

Stirling Engines

The purpose of this article is to give some further background and additional information. Given the current interest in reducing our fossil fuel consumption perhaps the Stirling engine might have a new role?

For the last 4 years I have demonstrated my Stirling engine during Sandstone open days, most recently Easter 2022, in the Stationary Engine Museum. It featured in the International Stars of Sandstone 2019 video <https://www.youtube.com/watch?v=jjteRU-Xls4> at about 28 mins 30 seconds, demonstrated by the Museum curator, Danie Pretorius. It also appears here <https://youtu.be/kpQg9zB8T2g> at about 1 minute 20 seconds.

The Stirling principle was invented by Robert Stirling in 1816, thus predating all internal combustion engines. But not the steam engine. It arrived around the time interest was generated in applying the principle of steam engines to railways. https://en.wikipedia.org/wiki/Stirling_engine. It can use any external source of heat. Since there is no internal combustion with a Stirling there are neither valves nor camshafts. As there is no steam there is no need for boilers with their attendant requirements-safety valves, boiler inspection and certification. As demonstrated it is virtually silent running. It generates power on every rotation, so it is similar in some respects to a two stroke engine.

It has been and remains a scientific oddity, even an enigma. No-one has managed to turn the principle to commercial advantage, though many have tried. Ford, working with Philips (the Dutch electrical giant) had a three cylinder version in a car. <https://trid.trb.org/view/115666>. More recent attempts were made to produce domestic power generators. They have also been used in submarines. Engines using solar heat have been developed.

A few of the visitors to the Stationary Engine Museum knew about Stirling engines but many did not. Thanks to the world wide web today, details for making your own engine are readily available. There are web sites showing how to make a simple engine, using the things an average handyman might have at home. For instance the ones made to be put on a coffee (or tea) cup. More complex kits and ready built models are also available to suit just about any combination of pocket and skill level.

I hope you might be inspired to set out on your Stirling engine journey!

My engine was built by my late uncle, Edward Maga, about 40 years ago. He very kindly passed it on to me. I am sure he would have loved Sandstone-just as much as I do.

Keith Simmons