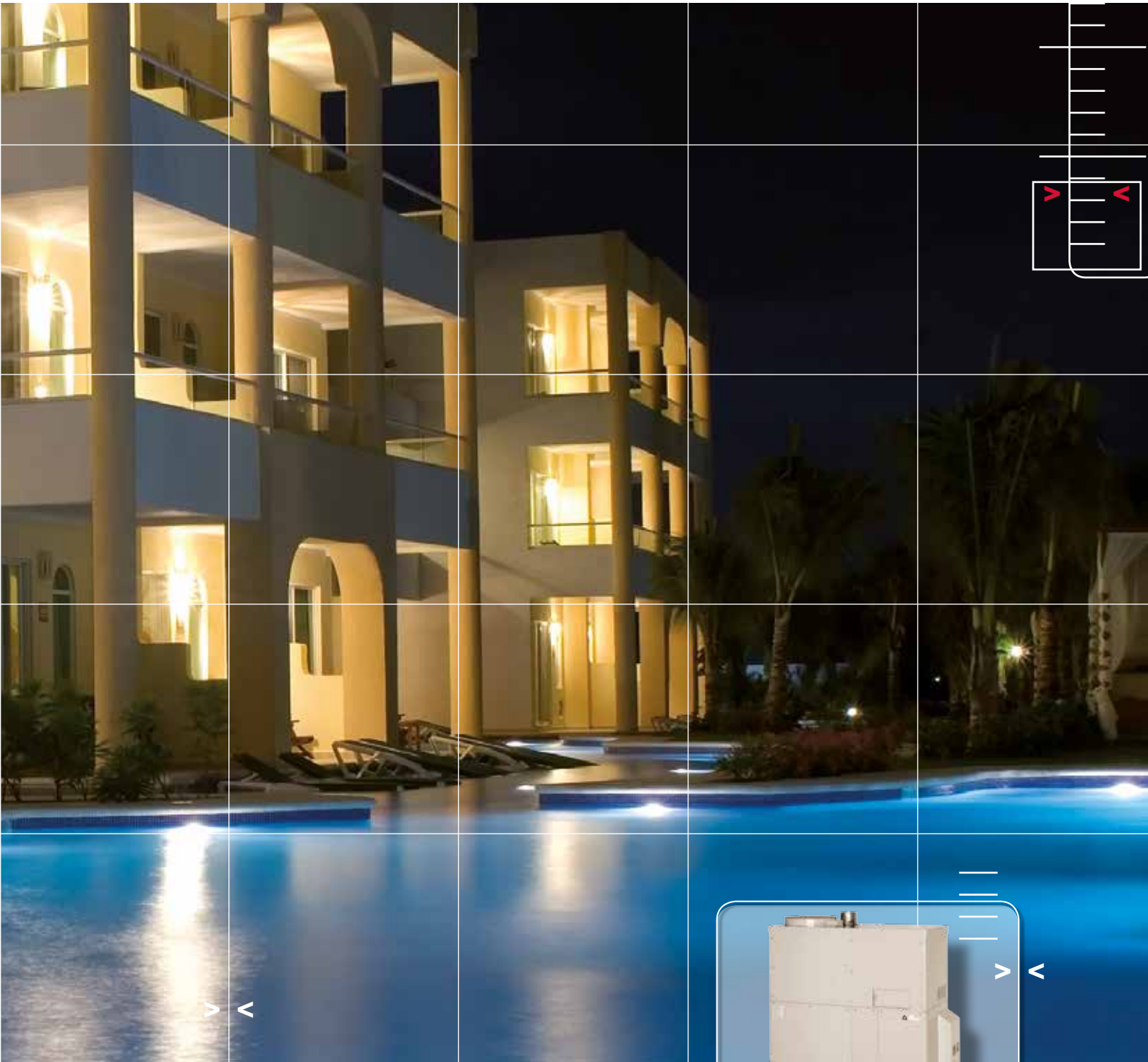




YANMAR

MICRO COGENERATION

CP Series



Call for Yanmar solutions



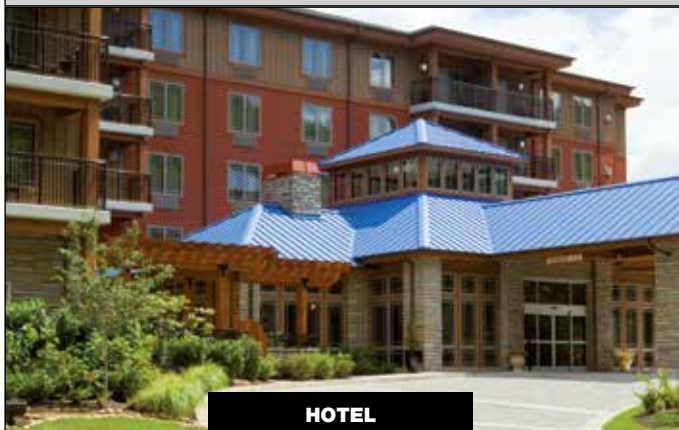
MICRO COGENERATION



To help overcome worldwide environmental and energy issues such as global warming and rapidly-growing energy consumption, Yanmar has developed a range of highly efficient, gas driven micro cogeneration systems mainly fuelled by natural gas, however also biogas and propane are part of the line-up. Cogeneration systems offer a much higher overall efficiency compared to the efficiency by typical conventional electrical power generation. In particular decentralized power generation in combination with utilizing the produced heat energy provide a great contribution to saving energy, cost reduction and reduced environmental impact through lower CO₂ emissions. For electrical power below 50 kW this is called micro cogeneration.

APPLICATIONS

The combination of electrical power output along with the utilization of the recovered heat from the engine makes these micro cogeneration systems suitable for a wide range of small scale applications where electrical power and heating or cooling is required. Typical examples are hotels, nursing homes, restaurants, swimming pools, health spa's, apartment buildings, farms and greenhouses.



UNIQUE FEATURES

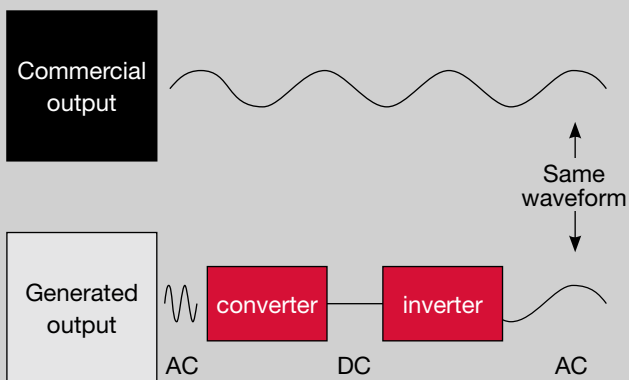
The CP Series is a further result of YANMAR's long experience and technical mastery of engine developing and manufacturing which provided the base for the unique features of this high quality, reliable and durable micro cogeneration system.



LONG MAINTENANCE INTERVAL

10,000 hours [natural gas] 6,000 hours [biogas]

The gas engine provides one of the industry's longest maintenance intervals through YANMAR's unrivalled engine technology in combination with the lean-burn Miller cycle.



EASY GRID CONNECTION

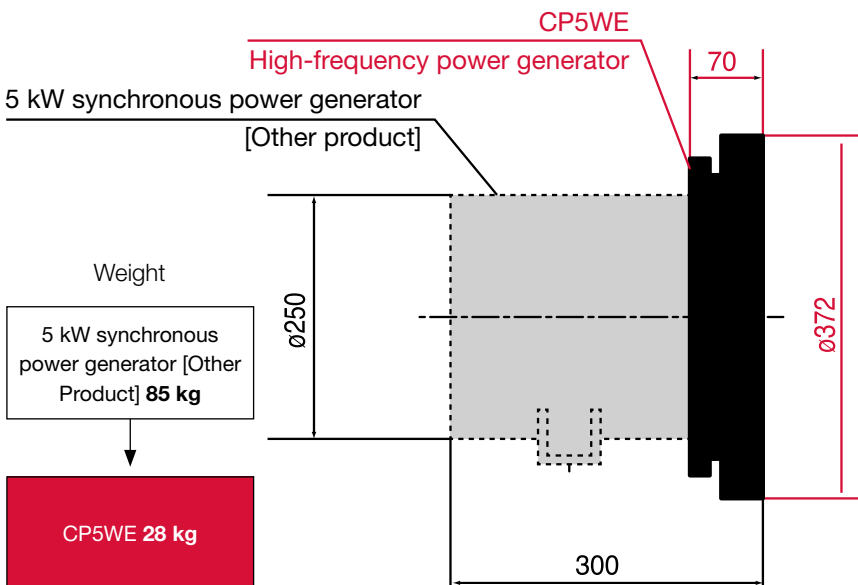
High efficiency inverter with built in protection- and synchronisation device required for grid connection. The generator output is converted to DC by the converter; the inverter converts the voltage and frequency into the same as that of commercial power. This allows ease of systems interconnectivity.



COMPACT AND HIGH EFFICIENCY GENERATOR

A light and compact generator with over 90% efficiency

Comparison with conventional Power Generator



LOW OPERATION NOISE

- CP5WG1 : 50 dB [A]
 - CP10WG : 53 dB [A]
 - CP10WE : 54 dB [A]
 - CP25WE : 62 dB [A]
- [at 1 m distance]

PARTIAL LOAD OPERATION

When grid feed is prohibited or FiT does not apply the output can be controlled by an external signal.

REMOTE MONITORING SYSTEM

Online information sharing like operational data, operating condition and warnings.



ADVANCED SYSTEM CONTROLLER

Providing the optimum energy balance between demand and output as well as for easy functional-, monitoring-, alarm-, and emergency stop functions input.



ALL WEATHER CANOPY

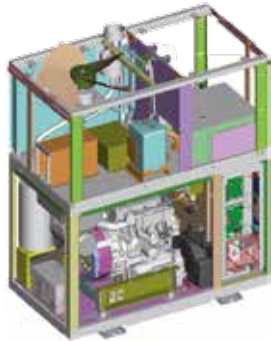
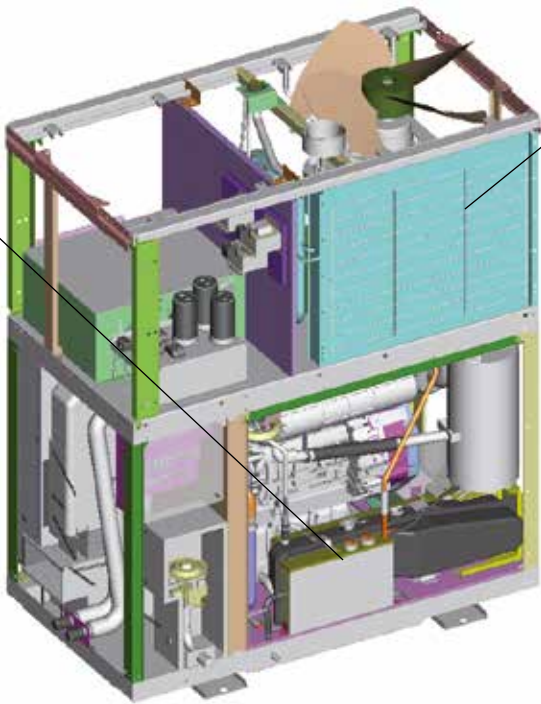
Indoor as well as outdoor installation with the IP44 standard and protective powder coating.

INTEGRATED NEUTRALIZER

Exhaust drainage with build-in neutralizer and syphon.

INTEGRATED RADIATOR PACKAGE

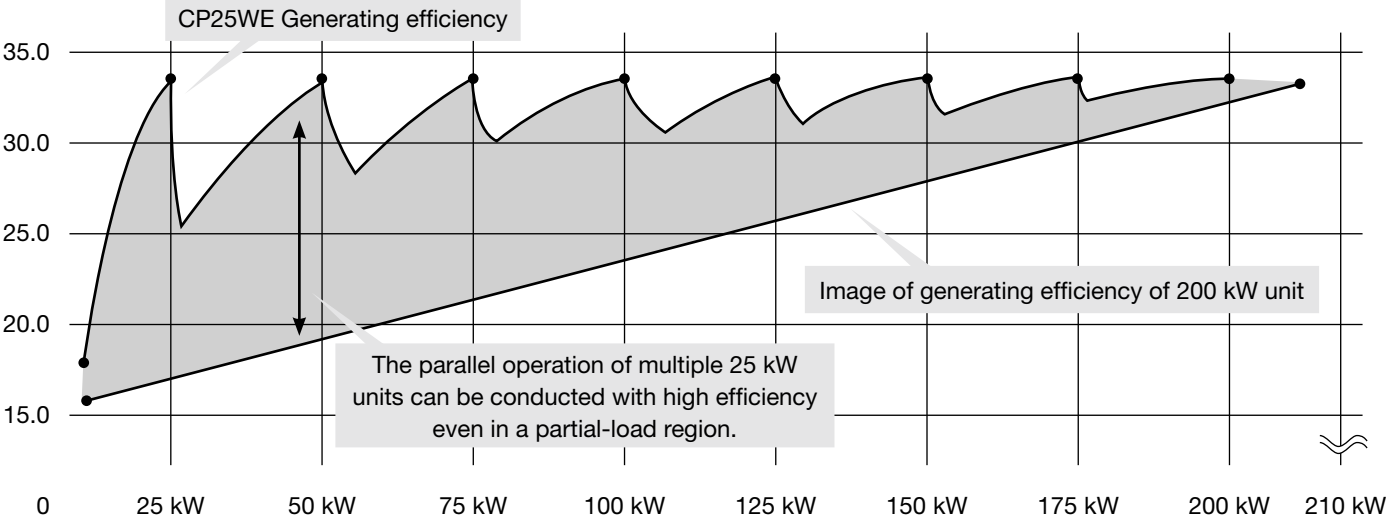
Electrical power oriented operation possible by dumping the generated heat through build-in fan and radiator.



MULTIPLE-UNIT OPERATION

- Up to 8 units parallel running
- High efficiency operation at partial load
- Continue running during maintenance
- Rotating operation for same time maintenance

GENERATING EFFICIENCY [%] FOR CP25WE [8 UNITS]



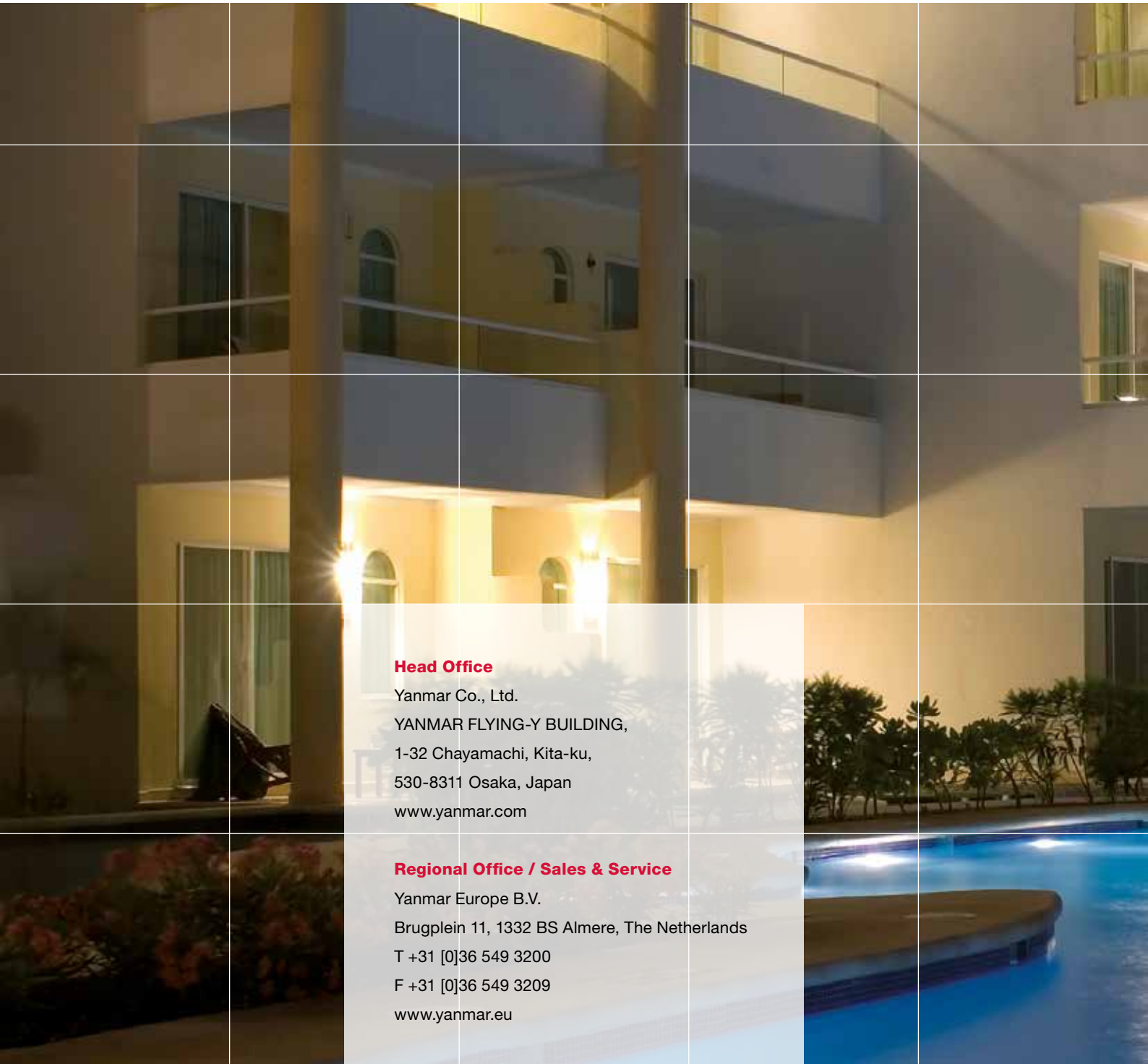
TECHNICAL SPECIFICATION

CP Series - Technical specification		Unit	CP5WG1	CP10WE1	CP10WG		CP25WE		CP25WE [biogas]	
Output	Rated output*1	kW	5.0	10.0	10.0		25.0			
	Frequency	Hz	50	50	50		50			
	Voltage	V	400	400	400		400			
	Current	A	7.2	14	14.0		35.4			
	Phase / Wires	-	Three phase / four wires	Three phase / four wires	Three phase / four wires		Three phase / four wires			
	Transmission method	-	Inverter	Inverter	Inverter		Inverter			
Power control	Reverse power flow	-	Standard	Standard	Standard		Standard			
	Reverse power prevention	-	Option	Option	Option		By external signal			
Heat recovery	Recovered heat	kW	9.9	16.2	17.6	17.5	38.4	38.7	38.7	40.6
	Water temperature inlet	°C	60	65	60		70			
	Water temperature outlet	°C	80	70 ~ 78	80		75 ~ 85			
	Water flow rate	l/min	6.6	48.2	12.6	110		110	116	
Efficiency	Overall efficiency	%	85.0	84.0	87.0	86.5	85.0	84.0	84.0	84.0
	Electrical generation efficiency	%	28.5	32.0	31.5	31.5	33.5	33.0	33.0	32.0
	Heat recovery ratio	%	56.5	52.0	55.5	55.0	51.5	51.0	51.0	52.0
Operating sound levels *2		dB[A]	50	54	53		62			
Multiple unit operation		-	8 units by group / by unit rotation	8 units by group / by unit rotation	8 units by group / by unit rotation		8 units by group / by unit rotation			
Fuel	Gas type	-	Natural gas group E,H,L,LL LPG [propane]	Natural gas group E,H,L,LL	Natural gas group E,H,L,LL	LPG [propane]	Natural gas group E,H,L,LL LPG [propane]	Natural gas group L,LL LPG [propane]	Biogas CH4 80-90%	Biogas CH4 60-70%
	Gas consumption [LHV basis]	kW	17.5	31.2	31.7		74.6	75.8	75.8	78.1
	Gas supply pressure	mbar	10 ~ 30 [LPG : 50]	15 ~ 30	10 ~ 30	50	15 ~ 30		15 ~ 25	
Maintenance interval		h	10 000	10 000	10 000		10 000		6 000	
Installation location		-	Outside / Inside	Outside / Inside	Outside / Inside		Outside / Inside			
Remote monitoring system		-	Option	Option	Option		Option			
Ambient temperature	-5 to +40 °C	-	Standard	Standard	Standard		Standard			
	-15 to +40 °C	-	Option	Option	Option		Option			
Dimensions	Width	mm	1 000	1 470	1 470		2 150			
	Depth	mm	500 (570 including protrusions)	800 [900 including protrusions]	800 [900 including protrusions]		800 [900 including protrusions]			
	Height	mm	1 200	1 790	1 450		2 010			
	Weight	kg	365	790	710		1 320			

*1 Power consumption by CP is included.

*2 Values are the maximum of anechoic readings measured in 4 directions at a point 1m from the unit, 1.2m above the ground with the radiator fan off.

Note: all data subject to alteration without notice.



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