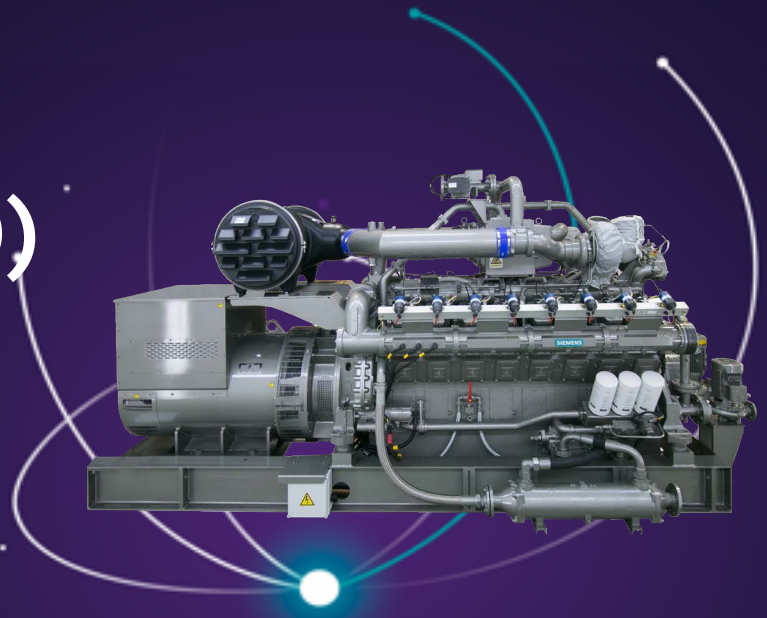


Conversion from SGE-FL (FGLD) engine type to SGE-SL (SFGLD)



www.siemens-energy.com/gas-engines

Background

Siemens Energy is continuously improving its products and solutions and the modern version of SGE (Siemens Gas Engines) are more efficient, robust, flexible, and easier to operate.

At the same time, there is a significant number of the old SGE-FL engines (previously named FGLD) installed and operating around the world.

In this sense, Siemens Energy developed a kit of modernization able to transform a SGE-FL in a SGE-SL (previously named SFGLD) to allow the engine to run in modern conditions with the current advantages provided by new engines.

Product Overview

There are two possibilities to implement this modernization kit:

1. KEEPING THE SAME POWER OUTPUT

One of the main differences between a SGE-FL and SGE-SL is the piston type used. The piston design of a SGE-SL (Triflow) besides allowing a higher compression ratio, generates a higher turbulence inside the cylinder favoring the combustion and improving the efficiency.



Figure 1 Triflow piston

2. INCREASING THE POWER OUTPUT TO THE SAME LEVEL OF A MODERN SGE-SL MAXIMUM

In this case, additionally to the change of the pistons over-mentioned it is also necessary to change the electronic ignition module and, in V engines, the vibration damper. In few cases, the change of the gas regulator screw and the knocking detection system could be necessary.

Application

The kit is available for all engines of F (FGLD) series.

In case of power increase, a previous verification of the existing installation shall be performed to assure that there are no mechanical interferences to implement the kit in the engine and also check that the additional power can be absorbed by the installation.

Main equipment to be verified are: generator, circuit breaker, wiring, cooling system, gas ramp and exhaust system.

Benefits

The main benefit of this solution is the increase of power output as well as the engine efficiency, reducing the gas consumption. Additionally, there is an improvement in emissions.

The mechanical power increase can reach up to 17% and the efficiency increase up to 2% depending on the engine type.

An increase from 600 kW to 700 kW in the SGE-36FL for example gives to the investor the opportunity to significantly enhance the profitability by exporting more energy or consuming less.

In addition, a 2% increase in efficiency also reduces the gas consumption proportionally, contribution even more for the economic model of the power plant.

SGE Model	Cyl	Pmec (kW)			
		1.500rpm	AP (%)	1.800rpm	AP (%)
GE-18FL	6L	275	-	300	-
GE-24FL	8L	360	-	400	-
GE-36FL	12L	550	-	600	-
GE-48FL	16L	725	-	792	-
↓					
GE-18SL	6L	314	14%	350	17%
GE-24SL	8L	419	16%	453	13%
GE-36SL	12L	630	15%	700	17%
GE-48SL	16L	838	16%	906	14%

Figure 2 Output power increase after the transformation

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