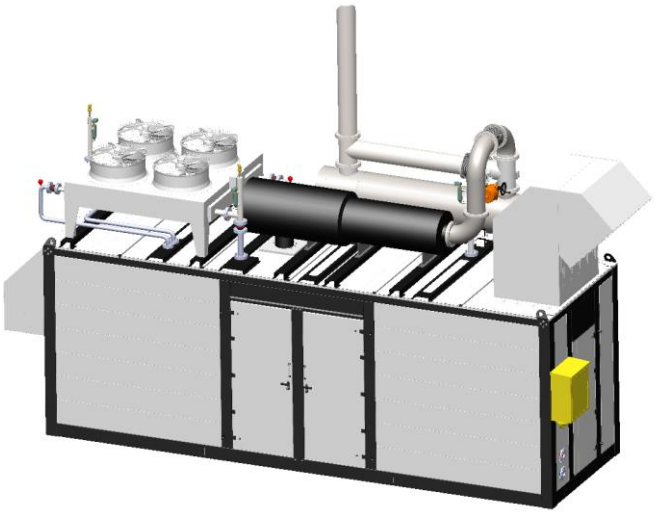
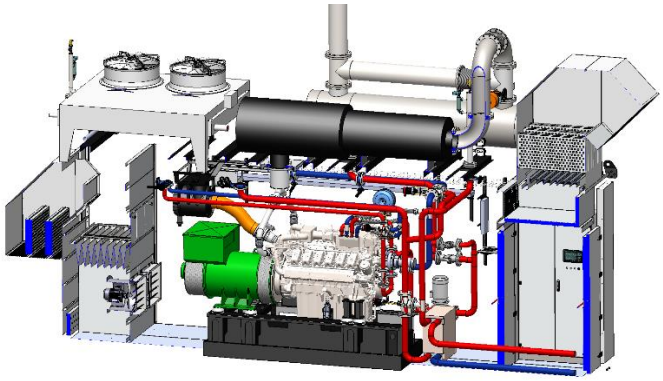
FOCUSED ON GENERATORS ONLY

CHP UNIT FGI 525 NLSNK

NATURAL GAS CHP UNIT

Great availability and performance guaranteed by careful engineering and components selection	Innovative modular, customised shelter ensures compactness, small footprint and ease of transport and deployment.
Enlarged engine oil tank extends operation time between required maintenance intervals	Improved accessibility reduces maintenance effort
Quality soundproof batting	Top grade control system of the entire CHP unit with its exceptional monitoring capabilities ensures efficient and reliable operation.





SPECIFICATION

Type	FGI 525 NLSNK
Electrical power (COP) [kWe]	525
Nominal output voltage [V]	3x400V 50Hz
Frequency [Hz]	50
Heat output HT [kW]	648,0
Electrical efficiency (cos φ = 0.95) [%]	40,0
Electrical efficiency (cos φ = 1.00) [%]	40,2%
Total efficiency (cos φ = 0.95) [%]	88,5%
Fuel type	Natural gas
Calorific value [MJ/m³]	36,5
Min. methane number [-]	92
Fuel consumption 75%[MJ/kWh]	9
100% [MJ/kWh]	8,8
Control voltage [V]	DC 24
Shelter dimensions L x W x H [mm]	8000 x 2440 x 3000
Emissions:	
NOx [mg/Nm³]	500
CO [mg/Nm³]	650
Noise level - shelter (7m dist.) [dB]	<72
Noise level – table cooler (10m dist.) [dB]	58,7

Continuous Operating Power (COP):
The maximum power which the generation set is capable of delivering continuously whilst supplying a constant electrical load when operated for an unlimited number of hours per year under the agreed operating conditions.

Notes:
Nominal parameters for the unit specified as operated in standard conditions according to ISO 8528-1:2005 and DIN ISO 3046-1.

Fuel specification:
Natural gas, MN>92

Standards:

- Machine Directive 2006/42/WE
- Low Voltage Directive 2006/95/WE
- Electromagnetic Compatibility 2004/108/WE
- Emissions Directive 97/68/WE
- ISO 8528-1/2005, PN-ISO 8528-5/2005
- PN-EN 12601
- PN-EN 60204-1
- DIN ISO 3046-1

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CHP UNIT FGI 525 NLSNK

ENGINE

Manufacturer	MAN
Model	E 3262 LE 212
Country of origin	Germany
Nett engine power[1] [kW]	550
Emission[2]	non-emission
Speed [rpm]	1500
Speed control	electronic
Class[3]	G3
Configuration / number of cylinders	V12
Compression ratio	12 : 1
Displacement [dm³]	25,8
Fuel system	gas mixer
Control voltage [VDC]	24
Coolant capacity [dm³]	58,0
Oil sump capacity [dm³]	102
Fuel type	natural gas
Fuel consumption 75% of load [m³/h]	99,8
Fuel consumption 100% of load [m³/h]	126,5
Oil consumption [kg/h]	0,175
Engine weight, dry [kg]	1849
Ignition lead angle [°]	16

GENERATOR

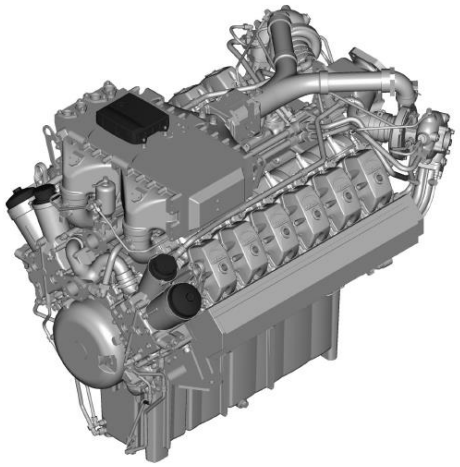
Manufacturer	Leroy Somer
Model	LSA 49.3 M6
Type	Synchronous
Rating (40 ºC, <1000 m.a.s.l.) [kW/kVA]	584/730
Voltage [VAC]	400
Frequency [Hz]	50
Efficiency [%]	96%
Excitation	AREP
Voltage regulation	electronic
Voltage stability [%]	±0,5%
Protection class	IP23
Insulation class	H
Harmonics THF [%]	<2%
Subtransient reactance X_d'' [%]	11,3
Connection	Y, 6 lead
Weight [kg]	1616

MEASURED PROCESS VALUES

- 3-phase voltage, generator and mains
- 3-phase current
- neutral/mains current
- frequency/revolutions
- 3-phase power (real, reactive, apparent, power factor)
- energy counters
- 3x operation time counters
- engine ECU data link
- engine and tank oil levels
- temperatures in LT circuit
- temperatures in HT circuit
- exhaust exchanger temperatures
- internal/external air temperatures
- generator windings temperatures
- pressures in cooling circuits
- flow in cooling circuits monitoring
- gas train temperature/pressure monitoring
- auxiliary supply monitoring
- starter battery monitoring
- smoke detection
- gas leak detection

EXTERNAL CONNECTIONS

Gas input connection	DN50 PN16
Heat output/return connection	DN65 PN16
Electric power output	GCB terminals



[1] According to DIN ISO 3046-1

[2] According to 97/68/WE limitation of emission of gaseous and particulate pollutants from internal combustion engines to be installed in non-road mobile machinery.

[3] According to PN-ISO 8528-5/1997

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CHP UNIT FGI 525 NLSNK

SYSTEM CONTROLER

ComAp InteliSys Gas
Industrial grade controller for gas gen-set based CHPs
Precision speed and excitation control
Stand alone, parallel to grid or multi gen-set operation
Predefined, adjustable functions for gas gen-sets
Fully configurable with built-in PLC functionality
Interoperability with J1939 CAN engine control units (ECUs)
Communication capabilities: 2x RS 485 Modbus, RS232, Ethernet
Remote access via InternetBridge NT module (WAN, GPRS)
Free local/remote monitoring software InteliMonitor
Advanced remote access monitoring and control functions
WebServer, WebSupervisor, AirGate, smartphone application
SCADA link capability
Multi-level access privileging system
Calendar/time driven operation programming
Scalable with variety of expansion modules
Intuitive HMI with 12” color LCD display
Advanced trending capabilities
USB flash disc data storage
Multilingual support

ELECTRIC PROTECTIONS

	ANSI
Synchronism check	25
Overcurrent/ fast overcurrent	50/51
Overload protection	32P
Overvoltage/undervoltage – generator and mains	27/59
Overfrequency/underfrequency – generator and mains	81L/81H
Reverse power	-32P
Over-excitation / under-excitation	±32Q
Current unbalance	46
Voltage unbalance, phase sequence	47
ROCOF	81R
Vector shift	78

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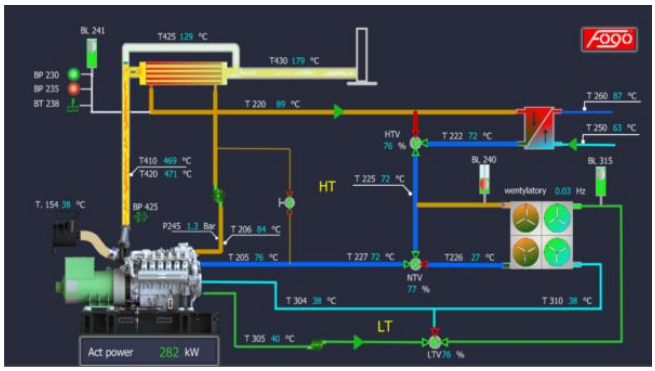
CHP UNIT FGI 525 NLSNK

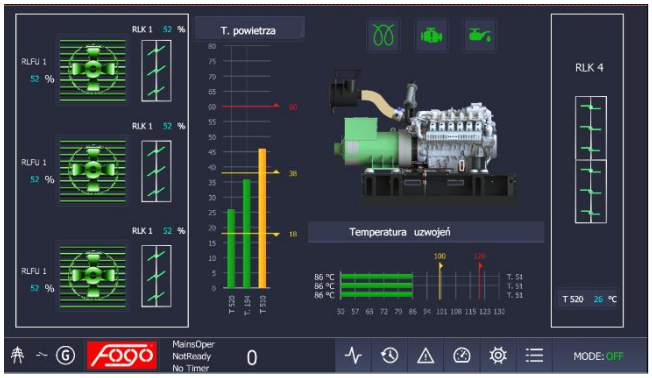
STANDARD CONFIGURATION

- Complete 525kWe gas CHP unit in shelter, ready to deploy:
- V12 gas fed reciprocating engine
  - Dry-type inlet air filter
  - Integrated crankcase ventilation/filtration
  - Electronic fuel and speed control
  - Electronic ignition system
  - Electric starter motor, 24V 180Ah batteries, battery charger
- 3x400V 50Hz synchronous generator
  - Electronic AVR module with AREP excitation
  - Motorized 3-pole generator circuit breaker (1000A)
- Gen-set frame with integrated oil tank
  - Vibration damping mount and elastic coupling
- Gas train
  - Zero-pressure regulator
  - Fine particle filter
  - Double gas shut off solenoid valves with shut proofing system
  - Flexible engine connection pipe
- Cooling and heat recovery system
  - Standard heat output parameters 90/70ºC
  - LT mixture pressurised cooling circuit
  - HT engine pressurised cooling circuit
  - Exhaust heat recovery exchanger
  - Electric HT/LT circulation pumps
  - Electrically actuated 3-way control valves
  - Integrated HT/LT table rooftop cooler with VFD control
  - Standby electric heating
  - Output separation heat exchanger
- Exhaust installation
  - Exhaust expansion joints and stainless tubing
  - Exhaust roof mounted muffler
  - Exhaust bypass with motorised diverter
  - Rooftop exhaust stack ranging ~7m above ground level
  - Insulation batting with external stainless sheet metalwork
- Ventilation
  - Inlet bag filters
  - 3x inlet fan with VFD control
  - Electrically actuated input/output louvres
- Lubrication and oil storage
  - 500 litres oil storage with electric oil transfer pump
  - Oil level monitoring, automatic control and protection
- Integrated container shelter
  - Frame structure
  - AlZn corrosion protection with powder paint coating
  - Soundproof Rockwool batting
  - Separated control room
  - Gas leak detection system with automatic gas shut off valve
  - Smoke/fire detection with power shut down
- Control system
  - ComAp InteliSys Gas system controller
  - InteliVision 12” color HMI display
  - InternetBridge-NT communication module

OPTIONS

- Heat output control with add. pump and 3-way valve
- Modified heat output parameters
- Modified exhaust stack height
- PMG excitation system
- Secondary electric protection relay
- Oil leak detection
- Additional oil storage tanks
- Detonation detection system
- Battery backup for control circuitry
- Power management: Import/Export, Peak shaving, Load shedding
- Control system input/output expansion





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