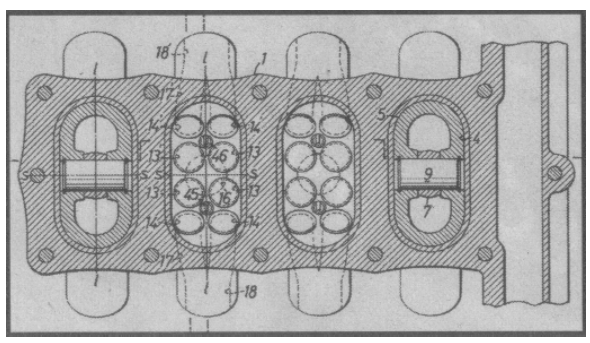
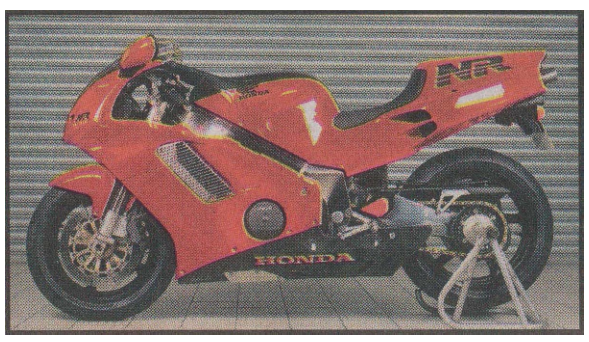
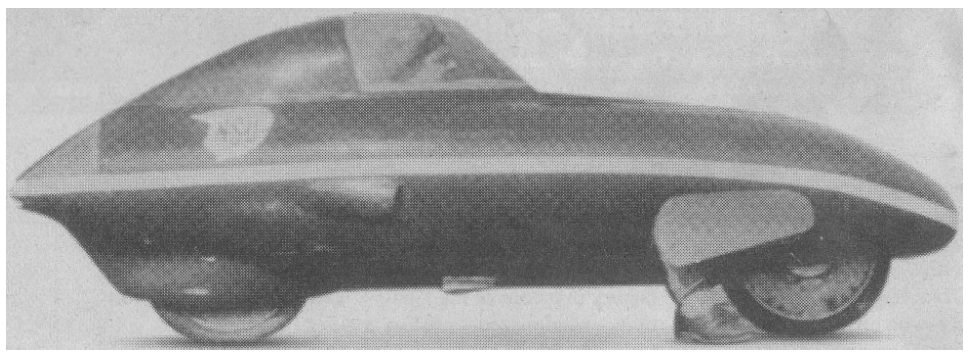




GRAND DESIGNS

(that never quite made it...)



Developing technology is all about trying new ideas and re-inventing old ones. Some of it works. Some of it. doesn't. A lot of it is put on the backburner and tried decades later to take advantage of new production methods. **Andy Downes** investigates

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TRACTION control has found its way on to road bikes this year. So has electronically controlled suspension, but not too long ago the idea of such technology being used outside of racing was almost laughable.

Historically, racing has seen some wild ideas that were quickly discarded, but a lot of those ideas have become commonplace on road bikes years later thanks to advances in technology.

In 1985, Honda's racing boss Takeo Fukui - now in charge of the entire Honda company - spoke about technology that even today, sounds a little far fetched.

How does a four-stroke, oval pistoned, twin-cylinder 250cc race bike with a turbo sound? Unlikely? Well Honda had this radical engine lined up as a competitor to the mainstay of the MotoGP class of the time the V4 500cc two-strokes - but opted not to run it.

At the time, Fukui said: "We are developing a four-stroke 250 turbo to race against the 500 two-strokes, but we are experiencing difficult technical problems.

"Not horsepower. On a dyno, we already have the 250 turbo making more horsepower than 2 two-stroke, more than 140bhp; 150, I think. But to put it on a racing bike is very difficult, because of the throttle response, and design problems. A motorcycle has only a very small space, but the turbo hardware, intercooler and fuel injection system need a big space.

"We are testing many kinds of design. I think that two cylinders are enough, using the eight-valve oval-piston cylinder."

One step further down the line of production was a fully designed, built and engineered road bike using a very similar engine and called the VT250Turbo. Although ready to go into a showroom it never made production.

This is just one of dozens of new engine configurations developed by motorcycle manufacturers - most of which have been ditched.

Patent drawings as far back as 1981 show radical oval piston engines (above) submitted by Honda that took the concept of radical engineering to new heights.

These patent drawings show an eight-valve per cylinder motor that has never been seen in public. Honda raced the NR500, and then produced the NR750 road bike with eight-valves-per-cylinder.

This was an attempt to sidestep the FIM rules that said you could only race a four-cylinder engine. Honda's solution was a V4 that breathed and acted like a V8, even having two con-rods per piston.

These patents were taken out on an even more radical configuration, a single conrod version that placed the valves in line with the bike. The 1981 patent shows a cylinder head with the inlets coming in vertically from the top of the head to four inlet valves in the centre of the combustion chamber. The exhausts are on the outside with a further two cams opening four valves on the outer edges of the combustion chamber.

MCN technical expert Neil Spalding said: "No detail is given to how the inlet valves would be stopped from hitting each other as they opened but presumably with separate camshafts the opening could be phased slightly, quite probably helping the engine by encouraging better atomisation of the fuel air mixture.

"The major issue would be packaging this lot on to a motorcycle. You would have the worst aspects of a V4 and an inline four all together; and quite probably a carburettor sucking at the rider's chin. This is probably why it never saw action."

The "vertical inlet" aspects of the design are similar to a four-valve design produced by Ludwig Apfelbeck for BMW in the mid-60s. This was given a new lease of life when German racer Katja Poensgen won the Super

'We have the 250 turbo making more horsepower than a two-stroke'
TAKEO FUKUI, **HONDA, 1985**