

Technical data sheet Gen70L Generator module

Version 8/23

Description:

The generator module Gen70L is a ready-to-use Stirling aggregate for operation with liquid fuels. A prototype is optimized for diesel fuel or extra light heating oil and consists of the following components:

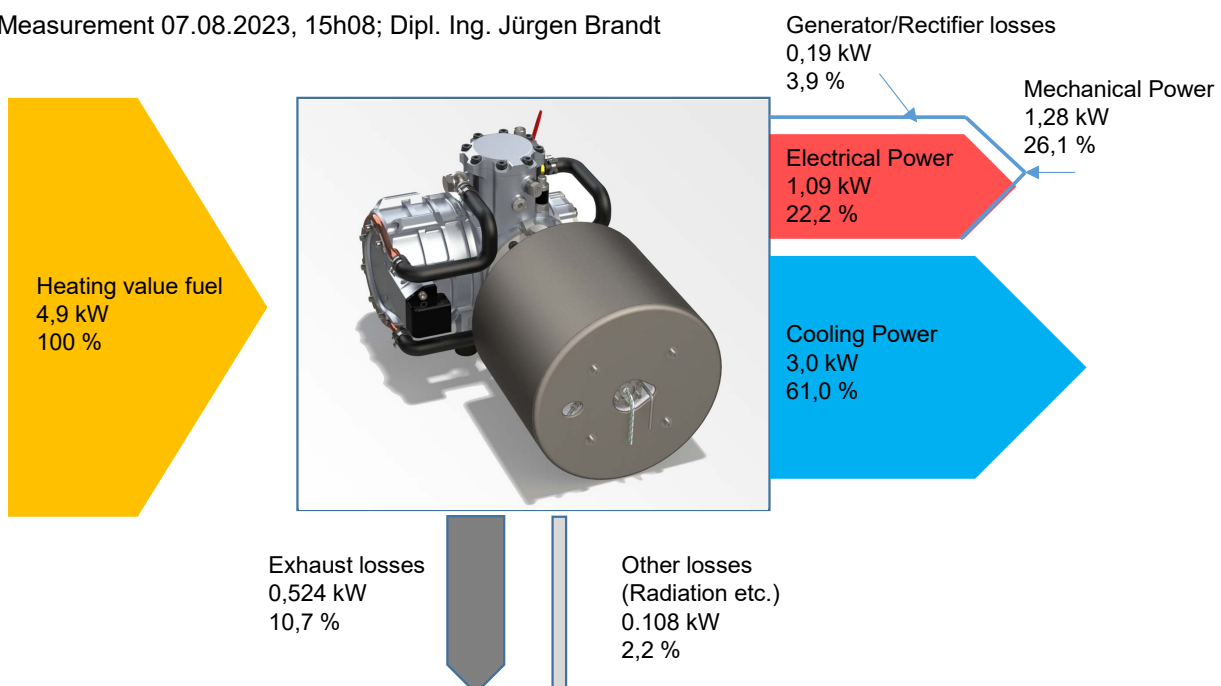
- > Stirling engine based on the alphagamma@ process with a displacement of 70 ccm
- > Liquid fuel burners, nozzle-mixing evaporator burner
- > Heat exchanger for air preheating from the exhaust gas energy
- > 3-Phase generator for connection to a three-phase bridge rectifier
- > Connection of 24 volt batteries for charging up to 43 ampere charging power
- > Optional design for 48 volt batteries
- > Connections for cooling water circuit, process gas filling and exhaust duct

The module is suitable for companies or institutions that want to apply an electrical control system tailored to their specific application. A control module for the following functions is under development:

- > Burner – firing module
- > Monitoring of cooling water circuit (flow rate, temperature)
- > Engine - starting device
- > Temperature control of the heater heat exchanger
- > Burner capacity control
- > Rectifier module for battery charging
- > Battery charge control
- > Switching output for two-point charging control

Energy balance when operated with extra light heating oil:

Measurement 07.08.2023, 15h08; Dipl. Ing. Jürgen Brandt



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Performance data in tabular form:

Description	Value	Unit	Comment
Aggregate			
Type destination/serial number			MobilGen Gen70 Nr. #100
Electrical efficiency	22,2	%	DC Power to LHV fuel
Sound pressure level according		dB(A)	In closed battery box
Mass Stirling engine	34	kg	Without external components
Engine			
Configuration			Stirling alphagamma®
Process gas			Helium
Hot end temperature	682	°C	
Mean process pressure	53	bar	
Stroke volume	70	cm ³	Expansion volume
Cylinder phase angle	90	degrees	
Rated mechanical power	1,28	kW	At the crankshaft
Rotational speed		1/min	
Cooling power	3,0	kW	
Coolant temperature	30	°C	Range up to 50 °C
Coolant flow rate		m ³ /h	0,3 – 0,5 m ³ /h
Maintenance interval	>5000	h	Target, under test
Generator			
System	3-phase		BL multipole generator
Elektrical power	1,087	kW	At 25,85 Volt after rectifier
Burner			
System			Evaporative burner
Thermal Power	4,9	kW	LHV
Fuel			Extra light heating oil
Fuel pressure	1,0	bar	
Air mass		kg/h	
Air flow pressure	24,2	mbar	
Exhaust gas temperature	163	°C	At 22 °C ambient temperature
Emission value O ₂	8-12%	%	Oil heating operation
Emission value CO		g/kWh	
Emission value NO _x		g/kWh	

Table 1: technical data and preliminary measurements,
Measurement from 07.08.2023 15:08, Examiner: Dipl. Ing. Jürgen Brandt