

A scenic view of a mountain valley. In the foreground, a clear, turquoise lake reflects the surrounding landscape. The middle ground is dominated by a dense forest of evergreen trees. In the background, majestic, rocky mountains rise against a clear blue sky. The overall scene is bright and vibrant, suggesting a clean, natural environment.

RENEWABLE ENERGIES MADE IN AUSTRIA

Technology expertise
for greater energy efficiency



UMBRELLA ORGANIZATION
ENERGY-CLIMATE PROTECTION



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Welcome to the country of energy-efficient opportunities

THE UMBRELLA ORGANIZATION ENERGY-CLIMATE PROTECTION

The UMBRELLA ORGANIZATION ENERGY-CLIMATE PROTECTION (DVEK) is a working group within the Austrian Federal Economic Chamber (WKO) with a focus on renewable energies, climate protection and energy efficiency. The activities of DVEK revolve around the business-oriented implementation of climate protection in Austria. DVEK is an official voice of different interest groups inside and outside the WKO and as such, serves as the central communication platform for the entire value chain. For more information about DVEK, please consult page 14 of this brochure.

ENERGY TRANSITION – FULL SPEED AHEAD!

Austrian technologies associated with energy efficiency and renewable energies are much in demand worldwide. Many companies run their own research labs and development centers that consistently drive development efforts forward and continuously attract worldwide attention with their technical innovations. The country takes a lead role in modern energy technology. The "Made in Austria" label has long been a mark of quality in this sector.

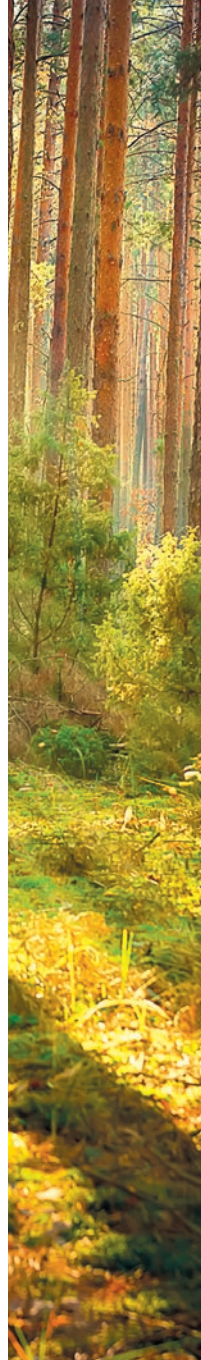
STRONG IN THE DOMESTIC MARKET - STRONG IN EXPORT MARKETS

The advanced internationalization of Austrian energy technologies has naturally led to a corresponding strengthening of exports in this field. The export rates range from 35% to 97% depending on the product involved. Not only does this sector make an important contribution to the Austrian balance of trade, it also safeguards jobs in a market that has seen constant growth.

ADVANTAGE AUSTRIA is the internationalization and innovation agency of Austrian business and the foreign trade organization of the WKO. As such, it works in close international cooperation with the UMBRELLA ORGANIZATION ENERGY-CLIMATE PROTECTION (DVEK) to strengthen the international presence of Austrian businesses and to optimize Austria's position as a business location.



A product list is enclosed with this brochure. For further information and the online company and product search site, visit www.energieklima.at.



Innovative technologies

GREATER ENERGY EFFICIENCY AND CLIMATE PROTECTION

Austria is a front-runner in the development of energy efficient technologies that are synonymous with resource conservation and sustainable climate protection. The range of products and services is comprehensive and covers all areas of environmental technology, from waste processing, air pollution control, and sewage and water treatment to energy efficient and renewable energy technologies. Control technology and sensors are instrumental in saving energy.

COMBINED HEAT AND POWER (CHP) AS ONE EXAMPLE

Combined heat and power is considered an extremely efficient energy technology characterized by a high degree of efficiency, maximum economy, and the effective conservation of resources. Biomass is regionally available and CO₂-neutral, making it perfectly suitable as an energy source for CHP plants. Besides electricity production, the waste heat from the plants is put to direct thermal use.

WITH SUSTAINABLE TECHNOLOGY TO A GREEN FUTURE

Austrian research institutes and companies in the green economy file about 200 patent applications a year with the European Patent Office (EPO). Total national sales in technologies for the utilization of renewable energies amounted to € 7.2 billion in 2016, a figure 4.2 % higher than the year before.

(Source: www.feei.at; Erneuerbare Energie in Zahlen 2017, BMNT)





Engineering offices and installation businesses

THE AUSTRIAN ART OF ENGINEERING

With their experience and expertise, Austrian planning and engineering offices play a key part in tapping into the enormous potential of environmental technologies. These efforts entail not only planning overall projects but also monitoring, advising on and providing consulting services for process analyses relevant to energy – all based on strict neutrality in terms of the technologies used.

The sustainable use of energy and natural resources is pivotal to the future development of the environment, not only in Austria but worldwide. That is why the export of Austrian technologies and services is heavily based on the performance of Austrian engineering. At the same time, this expertise helps Austria to further expand its energy independence and net domestic product.

SPECIALIZED MANUFACTURING AND INSTALLATION BUSINESSES

A number of electrical and plumbing installation businesses in Austria specialize in the installation and maintenance of a wide variety of energy technology equipment. Unsurpassed training standards and regular professional training from manufacturers or the specialist groups of the trade and craft sector ensure the comprehensive expertise of these businesses. The traditional craftsmanship of these businesses coupled with the most modern technology rightly bears the quality mark "Made in Austria", which has a sterling reputation worldwide.





Hydropower

LET THE WATER FLOW!

Rivers and mountains are prominent features of Austrian topography, so the country can look back on a long history of hydropower. Equally prominent is Austria's expertise in this segment, which is much in demand internationally. Austria successfully exports hydropower plants, their components and associated planning services to the world market.

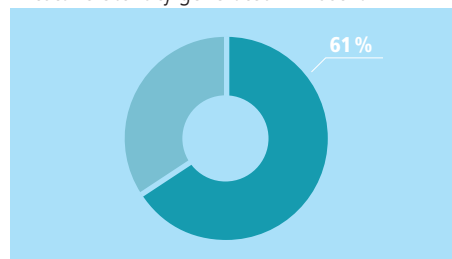
ELECTRICITY SUPPLIER AND EMPLOYER

Hydropower plays a very important role in Austria, especially in power generation. Modern storage power plants and pumped-storage power plants have high power storage capacities, which are crucial to the load leveling and operation of electricity grids.

With an output of about 43,000 GWh, hydropower accounts for 61% of the electricity generated in Austria. Hydropower also makes its mark on the labor market. In 2016, hydropower provided 6,784 jobs, second only to biomass among the technologies for the utilization of renewable energies.

SHARE OF HYDROPOWER

in total electricity generated in Austria



(Source: Energie in Österreich 2018, BMNT)



Wind power

AN INDUSTRY ON THE RISE

Wind power plays a significant role in Austria, accounting for € 1 billion, or 13.8%, of total sales in technologies for the utilization of renewable energies. The first wind turbines were built in the mid-1990s. Since then, this industry has experienced regular ups and downs with the constant changes in basic conditions; all in all, however, it has grown steadily.

In 2017, there were 1,260 wind turbines on the grid across Austria, producing a total of 2,844 MWh. They generate an annual 6.5 to 7 TWh of electricity a year, supplying about 1.9 million households in Austria with clean, eco-friendly electricity. As a result, 4.3 million tonnes in CO₂ emissions can be avoided every year.

STRONG IN EXPORT BUSINESS

In 2017, wind power provided more than 4,400 jobs (ranking third among the technologies for the utilization of renewable energies). Austrian wind power technology is also in demand abroad. Numerous businesses in the supplier industry deliver generators, control systems, services, etc. to the international market, with exports making up 70% of total business.

(Source: Erneuerbare Energie in Zahlen 2017, BMNT; Innovative Energietechnologien in Österreich, Marktentwicklung 2017, BMVIT; igwindkraft.at)





Source: PVA 2018

Photovoltaics

SUNNY AUSTRIA

Energy from the sun is available in unlimited quantities. Photovoltaic technology can make efficient use of this energy potential by producing electricity in an eco-friendly way free of emissions or bothersome noise or odors. This energy can be employed not only for conventional electricity use in households or at companies but also, for example, for the intelligent provision of heat and mobility. If own consumption is the focal point, investments can be recouped within a matter of years because energy purchases are reduced.

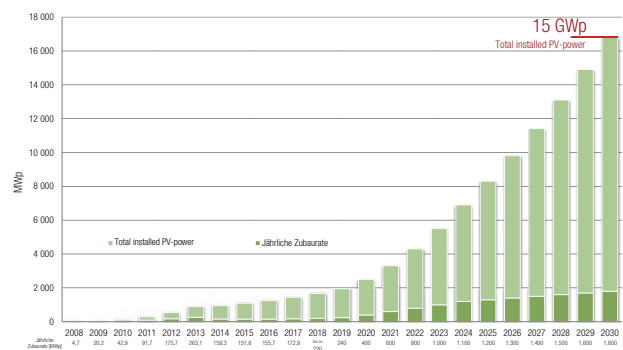
In 2017, photovoltaics saw the largest relative annual growth in the renewable energies sector – and that trend is on the rise. Solar power therefore now accounts for over 2% of total Austrian electricity output. Photovoltaics will be able to deliver the biggest increases to an electricity supply fully based on renewable energy in the future, too. By 2030, solar power is predicted to reach a 15 % share.

AN EXPORT HIT WORLDWIDE

Thanks to ongoing development efforts, high quality standards, and strong innovation, the Austrian photovoltaics industry enjoys an excellent reputation internationally and currently provides 3,400

jobs. Future trends will entail new materials, storage systems, photovoltaics integrated on the roofs or facades of buildings, carports, and flexible modules. Domestic companies have created excellent innovations in this sector worthy of the quality seal “Made in Austria”. More than half of the PV modules produced in Austria and nearly all inverters were exported. Total sales in the industry in 2017 topped € 280 million.

ANNUAL PV CONSTRUCTION AND TOTAL INSTALLED PV OUTPUT BY 2030



(Source: Innovative Energietechnologien in Österreich, Marktentwicklung 2017, BMVIT; PVA 2018)



Solar heat

LIGHT AND SHADOWS

Thermal solar energy had its first heyday back in the 1980s in the heating of hot water and swimming pools. In the early 1990s, it began being used for indoor heating as well. In recent years, however, the solar heat market has seen a steady decline. This trend was initially due to the effects of the economic crisis. Additional causes followed later in the form of plunging prices for photovoltaic installations, increased use of heat pumps, and persistently low oil prices. Digitization and the EU directive for nearly emission-free buildings pose further challenges for the industry but also open up opportunities.

FIGURES AND FUTURE PROSPECTS

In 2017 there were 5.2 million m² of thermal solar collectors operating in Austria with an installed output of 3.6 GWth. Of that total, 71 MW thermal were newly installed and covered an area of 101,780 m², a decrease of 9.1% compared to the previous year. Exports were the only bright spot, with a slight increase to around 84%. The Austrian solar heat industry employs about 1,500 people and generates annual sales of about € 178 million. The future of solar heat will be shaped by the development of new markets such as large-scale installations for industrial applications or district heating systems of the kind already being successfully operated in Denmark.

(Source: Erneuerbare Energie in Zahlen 2017, BMNT; Innovative Energietechnologien in Österreich, Marktentwicklung 2017, BMNT)





Solid biomass

ENERGY FROM DOMESTIC FORESTS

Wood-based energy sources such as logs, wood chips, pellets, briquettes and bark are designated as solid biomass and provide heat or – in the case of combined heat and power – electricity and heat. Combustion in biomass firing systems such as boilers or furnaces is economically attractive and eco-friendly in operation and allows for the automated feeding of fuel. Another advantage involves the use of regionally available combustible material, to which Austria has ample access thanks to its extensive forests.

ON THE UPGRADE

With its decades of experience and consistent investments in research and development, Austria is one of the world market leaders in biomass technology. Although the sales figures have declined in recent years due to low oil prices and high average temperatures, this sector has recently seen an increase again in sales of biomass boilers. In Austria, exports of biomass boilers traditionally account for about 80% of total sales, with customers in Germany, France, Italy and Spain being the main recipients. In 2017 the biofuel industry recorded total sales of € 1.606 billion, which corresponds to an employment effect of 18,967 full-time jobs.

(Source: Erneuerbare Energie in Zahlen 2017, BMNT; Innovative Energietechnologien in Österreich, Marktentwicklung 2017; BMVIT)

Heat pumps

AN AUSTRIAN INVENTION TAKES THE WORLD BY STORM

The heat pump is an Austrian invention and was first employed in 1856 in the Ebensee saltworks. Heat pumps run on ambient heat from different heat sources, such as the air, the ground, groundwater or waste heat sources from industrial processes or sewage.

With an efficiency of 300% to 500% (coefficients of performance of 3 to 5), heat pump systems are the most efficient technology for the heating and cooling of buildings.

ALL-ROUND TALENT WITH MULTI-FACETED USES

Heat pump systems are used in cases calling for the lowest energy and operating costs as well as eco-friendly solutions. The range of applications extends from high-efficiency home appliances such as heat pump tumble dryers all the way to heating for entire residential districts. In single- and multi-family homes, heat pumps are established standards for providing heating and hot water.

Digitization, networking and innovative advances are expanding this scope of use even more:

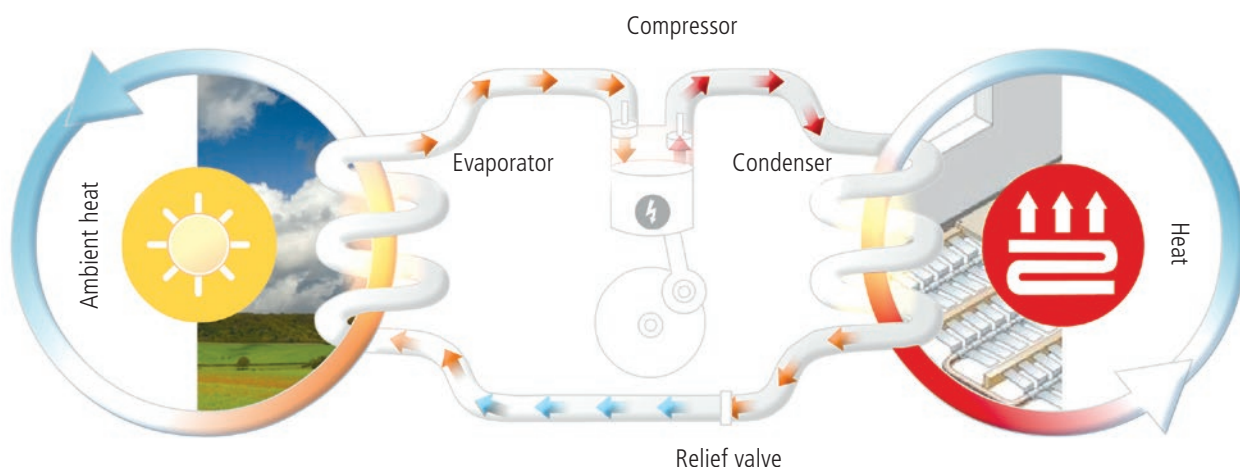
- Highly efficient solutions for the heating and cooling of buildings
- Simultaneous heating and cooling in a single process for industry and office buildings
- Use of waste heat from cooling systems, processes and sewages
- Load leveling in electricity grids to boost the quality and reliability of the electricity supply
- Process heat up to 130°C for industrial and commercial applications
- Efficiency increase in local and district heating systems

FACTS AND FIGURES

More than one million heat pump heating systems are installed in Europe annually, 20,000 of them in Austria. Thus, heat pumps have established themselves as the most widely sold renewable energy technology in the domestic heating market. Industry sales are steadily rising and amounted to € 583 million in 2017. The 300,000 heat pumps now in operation cut CO₂ emissions by about 600,000 t a year.

(Source: Erneuerbare Energie in Zahlen 2017, BMNT; Innovative Energietechnologien in Österreich, Marktentwicklung 2017, BMVIT)

FUNCTIONAL PRINCIPLE OF THE HEAT PUMP





Biogas

AUSTRIA STEPS ON THE GAS!

Biogas is produced throughout Austria in about 350 biogas plants by digesting agricultural products and waste materials such as liquid and solid manure, green waste, corn, etc. This use of residual and waste materials produces valuable energy – either as fuel for vehicles powered by natural gas or in the form of electricity and heat. Several biogas plants process methane gas of natural gas quality and feed it directly into the natural gas grid. This approach makes the best possible use of existing infrastructure.

POTENTIAL AND EFFICIENCY

Austria has over 170,000 farms and more than 1.34 million hectares of land in agricultural use, giving it enormous potential for biogas. The share

of biogas in the Austrian energy mix is therefore growing steadily. The use of biogas recently enabled CO₂ emissions to be reduced by 135,000 t. The following examples vividly demonstrate just how efficient many biomass-derived materials are:

- The annual manure output of four cows can cover the electricity needs of an average household for one year.
- The annual manure output of five cows is sufficient to circle the earth in a methane-powered car – for an impressive 40,000 km. The same holds true for one hectare of green waste.

(Source: Erneuerbare Energie in Zahlen 2017, BMNT; initiative-gas.at)

Biofuels

ON TARGET WITH BIOFUELS

Biofuels are suitable substitutes for fossil fuels in the transport sector. The main types of biofuels are biodiesel, hydrogenated plant oil, bioethanol, and plant oil.

In 2017, Austria once again topped its substitution target as measured by energy content, achieving 6.1% compared to the target of 5.75%. With this figure, Austria affirms its top ranking in the EU in this regard, as in years past.

STRONG PERFORMANCE BY AUSTRIA

Nine biodiesel plants were in operation across Austria in 2016. Seven of them produced a total of 307,334 t of biodiesel, covering about 61% of domestic consumption. One plant with a production capacity of about 191,000 t was in operation in Austria for large-scale industrial production. These facilities helped to cut CO₂ emissions by 1.76 million t.

Part of the produced biofuels are already being exported abroad. Austrian biofuel plants are in great demand in countries such as the US, Australia and China.

(Source: Erneuerbare Energie in Zahlen 2017, BMNT; Österreichischer Kraftstoffbericht 2018, BMNT)



Together. Sustainable. Energy efficient.

THE UMBRELLA ORGANIZATION ENERGY-CLIMATE PROTECTION

The UMBRELLA ORGANIZATION ENERGY-CLIMATE PROTECTION (DVEK) is a working group within the Austrian Federal Economic Chamber (WKO). It coordinates and represents the common interests of the industry engaged in the technology and use of environmental energy and the crafts and trades associated with this industry. The goal is to improve and make proactive use of market opportunities within Austria as well as internationally. These efforts focus on renewable energies, climate protection, and energy efficiency. As a representative of business interests, DVEK represents members from the entire value chain, such as planners and engineering offices, the producing industry, trade, and installation businesses but also branch representatives outside the WKO.

TASKS AND OBJECTIVES

The energy transition opens up market opportunities for Austria as a business location. Recognizing and using these opportunities is a central task of DVEK. Through the promotion of investments, innovations, and the internationalization of renewable energy sources and the participating sectors, DVEK advocates the use and improvement of opportunities for Austria as a business location with the goal of increasing growth and employment in the country.



PRODUCTS AND COMPANIES

**You should find
our list of products
and companies here.**

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than you. You will find the list of products and
the online search site for products
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www.energieklima.at

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WIRTSCHAFTSKAMMER ÖSTERREICH

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