

WANKEL ENGINE - USES

Aircraft engines uses:

The Wankel's superb power-to-weight ratio, reliability, and small frontal area make it particularly well suited to aircraft engine use. There was intense interest in them in this role in the 1950s when the design was first becoming well known, but it was at this same time that almost the entire industry was moving to the jet engine, which many believed would be the only engine in use within a decade. The Wankel suffered from a lack of interest, and when it later became clear that the jet engine was far too expensive for all roles, the general aviation world had already shrunk so much that there was little money for new engine designs. Nevertheless, interest in them for small aircraft has continued.

Aircraft Wankels have made something of a comeback in subsequent years. None of their advantages have been lost in comparison to other engines, and the introduction of better materials has helped the tip-seal (Apex-seal) problem. They are being found increasingly in roles where their compact size and quiet running is important, notably in drones, or UAVs. Many companies and hobbyists adapt Mazda rotary engines to aircraft use; others, including Wankel GmbH itself, manufactured Wankel rotary engines dedicated for the purpose.

Other uses:

Small Wankel engines are being found increasingly in other roles, such as go-karts, personal water craft and auxiliary power units for aircraft. Some used Wankel engine for model airplane which has been in production essentially unchanged since 1970; even with a large muffler, the entire package weighs only 13.4 ounces (380 grams).

The simplicity of the Wankel makes it ideal for mini, micro, and micro-mini engine designs.

The largest Wankel engine was available in 550 hp (410 kW) one rotor and 1100 hp (820 kW) two rotor versions, displacing 41 liters per rotor with a rotor approximately one meter in diameter. By limiting the engine speed to only 1200 rpm and use of natural gas as fuel was well chosen for the engines to drive pumps on natural gas pipelines.

A limited number of motorcycles powered by Wankel engines were also produced.

Aside from being used for internal combustion engines, the basic Wankel design has also been utilized for air compressors, and superchargers for internal combustion engines, but in these cases, although the design still offers advantages in reliability, the basic advantages of the Wankel in size and weight over the four-stroke internal combustion engine are irrelevant. In a design using a Wankel supercharger on a Wankel engine, the supercharger is twice the size of the engine!

Perhaps the most exotic use of the Wankel design is in the seat belt pretension system of the Volkswagen New Beetle. In this car, when deceleration sensors sense a potential crash, small explosive cartridges are triggered electrically and the resulting pressurized gas feeds into tiny Wankel engines which rotate to take up the slack in the seat belt systems, anchoring the driver and passengers firmly in the seat before any collision.

Source: http://engineering.wikia.com/wiki/Wankel_engine