Free-piston Resonance Stirling

The free-piston Resonance Stirling is the coming centrepiece par excellence of a state-of-the-art <*power generating heater*>. Thanks to its extremely high electrical efficiency and its compact design, the engine will set new standards on the market.

Currently the FR-Stirling undergoes long-term tests without encountering any particular problems. This technology will soon be ready for its market launch.

Figure: CAD illustration SOLID Works ®2016 Rudolf Schmid AG

To date, the free-piston Stirling technology was appreciated for its low maintenance needs and cleanliness, but its electrical efficiency remained marginally satisfactory.

This is now going to change:

The new free-piston Resonance Stirling sets new standards in terms of electrical efficiency, *while keeping all its positive characteristics.*

Technical specification of the 2kW $_{EL}$ FR-Stirling

Nominal electric power:	2kW	Width:	60cm
Electric efficiency:	23 – 25%	Depth:	70cm
Available heating power output:	5.5kW	Height:	120cm
Total efficiency:	approx. 95%	Mass:	approx. 180kg

(Part-load operating range 60-100%)

Rudolf Schmid AG
Maschinenbau
Freiburgstrasse 830
CH-3174 Thörishaus

info@stirling.ch
info@r-s-ag.ch
Tel. +41 (0)31 888 50 10
Fax +41 (0)31 888 50 11

The benefits in a nutshell

Highly economical
The FR-Stirling saves up to 50% of primary energy compared with conventional heating systems.

Extremely high efficiency
Thanks to its electric efficiency close to25% , the FR-Stirling keeps up with comparable diesel and gas engines.

Ecologically compatible
Clean combustion at high temperatures in a diluted gas stream (mild combustion under flameless conditions). Carbon emissions below 20ppm, NO_X below 30ppm. Complies with all relevant standards without derogations.

Environmentally friendly
The residual heat being available for heating purposes means that the supplied energy is optimally used. Thus, carbon emissions are significantly reduced.

Full-load and flexible part-load range
In the part-load range between 60 and 100%, a modulating operation is possible at a virtually constant efficiency.

Low-maintenance and super-silent
Maximum service life, no lubrication needed, free of noise and vibrations. Maintenance is limited to the periodic control of the burner.

Easy control
Due to a sophisticated system, the engine is extremely easy to control.

Expandible model range
The system is suited for series with a power output in the range of 1 to 5 kW_{EL}.

Compact structure
The new system enables a high cyclic pressure variation, which results in compact engine arrangements (Δp = 12 bar cyclic pressure change, pressure ratio p_{MAX}/p_{MIN} ~ 1.4)

Peak-load absorber
The engine works on full power in less than 10 minutes and thus easily operates during peak-load periods. By including a hot water boiler system, electric energy may be produced particularly during peak-load periods.

Variety of fuel
A large variety of renewable energies, such as biogas, pellets or wood chips, as well as natural gas or oil can be used to run the FR-Stirling.

Performance measurements
Independent experts of the Lucerne University have verified and confirmed the performance measurements during the long-term testing of the engine.

Encouraging results
The current endurance tests have been performed without the slightest problems, the FR-Stirling is in an advanced development stage and will soon be launched.

Reasonable costs when produced in series
The expected costs when produced in series are in a reasonable range.

The free-piston Resonance Stirling offers unique, future-oriented properties. For further information and contact with the development team and patent owner please visit: **www.stirling.ch**

Rudolf Schmid AG
Maschinenbau
Freiburgstrasse 830
CH-3174 Thörishaus

info@stirling.ch
info@r-s-ag.ch
Tel. +41 (0)31 888 50 10
Fax +41 (0)31 888 50 11