

CHP & HYBRID POWER PLANT

**HD HYUNDAI
POWER PLANT SOLUTIONS**

Make More Profit With
Twice The Efficiency

Why CHP

The economics of engines in on-site power generation applications often depend on effective use of the thermal energy contained in the exhaust gas and cooling systems, which generally represents 60 to 70 percent of the inlet fuel energy.

Most of the waste heat is available in the engine exhaust and jacket coolant, while smaller amounts can be recovered from the lube oil cooler and the turbocharger's intercooler and after cooler(if so equipped).

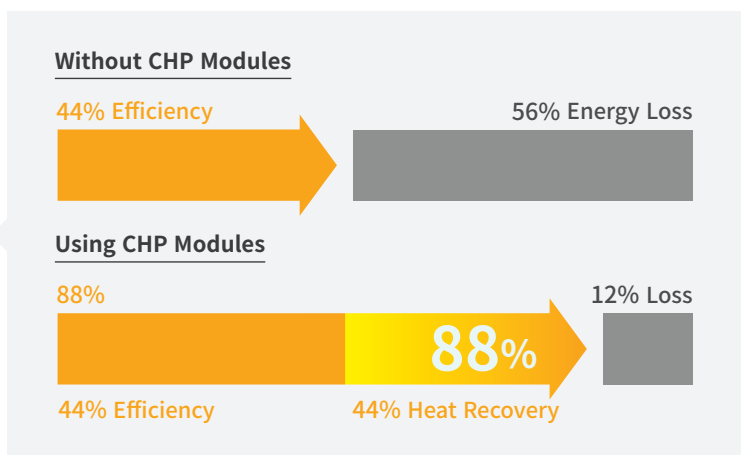
Why Are They Good?

1. MORE PROFIT WITH BETTER EFFICIENCY

The fuel efficiency can grow about twice as much when using CHP modules.

Efficiency can
be more than

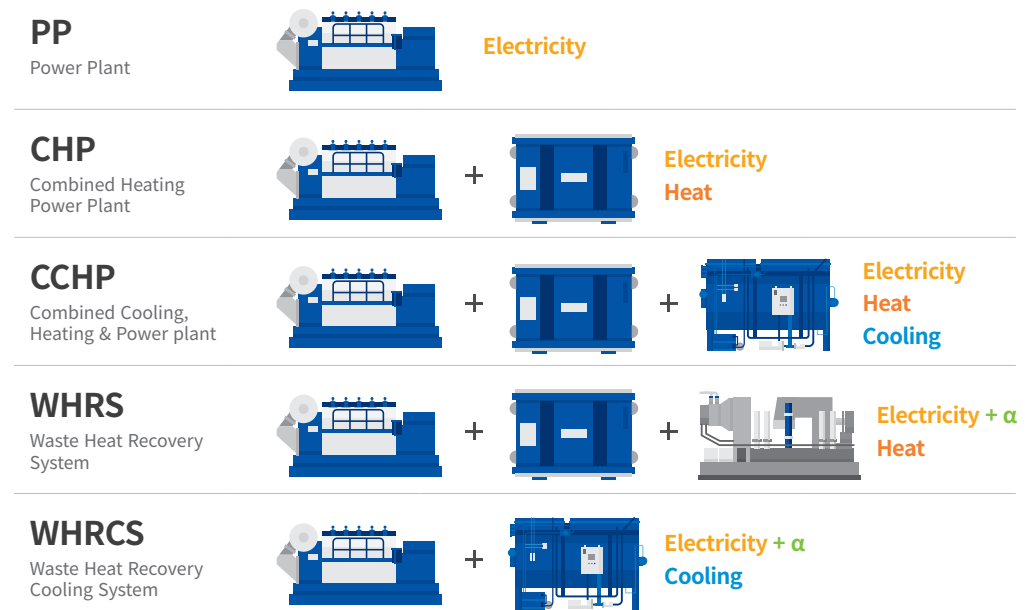
88%



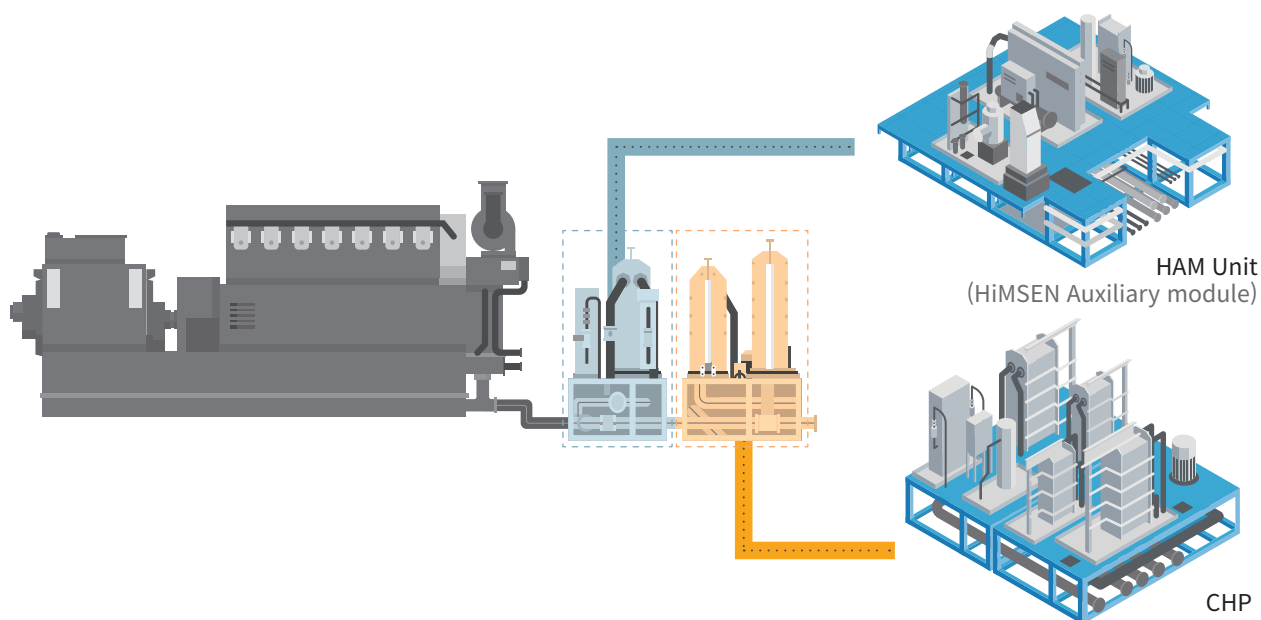
2. EASY AND FAST INSTALLATION

The units are carefully modularized so that transportation and installation can be easier and provided faster. Also, the CHPs are pre-designed, so that they can be instantly provided upon request.

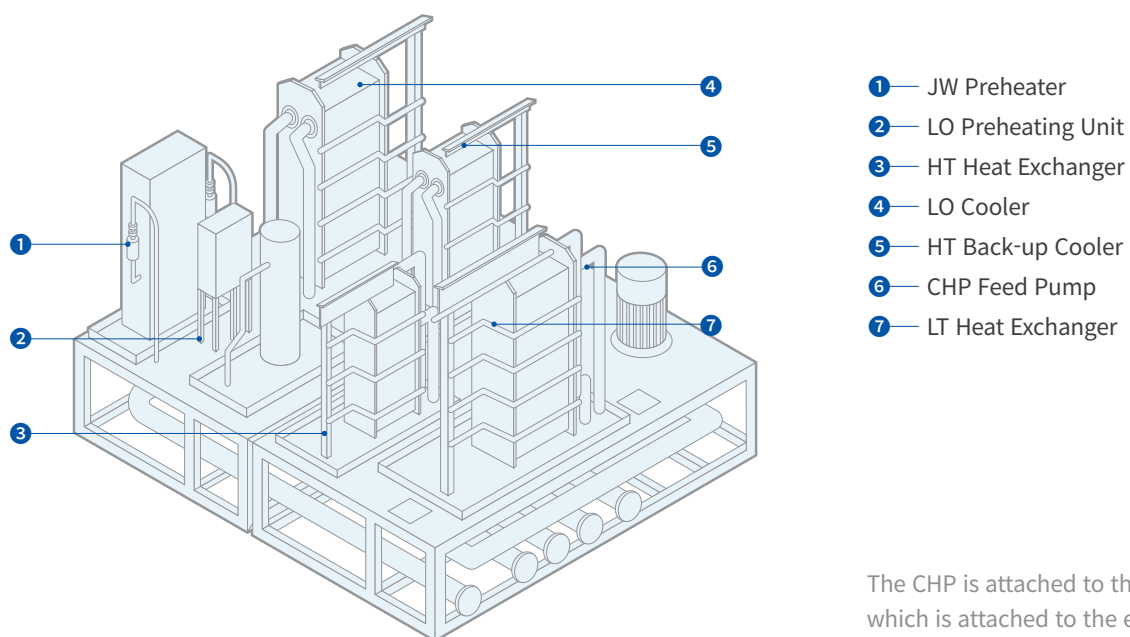
3. EASY CUSTOMIZATION



Combined Heat & Power Modules



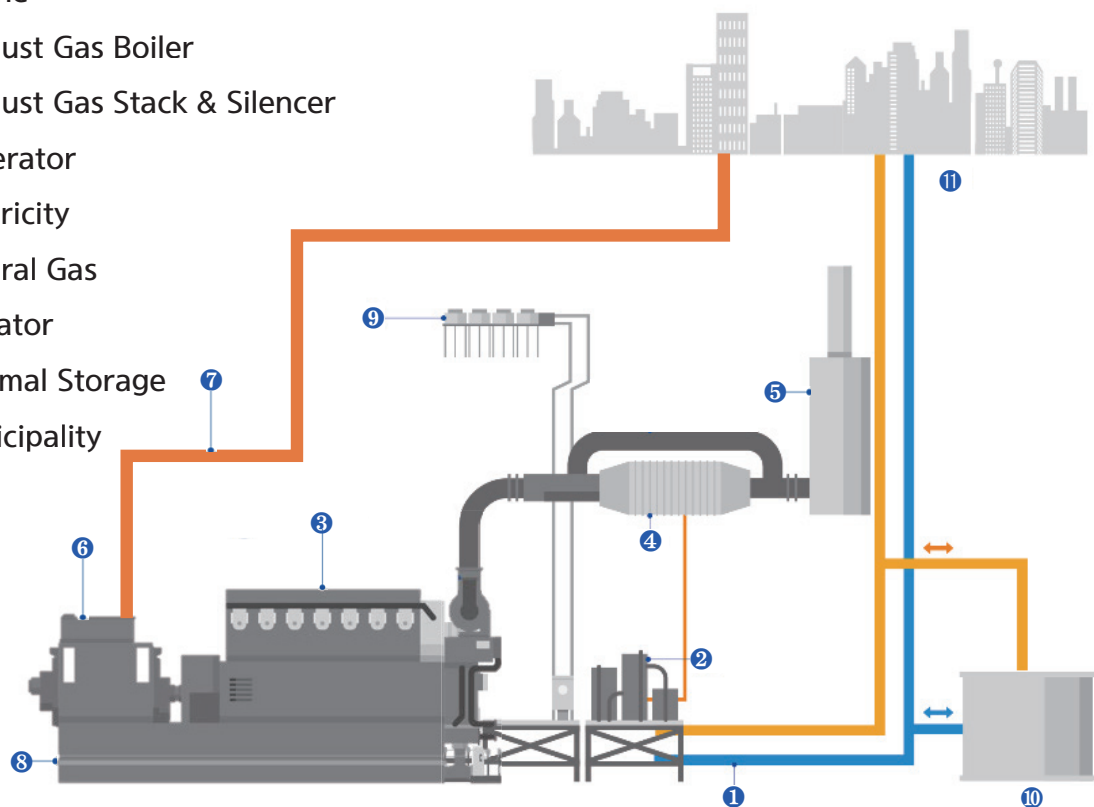
The Components of CHP Modules



The CHP is attached to the HAM module which is attached to the engine.

Operation Flow of CHP

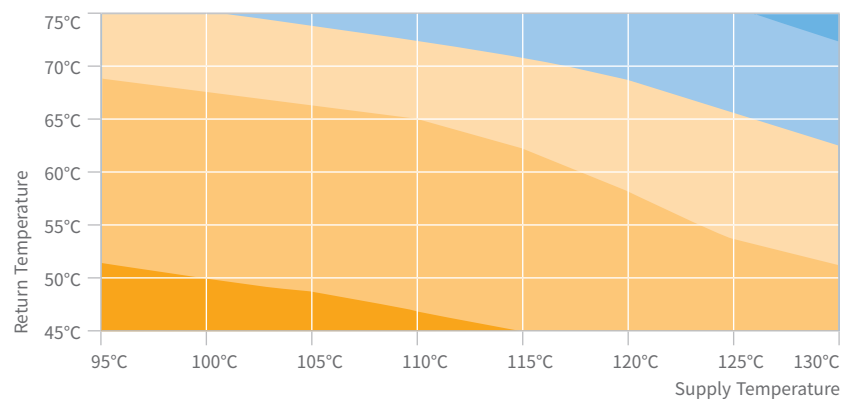
- ①— District Heating Network
- ②— CHP Module
- ③— Engine
- ④— Exhaust Gas Boiler
- ⑤— Exhaust Gas Stack & Silencer
- ⑥— Generator
- ⑦— Electricity
- ⑧— Natural Gas
- ⑨— Radiator
- ⑩— Thermal Storage
- ⑪— Municipality



CHP takes the exhaust gas through the WHRB (Waste Heat Recovery Boiler) which has the Cooling Water compartment and Heat exchanger

The Return Temperature Depending On The Supply Temperature

- 82% - 84%
- 84% - 86%
- 86% - 88%
- 88% - 90%
- 90% - 92%

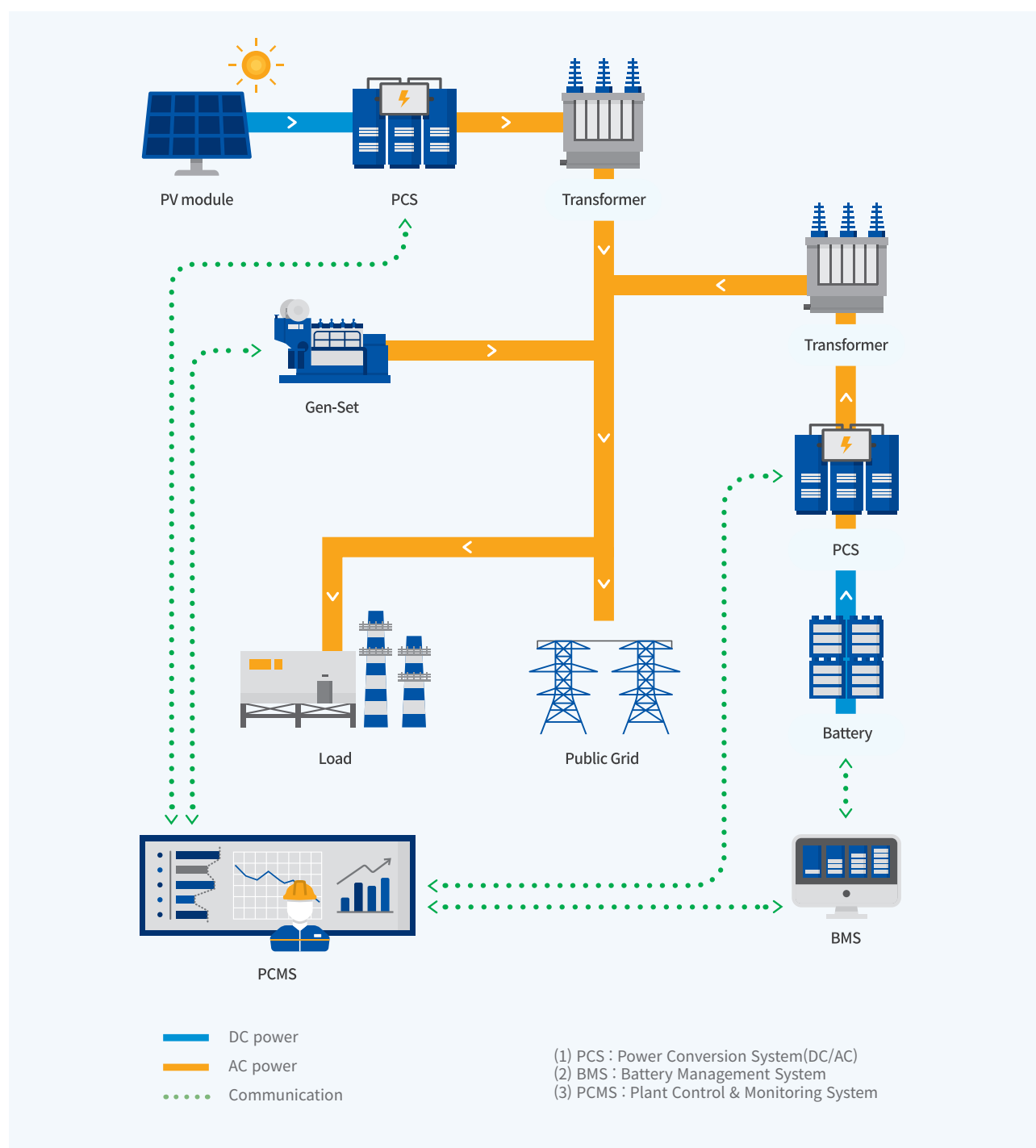


HYBRID POWER PLANT

SOLAR + ENGINE POWER

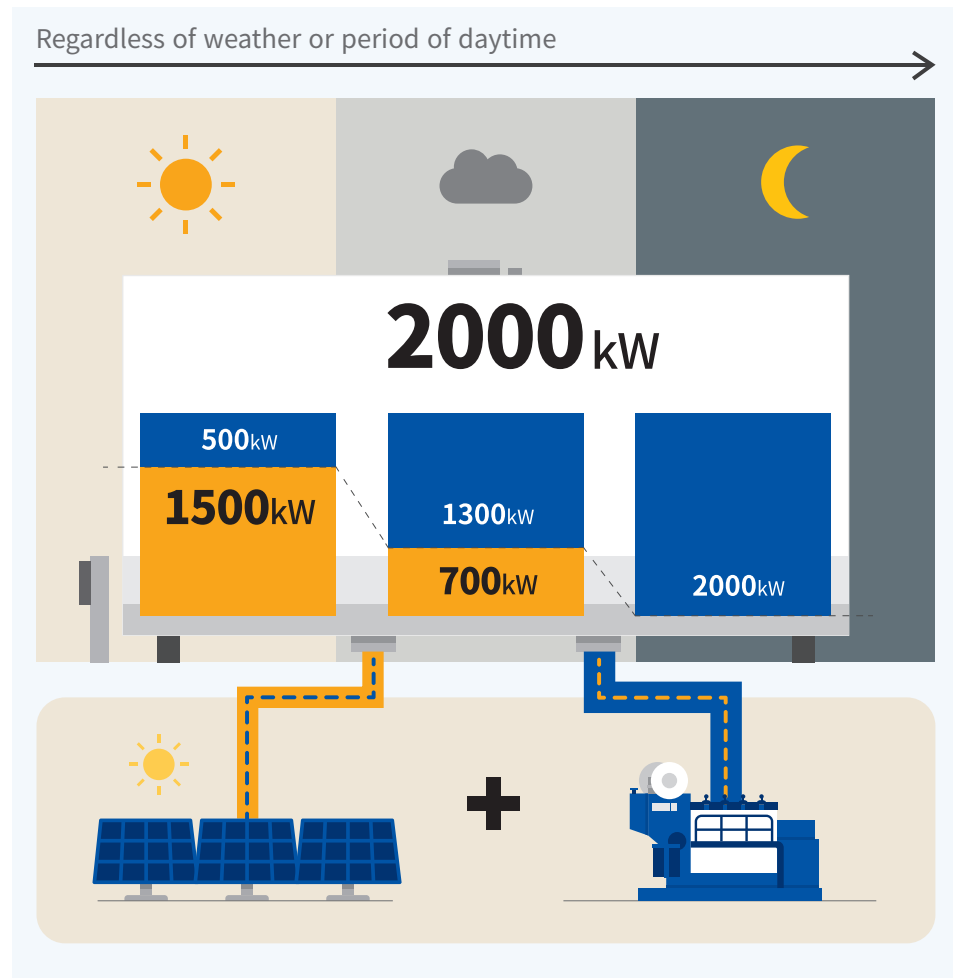
Hybrid power plant can supply stable power through balance between or among the power source. Regardless of weather or natural condition, it produces constant power.

Hybrid power plant overall scheme

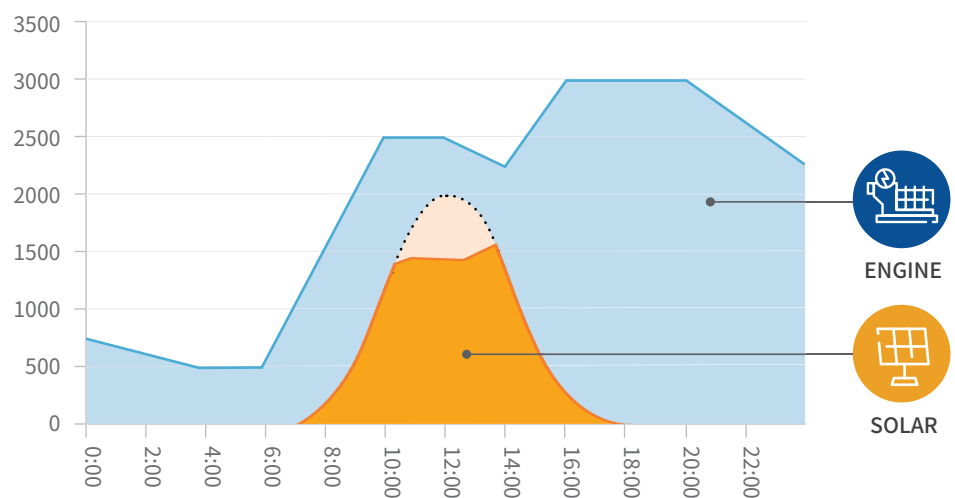


SOLAR PV POWER + GEN-SET PROFILE

How a typical day could look like



24h load and PV energy generation profile



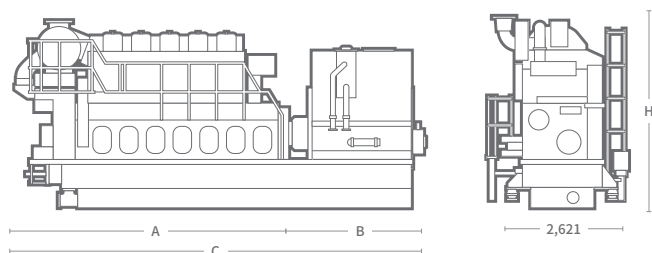
HiMSEN Engine Line-up for Stationary Gensets

'HiMSEN'® is the registered brand name of HD HYUNDAI's own design engine and the abbreviation of 'Hi-touch Marine & Stationary Engine'.



Gas Fuel

H35G Bore: 350mm Stroke: 400mm

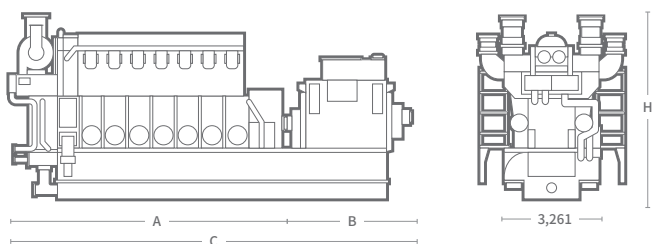


Main Data

Speed	720rpm		750rpm		Dimension(mm)				Dry Mass(ton)	
Frequency	60Hz		50Hz							
	Eng.(kW)	Gen.(kW)	Eng.(kW)	Gen.(kW)	A	B	C	H	Engine	GenSet
6H35/40G	2,880	2,764	3,000	2,880	5,760	3,130	8,890	3,959	33.7	68.6
7H35/40G	3,360	3,225	3,500	3,360	6,112	3,374	9,486	4,130	38.6	77.1
8H35/40G	3,840	3,705	4,000	3,860	6,602	3,594	10,196	4,130	41.5	82.0
9H35/40G	4,320	4,168	4,500	4,342	7,092	4,097	11,189	4,130	44.6	89.1

Based on alternator efficiency of 96~96.5%.

H35/GV Bore: 350mm Stroke: 400mm

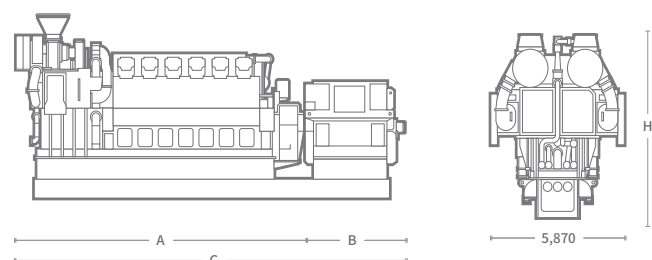


Main Data

Speed	720rpm		750rpm		Dimension(mm)				Dry Mass(ton)	
Frequency	60Hz		50Hz							
	Eng.(kW)	Gen.(kW)	Eng.(kW)	Gen.(kW)	A	B	C	H	Engine	GenSet
12H35/40GV	5,760	5,558	6,000	5,790	6,624	3,760	10,384	4,723	56.0	108.8
14H35/40GV	6,720	6,518	7,000	6,790	7,295	3,860	11,155	4,723	63.3	121.3
16H35/40GV	7,680	7,449	8,000	7,760	7,914	3,479	11,393	4,723	69.1	130.9
18H35/40GV	8,640	8,380	9,000	8,730	8,585	3,859	12,444	4,794	76.3	141.2
20H35/40GV	9,600	9,312	10,000	9,700	9,344	3,659	13,003	4,794	84.0	153.9

Based on alternator efficiency of 96.5~97%.

H54GV Bore: 540mm Stroke: 600mm



Main Data

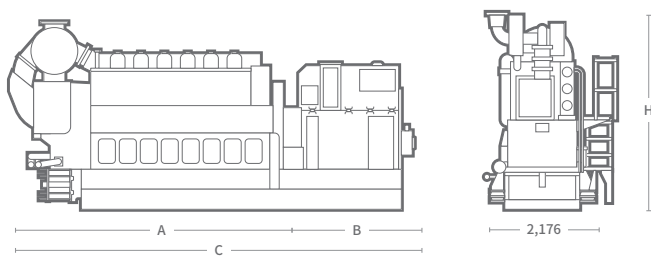
Speed	600rpm		600rpm		Dimension(mm)				Dry Mass(ton)	
Frequency	60Hz		50Hz							
	Eng.(kW)	Gen.(kW)	Eng.(kW)	Gen.(kW)	A	B	C	H	Engine	GenSet
12H54GV TSTC ¹⁾	16,800	16,380	16,800	16,380	12,511	4,638	17,149	7,994	294.0	381.0
14H54GV TSTC	19,600	19,110	19,600	19,110	13,661	4,582	18,243	7,994	324.0	421.0
16H54GV TSTC	22,400	21,840	22,400	21,840	15,086	4,757	19,843	8,383	361.1	467.0

Based on alternator efficiency of 97.5%.

1)TSTC : Two Stage Turbo Charger

Dual Fuel

H27DF Bore: 270mm Stroke: 330mm



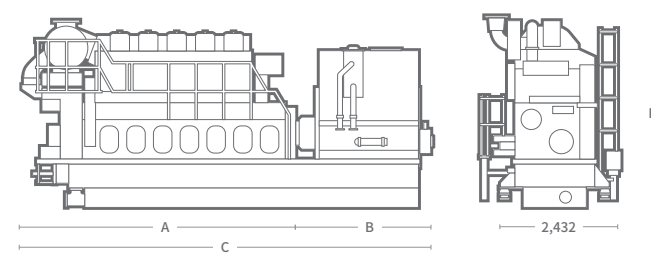
Main Data

Dimensions

Speed	900rpm		1,000rpm		Dimension(mm)				Dry Mass(ton)	
Frequency	60Hz		50Hz							
	Eng.(kw)	Gen.(kw)	Eng.(kw)	Gen.(kw)	A	B	C	H	Engine	GenSet
6H27DF	1,710	1,624	1,860	1,767	4,414	2,262	6,676	2,835	21.2	30.8
7H27DF	1,995	1,905	2,170	2,072	4,794	2,262	7,056	3,241	23.5	34.9
8H27DF	2,280	2,177	2,480	2,368	5,311	2,340	7,651	3,371	25.1	40.5
9H27DF	2,565	2,462	2,790	2,678	5,691	2,490	8,181	3,371	27.2	46.0

Based on alternator efficiency of 95~96%.

H35DF Bore: 350mm Stroke: 400mm



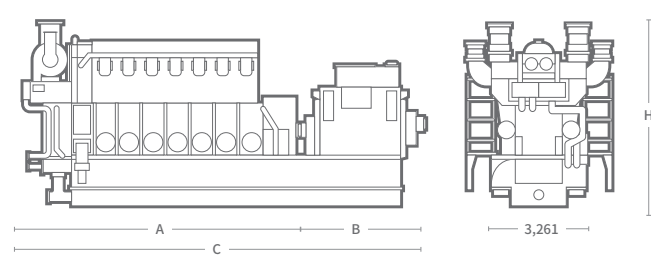
Main Data

Dimensions

Speed	720rpm		750rpm		Dimension(mm)				Dry Mass(ton)	
Frequency	60Hz		50Hz							
	Eng.(kw)	Gen.(kw)	Eng.(kw)	Gen.(kw)	A	B	C	H	Engine	GenSet
6H35/40G	2,880	2,764	2,880	2,764	5,760	3,130	8,890	4,367	34.7	69.6
7H35/40G	3,360	3,225	3,360	3,225	6,112	3,374	9,486	4,583	39.6	78.1
8H35/40G	3,840	3,705	3,840	3,705	6,602	3,594	10,196	4,583	42.5	83.0
9H35/40G	4,320	4,168	4,320	4,168	7,092	4,097	11,189	4,583	45.6	90.1

Based on alternator efficiency of 96~96.5%.

H35DFV Bore: 350mm Stroke: 400mm



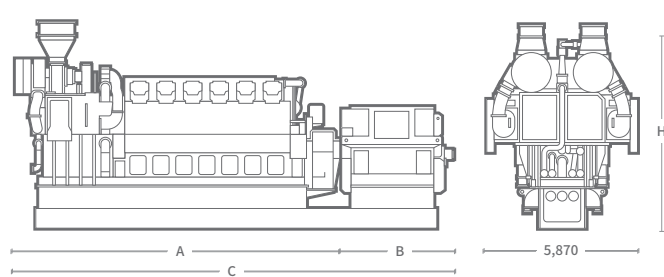
Main Data

Dimensions

Speed	720rpm		750rpm		Dimension(mm)				Dry Mass(ton)	
Frequency	60Hz		50Hz							
	Eng.(kw)	Gen.(kw)	Eng.(kw)	Gen.(kw)	A	B	C	H	Engine	GenSet
12H35DFV	5,760	5,558	5,760	5,558	6,624	3,760	10,384	4,723	58.0	110.8
14H35DFV	6,720	6,518	6,720	6,518	7,295	3,860	11,155	4,723	65.3	123.3
16H35DFV	7,680	7,449	7,680	7,449	7,914	3,479	11,393	4,723	71.1	132.9
18H35DFV	8,640	8,380	8,640	8,380	8,585	3,859	12,444	4,794	78.3	143.2
20H35DFV	9,600	9,312	9,600	9,312	9,344	3,659	13,003	4,794	86.0	155.9

Based on alternator efficiency of 96.5~97%.

H54DFV Bore: 540mm Stroke: 600mm



Main Data

Dimensions

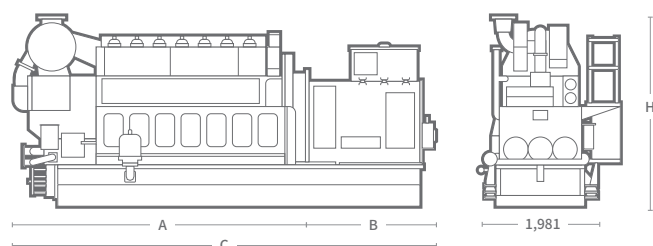
Speed	600rpm		600rpm		Dimension(mm)				Dry Mass(ton)	
Frequency	60Hz		50Hz							
	Eng.(kW)	Gen.(kW)	Eng.(kW)	Gen.(kW)	A	B	C	H	Engine	GenSet
12H54DFV TSTC ¹⁾	16,800	16,380	16,800	16,380	12,511	4,638	17,149	7,994	303.0	391.0
14H54DFV TSTC	19,600	19,110	19,600	19,110	13,661	4,582	18,243	7,994	335.0	431.0
16H54DFV TSTC	22,400	21,840	22,400	21,840	15,086	4,757	19,843	8,383	373.0	480.0

Based on alternator efficiency of 97.5%.

1)TSTC : Two Stage Turbo Charger

Liquid Fuel

H21/32 Bore: 210mm Stroke: 320mm



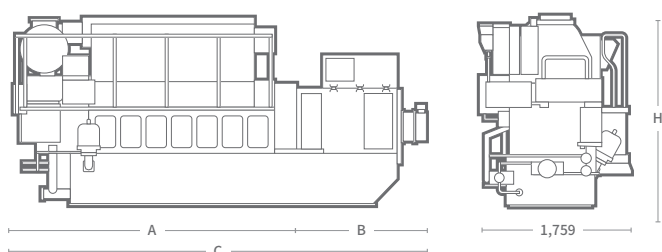
Main Data

Dimensions

Speed	900rpm		1,000rpm		Dimension(mm)				Dry Mass(ton)	
Frequency	60Hz		50Hz							
	Eng.(kW)	Gen.(kW)	Eng.(kW)	Gen.(kW)	A	B	C	H	Engine	GenSet
6H21/32	1,200	1,128	1,200	1,128	3,781	1,896	5,677	2,781	13.4	26.1
7H21/32	1,400	1,323	1,400	1,323	4,235	1,900	6,135	2,781	15.1	28.6
8H21/32	1,600	1,512	1,600	1,512	4,453	2,175	6,628	2,911	16.7	29.1
9H21/32	1,800	1,710	1,800	1,710	4,783	2,265	7,048	2,911	18.4	31.7

Based on alternator efficiency of 94-95%.

H21C Bore: 210mm Stroke: 330mm



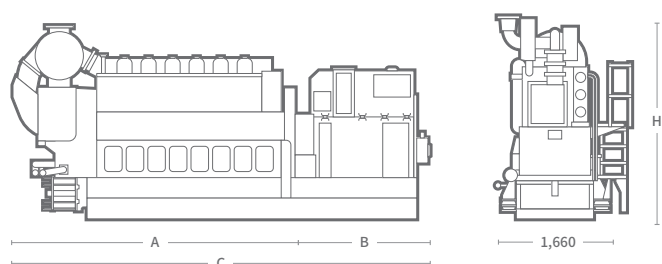
Main Data

Dimensions

Speed	900rpm		1,000rpm		Dimension(mm)				Dry Mass(ton)	
Frequency	60Hz		50Hz							
	Eng.(kW)	Gen.(kW)	Eng.(kW)	Gen.(kW)	A	B	C	H	Engine	GenSet
5H21C	1,200	1,128	1,200	1,128	3,735	2,249	5,984	2,600	14.3	22.1
6H21C	1,440	1,360	1,440	1,360	4,085	2,249	6,334	2,600	16.0	24.9
7H21C	1,680	1,587	1,680	1,587	4,435	2,305	6,740	2,600	17.8	28.3
8H21C	1,920	1,824	1,920	1,824	4,785	2,305	7,090	2,653	19.4	30.2
9H21C	2,160	2,062	2,160	2,062	5,135	2,450	7,585	2,653	21.0	33.6

Based on alternator efficiency of 94-95.5%.

H25/33 Bore: 250mm Stroke: 330mm



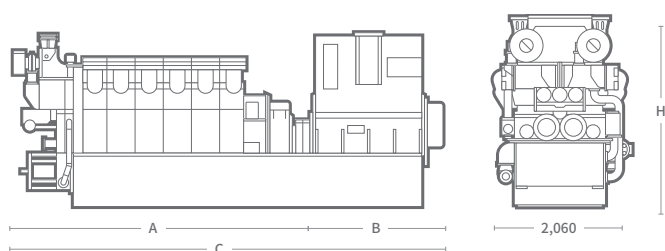
Main Data

Dimensions

Speed	900 rpm		1,000rpm		Dimension(mm)				Dry Mass(ton)	
Frequency	60 Hz		50Hz							
	Eng.(kW)	Gen.(kW)	Eng.(kW)	Gen.(kW)	A	B	C	H	Engine	GenSet
6H25/33	1,740	1,661	1,800	1,719	4,414	2,262	6,676	2,961	20.2	29.8
7H25/33	2,030	1,938	2,100	2,005	4,794	2,262	7,056	3,241	22.5	33.9
8H25/33	2,320	2,215	2,400	2,292	5,311	2,340	7,651	3,371	24.1	39.5
9H25/33	2,610	2,505	2,700	2,592	5,691	2,490	8,181	3,371	26.2	45.0

Based on alternator efficiency of 95.5-96%.

H25/33V Bore: 250mm Stroke: 330mm



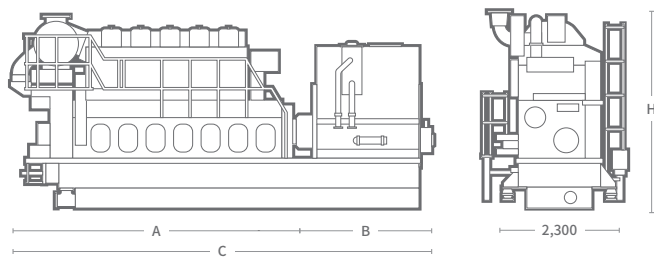
Main Data

Dimensions

Speed	900rpm		1,000rpm		Dimension(mm)				Dry Mass(ton)	
Frequency	60Hz		50Hz							
	Eng.(kW)	Gen.(kW)	Eng.(kW)	Gen.(kW)	A	B	C	H	Engine	GenSet
12H25/33V	3,840	3,705	3,840	3,705	5,524	3,334	8,858	3,750	33.5	58.2
14H25/33V	4,480	4,323	4,480	4,323	5,944	3,504	9,448	3,750	36.5	63.4
16H25/33V	5,120	4,940	5,120	4,940	6,364	3,682	10,046	3,750	39.5	69.6
18H25/33V	5,760	5,558	5,760	5,558	6,784	3,772	10,556	3,750	42.5	77.5
20H25/33V	6,400	6,208	6,400	6,208	7,204	3,727	10,931	3,750	45.5	79.5

Based on alternator efficiency of 96.5-97%.

H32/40 Bore: 320mm Stroke: 400mm



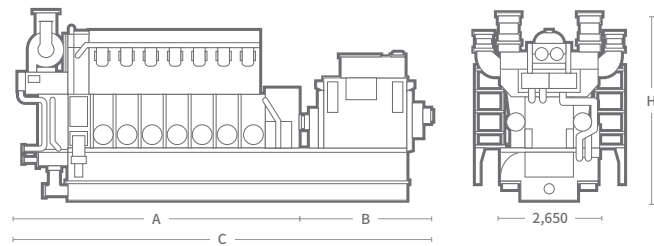
Main Data

Dimensions

Speed	720rpm		750rpm		Dimension(mm)				Dry Mass(ton)	
Frequency	60Hz		50Hz							
	Eng.(kw)	Gen.(kw)	Eng.(kw)	Gen.(kw)	A	B	C	H	Engine	GenSet
6H32/40	3,000	2,880	3,000	2,880	5,055	3,490	8,545	3,759	33.7	65.2
7H32/40	3,500	3,360	3,500	3,360	5,545	3,490	9,035	3,882	38.6	72.6
8H32/40	4,000	3,860	4,000	3,860	6,035	3,785	9,820	4,132	41.5	78.6
9H32/40	4,500	4,342	4,500	4,342	6,525	3,685	10,210	4,132	44.6	82.7

Based on alternator efficiency of 96~96.5%.

H32/40V Bore: 320mm Stroke: 400mm



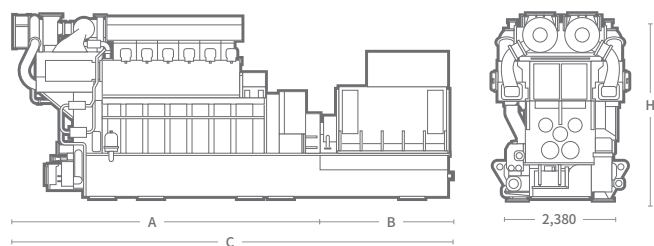
Main Data

Dimensions

Speed	720rpm		750rpm		Dimension(mm)				Dry Mass(ton)	
Frequency	60Hz		50Hz							
	Eng.(kW)	Gen.(kW)	Eng.(kW)	Gen.(kW)	A	B	C	H	Engine	GenSet
12H32/40V	6,000	5,790	6,000	5,790	6,624	3,760	10,384	4,723	56.0	108.8
14H32/40V	7,000	6,790	7,000	6,790	7,295	3,860	11,155	4,723	63.3	121.3
16H32/40V	8,000	7,760	8,000	7,760	7,914	3,479	11,393	4,723	69.1	130.9
18H32/40V	9,000	8,730	9,000	8,730	8,585	3,859	12,444	4,794	76.3	141.2
20H32/40V	10,000	9,700	10,000	9,700	9,344	3,659	13,003	4,794	84.0	153.9

Based on alternator efficiency of 96.5~97%.

H32CV Bore: 320mm Stroke: 450mm



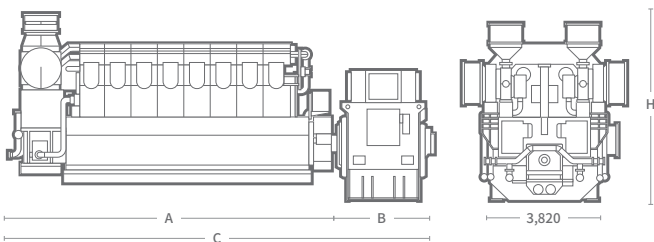
Main Data

Dimensions

Speed	720rpm		750rpm		Dimension(mm)				Dry Mass(ton)	
Frequency	60Hz		50Hz							
	Eng.(kW)	Gen.(kW)	Eng.(kW)	Gen.(kW)	A	B	C	H	Engine	GenSet
12H32CV	7,200	6,984	7,200	6,984	7,526	3,900	11,426	4,362	78.0	121.2
14H32CV	8,400	8,148	8,400	8,148	8,126	4,100	12,226	4,362	88.0	137.9
16H32CV	9,600	9,312	9,600	9,312	8,726	4,300	13,026	4,448	96.0	152.6
18H32CV	10,800	10,476	10,800	10,476	9,326	4,500	13,826	4,448	106.0	169.3

Based on alternator efficiency of 97%.

H46/60V Bore: 460mm Stroke: 600mm



Main Data

Dimensions

Speed	600rpm		600rpm		Dimension(mm)				Dry Mass(ton)	
Frequency	60Hz		50Hz							
	Eng.(kW)	Gen.(kW)	Eng.(kW)	Gen.(kW)	A	B	C	H	Engine	GenSet
12H46/60V	13,800	13,455	13,800	13,455	10,610	3,474	14,084	5,611	193.0	243.9
16H46/60V	18,400	17,940	18,400	17,940	12,610	3,724	16,334	5,611	235.2	296.7
18H46/60V	20,700	20,182	20,700	20,182	13,610	3,767	17,377	5,895	260.3	334.3

Based on alternator efficiency of 97.5%.

- 1) Depending on alternator.
 - 2) Without common base frame.
 - 3) With common base frame & alternator (Maker: HHI-EES).
- Note) All dimensions and weight are approximate value and subject to change without prior notice.

RELIABLE & POWERFUL SUPPORT AROUND THE WORLD

- Optimized Solutions For Each Customer's Needs
- Genuine Spare Parts From The Original Equipment Manufacturer
- Fast and Reliable Response Through Our Global Service Network
- 24/7, Immediate Support



Contact Us

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