

## TECHNICAL DETAILS – INDOP 9TO

TECHNICAL DATA FOR UNIT	EM	9 kW
		100%
Energy input	kW	30,8
Gas consumption	Nm <sup>3</sup> /h	3,08
Electric power	kW <sub>el.</sub>	9
Power factor	$\lambda$	0,96-0,98
Thermal power	kW	19,7
Electric efficiency	%	29,2
Thermal efficiency	%	64
Total efficiency	%	93,2
Seasonal space heating energy efficiency	%	166
Sound power	dB	64
Sound pressure	dB(A)	48
<b>Thermal circuit</b>		
Flow temperature	°C	80–90
Return temperature	°C	35–70
Minimum flow rate of medium	l/min	14,5
Minimum flow rate of medium	m <sup>3</sup> /h	0,87
<b>Basic dimensions and mass of INDOP CHP unit (no handles, compensation or attachments)</b>		
Length	mm	1202
Width	mm	800
Height	mm	1170
Weight	kg	600
<b>Technical data - engine</b>		
Manufacturer		TOYOTA 1KS
Engine type		L
Operating mode		4-Takt Otto
Configuration		R
Number of cylinders		3
Cylinder diameter	mm	72
Engine stroke	mm	78
Volume	cm <sup>3</sup>	953
Nominal speed	RPM	1500
Length	mm	489
Width	mm	399
Height	mm	651
Net weight	kg	73,5
Lubricating oil consumption	kg/h	0,003
Compression ratio	$\epsilon$	12
Oil volume in the engine max/min	l	15/1,8
Oil tank volume	l	10
Engine fuel pressure	mbar	20–50

Technical data - alternator		
Frequency	Hz	50
Voltage	V	400
Power	kVA	11,5
Power factor	$\lambda$	0,76
Revolutions per minute	RPM	1500
Thermal energy balance		
Energy input	kW	30,8
Cooling water	kW	14,2
Flue gases	kW	5,5
Heat to power ratio		2,19
Flue gas		
Flue gases temperature with full load	°C	100+/-5
Flue gases mass flow rate - wet	kg/h	38,8
Flue gases mass flow rate - dry	Nm3/h	32,3
Maximum pressure drop of flue gases	mbar	20
Air combustion data		
Combustion air mass flow	kg/h	37,6
Ventilation air flow	m3/h	18
Emissions		
CO @ 5% O2	mg/Nm3	75
NOx @ 5% O2	mg/Nm3	95
CO (total energy produced)	mg/kWh	85
NOx (total energy produced)	mg/kWh	107
CO (electricity produced)	mg/kWh	270
NOx (electricity produced)	mg/kWh	341
CO (heat produced)	mg/kWh	123
NOx (heat produced)	mg/kWh	156



Symbolic photo (INDOP micro units)