

POLY
H.E.L.D.[®]  HIGH
EFFICIENCY
LOW
DUST

***Innovative combustion technology
with extreme air staging control***



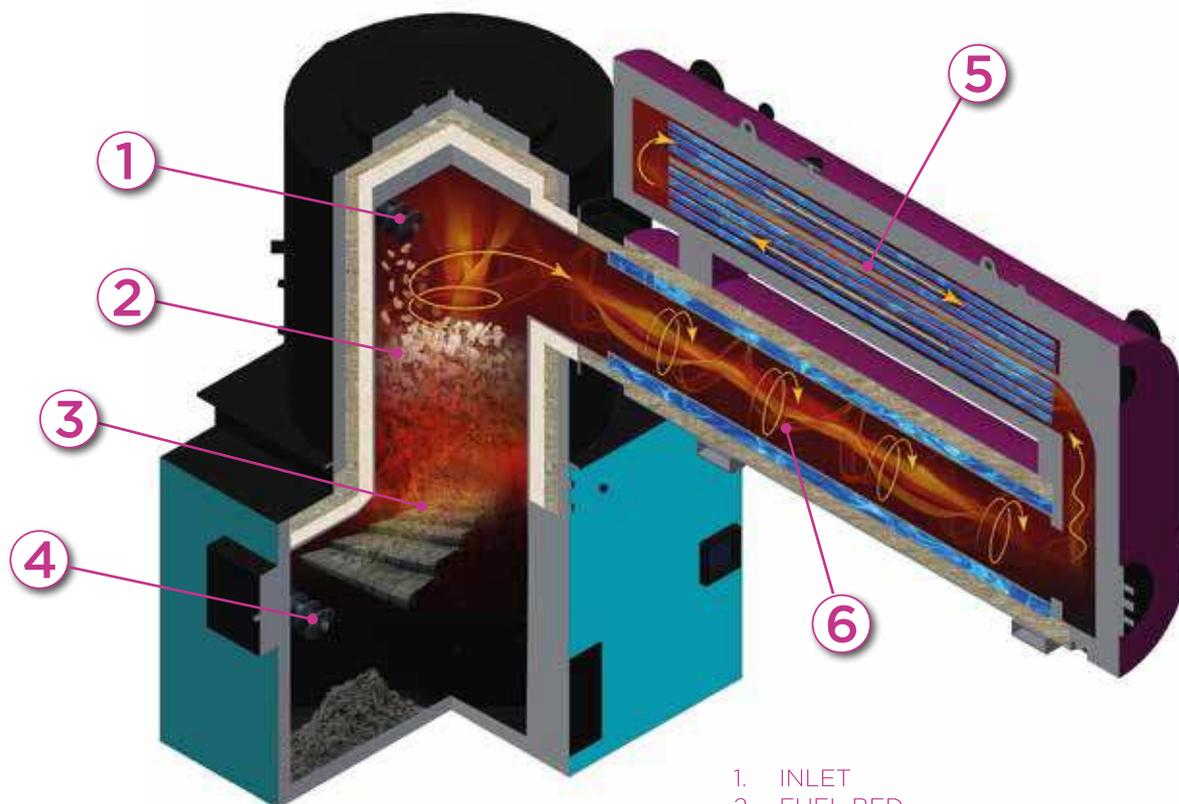
POLY H.E.L.D.®

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

POLY H.E.L.D.® is the combustion technology of the future. This combustion system with extreme air staging allows for low-emission and efficient combustion of various fuels. Dust emissions for wood-based biomass remain lower than 20 mg/Nm³ at 11% O₂. A value of 10 mg/Nm³ can be reached with quality wood chips. Additionally, POLY H.E.L.D. is able to combust or gasify high-ash fuels with relatively low ash melting points. The system accomplishes these low emission values without additional flue gas purification, which makes it a highly economical solution. As a unique design, this system achieves 20-30% lower NO_x emissions compared to grate firing without the need for secondary measures (SNCR or SCR).



OPERATING PRINCIPLES LOW EMISSION BURNER



1. INLET
2. FUEL BED
3. GASIFIER GRATE
4. ASH REMOVAL
5. HEAT EXCHANGER
6. SPECIAL LOW-NO_x BURNER

Fuel is supplied via an inclined screw stoker. The fuel height is controlled by a redundant radar system. The produced gas is initially ignited by a propane gas burner with a nominal output of 35 kW. The gasifier is ignited automatically by a hot-air blower.

The grate is a gasification grate, specifically developed by POLYTECHNIK for this gasification technology. The new grate is aligned symmetrically below the gasifier and is cleaned of ashes simultaneously to the left and right. In this process, the ash is discarded onto two horizontal screws at both ends of the grate and from there it is transported to another ash screw which transfers all of the ashes to an air-tight container.

The grate is cooled by a grate frame cooling system. The produced gas is combusted in a multi-stage gas burner after the gasifier. After the gas burner, the flue gas flows through the heat exchanger and the energy can be used for various purposes.

The plant can be operated with warm water, hot water, thermal oil and steam boilers.

HIGHLIGHTS



Fuel flexibility:

Wood chips up to M45, corncobs, straw pellets, and various agricultural residues



Efficiency > 92%

(+5% compared to conventional combustion)



NO_x: -25%

(compared to conventional combustion)



Dust: < 20mg/Nm³

(without flue gas purification)



Output range

25-100%
(also with M45)



START-STOP

within just a few minutes



TECHNICAL DATA

POLY H.E.L.D	Unit	Poly HELD	Poly HELD	Poly HELD	Poly HELD
		400	600	1000	1500
Nominal output	kW	400	600	1000	1500
Effective output range	kW	100 - 420	150 - 630	250 - 1050	350 - 1600
Fuel type (wood, straw, sunflower, miscanthus pellets, etc.)		Wood chips up to M45	Wood chips up to M45	Wood chips up to M45	Wood chips up to M45
Efficiency full load/partial load	%	92/93	92/93	92/93	92/93
Fuel consumption*	kg/h	129	193	320	478
	approx. m ³ /h	0,50	0,75	1,24	1,85
Fuel type (wood, straw, sunflower, miscanthus pellets, etc.)		Pellets M10	Pellets M10	Pellets M10	Pellets M10
Efficiency full load/partial load	%	93/94	93/94	93/94	93/94
Fuel consumption**	kg/h	90	134	224	335
		0,14	0,21	0,34	0,52
BOILER					
Heat medium		Warm water other heat media (steam, thermal oil, air) available upon request			
Max. permitted operating pressure	bar	6			
Max. permitted operating temperature	°C	110			
Inlet temperature	°C	< 105			
Min. return temperature	°C	60			
Electrical auxiliary power					
Electrical load	kVA	400 V AC / 50 Hz / 3P + N + PE			
		5,0	7,5	11	15
El. power consumption full load/partial load *	kWh/h	1,25 / 0,6	2,0 / 1,0	3,5 / 1,8	5,5 / 2,8
START-UP BURNER					
Gas type		Natural gas, propane, biogas			
Flow pressure	mbar	200			
Installed burner output	kW	35	35	85	85
Consumption of electricity per start-up procedure from cold start	kWh	100	125	160	200
WATER CONNECTION					
Quality		Drinking water			
Flow pressure	bar	2 - 6			
Connected capacity required	m ³ /h	2,0	2,0	3,0	3,0
EMISSIONS					
Guaranteed emissions as per Ordinance on Firing Installations (at 11% O ₂ , dry flue gas)***					
Carbon monoxide CO		250			
Nitrogen oxides NO _x (as NO ₂)	mg/m ³ N	250			
Dust		20			

* based on woodchips quality M30, P45, A3.0 and N0,5

** based on wood pellets – quality class A1

*** emission values for various production limits achieved without additional emission control equipment (e.g.: KPC) available upon request

FUELS

MOST COMMON FUELS



WOOD PELLETS



WOOD SHAVINGS



SAWDUST



WOOD BRIQUETTES



SUNFLOWER HUSK PELLETS



SHREDDED WOOD



WOOD CHIPS, SIZE UP TO P45



SHREDDED BARK



FORESTAL BIOMASS



BAMBOO



STRAW PELLETS



ELEPHANT GRASS PELLETS



AGRICULTURAL RESIDUES AS PELLETS



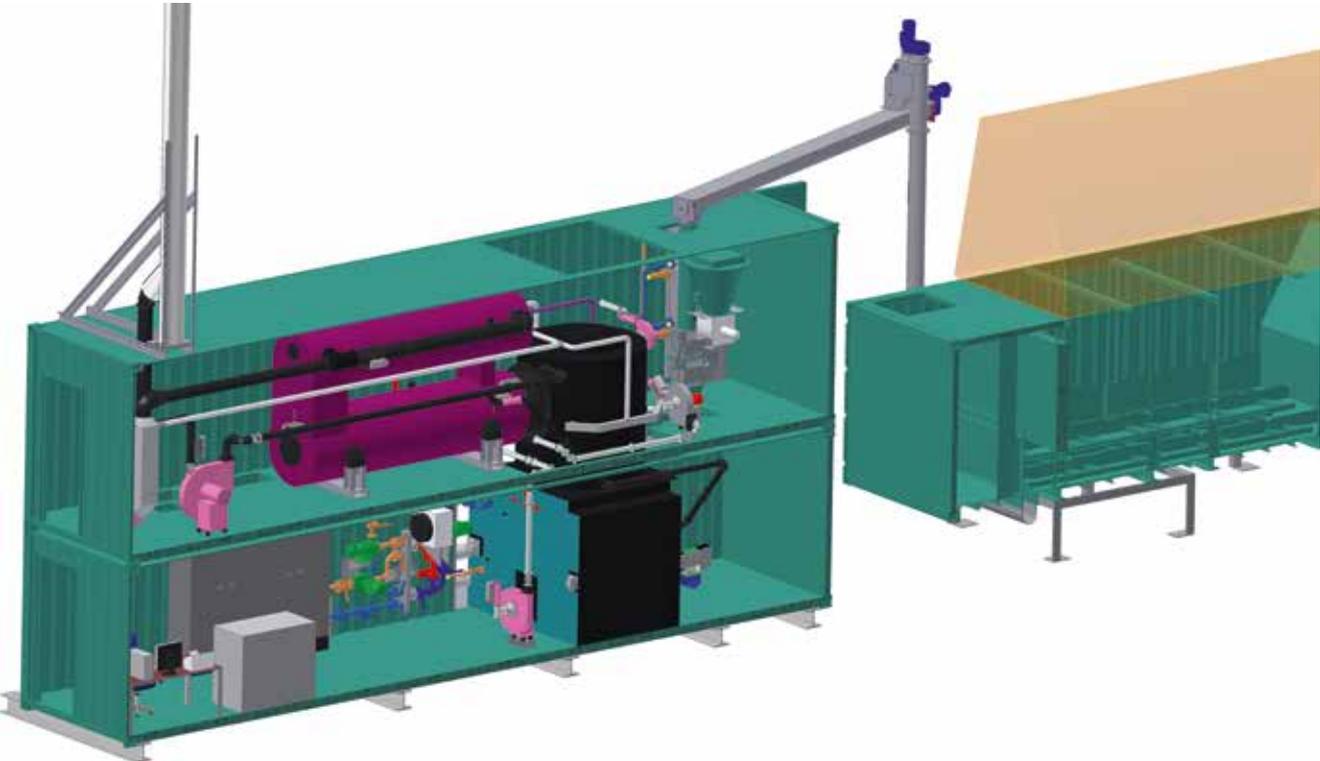
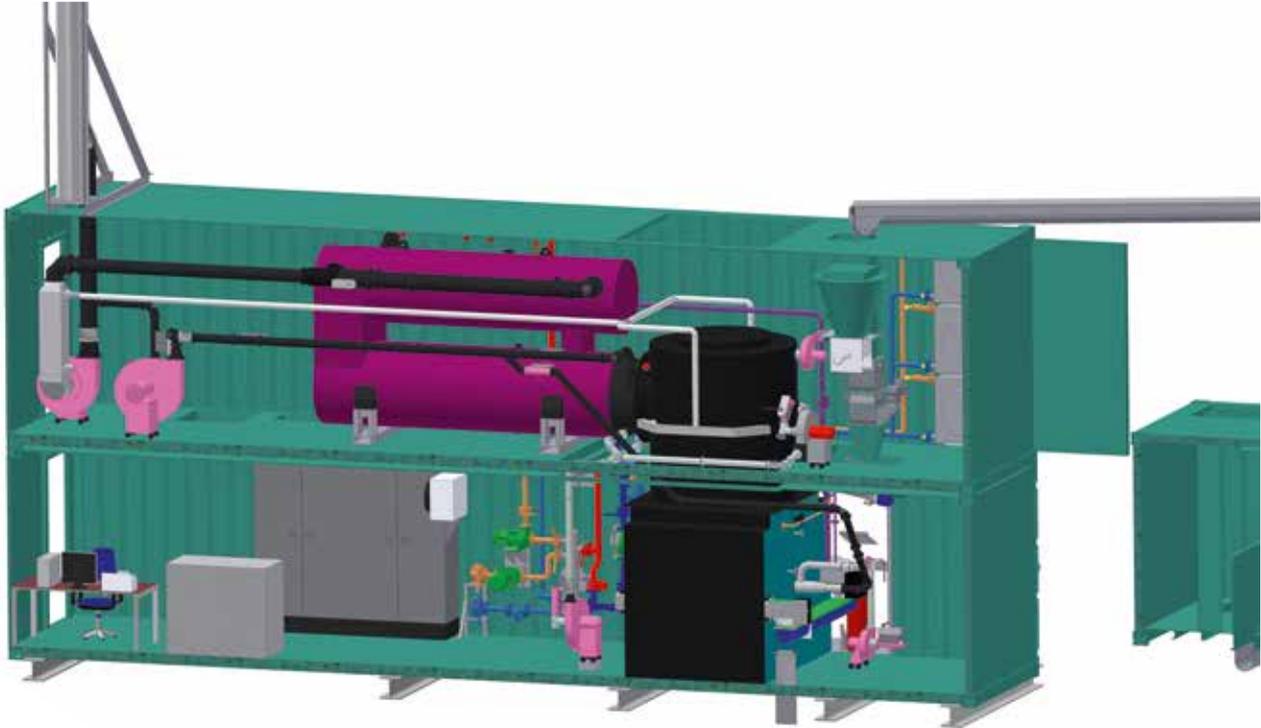
COCONUT FIBER

... as well as most wood-based fuels

Climate and energy targets - The POLY H.E.L.D.[®] system ensures a high fuel flexibility as well as extremely low emissions and high efficiency. This way, the fuel consumption is lowered, which represents a significant contribution to the conservation of resources. The security of supply can be maintained by sustaining the rural supply structures. With POLY H.E.L.D.[®], dust emissions below 20g/Nm³ as well as a NO_x reduction of approx. 25% compared to the current state-of-the-art combustion technology can be achieved.

SET-UP VERSIONS

Example for a container solution

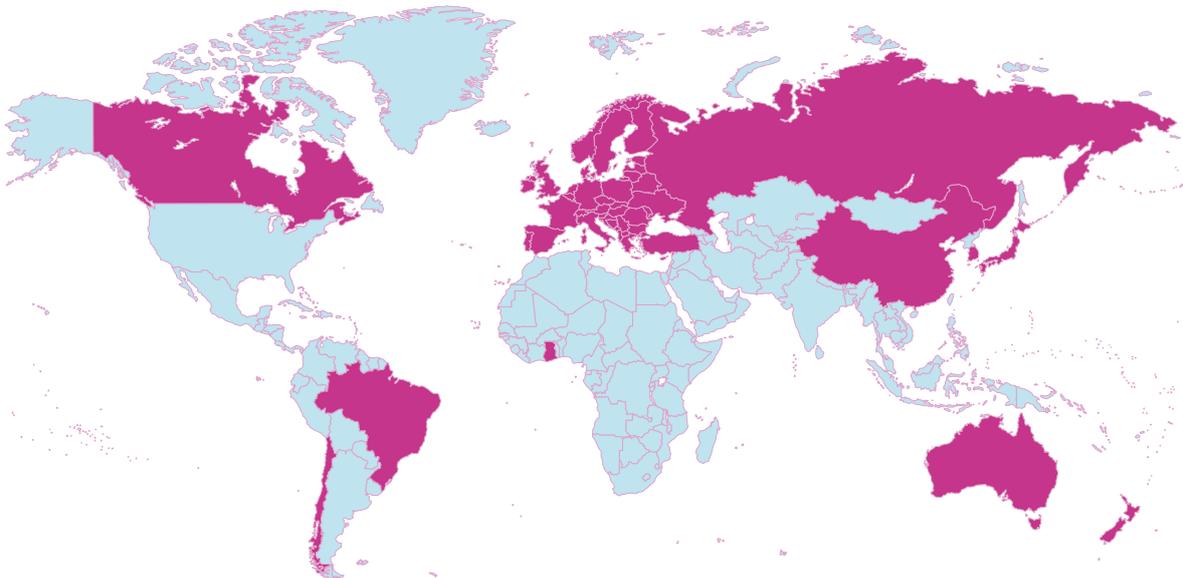


individual set-ups for boiler rooms are also available

POLY H.E.L.D.® - HIGH EFFICIENCY LOW DUST

- Pilot system has been operating for 3 years
- Suitable for all countries and markets
- Fuel flexibility: Wood chips up to M45, corncobs, straw pellets, various agricultural residues
- Efficiency: > 92% (+5% compared to conventional combustion)
- NO_x: 25% compared to conventional combustion
- Dust: < 20mg/Nm³ (without flue gas purification)
- Output range: 25-100% (also with M45)
- START-STOP within just a few minutes

POLYTECHNIK
Biomass Energy  WORLDWIDE



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