HAWK TURBINE

STATE OF THE ART TURBINE

Hawk 100R is the most efficient model jet engine in the world.

The Hawk 100R incorporates a lot of new advanced technologies. One example is the in-house designed **milled transonic compressor**. Flight tests have shown an average fuel consumption of less than 100 grams/minute over a flight cycle!

How is this possible?

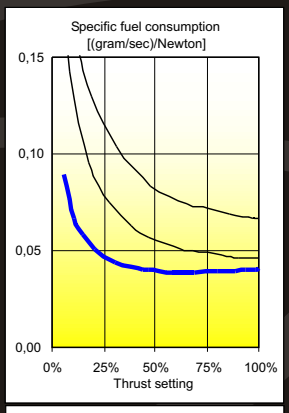
The fuel efficiency of the engine is a result of all internal parts being carefully designed and precision manufactured. To achieve the highest possible efficiency there is no room for any low performing or mismatched parts in the system. Calculations and tests of all parts have been carefully and systematically carried out, and have resulted in the most fuel efficient model jet engine in the world.

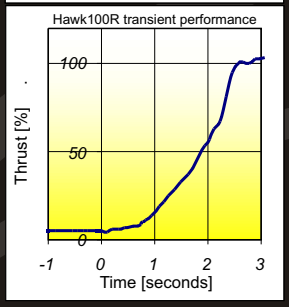
New in-house designed compressor!

No existing turbo charger compressor on the market had the required performance therefore a **new transonic radial compressor** had to be designed from scratch.
The performance was achieved with lots of aerodynamic calculations along with iterated stress and vibration calculations.

Rubust engine design.

The engine is a robust module construction with three main sections such as rotor unit, compressor unit and combustor. The modules give the engine a **low maintenance cost and a fast turnaround service**. Achieving a long bearing life is important for the durability. The fuel system is integrated with the bearing system in a way so all the fuel consumed goes through the bearing system to lubricate, cool and damping out the vibrations. The combustor is a reverse flow type i.e. situated behind the turbine and has very high burn efficiency and also is actually insensitive to air bubbles in the fuel line. The fuel line is connected directly to the **unique engine mounting lugs** and located outside the aircraft's ducting system which certainly is appreciated if there is a fuel leak.





The specific fuel consumption is the lowest on the market!

The result of the carefully **designed** engine is a high efficiency which gives a **very low SFC** (specific fuel consumption) over a wide range.
This makes it possible to fly **10 minutes with only 2 litres of fuel onboard.**

As seen on the blue line in the diagram, already around 20 N the **SFC is below 0,05 (g/s)/N.** This feature makes it possible to get extremely **low in flight average fuel consumption.** Data from all engines tested by Mr. Tom Wilkinson in RC-Jet International perform in between the two black lines as references.

Another very important aspect is also the **transient response.** As a matter of fact high efficiency also results in good transient response, shown in the lower graph.
Aircraft cases such as F15 from Avonds, Flash from C-ARF, L39- from Skymaster, F16 from Avonds and SAAB Viggen from Einar Johnsson fly with **fuel systems around 1,8-2,5 litres** and the timers set to **10 minutes**! The C-ARF Flash for example does not use the fuel cell in the wing, only the main fuel cell (2,2 litres) in the fuselage! That gives a benefit of lower takeoff weight and better flying performance.

The comparison of another engine in the same aircraft shows that the Hawk 100R uses almost **half the amount of fuel during a flight!** This gives the user a much lower fuel cost.
The Hawk 100R only needs 1,5% of two stroke oil in the fuel. **No more expensive turbine oil needed!**

Having coffee just after starting up the Hawk 100R! No problem…
The fuel consumption on idle is around **30 grams/minute. 5 minutes of coffee break consumes less than 200ml!**

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