resource requirements for the infrastructure and the mobility of the residents.

Non-profit developer Heimat Österreich implemented a forward-looking concept in the renovation and redensification of a housing complex from the 1980s in Salzburg's Aigen district. The project demonstrates how climate protection can be optimally brought into accord with high standards for quality of living and affordability.

The residential complex on Friedrich-Inhauser-Strasse was a prime example of ageing building stock in Austria in need of renovation due to poor energy conditions. Heimat Österreich opted for a sustainable renovation in line with klimaaktiv standards (for the building and the complex) and received comprehensive scientific assistance on the project.

Optimised solutions were developed within the research projects “ZeCaRe I,” “ZeCaRe II” and “ZeCaMo”¹. Key objectives for all measures included keeping costs under control and giving ideal consideration to the social needs of the residents.

REDENSIFICATION AND OPEN SPACE DESIGN

The existing buildings within the complex were not merely renovated during the project, they were also expanded. By adding floors it was possible to increase the previous 75 units to the current 99 units. The concept² calls primarily for the use of renewable construction materials. The additions were executed in a hybrid wood construction style. A cellulose façade insulation system reduced the building's energy consumption considerably. Great attention was paid to the open space design within the complex, including gardens and plenty of spaces for community activities.

PIONEERING ENERGY CONCEPT

The goal of the renovation was to reduce the CO₂-emissions of the residential complex to a minimum. The full technical concept was created by ECA - Energy Consulting Austria and optimised based on simulations in cooperation with FH Salzburg University of Applied Sciences and the Salzburg Institute for Regional Planning and Housing (SIR).

Instead of using fossil gas, the residential units are now 100 % supplied by renewable energy sources. This includes heat recovery from local waste water and ambient air, photovoltaics, a pellet heating system and a buffer storage. Recovering heat from waste water is a completely new approach in a multi-story subsidised residential building.

¹ PROJECT PARTNERS: Salzburg Institute for Regional Planning and Housing (SIR); Heimat Österreich, Gemeinnützige Wohnungs- und Siedlungsgesellschaft mbH, municipality of Salzburg, MA 05 Regional Planning and Construction Authority, MA06 Building Directorate and MA03 Social Affairs, Stadt Land Berg, Rosemarie Fuchshofer, FH Salzburg University of Applied Sciences - Smart Buildings in Smart Cities

² Architect Christoph Scheithauer in cooperation with architect Stijn Nagels



Photos: www.vogl-perspektive.at

All waste water is collected in a manhole, where the thermal energy is extracted from the water using a heat pump and then used to produce hot water and room heat in the apartments.

A photovoltaic power plant was installed on the roof (85 kW_p) and is capable of covering up to 20 % of the total electricity demand. Salzburg AG offered a landlord-to-tenant electricity model based on locally produced power that also offers the residents a detailed overview of their electricity consumption and the solar yield.

NEW MOBILITY OPTIONS

The project takes on a pioneering role with its comprehensive mobility concept. Residents are offered a wide range of alternative mobility options to reduce travel with private cars. Multiple bicycle parking spaces are planned for every unit. The residents can make use of various inexpensive sharing options at a special mobility point. This includes bike trailers for cargo or children, e-scooters, e-bikes, a pedelec cargo bike and an electric car. Charging stations for all vehicles can also be found here.

SOCIAL SUPPORT AND QUALITY ASSURANCE

The residents received intensive support and information over the entire course of the project. Since they were forced to move for the duration of the renovation work, replacement homes were found, moves were organised and support was also provided during the move-in phase. About 25 % of the previous residents returned to the residential complex after the renovations.

The high quality of the entire project was ensured by a quality assurance agreement and consideration of the Smart City goals of the city of Salzburg. The klimaaktiv building standard was applied during the renovations. The planning for the building achieved 929 out of 1,000 possible points, earning the klimaaktiv gold standard for sustainable residential and service buildings. The project was also one of the first in Austria to receive the silver rating for the klimaaktiv residential complex standard.

smartcities.at/projects/zecare-ii

Contribution of the individual energy sources to the heating supply

	Waste water	Exhaust air	Pellets
Planning	35%	31%	34%
Simulation	45%	30%	25%

AWARDS

- > 2021 Sustainability Award
FH Salzburg 1st place in the "Research" category
- > 2021 VCÖ Mobility Prize Salzburg
Recognised as an exemplary project by the city of Salzburg
- > 2021 ÖGUT Environmental Award
Entire project team - main prize in the "Innovation and City" category



Photo: private

Nina M. Mostegl

SIR – Salzburg Institute for Regional Planning and Housing

How active are Austria's cities and communities when it comes to moving towards climate neutrality?

Although we don't have a standard definition, climate neutrality sets the overall goal: decarbonisation by 2040. This goal calls for a rapid and fundamental transformation of energy, heating and mobility systems, new methods for planning and erecting buildings and goal-oriented governance approaches with widespread inclusion of the citizens. A number of cities have already issued binding declarations on achieving climate neutrality. In some cases, local greenhouse gas emissions are monitored and forecasts are generated to track the necessary reductions. Climate road maps have been drafted with specific reduction targets and backed up with concrete measures and systematically planned project bundles. It is rare to see climate protection projects executed in an isolated or independent fashion. But the range of different activities is broad. Cities are also not islands, and their freedom of action and decision-making authority are limited in many areas. They depend on proper framework conditions for taking effective action. To enable cities to play a more active role, they require action on the part of the federal government (e.g. the Renewable Energy Act), the provinces (e.g. building ordinances, Regional Planning Act) and local stakeholders, such as energy suppliers, real estate developers (as investors) and the population (acceptance, consumer behaviour). This is why the BMK's mission "Climate-neutral City" in collaboration with the Climate and Energy Fund represents a significant milestone that will assist many cities in making the right decisions and playing an active role in climate protection.

You are coordinator of the Smart Cities networking platform. What does the platform offer?

The networking platform was established in 2016 at the initiative of the "Smart Cities" of Vienna, Graz and Salzburg as well as the BMK as an interface for sharing knowledge, mutual learning and translating the needs of cities into RTI research questions. We organize targeted communication and exchange formats to accelerate transformation and innovation processes, to strengthen the cooperation between cities as well as with research institutions and businesses and to regularly initiate projects that go beyond individual cities. These activities have been met with

great interest by other cities. As of 2022, Villach, Klagenfurt, Innsbruck, Linz and St. Pölten are also part of the Smart Cities Network Austria. The expansion of the platform has enabled a more in-depth exchange of knowledge while also defining a new focus: climate neutrality. The platform contemplates and discusses topics related to the energy and the mobility transformation, digitalisation, climate protection and adaptation to climate change. Participation in the networking platform is voluntary, free and open to all cities. The only requirements are active participation in the formats and the contribution of experience and knowledge.

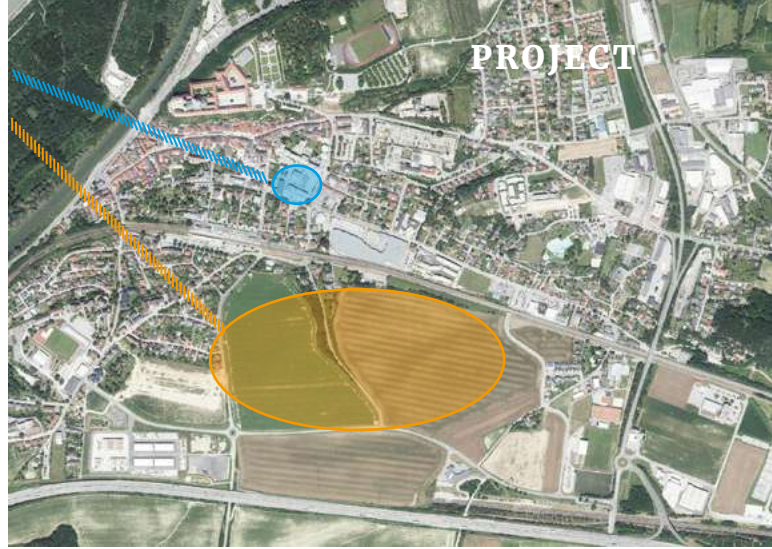
How important is knowledge transfer at the international level, such as in connection with the technology programme "Cities TCP" of the International Energy Agency (IEA)?

Taking a higher level perspective not only improves our own understanding, it also exposes us to valuable potential solutions to local problems. That is why cooperation within the German-speaking region – which has given rise to the Austrian principles for regional energy planning, positive energy districts and residential complex certification, for example – as well as tapping into the knowledge of transnational organisations and programmes of the EU also play a major role. In particular, the research activities of the IEA offer a broad spectrum of technical components that have not thus far been adapted for use in cities. The "Cities TCP" strives to close this gap in three ways:

- > Establishing a system of knowledge management pertaining to the decarbonisation of cities as a one-stop shop for cities as well as other TCPs
- > Translating existing knowledge from IEA research into urban applications and formulation of research questions based on the needs of cities
- > Linking of national city networks as well as technical and non-technical experts to accelerate the path to climate neutrality.

The national activities must always strive to ensure that even the smallest communities can benefit from the activities and projects undertaken at the international and national levels as well as by large cities. However, this necessitates efforts to translate the results from the transnational level down to the national and regional levels.

Boulevard Melk
2 ha, 18,000 m² GFA, non-residential use, 150 residents, 2023 to 2026
Melk South
60 ha, 350,000 m² GFA, residential use, 2,700 residents, 2025 to 2040
Background picture: atlas.noe.gv.at/baseimap.at



Positive energy district Melk

Roadmap for climate-friendly urban development areas

With the slogan “Climate Fitness for Melk,” the municipality of Melk is establishing targeted initiatives to bring it closer to climate neutrality. The first steps were taken with the “Melk Solar Power Plant” project plus the founding of an energy community. For two urban development projects, the city launched an exploratory study¹ to evaluate the necessary conditions as well as the required technical and organisational solutions for realising positive energy districts.

The “Boulevard Melk” area is a small urban zone bordering on the historic old city with about 12,000 m² of usable area that is primarily used for commercial purposes. The “Melk South” district is an urban development area with a usable area of about 350,000 m². Starting in 2025, construction should begin here on residential units for 2,700 people.

PATH TO A POSITIVE ENERGY DISTRICT

The exploratory study examined the feasibility of positive energy districts for these two sites. One important goal was to raise awareness of the topic and improve the acceptance of measures to implement positive energy concepts through the active participation of the city of Melk as well as the property owners, investors and developers. In accordance with the goals and the needs of the involved actors, a requirements catalogue was developed for positive energy districts that defines the necessary building standards and the potential for renewable energy sources. The technical analysis of the districts was carried out in the form of spatial energy analysis, an assessment of the expected energy demand and an evaluation of the potential for photovoltaics. A positive energy balance sheet was created for both urban development areas. Potential business models (such as marketing via an energy community) were also evaluated. The results can be used in the further planning and implementation by policy-makers, city agencies, property developers and project developers.

RESULTS OF THE ANALYSES

Primarily commercial use is planned for the “Boulevard Melk” area. Key aspects of the planned construction projects were assessed in coordination with the city of Melk. The potential to cover the district’s electricity needs from renewable energy sources was evaluated. It was determined that in addition to the surfaces of the building envelopes more spaces must be utilised for the installation of PV modules in order to cover the full electricity demand. This is due to the energy-intensive businesses (e. g. restaurants, retail, etc.) to be located in this district.

Various scenarios were studied for the “Melk South” area. The analysis took into account various building standards (from A/ passive-house to D/heating demand of 25 kWh/m² per year), the options for renewable energy (PV on roofs, plus façades, plus other surfaces), the heating supply (district heating, heat pumps) and relevant scopes of analysis (with and without e-mobility). If a high building standard is implemented along with a high share of renewable energy sources, the positive energy standard can be achieved in this district.

One critical aspect of the analysis is the definition of the system boundary for a positive energy district. If, for example, the energy demand for mobility is not included in the calculations, a positive balance can also be achieved with lower requirements for the building standard. However, forward-looking concepts should always take into account mobility needs and solutions.

NEXT STEPS

In coordination with the city of Melk, a roadmap was created to plan the implementation of the positive energy districts. For Melk South, there is an interest in solutions for local heat and cold supply that take into account sources of waste heat. Furthermore, Melk now wishes to expand its focus to the entire city and work out a path to climate neutrality as well as the actions required for this.

¹ PROJECT PARTNERS: e7 Energie Markt Analyse GmbH (project coordination), municipality of Melk, Energy and Environment Agency of Lower Austria



Building in the "Smart City Baumgarten" district,
Image: aap.architekten ZT-GmbH

Smart City Baumgarten

Energy network in an existing district of Vienna

In Smart City Baumgarten in Vienna's 14th district, the residences should in future be supplied with heating, cooling and electricity via an energy network spanning the various properties and operated with 100 % renewable energy sources. The innovative concept makes it possible for neighbouring households to jointly make use of locally generated renewable energy via a low-temperature micro-network. The demonstration project¹ is being developed as a forward-looking alternative for urban areas located outside of the district heating network.

"Smart City Baumgarten" features a mix of buildings from various epochs which is typical of Vienna's outer districts. The heating for the buildings is supplied primarily via distributed natural gas heating systems. A conversion to renewable energy sources poses major challenges in such neighbourhoods. The construction of a new building in an existing gap offers the unique opportunity here to connect a number of different properties and

building types with an energy network to accomplish the switch to 100 % renewable energy sources. A prototype of this new and promising form of energy supply will be realised in an existing urban quarter and will demonstrate a solution that can be adopted elsewhere as well.

The joint planning and implementation of the renovation and energy efficiency improvements of the existing buildings is a central aspect to ensure that the energy requirements are kept as low as possible. The energy will be supplied via geothermal energy in combination with photovoltaics. The cross-building concept makes it possible to fully exploit the potential of the individual properties with respect to geothermal heat and solar power.

¹ **PROJECT PARTNERS:** Schöberl & Pöll GmbH (project management), aap.architekten ZT-GmbH, ATB-Becker e.U., LANG consulting, BPS Technisches Büro zur Planung haus-technischer Anlagen GmbH, Welt & Co. e.U., WIEBE Wiener Bauträger- und EntwicklungsgesmbH, WEG Wohnungseigentümer*innen Gemeinschaft Linzer Strasse 280

WHAT IS AN ENERGY NETWORK?

An energy network consists of heat sources (solar panels, waste heat from cooling systems), heat accumulators (geothermal probes) and heat consumers (connected buildings with heat pumps). These system components are connected by a simple pipeline carrying water at a temperature of 4–20 degrees Celsius. The water transports the energy and can be utilised via the heat pump for either heating or cooling.² Energy networks could represent a future option for supplying energy to existing urban neighbourhoods.

² Source: www.oegut.at/de/news/2020/08/pa-energie-in-gesterreichs-staedten.php

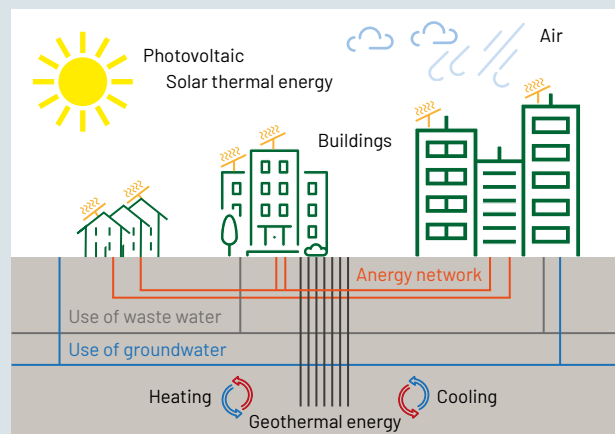


Chart: Waldhör KG



PROJECT HIGHLIGHTS

- > Prototype for an energy community with an energy network in an existing neighbourhood
- > Optimal utilisation of the surface area for PV with installations distributed across the properties
- > Customised and innovative thermal insulation and energy efficiency measures for renovation of the various buildings
- > Clarification of legal questions concerning the energy community
- > Possible connection of other properties in the neighbourhood

DEVELOPMENT OF THE OVERALL CONCEPT

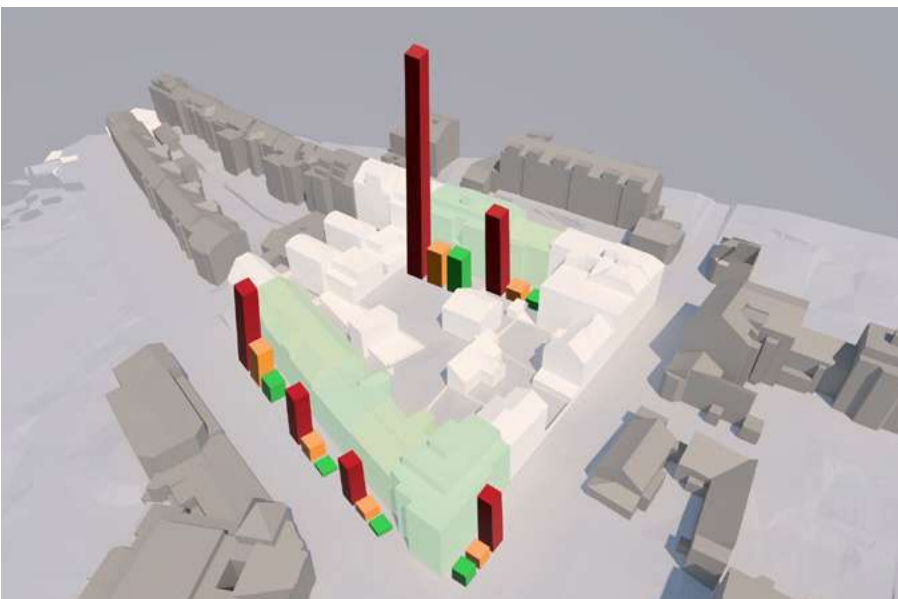
The project includes extensive analyses and simulations to identify possible savings from renovation work, the potential geothermal yields and the optimal PV surfaces as well as their yields. Technical solutions are under development for energy storage, and the required storage volumes for heat and electricity are being calculated.

The preparations for the implementation of the project “Smart City Baumgarten” are already underway. After demolition of the property, exploratory drilling was carried out for the geothermal probes of the future energy network.
 Photos: LANG consulting

The project also encompasses the investigation of legal questions and consideration of financing models. The inclusion of social components and needs (comfort, resident satisfaction, acceptance of planned renovation measures and innovations, etc.) will be ensured by an accompanying process.

“Smart City Baumgarten” will become a sustainable, energy-efficient urban quarter that can serve as model for other cities with its solution for local, climate-neutral energy supply in a networked neighbourhood.

nachhaltigwirtschaften.at/de/sdz/projekte/smart-city-baumgarten.php



Smart City Baumgarten - Energy data and possible construction phases (red columns show the total energy demand before renovation, the orange columns show the potential total energy demand after renovation and the switch to new energy carriers, the green columns show the potential for photovoltaic systems on the building), Image: Anton Feirer/aap.architekten ZT-GmbH

ANERGY2PLUS

Complete concept for a pioneering residential neighbourhood



Photo: DI Prehm

In a project initiated by the association "Garten der Generationen" (Garden of Generations), a sustainable residential quarter is being built in Herzogenburg, Lower Austria, over the course of multiple construction phases – all planned according to the sustainable circular economy principles. The concept encompasses cycles of a biological, social, physical and economic nature.

An attractive and affordable living space for all generations is being created with a gross floor area of 10,000 m². The planning for this holistic urban quarter aims to create optimal conditions for a sustainable lifestyle, a sense of community and an environment friendly to both seniors and children. Careful management of locally available resources and a forward-looking energy supply based on renewable energy sources are key pillars of the overall concept. In the first construction phase, which began in winter 2020/2021, two multi-unit residential buildings are being built, complete with workshop, guest apartment and assisted-living facilities as well as a large community building with an event hall.

ANERGY NETWORK FOR A SUSTAINABLE ENERGY SUPPLY

An innovative technological concept for the generation, consumption and storage of energy was developed within the research project Anergy2Plus¹. The central element of this concept is an anergy network for the supply of heating and cooling that will grow along with the construction phases, gradually integrating more local resources.

A low-temperature micro-network connects the buildings with the supply-side long-term storage system, making it possible to exchange heat. Heat pumps distributed throughout the buildings make the heat available to the households. The entire system is largely supplied by solar thermal collectors combined with seasonal long-term storage systems, heat pumps and storage systems inside the buildings.

In parallel with the first construction phase, the infrastructure for energy supply via the anergy network was built (including underground storage and foundation storage, heat pumps and solar collectors). Comprehensive monitoring during operation will enable continuous optimisation, and the necessary equipment has already been installed.

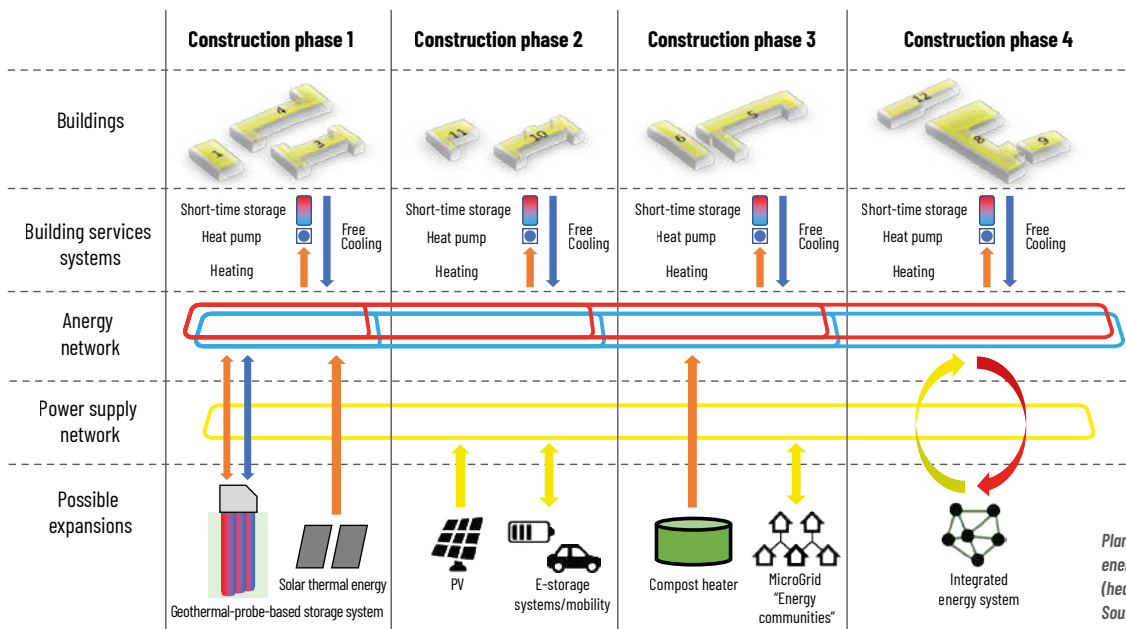
RENEWABLE ENERGY SOURCES

Additional local resources will be integrated during the next step. In the future, a compost heater (also commonly known by the German term "biomeiler") will be used to convert organic waste and green cuttings into usable energy. The heat produced during the aerobic composting process will be captured and used to help cover the heating demand of the building. The nutrient-rich compost can still be used and returned to biological circulation.

¹ PROJECT PARTNERS:

Garten der Generationen (project management), AEE INTEC Institute for Sustainable Technologies, Obkircher Plus

Detailed information for interested persons: www.gartendergenerationen.net



Planned construction phases for an integrated energy system for independent energy supply (heat, electricity, mobility)
Source: AEE INTEC

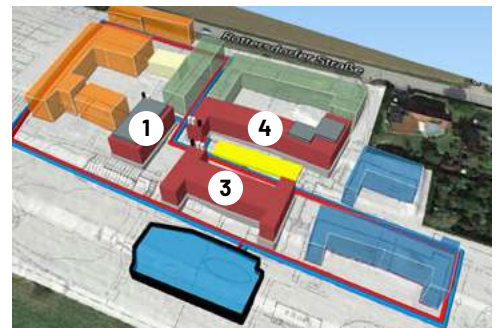
USE OF WASTE WATER

This project is striving for maximum resource conservation when it comes to water as well. The waste water will be treated for reuse with an aerobic retting and plant filtration system. The cleaned water will be stored and used for watering the gardens. Roughly 3 to 4 m³ of water can be kept on the property in this way every day. The rotted and composted solids from the waste water will be used as fertiliser.

OUTLOOK

During the upcoming construction phases, additional buildings with similar usage profiles will be erected as well as energy production and storage units. The energy system will be expanded with external long-term storage systems. The plan also calls for the integration of photovoltaic modules to cover the electricity demand in the quarter via local energy sources. Innovative measures at the component and system level are also planned, such as for load and storage management and for linking together the heating, cooling and electricity supply systems. Over the long term, the goal is to achieve an integrated, maximally independent supply of heat and electricity as well as mobility options through the intelligent networking of supply, demand, storage capacities and user behaviour. The insights and experiences from the project can contribute to the planning and implementation of other sustainable construction projects.

nachhaltigwirtschaften.at/de/sdz/projekte/energy-2-plus.php



First construction phase: Buildings 1, 3, 4, two solar thermal collector fields with a total area of 100 m², one geothermal probe field (yellow) for seasonal storage of heat, foundation storage under the buildings, parts of the energy network (red and blue lines), building heat pumps (black) and storage tanks (white), Source: AEE INTEC



First residents of the community residential project shortly after moving in, September 2022; photo: Garten der Generationen



Photo: Garten der Generationen



As a community residential project, it is a new and beautiful experience for us to be involved in such a large research project. Thankfully, we have experienced partners at our side: above all, the company Obkircher Plus from Vienna and AEE INTEC Institute for Sustainable Technologies from Gleisdorf.”

RONALD WYTEK
BOARD MEMBER, GARTEN DER GENERATIONEN

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Mission “Climate-neutral City” / Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK)

nachhaltigwirtschaften.at/en/sdz/topics/mission-climate-neutral-city.php

Smart Cities Initiative / Climate and Energy Fund

smartcities.at/en

IEA Research Collaboration

nachhaltigwirtschaften.at/en/iea

Decarbonisation of cities and communities (IEA Cities TCP)

nachhaltigwirtschaften.at/en/iea/technologyprogrammes/cities



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