aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding

BioEnergy Solutions

Parker Hiross

ENGINEERING YOUR SUCCESS.

Protect the Environment and your Investments

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 includes 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 dust particles.

Biogas is available from:
- **landfills**
- **wastewater treatment plants**
- **agriculture and livestock operation**
- **organic industrial waste**
- **separated municipal solid waste**
- **gasification of biomass residues**

The characteristics of biogas are somewhere comparable to natural gas. The energy content is defined by the concentration of methane. For biogas as a fuel, most of the impurities have to be removed, as they may cause corrosion, deposits and damage to the equipments. Substances which need to be removed include hydrogen sulphide, water, CO_2, halogen compounds (chlorides, fluorides), siloxanes, aromatic compounds, air.
Biogas is dried by cooling it to temperatures close to 1°C using water-cooled heat exchangers working with water chillers.

Respect the Environment:

Biogas is an attractive alternative to conventional fuels. Energy generated from biogas results in no net carbon emissions and helps to reduce the greenhouse effect and achieve the objectives of the Kyoto Protocol.
- reduced methane emissions from atmospheric decomposition;
- nitrogen is converted to ammonia that is more easily converted by plants to nitrites and nitrates, thereby eliminating nitrogen overloading in the soil;
- biogas used for power production replaces the use of fossil fuels for the same purpose.

Improve your Factory's performances:

- the European biogas sector is expanding as governments invest in renewable energy generation;
- biogas utilisation is successful in wastewater treatment plants, industrial processing applications, landfills and in the agricultural sector. 10% of methane in the dry gas corresponds approximately to 1 kWh per m^3;
- plants for biogas production are commercially available and systems have been installed throughout the EU and substantial revenues are invested annually to increase biogas capacities.

Free your Energy

with the Parker Hiross solutions

Separators		Hypersep BioEnergy
Aftercoolers		Hypercool BioEnergy
Drains		Hyperdrain BioEnergy
Chillers		Hyperchill BioEnergy

Aftercoolers

Hypercool BioEnergy

- stainless steel ribbed tubes
- high efficiency heat exchange
- low gas outlet temperature

Condensate drains

Hyperdrain BioEnergy

- large capacity drain
- no electrical wiring and no gas loss
- designed to work with dirty condensate and for low pressure operation
- Hiroshield treatment for optimal operation in any ambient

Free your Energy

Separators

Hypersep BioEnergy

- high efficiency demister separator with very low pressure drops
- removable demister for very easy maintenance
- stainless steel separator with 99% efficiency for the whole range of flows
- patent pending

Water chillers

Hyperchill BioEnergy

- special protective treatment on condensers and copper piping for reliable operation even in aggressive ambients
- pump and tank installed inside the chiller for a compact and easy to install solution
- close water temperature operation with high working limits and low running costs

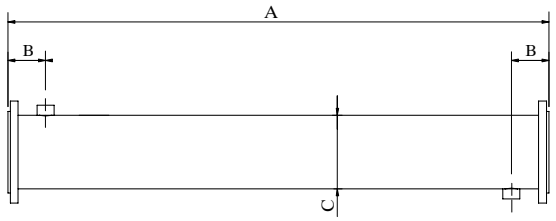
The Parker Hiross solutions

Technical data

Hypercool BioEnergy

Model	gas flow		refrigerant connections		dimensions (mm)			weight
	m³/min	m³/h	gas	water	A	B	C	kg
WFB120	2	120	DN125	1”	1800	100	133	71
WFB170	2,8	170	DN150	1”	1800	100	168,3	86
WFB220	3,7	220	DN150	1”	1800	100	168,3	92
WFB300	5	300	DN150	1 ¼”	1800	125	193,7	110
WFB500	8,3	500	DN200	1 ¼”	1800	125	244,5	150
WFB700	11,7	700	DN250	1 ¼”	1800	125	273	209
WFB1000	16,7	1000	DN300	1 ½”	1800	125	323,9	259
WFB1300	21,7	1300	DN350	1 ½”	1800	125	355,6	298
WFB1600	26,7	1600	DN350	2”	1800	125	375	333
WFB2000	33,3	2000	DN450	2 ½”	1800	150	457	480
WFB2400	40	2400	DN500	DN100	1800	200	508	600
WFB2800	46,7	2800	DN600	DN100	1800	200	610	890

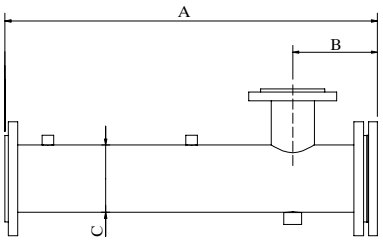
Performances refer to models operating with clean cooler , gas flow at 20°C / 1 bar A. Nominal working conditions: 60% CH4, 35% CO2, 5% other gases, working pressure 0,2 barg, water inlet gas content 48 g/Nm³, water inlet temperature 1°C, gas outlet temperature 4°C (± 1°C).



Hypersep BioEnergy

Model	gas flow		gas connections		dimensions (mm)			weight
	m³/min	m³/h	in	out	A	B	C	kg
SFB120	2	120	DN125	DN50	785	191	133	35
SFB220	3,7	220	DN150	DN100	932	212	168,3	42
SFB300	5	300	DN150	DN125	936	214	193,7	58
SFB500	8,3	500	DN200	DN150	1422	285	273	105
SFB700	11,7	700	DN250	DN200	1609	285	323,9	140
SFB1000	16,7	1000	DN300	DN200	1610	285	355,6	180
SFB1600	26,7	1600	DN350	DN250	1880	305	457	240
SFB2000	33,3	2000	DN450	DN300	2130	355	508	310
SFB2400	40	2400	DN500	DN350	2335	390	609,6	400
SFB2800	46,7	2800	DN600	DN400	2155	415	609,9	435

Performances refer to models operating with clean separator, gas flow at 20°C / 1 bar A. Nominal working conditions: 60% CH4, 35% CO_2, 5%other gases, working pressure 0,2 barg, gas inlet water content 48 g/Nm³, average pressure drop 1 kPa (± 0,3 kPa).

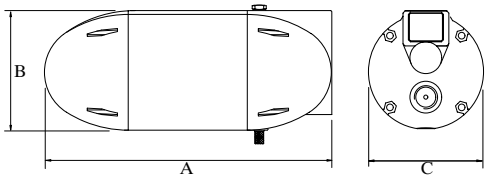


Free your Energy

Technical data

Hyperdrain BioEnergy

Model	construction materials			gas flow		connec.	max	dimensions (mm)			weight
	housing	float	lever	m^3/min	m^3/h	in/out	pressure	A	B	C	kg
HDF220BE	aluminium	plastic/st steel	plastic/st steel	108	6500	1”/1/2”	1	266	111	108	1,9



Hyperchill BioEnergy

Modello ICE		007	010	015	022	029	039	046	057	076	090	116	150	183	230	310	360
Cooling capacity[1]	kW	7,0	9,5	14,3	21,8	28,1	38,2	45,2	56,4	76,2	90,2	115,5	149,2	182,3	225,1	305,1	359,7
Compr. abs. power[1]	kW	2,0	2,3	3,4	5,2	5,7	7,7	10,1	12,3	15,4	20,3	24,9	30,8	40,1	51,1	64,2	81,5
Cooling capacity[2]	kW	5,2	7,0	10,6	16,2	20,8	28,4	33,8	42,1	56,5	67,1	86,4	110,9	135,4	163,2	220,8	259,1
Compr. abs. power[2]	kW	1,7	2,2	3,2	4,5	6,0	8,2	11,0	13,1	16,4	21,1	25,8	33,5	42,1	54,1	66,2	83,7
Controller		microchiller		pCO xs						pCO small			pCO medium				
Protection class	IP	44		54													
Compressors																	
Compr./circuits		1/1								2/2			4/2				
Max abs. p. -1 compr.	kW	1,8	3	2,9	6,9	7,8	11,1	13,7	16,8	11,1	13,7	16,8	11,1	13,7	16,8	23,3	28,7
Axial fans																	
Quantity		1					2			3			2		3	4	
Max. abs. p. - 1 fan	kW	0,1	0,1	0,61	0,61	0,78	0,61	0,61	0,61	0,78	0,78	0,78	2	2	2	2	2
Air flow	m^3/h	4400	4100	7100	6800	9200	12400	12000	17400	25500	25000	26400	47000	46000	66000	88000	88000
Pump P30 (standard on ICE007-230, optional on ICE310-360)																	
Type		peripheral		centrifugal													
Pot. max ass.	kW	0,78	0,78	1,04	1,034	1,34	1,34	2,35	2,35	1,85	2,24	2,24	4	4	4	7,5	7,5
Water flow (nom/max)[1]	m^3/h	1,3/3	1,5/3	2,3/6	3,5/9,6	4,5/9,6	6,3/9,6	7,6/18	9,3/18	13/18	15/26	19/27	35/50	30/50	38,7/48	52,5/90	61,9/90
Head press. (nom/min)[1]	mH_2O	35/8	31/8	29/21	28/17	27/17	24/17	28/22	27/22	26/22	28/16	25/16	34/20	32/20	28/21	34/21	31/21
Water flow (nom/max)[2]	m^3/h	0,9/3,0	1,0/3	1,6/6	2,4/9,6	3,2/9,6	4,5/9,6	5,5/18	6,7/18	9,0/18	11,0/26	13,4/27	18/50	22,1/50	28,1/48	38/90	44,6/90
Head press. (nom/min)[2]	mH_2O	72/8	39/8	30/21	29/17	28/17	27/17	28/22	28/22	27/22	32/16	30/16	36/20	35/20	32/21	35/21	35/21
Pump P15																	
Pot. max ass.	kW	0,48	0,48	0,3	0,45	0,75	0,75	0,75	0,75	1,1	1,1	1,1	1,5	1,5	2,2		
Water flow (nom/max)[1]	m^3/h	1,3/2,4	1,5/2,4	2,3/4,2	3,5/7,2	4,5/18	6,3/18	7,6/18	9,3/18	12/25	15/25	19/44	25/44	30/44	39/48		
Head press. (nom/min)[1]	mH_2O	23/6,0	20/6,0	18/10	18/7,0	17/10	16/10	16/10	15/10	15/8,0	15/8,0	13/6,0	12/6,0	10/6,0	14/9,0	on request	
Water flow (nom/max)[2]	m^3/h	0,9/2,4	1,0/2,4	1,6/4,2	2,4/7,2	3,2/18	4,5/18	5,5/18	6,7/18	9,0/25	11/285	13/44	18/44	22/44	28/48		
Head press. (nom/min)[2]	mH_2O	30/6,0	27/6,0	18/10	20/7,0	17/10	17/10	17/10	16/10	16/8,0	16/8,0	13/6,0	11/6,0	12/6,0	20/9,0		
Dimensions & weight																	
Depth	mm	534	534	730	730	744	744	744	744	898	898	898	1290	1290	1290	1510	1510
Width	mm	1228	1228	1358	1358	1358	1358	1358	1358	1954	1954	1954	2272	2272	2272	2238	2238
Height	mm	980	980	1122	1122	1650	1650	1650	2200	2200	2200	2200	3000	3000	3270	4210	4210
Connections in/out	in	1”	1”	1 ¼”	1 ¼”	1 ½”	1 ½”	1 ½”	1 ½”	2”	2”	2”	2 ½”	2½”	2½”	4”	4”
Tank capacity	l	45	45	120	120	180	180	250	300	500	500	500	1000	1000	1000	400	400
Weight[3]	kg	170	180	250	270	380	140	430	520	800	900	1000	1500	1800	2100	2900	3100
Noise level																	
Sound pressure[4]	dB(A)	53	53	50	50	53	52	52	56	58	58	58	62	62	64	65	65

1) data refers to water inlet/outlet temperature = 20/15°C, glycol 0%, ambient temperature 25°C.
2) data refers to water inlet/outlet temperature = 12/7°C, glycol 0%, ambient temperature 32°C.
3) weights are inclusive of pallet and refrigerant charge.
4) in free field conditions at a distance of 10m from the unit, measured on condenser side, 1m from ground.
All models supplied with R407C and with power supply 400V / 3ph / 50Hz.

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