

POLYTECHNIK[®]
Biomass Energy

Worldwide
service
of proprietary
and third-party
equipment

55 YEARS OF POLYTECHNIK[®]

Biomass Energy

Reduce your carbon footprint, protect the environment with innovative,
economic & high-quality technologies from Polytechnik!

Polytechnik, a family-owned company based in Weissenbach, Austria, makes a significant contribution to CO₂-neutral energy production by developing state-of-the-art ecological products. Large energy suppliers and industrial energy consumers use our tailor-made products, plants, and systems predominantly in the wood processing industry, for industrial and municipal heat supply and to generate electricity.

WE'D LOVE TO HEAR FROM YOU!

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Proven
technologies &
individual
concepts

GREEN INNOVATIONS

Renewable energies – CO₂-neutral and powerful
Best plant quality – lowest emissions

POWER AND HEAT GENERATION WITH HIGH-PERFORMANCE BIOMASS PLANTS

Recycling the resources of our environment in an innovative and climate-friendly way has made Polytechnik, an Austrian family-owned company with more than 3,300 plants built worldwide, a global player and ideal provider of tailor-made solutions for every need – and this for more than 55 years.

PROTECTING THE CLIMATE WITH RESEARCH & FUTURE TECHNOLOGIES

We maintain a consistent technological dialogue with industry experts, focus on further developing existing products through research, and intuitively search for future-oriented environmental technologies. We are aware of the important quality standards and environmental factors, such as CO₂ reduction, climate protection and economic efficiency. Therefore Polytechnik always strives to align its products accordingly.

Resource and energy efficiency and low emissions are the main challenges that climate and renewable energy strategies are facing.

**... BECAUSE WE CARE ABOUT OUR CUSTOMERS
AND OUR ENVIRONMENT!**

- 🔧 **Wood and biomass combustion plants**
(from 300 kW to 30,000 kW individual boiler output)
- 🔧 **Power generation from biomass (CHP)**
(200 kWel - 20,000 kWel single turbine output)
- 🔧 **Carbonisation plants**

- 🔧 **NEW: Poly-H.E.L.D. combustion technology**
(Highest degree of efficiency – minimum particulate emissions <20mg – all without additional flue gas cleaning systems)
- 🔧 **CO₂ neutral trigeneration plants (CCHP)**

SHOWCASES

HILLEROD FORSYNING Denmark

Special attention was paid to highly efficient operation during the design and construction of the complete boiler and ORC cogeneration plant (2 x 12.73 MW), with electrical output 4.8 MWe. For this purpose, a flue gas condensation system, a heat pump for raising the return temperature and the recirculation of various waste heat accumulations were planned and integrated into the overall system in order to utilise all energy flows. This resulted in overall efficiencies of 117%. The generated heat of around 30 MW is fed into the connected large district heating network for the town of Hillerod.



VOLAC Great Britain

World's largest protein producer and animal feed giant

Volac International chose Polytechnik to build a state-of-the-art biomass power plant in 2017, which was opened by His Royal Highness Prince Charles of Wales. It was built to generate energy with renewable raw materials and at the same time reduce the factory's carbon footprint and its operating costs. The cogeneration plant installed there supplies electricity and process heat for processing the protein and animal feed products. The power plant generates about 65% of the electricity requi-

red by the factory and uses the heat generated for production. This is not the first plant with which Polytechnik has been able to establish itself in the industry for the production of food and animal feed from dairy products: Since 2007, Tirol Milch in Wörgl, Austria, has been using steam energy generated in a biomass plant from Polytechnik fed by wood residues from the surrounding area.



Meeting of His Royal Highness The Prince of Wales and the managing directors of Volac International and Polytechnik

AIRBUS France

Major European aircraft manufacturer

A 13.5 MW saturated steam boiler plant with hydraulic step grate firing was built for Airbus to convert wood chips into energy. The plant is located at the airport in Toulouse and supplies aircraft production with process steam.



L'OREAL Spain

The world's largest cosmetics company

A biomass boiler system for wood chips with a boiler output of 4.18 MWth and an ORC module generating 619 kW of electricity was installed for the well-known French company L'Oréal at its Spanish production site in Burgos to supply cooling, heat and power. In addition to the supply of cold water, hot water and electricity, saturated steam for L'Oréal's production gets produced via a specially designed steam generator integrated into the thermal oil circuit.

Modern energy centres can also be equipped with photovoltaics

JIERONG China

In Jierong-Guangdong China, Polytechnik installed a 34 MW cogeneration plant, which generates 10 MW of electrical power by means of a turbine. The plant, which went into operation in 2021, supplies an industrial park with district heating and electricity.



TONO KOSAN Japan

Wood processing industry

A 3.815 MW thermal oil boiler with a water-cooled step grate and ORC module was installed in Japan in 2018. This plant generates 689 kW of power. Polytechnik has already 15 systems in Japan for various applications and is well represented by a local sales partner. Polytechnik's next plant will be built in Furudono.



SVEZA MANTUROVO Russia

Large sawmill in Russia's growing timber and plywood industry.

Plant size: 38 MWth

Superheated steam from both boiler plants is used to generate electricity via the steam turbine with a synchronous generator (design 23 bara, 345 °C, 56 t/h). Up to 4.5 MW of the generated power gets fed into the sawmill's grid. The extracted steam is used for production and heating.

SOLUTIONS FOR CONSTRUCTION AND DEMOLITION WOOD

OIE AG Germany

Energy supplier with a vision

As a result of operating the new plant, CO₂ emissions are reduced by 15,000 tonnes annually! Since December last year, the biomass heating plant has been running and has already generated almost 30,000 megawatt-hours of heat for the American properties in Westrich City. The saturated steam boiler plant is designed for a thermal output of 10 MW, corresponding to a steam output of 15 t/h and a maximum steam pressure of 13 bar (above atmospheric pressure). Recycled wood gets utilised as fuel.



MIGROS Switzerland

Switzerland's largest retail company

At MIGROS' operations centre in Dierikon, Lucerne, a Polytechnik biomass trigeneration plant was put into operation. In addition to heating the company's premises and adjacent properties, the plant provides cooling and generates electricity for internal use. As a fuel, wood chips from recycled wood, with a length of 100 mm, according to classes I, II and III, get transported from an underground storage bunker via a live floor and conveying systems to the adiabatic furnace with an advanced combustion control system which ensures lowest emissions of the plant.

BÜHLER SPANKORBFABRIK Germany

One of the largest rotary veneer factories in Europe

The family business, based in Bühl, decommissioned their old fuel oil and wood boilers after 40 years as they no longer met today's requirements. For Bühler Spankorbfabrik, only suppliers offering a complete range were an option; hence they chose Polytechnik's due to the comprehensive scope and service. The production requires process heat. Polytechnik implemented a heating system with a boiler output of 4.3 MW. Through the combination of advanced controls, staged combustion, and the associated complete combustion, the lowest emission values can be guaranteed. In other words, an entirely successful, climate-friendly and innovative heating system.

UNDER CONSTRUCTION IN Q4/2021

CHRISTCHURCH HOSPITAL New Zealand

In New Zealand, Polytechnik was able to hit another milestone in the company's history. As the best bidder in terms of technology and price, Polytechnik provides a 15.6 MW steam boiler plant, in an earthquake-proof design, to supply heat and steam for the hospital located in New Zealand second-biggest city, Christchurch. Polytechnik's design and execution of earthquake-resistant technology are used in many installed systems in New Zealand. The Minister for Climate Change, James Shaw, visited the innovative plant, which is currently under construction. „The new biomass heating plant will help us reduce CO₂ emissions and decommission the current coal-fired boilers,“ Shaw said. The plant will go into operation in early 2022.



ERNWÄRME EISENSTADT Austria

Energie Burgenland is further expanding the existing district heating system in Eisenstadt, the capital of Burgenland, Austria. Polytechnik has installed a 7 MW biomass plant for this purpose in 2020. The second construction phase of another 7 MW plant is now underway, followed by the third, which will also have a capacity of 7 MW. Many historic buildings in the centre of Eisenstadt are connected to this district heating system.



ENERGIE AUSSERSCHWYZ AG Switzerland

The wood-fired cogeneration plant in Galgenen is currently in the installation phase. The plant, which will run on construction and demolition wood, has a thermal output of 22 MW. It will supply heat to residential, commercial, industrial and public buildings in the districts of March and Höfe once it is operational. When completed, the district heating network will provide a secure and ecological heat supply over a distance of 50 km. A high-pressure steam turbine with a generator will produce 5.5 MW of electricity. The start-up is scheduled for the end of 2021.

HIGH-PRESSURE SUPERHEATED STEAM BOILER PLANT SOUTH KOREA

A 21.4 MW high-pressure superheated steam boiler plant is currently being built in the South Korean village of Yeon Cheon, directly on the border with North Korea. The plant is designed for recycled wood fuel and will be commissioned before the end of 2021.



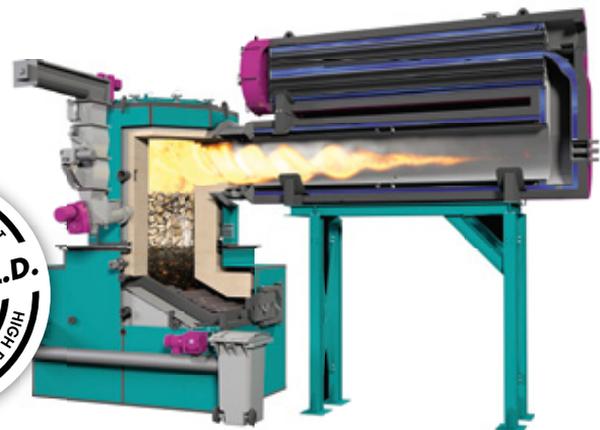
LATEST TECHNOLOGY NEWS

POLY H.E.L.D.® – A LEAGUE OF ITS OWN

Highest efficiency with lowest emissions without flue gas cleaning

With our new product POLY H.E.L.D.®, we are establishing a climate-friendly combustion system with the lowest emissions, which is uniquely forward-looking in its performance class!

The combustion system with gasifier technology and extreme air staging allows for low-emission and efficient combustion with the highest levels of efficiency with various fuels.



ENGIE Austria

One of the largest energy service providers in Europe

The plant and energy service provider ENGIE commissioned the innovative POLY H.E.L.D.® system from Polytechnik at the Sulz district heating plant in the Vienna Woods. With its low emission values, this system is climate-friendly and unique in its performance class, ecological and economical.

CARBONISATION

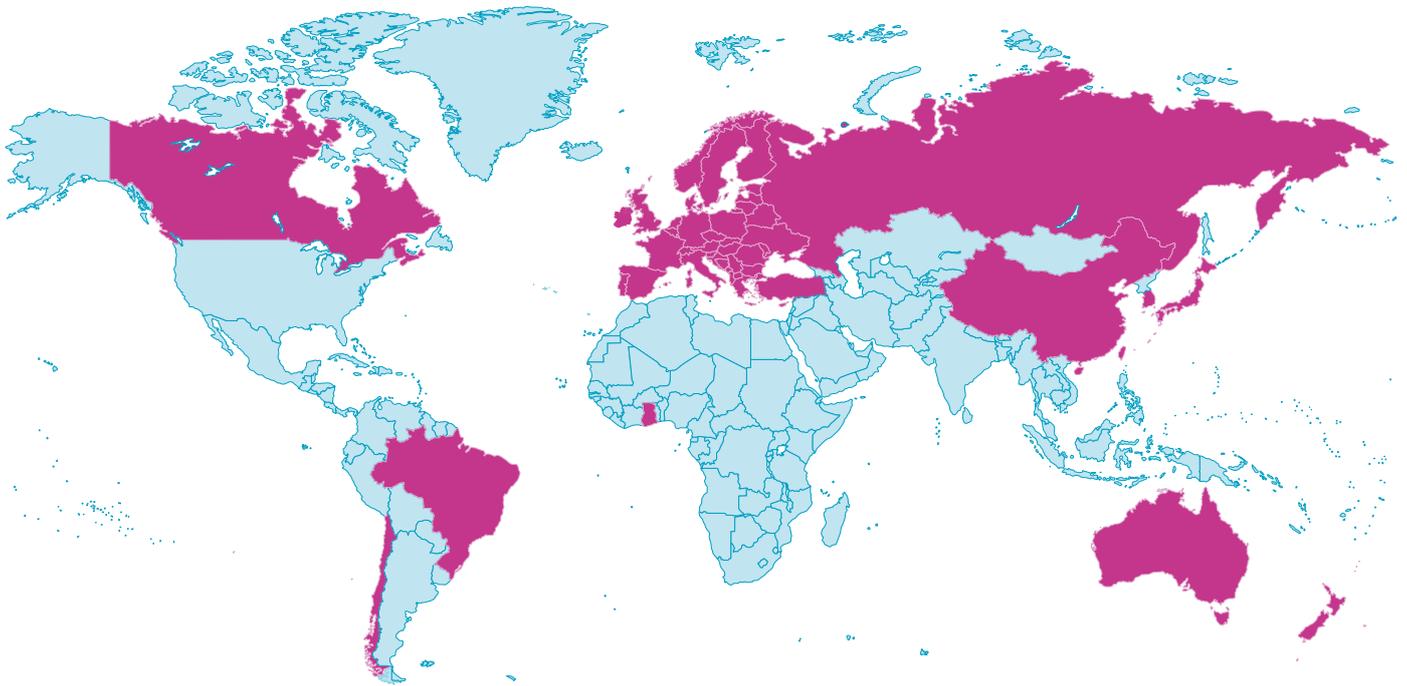
GREEN CARBON GMBH Germany

CO₂-storage with patented pyrolysis process

Green Carbon GmbH, based in Uelitz, has been operating the carbonisation plant, developed by Polytechnik for biogenic materials such as wood, cuttings from landscaping, etc., for several years to produce charcoal and biochar and to combat CO₂ emissions. Intensive research in recent years has made it possible to develop the patented batch process further so that different qualities of biocarbon can be produced. Qualities include

carbon as an animal feed additive, pharmaceutical carbon, Terra Preta for soil improvement, high-quality barbecue charcoal and biochar for steel and battery production. Polytechnik's standardised production modules are designed for an annual output of 4,500 t / 6,000 t / 9,000 t and 12,000 tonnes of biochar. Upon request, special designs for up to 20,000 t of biochar are available too.





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