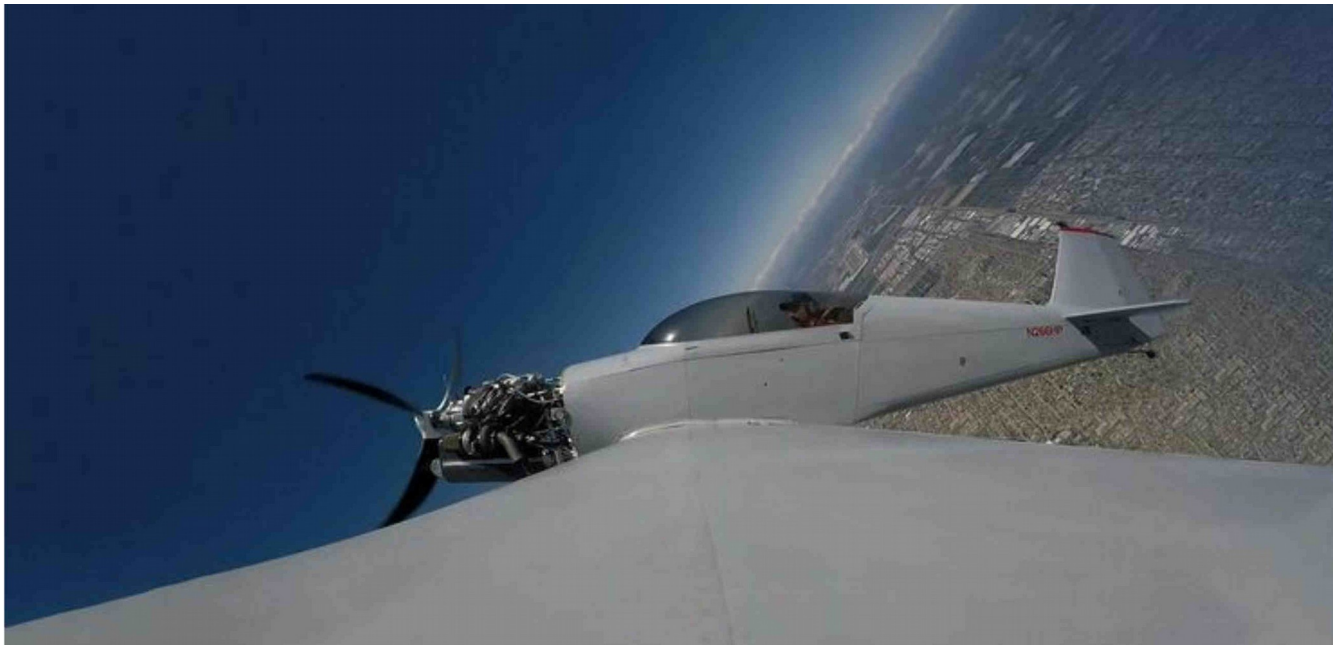
Mazda all aluminum Wankel rotary engine sets new FAI time to climb to 3000 meter record in one minute 39.6 seconds.

HTTP://WWW.FAI.ORG/record/18457



The secret to this record is the importance of engine power to weight ratio. This engine weighed only 200 pounds with a GT40 turbocharger and put out 650 HP. Unfortunately the prop was not capable of absorbing 650 HP so only 500 HP was used.

The aluminum end housings dropped the engine weight from about 325 pounds to under 200.

There are no valves to fail or crankshafts to crack. The eccentric shaft does not bend or twist like a crankshaft. Bend metal back and fourth long enough and it will crack and fail.

If you use 1000 F silicon nitride apex seals engine life is near unlimited. 500 motor glider rotaries have been sold in Europe with no TBO. It is a little known fact that the apex seals are subjected to thousands of degrees exhaust gases for a short period of time when they pass over the peripheral exhaust port. They must be cooled by oil. 500 F iron or steel apex seals will not live for long at high power.

The cross counter flow water cooling system weighed about 15 pounds. The overall engine never got above 150 degree Fahrenheit. There was no oil cooler as it had about 4 gallons of oil. It is hard to over heat 4 gallons of oil in under 2 minutes. With a better prop the record could be dropped to under 90 seconds. The airplane is sitting in a hangar in Santa Paula California.

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