

# INNOVATIVE BIOMASS HEAT AND POWER COGENERATION AS A COMPLETE SOLUTION

## The clean, efficient and cost-effective solution for small and medium power ranges

Polytechnik, a leading manufacturer of biomass combustion systems, and Dürr Systems AG, a leading manufacturer of ORC systems, have come together to produce an innovative machine. The advantages of the POLYHELD® wood gasification technology meet those of the CHP-capable Cyplan® ORC modules. Wood chips are used to generate process heat and electrical energy at temperatures up to 95°C.

### Benefits

Lower investment costs by up to 30%

Combination of already proven technologies (POLYHELD® and Cyplan® ORC)

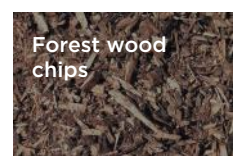
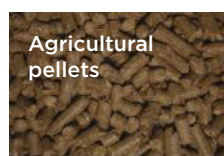
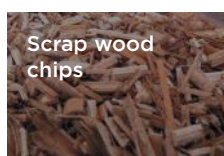
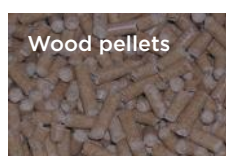
Clean operation with only one ash collection point (POLYHELD®)

Low maintenance costs

Little space required

### Use a variety of fuels

The following materials can be used with a water content of up to M45.



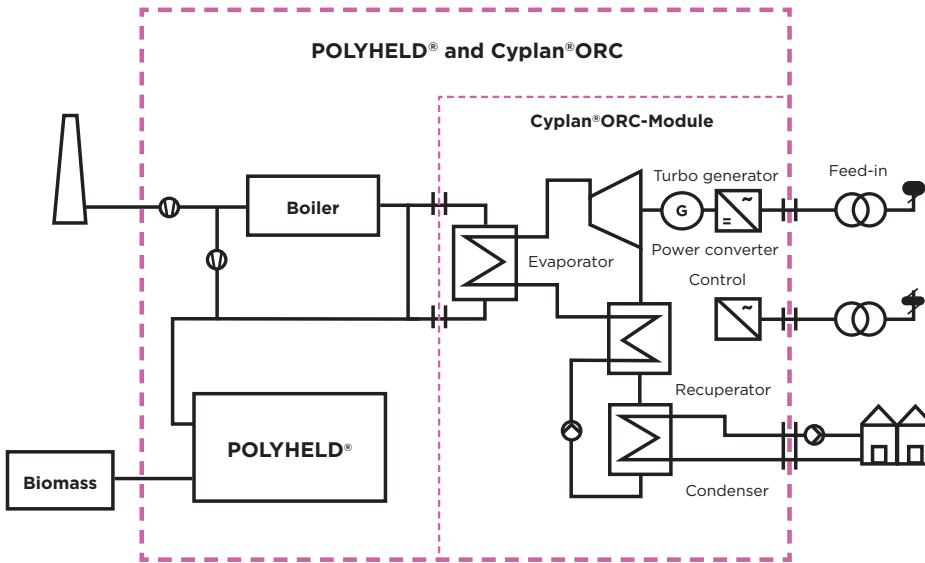


Image 1: depiction of the complete system process

Fuel is typically supplied using a screw stoker and the fuel level is controlled by a redundant measuring system. A Polytechnik grate developed exclusively for this technology is placed under the fuel bed for the gasification of solids.

The wood gas is burnt in a multi-stage process, using a low air surplus for high effectiveness and low emissions. The flue gas is then adjusted to the desired temperature in a mixing chamber and flows to the evaporator of the ORC system. There, the thermal energy is transferred to the ORC working medium to generate electrical energy in the cycle process using a turbo generator. The condensation heat of the ORC cycle process is transferred to water and heats it up to 95°C. The water is cooled in the ORC system. Part of the flue gas is recirculated via the mixing chamber, while additional thermal energy is extracted from the remaining flue gas in a combined heat exchanger and discharged through a flue. The innovative technologies mean that no additional emission control is required.

The biomass cogeneration plant is available in the following standard sizes (basic series, hot water temperature 60°C / 85°C). Adaptations are possible on special request.

**Wood gasification POLYHELD® with electricity generation Cyplan® ORC**

POLYHELD® Module	Max. NWL without electricity generator kW	Boiler	Cyplan® ORC Module	Electricity generation kWel (gross) 400 V	Usable heat output with electricity generation kW	Min. partial load electricity / heat
800	800	> 90%	120	120	670	40% / 25%
1500	1500	> 90%	250	220	1270	40% / 25%
2000	2000	> 90%	350	330	1660	40% / 25%
3000	3000	> 90%	500	500	2490	40% / 25%

**POLYTECHNIK** Luft- und Feuerungstechnik GmbH  
**HEAD OFFICE** Hainfelderstraße 69, 2564 Weissenbach, Austria  
**E-MAIL** sales@polytechnik.at **WEB** polytechnik.com  
**TEL. AT** +43 (0) 2672 890-0 **TEL. DE** +49 (0) 7191 911 525-0

**DÜRR SYSTEMS AG** Clean Technology Systems, Cyplan ORC  
**YOUR CONTACT** Sven Jensen  
**TEL.** +49 7142 78 2469  
**E-MAIL** sven.jensen@durr.com **WEB** durr.com