

NATURAL GAS FIRED EM 22NG

SPECIFICATION DATASHEET

Energy efficiency:	A++
Operational mode:	Mains parallel operation
Fuel:	Natural gas, LPG & H2*
Electrical output (P _{el}):	22kW(e) ²⁾ min 11 kW
Thermal output (P _{th}):	47 kW ²⁾ min 31.3 kW
Fuel consumption:	68.1 kW ¹⁾ (nett) 75.6%
CHP coefficient:	(gross) 0.44
Efficiency:	EN 50465
Total efficiency:	107% (nett) 97.2% (gross)
Electric efficiency:	32.3% (nett) 29.1% (gross)
Thermal efficiency:	74.7% (nett) 68.1% (gross)
Gas-connection pressure:	20-50 mbar
Gas-flow pressure:	≤16 mbar
Flow rate with natural gas:	6.8 Nm ³ /h
Flow temperature:	max. 90 °C
Return temperature:	max. 70 °C
Max. system pressure:	6 bar (heating side)
Combustion & cooling air requirement:	min. 75 m ³ /h (85 kg/h)
Ambient temperature:	5°C to max. 35°C
Exhaust gas emissions:	at 5 Vol% remaining oxygen
CO (carbon monoxide):	< 22.5 mg/m ³ (50% TA-air)
NOx (nitrogen oxide):	< 12.3 mg/m ³ (50% TA-air)
Exhaust gas temperature:	~ 50 °C ²⁾
Exhaust gas volume flow:	~ 83 m ³ /h
Exhaust gas mass flow dry:	~ 91 kg/h
Exhaust gas back pressure after CS ⁴⁾ :	max. 5 mbar
Sound pressure level CHP:	~ 47.1 dB(A) (1 m distance)

CHP: Dimensions, weights and connections

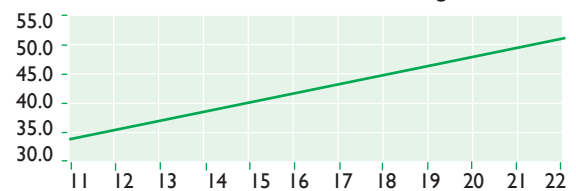
L x W x H CHP:	1.41 x 0.82 x 0.98 m
Weight CHP: incl. oil and water	895 kg
φ x H CS ⁴⁾ :	0.30 x 1.52 m (w/o flanges)
Weight CS ⁴⁾ :	30 kg
Colour CHP:	Pantone 5517C
Heating connections (VL):	R 1" Flow (warm) R 1" Return (cold)
Exhaust gas connection CS ⁴⁾ :	DN100
Gas connection:	R 3/4" NG R 1/2" LPG

Motor

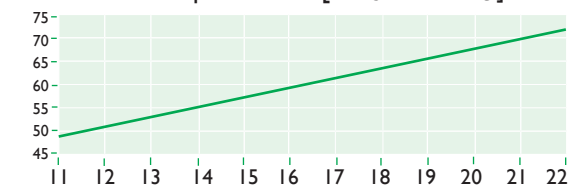
Motor	K24
Type:	Straight line
Operation:	4-stroke
Cylinder:	4
Displacement:	2.4 litres
Nominal engine speed:	1500 l/min



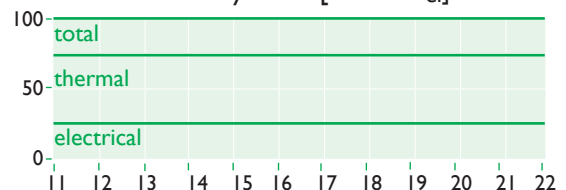
Output curve [kW_{th} to kW_{el}]
Continuous modulation range



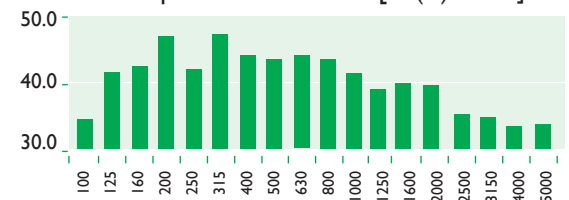
Consumption curve [NM³/h to kW_{el}]



Efficiency curve [% to kW_{el}]



Sound pressure level curve [dB(A) to Hz]⁵⁾



¹⁾ According to DIN ISO 3046-1, tolerance 5%

²⁾ Return temperature 60°C

³⁾ According to EU RL 2004/8/EG with 100% internal use

⁴⁾ Combination silencer

⁵⁾ Test stand measuring without liability

⁶⁾ According to EnEV and V 2009



PRIME MOVER UNIT

ASYNCHRONOUS GENERATOR EMOD WKASYG

Cooling:	water cooled
Power:	22 kW
Voltage:	400 V
Nominal current:	33 A
Frequency:	50 Hz
Operating mode:	S1

ELECTRICAL DATA ENERGIMIZER EM22NG

Max. effective power PA_{max} :	22 kW
Max apparent power SA_{max} :	23 kVA
$\cos \varphi$:	0.97
Nominal voltage U_N :	400 V
Rated current I_r :	33 A
Grid input:	three phase current
Isolated operation intended?:	No
Motor-driven start intended:	No
Starting current I_A :	-
Short circuit current I''_K :	0.21 kA
Short circuit stability of the complete system I_K :	10 kA
Reactive power compensation:	Existing
Number of compensation steps:	1
Reactive power per step:	9 kVAr _w
Detuning factor respectively resonance frequency:	0
Own requirement:	0.045 kVA

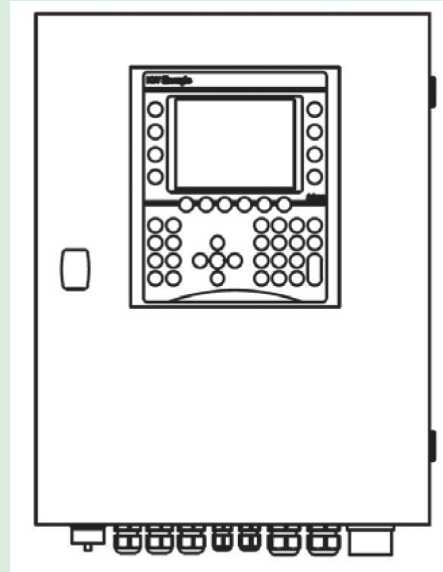
SETTING GRID PROTECTION (VDE-AR-N 41050)

Voltage drop protection $U <$	$0.8 U_n$ (100 ms)
Voltage increase protection $U >$	$1.1 U_n$ (100 ms)
Voltage increase protection $U >>$	$1.15 U_n$ (100 ms)
Frequency drop protection $f <$	47.5 Hz (100 ms)
Frequency increase protection $f >$	51.5 Hz (100 ms)

CABINET: DIMENSIONS AND WEIGHT

(Wall mounting, connections at the bottom, standard cable set 6 m)	
W x D x H:	0.04 x 0.19 x 0.52 m
Weight:	21 kg
Colour:	Pantone 5517C

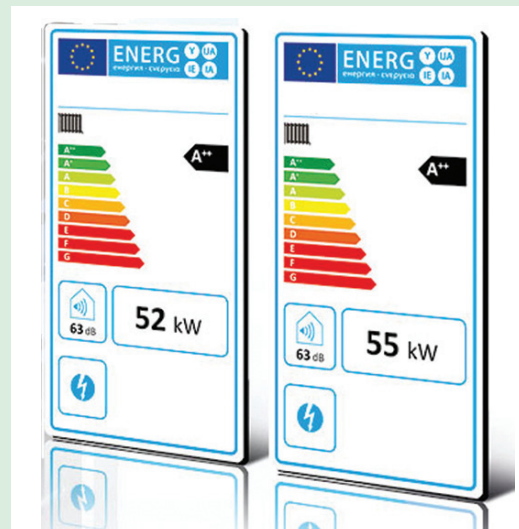
Standard reference conditions according to DIN ISO 3046-1: The technical data are based on natural gas H with a heating value of 10.0 kWh/Nm³ (total air pressure 100 kPa, air temperature 25°C, relative humidity 30%, 100m above sea level). Power adjustment at ambient conditions according to DIN ISO 3046-1 respectively DIN 6271-3. The tolerance of the specific fuel consumption is +5% at nominal power and the tolerance of the usable thermal output is 7% at nominal power. We reserve the right to change data and characteristics without prior notice in accordance with our business policy and the ongoing development process.

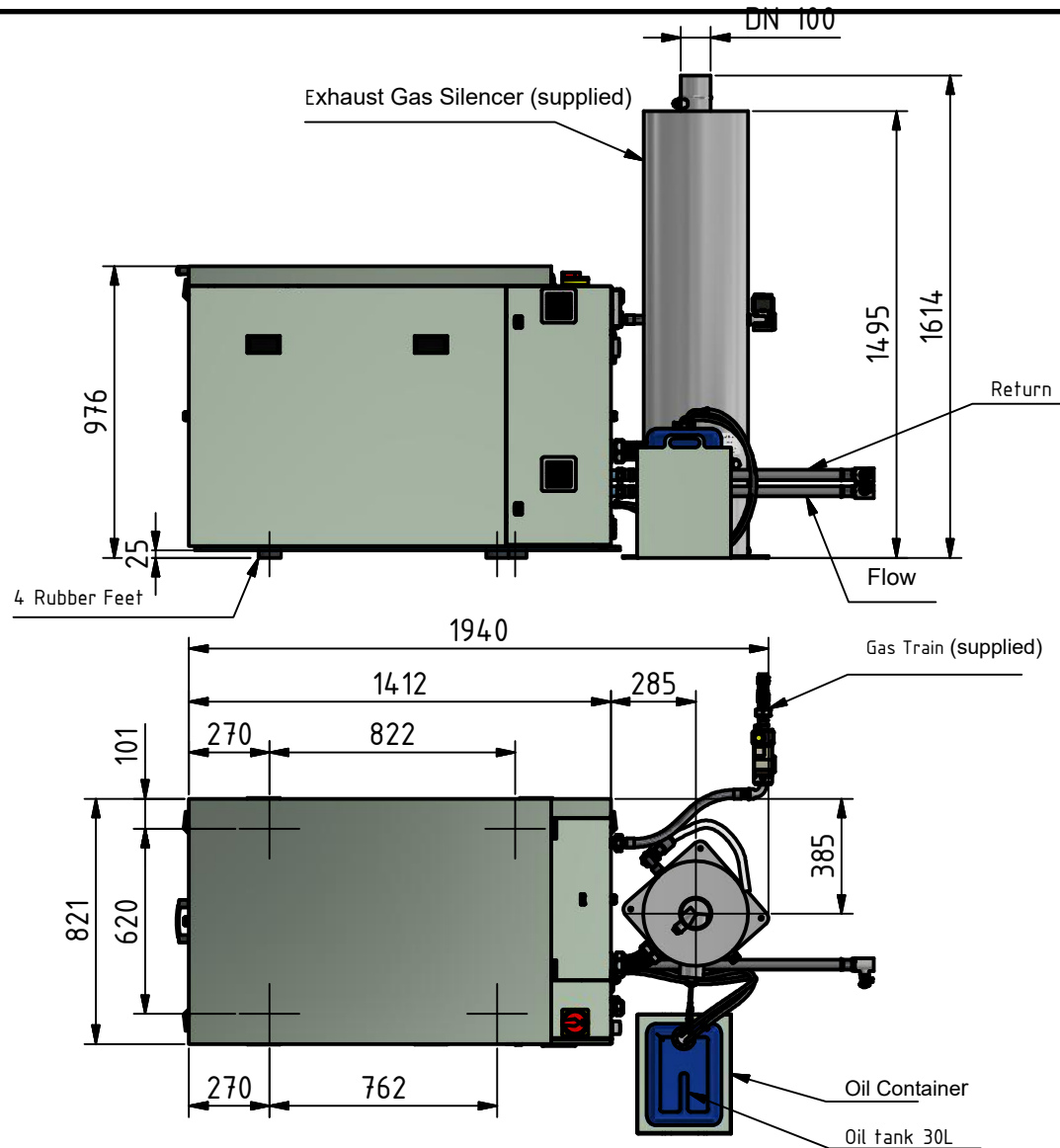


ENERGIMIZER EM22 BR18 CONTROL PANEL

Programmable BR18 control system to control, adjust, calculate, measure and display outputs. The control system is equipped with a full graphics touch screen display and all function buttons, required to operate the combined heat and power unit. The 5.7" LCD display shows information about the system and its current status.

The BR18 can optionally be expanded by a heating control system, requirement peak load boiler (up to 2 boilers), data transfer via LAN and Internet with an error notification via email (only with DSL) and an interface connection to external systems (Ethernet UDP, Mod-Bus RTU, RK 512, 3964R).







Notes for Installation:

A maintenance & service area of at least **600mm** is required for access around both sides and the front section of the CHP canopy with at least 2000mm above the unit.

With non compliance this may negate the warranty and any repair works will be prohibited

 KW ENERGIE	 CHP Dimensions		Product Number. EM22NG CHP		Allgemeintoleranz DIN ISO 2768-mK DIN ISO 1302 DIN ISO 13715	
			Datum	Freigabe / Name	Maßstab	Revision
			14.03.2018	A. Dünhuber	1 : 25	
				Blattgröße	Blatt	von
CAD-Zeichung, alle Rechte vorbehalten, Schutzvermerk nach DIN ISO 16016				A4	1	1

Exhaust Flue
 Medium back pressure 5mbar
 Sealed to withstand positive pressure
 Designed for acidic condensate
 Maximum Temperature 120C

Extra Condensate Drain
 on each vertical riser

Gas connection
 20mbar at full load

Fusible
 Link
 GasMultiBlock

Condensate Drain

Hot Flow from CHP

4 Bar
 Safety Valve
 14
 One-Way
 Valve
 0-10V speed
 controlled pump
 Maximum 3 steps
 4
 3

Cool return to CHP
 Minimum

Return Header
 Maximum Temp 60C

Bi directional flow

Bi directional Flow

2
 Thermal
 Store
 AAV
 Boiler
 Common Flow
 Sensor
 CHP
 Top Tank
 Sensor
 Drain
 Valve

14
 15

9

8
 5
 6
 7
 8c

VT circuit
 Ideally weather compensated
 Ideal flow temp 70C with 60C return
 If return comes back too hot, some level
 of return temp control should be implemented

VT Circuit

6
 7
 Demand controlled valve

CT Circuit

CT circuit
 If there is no demand the pump should turn off
 Ideally the return temp should be 60C
 The pump could be speed controlled to maintain return temp set point

Ensure One Way
 Valve is fitted
 & Modulating Shunt Pump

Ensure One Way
 Valve is fitted
 & Modulating Shunt Pump

Boiler Pumps should
 stop when boilers are not firing
 be speed controlled to maintain 20C delta T across boiler during boiler operation
 Boilers should start at minimum load and gradually ramp up (e.g. 10 mins minimum from minimum to maximum)

New Installation CHP Typical Connection Diagram

Revision		Project	
A First Issue		New Installation Connection	
Helec Ltd		NC-GA	
New Installation Connection		A3	