

# Hypercool & Hypersep BioEnergy

Coolers and separators for Biogas and Landfill Gas Cooling Applications



## Short Description

Bioenergy is renewable energy stored in organic materials such as plant matter and animal waste, known as biomass. The wide variety of biomass fuel sources include agricultural residue, pulp/paper mill residue, urban wood waste, forest residue, energy crops, landfills and animal waste. Anaerobic digestion is the process that occurs when bacteria decompose organic materials in the absence of oxygen to generate biogas.

Biogas is primarily composed of methane and carbon dioxide with smaller amounts of hydrogen sulphide and ammonia. Trace amounts of other gases like hydrogen, nitrogen or carbon monoxide are also present in the biogas. Usually the mixed gas is saturated with water vapour and may contain dirt particles.

For biogas as a fuel, most of the impurities have to be removed, as they may cause corrosion, deposits and damage to equipment. In particular biogas needs to be dried by cooling it to temperatures close to 5°C using water-cooled heat exchangers working with water chillers. Hyperchill BioEnergy is a key component of this biogas treatment process.

Hypercool BioEnergy and Hypersep BioEnergy have been specifically designed for Biogas applications. They provide safe and reliable operation in the harsh environments typically found in Anaerobic Digester and Landfill biogas production areas thanks to the use of stainless steel components specifically treated to maximize corrosion resistance.



## Features & Benefits:

- High quality materials (AISI304 or AISI316L) with pickling and passivation treatment in order to ensure highly reliable and continuous operation even in the harshest conditions typically experienced in a biogas plant or a landfill;
- Significant cost savings in investment, management and operation of the system;
- Designed using thermodynamic and fluid dynamic principles to ensure a high efficiency heat exchange and separation whilst maintaining a very low pressure drop;
- Performances and flow rates aligned with CHP and power generation market.

# Aftercooler

## Hypercool BioEnergy

The performance of biogas as a fuel depends on effective dehumidification. Saturated biogas contains water and impurities that need to be removed to avoid damage to engine equipment and pipeline and to reduce contamination of engine oil, increasing the efficiency of the whole plant and greatly reducing maintenance costs and plant downtime.



- Shell and tube heat exchanger with smooth pipes
- Material: Parts in contact with biogas in AISI304 or AISI316L, shell in AISI304
- Pickling and passivation treatment maximize corrosion resistance production)
- Flow rates and performances aligned with CHP power range
- Suitable for horizontal & vertical installations
- Max working pressure: 0,5 barg



# Separators

## Hypersep BioEnergy

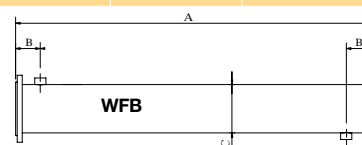
- Cyclonic separator optimized for biogas applications
- High separation efficiency with very low pressure drop
- Material: Stainless steel AISI304 or AISI316L
- Pickling and passivation treatment to maximize corrosion resistance;
- Suitable for installations with horizontal & vertical WFB;
- Max working pressure: 0,5 barg



## Technical data Hypercool BioEnergy

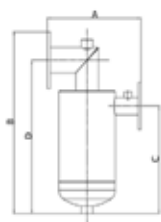
Model	Gas flow		Connections		Dimensions (mm)			Weight
	m <sup>3</sup> /h	m <sup>3</sup> /min	Gas	Water	A	B	C	kg
WFB60	60	1,0	DN80	3/4"	1490	65,5	89	16
WFB105	105	1,8	DN80	3/4"	1490	65,5	89	19
WFB165	165	2,8	DN125	1"	1490	100,5	140	30
WFB265	265	4,4	DN125	1"	1490	100,5	140	38
WFB240	240	4,0	DN125	1"	1990	100,5	140	48
WFB360	360	6,0	DN200	1 1/4"	1990	120,5	219	85
WFB510	510	8,5	DN200	1 1/4"	1990	120,5	219	102
WFB720	720	12,0	DN200	1 1/4"	1990	120,5	219	124
WFB1110	1110	18,5	DN300	2"	1990	144,5	324	196
WFB1620	1620	27,0	DN300	2"	1990	144,5	324	252
WFB2380	2380	39,7	DN450	2 1/2"	1990	179,5	457	405
WFB3180	3180	53,0	DN450	2 1/2"	1990	179,5	457	490

Performances refer to models operating with gas flow rate at FAD 20°C/1 barA.  
Nominal working conditions: gas inlet conditions 40°C saturated 60%CH<sub>4</sub> 40%CO<sub>2</sub>,  
water inlet temperature 1°C, gas outlet temperature 8°C for models WFB60, WFB105,  
WFB165, WFB265, 4°C for all other models, pressure drop 1,2 kPa with separator.

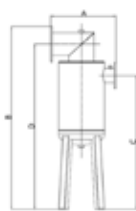


## Technical data Hypersep BioEnergy

Model	Gas flow		Connections		Dimensions (mm)				Weight
	m <sup>3</sup> /h	m <sup>3</sup> /min	IN	OUT	A	B	C	D	kg
CSB105	105	1,8	DN80	DN50	365,5	635,5	375,8	535,5	14
CSB265	265	4,4	DN125	DN80	460	1425	1038	1300	30
CSB720	720	12,0	DN200	DN125	570	1765	1293	1595	54
CSB1620	1620	27,0	DN300	DN200	638	1747,5	1156	1525	88
CSB3180	3180	53,0	DN450	DN300	833	2113	1264	1805	153



CSB105



from CSB265 to CSB3180

