## Energy Park Bruck an der Leitha

Enthusiasm, curiosity and the necessary dose of realism were the ingredients that moved a group of individualists around the then city councillor for the environment Herbert Stava to set up the Bruck/Leitha Energy Park in 1995. This has resulted in pioneering projects such as wind farms around Bruck/Leitha, biomass district heating and the Bruck/Leitha biogas plant as well as the master's course in "Renewable Energy Systems".

## Biogas Plant

The Bruck/Leitha biogas plant was commissioned in May 2004 and converted to 100% biomethane purification and gas grid feed-in in the course of the conversion in the first half of 2014. The ambitious research project "Virtual Biogas" laid the technological foundation for the current design of the plant towards full feed-in of biomethane.

*Abbildung 1 Shutterstock*

Since 2007, biogas has been purified to natural gas quality using a membrane technology developed in Austria and fed into the gas grid. This unique "virtual biogas" project showed that upgrading biogas to natural gas quality is technically feasible, energy-efficient and thus also economically viable. The goal is to help this innovative technology achieve a breakthrough, because the admixture of locally produced biogas to conventional natural gas can significantly increase its environmental compatibility. Meanwhile, 3,300,000m³ / year of purified biogas (= biomethane) is fed into the grid. An energy-rich cycle. Renewable raw materials and organic residues from the food and animal feed industries ferment into biogas under exclusion of atmospheric oxygen. A combined heat and power system

converts the biogas into electricity and heat. This is only needed for the plant's own consumption. The fermentation substrate left over from the anaerobic fermentation is used as plant fertiliser on agricultural land.

*Quick Stats:*

*Annual throughput: 34,000 t*

*Biomethane feed/year: 3,300,000 m³*

*-> biomethane for 2,200 households or*

*-> 1,000 circumnavigations of the earth with a modern CNG car*

*Capacity of the gas purification plant:*

*1,000 m³ biogas / h*

*3 fermentation tanks per 3,000 m³*

*2 secondary fermentation tanks each 5,000 m³*

*2 combined heat and power units:*

*1x 836 kWelect. / 1x 526 kWelect.*

## Windparks

*Abbildung 2 Shutterstock*

Even before the legislator pushed for the expansion of wind power with the Green Electricity Act of 2002, the energy park was intensively involved with the topic of wind energy. Against the scepticism of meteorologists, wind measurements were started in the region in 1995.

The findings provided the basis for the construction of the first wind farm in Bruck/Leitha in 2000. The construction of the wind farms in Hollern and Petronell-Carnuntum followed in 2004.

From the very beginning, it was important for the Energiepark to involve the local population in its activities. Thus, the three wind farms mentioned above were realised through citizen participation projects. In recent years, the wind power portfolio has grown step by step to 8 wind farms. Involving the population has been and continues to be a central element of Energiepark Bruck/Leitha's wind power activities.

Since 2013, Energiepark Bruck/Leitha has been working closely with the European Investment Bank at the financing level. This made it the first wind power company in Austria to go down this path. Here, too, a portion of pioneering spirit was involved.

*Quick Stats:*

*Total number of wind turbines: 54*

*Total output: 167 MW*

*This means that every year green electricity for approx. 112,000 households.*

*The CO2 savings are approx. 212,000 t/year.*

*ENERCON and VESTAS wind turbines are used in the 8 wind farms.*

## Solar PV

Since 2000, the energy park has also been intensively involved with the topic of photovoltaics. As a result, the construction of a large number of private PV systems has been initiated over the years. Especially in the phase of the development of the regional energy concept for the region Römerland Carnuntum (2009), 16 PV systems were built through the initiative of the energy park.

*Abbildung 3 Shutterstock*

The entry into the climate and energy model regions from 2011 brought a further boost due to the additional funding. Within the framework of the KEM period, the construction of 7 PV plants with a total output of 132 kWp was supported by the energy park.

This period also saw the organisation of a regional solar league (2012-2014), which encouraged the regional municipalities in particular to get involved in PV.

In addition to the activities within the framework of the climate and energy model region, a nearly 100 kWp PV system was also realised at the Brucker Bauhof in 2014. In close cooperation with the municipality of Bruck/Leitha, the energy park handled the entire process from potential analysis, tendering, submission of funding for the green electricity tariff and construction support to completion. The two regional projects (EnergieReiches RC, KEM Energie) have initiated a further a further 51 plants (1,300 kWp/32 kWh storage) have been initiated since 2017.

*Abbildung 4 Shutterstock*

## Biomass

Wood as a source of heat has accompanied mankind since the beginning of its history. It stores the heat of the summer to release it again in the cold winter nights - and it is CO2-neutral! The biomass district heating plant in Bruck an der Leitha was built by committed people around the energy park in cooperation with EVN AG. It was commissioned in October 1999. It supplies private households and, above all, central public buildings. A decision of principle by the municipality of Bruck/Leitha ensures that all public buildings as well as new residential areas located or to be

located along the district heating route will be connected to the biomass district heating system in the future. The biomass district heating plant currently supplies about 800 households with heat and thus covers 1/3 of the heat demand of all households in Bruck/Leitha.

## Small Hydropower

In its search for a suitable site for a small hydroelectric power plant a good 3 years ago, Energiepark Bruck/Leitha came across the former site of the Seidl mill, among others. After intensive evaluations, the decision (2020) was finally made in favour of the still existing weir threshold site on the Mühlbach, a tributary of the Leitha. The heart of the power plant is a hydropower screw (from Vandezande), which is a viable alternative to a conventional turbine for revitalised, small power plant sites. Hydropower screws are characterised by very efficient operation at low heads and are also designed in such a way that they allow fish to descend at the same time. Thus, in its 25th year of existence, Energiepark Bruck/Leitha completes its portfolio of renewable energy plants with hydropower.

*Abbildung 5 Foto Credits Energiepark*

*Quick Stats:*

*Capacity: 79 kW*

*Production: approx. 500,000 kWh/year*

*Electricity for approx. 125 households*

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