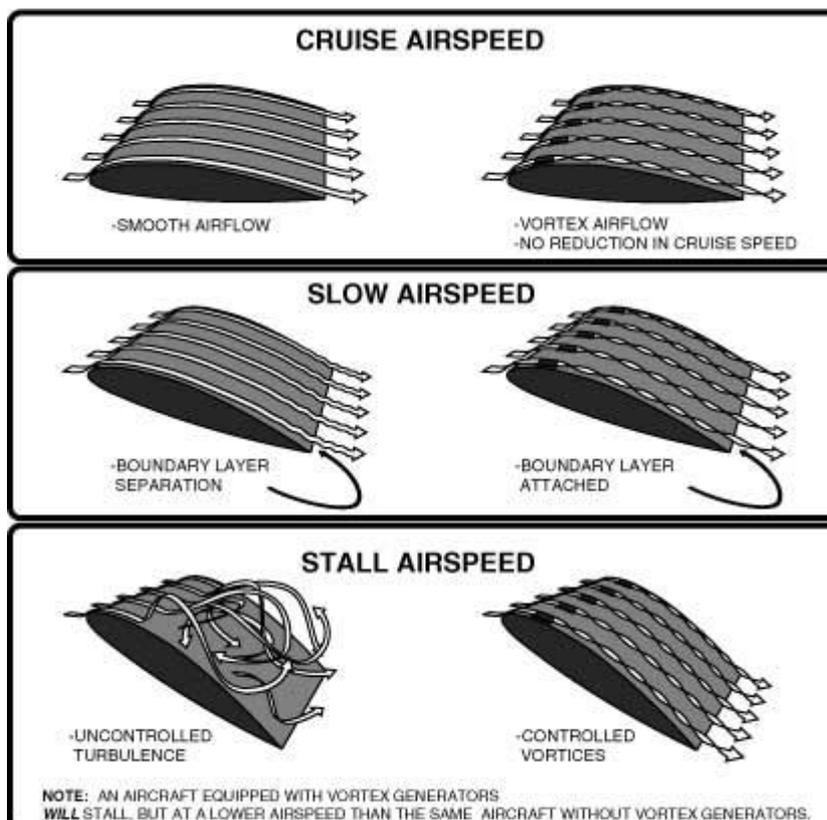


## ZK-BFG VG upgrade – Grant Bisset



Two friends and I bought a 180HP Penn Yan converted C172 P as a get around the place machine, straight forward to fly, maintain and operate. While the 172 is a sound machine it doesn't do anything spectacularly well, rather it does most things adequately.

We wanted to land in river beds and on beaches, airstrips etc but didn't have the budget for a 180 or similar. We did some mods as part of the SIDS process to give us a little more margin, one of them was to fit micro air VGs.



With the Penn Yan conversion our MAUW is 2550 lb, the VGs on the tail plane and fin give better crosswind control as well as better slow flight capability. The wing can create more lift at higher angles of attack, thanks to the wing VG's. So the C172 is now more versatile than when it rolled out the factory door.

The only aircraft I'd flown with VGs installed was a C 210. The 210 is an excellent aircraft but fully loaded can be a handful at low speed. My observation was a significant improvement in low speed handling and a reduced stall speed of several knots with no penalty at the top end. We decided to buy the VG kit for the 172.

Getting the best out of your aircraft is all about energy management. I've heard all sorts of stuff said about short landing technique but the underlying reality is that  $E=mv^2$ . So the lighter and slower you land the less energy you have to dissipate.

To improve performance the things we could do were reduce weight. Increase the horsepower, and improve the aerodynamics.

We took the vacuum system out of the aircraft, got rid of anything we didn't need, instruments, avionics etc, and thought about going to Jenny Craig for almost a nano second.

Increasing the horsepower further was going to be very pricey.

With VGs fitted we did some test flying. In our "utility" configuration of 2.5 hours fuel, 2 POB, and a few Kg of stuff we found we could fly around at 45Kts TAS. Flying around at 45 kts with good aileron control is something I wasn't used to in a C172.

Take off is interesting. We have a Garmin G5 so get the airspeed and ground speed readout. The 172 airspeed indication isn't very accurate below about 50kts. So in zero wind we rotate going through 35kts ground speed and the aircraft gets airborne without the stall warning squawking. Clearly this is power on and you want to be mindful that if it all goes quiet you will be arriving back on the ground imminently. Our technique is to get airborne and accelerate in ground effect if possible before climbing away.

You do need to be mindful that the aircraft is slightly different to fly at low speed, you need to knock a few knots off your approach and flare to avoid floating half way down the runway. Also you can achieve higher angles of attack so you can touch the tail more easily on landing.

In my view the VGs are an excellent mod and we are very happy with them on the 172, our setup achieves what we set out to do and I'd recommend VGs to anyone contemplating them.

However, I still really like a throttle in the left hand and a stick in the right, and for all the good things VGs achieve they don't achieve that.

Read more at <https://blog.aopa.org/aopa/tag/micro-vortex-generators/>

Watch a video at <https://youtu.be/1w9CNGwVw8M>