A brief HISTORY

Invention and early years

'Stirling's Air Engine' was invented and patented by Robert Stirling (a Church of Scotland minister) in 1816. The name 'Stirling Engine' was coined 100 years later, by Dutch engineer Rolf Meijer. It was an alternative to the steam engines of the day.

Compared with Steam Engines, Stirling Engines used less fuel, and were also safer when things went wrong. In addition, they were easier to run than their steam driven rivals.

However, they had to be run at higher temperatures than Steam Engines. This proved a problem, because at the time there were no materials available that could properly cope with the increased temperature demands.

Revival attempts

Around the 1940s, electronics company Philips rediscovered the Stirling Engine. They were trying to develop a radio that did not need mains electricity to run. They came up with a radio that would run off the heat of a fire. In the end, the idea was abandoned: The radio was too expensive for people to buy.

Attempts to put Stirling Engines in cars also never took off. This is because they:

- Take a while to warm up.
- Cannot speed up and slow down quickly enough.

What the FUTURE holds

Since Stirling Engines only require heat in order to work, they are finding an increasingly wide range of applications:

- Generating power from Biomass fuel – maybe even in cars.
- In space: Small engines that use nuclear fuel
- An alternative to photovoltaic solar panels
- Novelty: Charge your phone with your cup of tea!

How it WORKS

1. Pistons

   Cold air is heated in a hot cylinder. This makes it expand, pushing down the piston.

   This is the bit that actually makes the Engine move.

2. The pistons move the hot air into the cold cylinder.

3. In the cold cylinder, the hot air cools quickly. This makes it easier for a piston to compress it.

4. The cold, compressed air is moved from the cold cylinder back into the hot one. The cycle starts again from the beginning.