

New from Slovakia: Tomark Viper SD-4

Bill Henwood tries another microlight

I had the pleasure over a recent two-day period of flying one of the latest microlight/light sport aircraft (LSA) to be imported into New Zealand from Slovakia. Day one was a type rating for myself and evaluation for this report, with day two a BFR for local Waikato-based importer, Ewan Wilson. More about Ewan later ...

The Viper SD-4 is a low-wing, all-metal, two-seat side-by-side tricycle undercarriage aeroplane, powered by either an 80hp or 100hp Rotax 912 ULS engine. Three models are offered, depending on engine, instrument and fuel tank options. Within the three models a buyer can mix and match the options, so for example you can order the Basic model with steam gauges but the 50lt fuel tanks of the Standard or Deluxe (LX) model. The norm for the lower priced aircraft is 35lt tanks per side.

The example flown for this report, ZK-EAW, is certified as a microlight, but there is also the option to order the LSA version. EAW is the LX version, with 50lt of fuel per side and dual 10in Dynon avionics displays, including primary flight display (PFD), engine management system (EMS) display and moving map. The Dynon Skyview system can be configured to suit the individual pilot and includes synthetic vision, traffic collision avoidance system (TCAS) and autopilot functions. A leather interior completes the LX package.



Pilot interface with the PFD and EMS is by way of two joystick controls and eight contextual buttons on the bottom of the bezel (the button menus change depending on the options chosen by the pilot). The joysticks are easy to use, for instance in selecting waypoints on the moving map to construct your



The cockpit layout is typical microlight/LSA, with red ballistic recovery chute handle in immediately front of the pilot. The portable collision avoidance system (PCAS) is useful for locating a camera aircraft which has set out from a separate airfield.

route. The autopilot can then be engaged to follow the route in lateral and vertical modes (LNAV and VNAV).

A neat feature of the system is GPS assist which displays ground speed should the pitot head become blocked, as long as the GPS is up and running.

The avionics system offers most functions common to airliner and upper end GA aircraft but is not certified. Also as with all such systems in VFR aircraft, is a backup to normal airmanship disciplines for navigation and lookout. It seems that more than one light aircraft recently has succumbed to operating in IMC when it should have been in VMC. (But enough of the sermon!)

The Viper is provided with a backup battery that can optionally power the avionics for 60, 90 or 120min in the event of the main power source failing.

Entry into the cockpit is straightforward from the wing walkway under the aft and upward hinging canopy. The cockpit is well laid out, everything falling to hand readily, and the seats are comfortable for the 1½hr flights that we conducted. My mentor for the flight, Ewan Wilson, carefully and knowledgeably described the procedures with the aid of a checklist to get us underway. His experience in airline operations on Douglas DC-4s showed here.

As is common with most Rotax powered types, a choke is used for cold starting as opposed to the more usual primer pump on GA aircraft. The engine started readily on the first attempt and settled into an 1800rpm idle. It is permissible to leave the canopy open while idling, a godsend on this typically fine and hot Waikato summer's day. The bubble canopy generates heat in the cockpit very quickly, cooling aided by integral air vents and two storm windows. In warmer climes portable sunshades would be a must to keep cockpit temperatures to an agreeable level.

Taxying is easy via the direct linkages between the rudder pedals and nosewheel, and the hand operated disc brakes provide effective non-differential stopping power. The brake lever is located behind and below the throttle, and it took only a few seconds' practice in moving the hand between throttle and brake lever to adequately control the taxi speed. Park brake is provided by a button that locks the brake lever into that position.

Four-position electrically actuated flaps (0, 15, 30 and 45deg) are fitted and are normally set to 15deg for takeoff and



John King

30deg for a typical landing, with full flap for shorter strips. Elevator and aileron trim are electric, controlled by buttons on the top of the stick for the left-seat pilot with rocker switches available on the centre console for the right-seat pilot.

The fuel selector is also on the centre console, with selections for Off, Left, Right and Both. With more than three-quarter tanks, care must be taken with the fuel selection as excess fuel from the pumps is deposited into the left-hand tank and could lead to its tank overflowing. Normal selection is to the left tank in this case until enough fuel has been burnt off to make some room, otherwise the Both position can be used for takeoff and all phases of flight.

With checks complete we lined up and rolled at Te Kowhai on runway 05, to depart to the west for some aircraft handling and to sample the avionics. Acceleration is brisk for a 100hp aeroplane, weighing in at the new microlight weight limit of 600kg. Typical empty weight is 370kg, with full tanks at 72kg leaving 158kg for occupants and bags. Two standard adults (which of course we were!) leaves 14kg in the baggage area behind the seats, with a maximum capacity of 15kg.

Takeoff run with no wind and MAUW is advertised as 330m to clear the 50ft obstacle on a grass runway. Climb is carried out at 65KIAS (knots indicated airspeed) with an engine rpm of 5100 and producing a respectable 1000ft/min climb. Cruise rpm is 4400 to 5100, giving 10 to 18lt/hr and 108 to 119KIAS.

We briefly explored the PFD and moving map. Synthetic terrain vision gives the usual red, yellow or green colours, depending on whether you are below, within 1000ft or safely above terrain, with aural and visual terrain warnings as appropriate. PCAS worked well, indicating a transponder equipped aircraft within the same area. This is a great safety tool, not to replace the traditional lookout, but while our eyes were inside playing with all the other tools we could spend less time look-

Going solo at Woodbourne



John Whitcombe report and photographs

Instructor Teresa Lamont hopes nobody will associate her with her crew of, from left, Jared Smith, Josh Clark-Newson, Patrick Costello, Josh Frey-McLean and John Whitcombe.

It is interesting that in New Zealand you can legally fly a plane by yourself before being able to drive solo in mum's car. The reality is that most teenagers do not manage to do this.

However, each year there is an opportunity for Air Training Corps (ATC) cadets to achieve this feat at the annual National Aviation Course (NAC), held once again this summer

at RNZAF Base Woodbourne.

The NAC is an integral part of the ATC calendar and is a unique opportunity for cadets to learn to fly and navigate in an intensive learning environment. The course is divided into two components — navigation and powered flying.

Eighteen cadets made up the navigation contingent, taught the PPL air navigation

syllabus. This was the first year in which all pupils passed their final exam. The navigation course is completed by a further 35 cadets who will learn to fly and, if time and progress permit, have the chance to fly solo.

The day I arrived I was reminded of the time two years previously when I had attended the course as a "navvie", with the sweltering Marlborough air and familiar barrack block stirring fond memories from 2011.

On course there is a great aviation based atmosphere which makes it an unforgettable experience for all who take part. (We met RNZAF King Air and NH90 pilots who both recalled their time on the course.) For many it will be their first time getting any significant flying time.

A normal day on course began at 0800 hrs with a weather briefing, and once released we would hurry to untie our planes and prepare the flight line for the day's flying. Seven aircraft were used, five Piper Tomahawks and two Cessna 152s.

Each aircraft had an instructor and five cadets allocated to it for the duration of the course. This enabled us to pick up where we left off in our previous lesson, making progress much quicker.

Each pupil was taken through straight and level flight, turns, stalls, climbing and descending. Once the budding aviator had



"By my ded reckoning we should be at Woodbourne, er, in time for breakfast."

managed to master these skills, lessons turned to flying circuits around Woodbourne. For Woodbourne Air Traffic Control this is their busiest time of year, with an extra controller added to the tower to deal with the large increase in traffic.

For me this was the most exciting part, especially one time when I was on short final flying just above some trees and got a few sharp words for that. I found judging my correct approach height difficult and was making corrections too late.

Then finally, on the second to last day at 1700, it all finally clicked.

The next day I knew would be my last chance to fly solo in the near future (as of now, at the time of writing, I am but a poor university student). Thanks to a number of

ing outside.

A hazard with PCAS (and the higher-end TCAS), though, is that it picks up only aircraft with operating transponders, and the one you will hit is still the one you don't see. The 10in EMS screen was easy to see and interpret, aided by warnings as needed.

The Viper has conventional stall characteristics, with little tendency to drop a wing, even when abused by carrying out an out-of-balance steep turn. The 1G clean power-off stall occurred at 44KIAS, and with 3000rpm and full flap it occurred at an indicated 38kt, with a book figure of 40kt.

On approach at 1.3V_s the approach should be made at 50kt, the pilot's manual recommending 65KIAS which produced some float. With practice and familiarity, speeds approaching the lower figure could be used with a shorter ground roll. Landing and rollout presented no problems, with the brake being effective when used as required.

The aircraft flight manual is reasonably clear, obviously translated from Slovakian but with few instructions lost in the translation. "Orientation of the movements of control elements" is one topic that took a couple of reads to understand fully, aided by the following paragraph that states "pushing the left control pedal turns the aircraft leftwards during its movement on the ground and in the air ..."

The manual for the Dynon Skyview avionics has no such problems, albeit printed in American English, and is comprehensive and clear. The colour version is available electronically which is a great help with the various screen shots. Somehow the printed black and white version loses some of its impact.

The information contained in the manual deserves full understanding before launching off into the wild blue, with carriage of a safety pilot (or instructor) for the first few hours while the pilot gains familiarity with the avionics operation and functions. Time on the ground with ground power plugged in is also well worth the investment.

The EMS displays the normal range of engine instruments, plus extrapolated data from the sensors to monitor and provide warnings of any parameters that are approaching limits. Although not applicable to the Rotax powered aircraft, the system aids operations in Lycoming and Continental powered aircraft lean of peak, but providing information of the leanest cylinder and the difference each cylinder is operating from its peak mixture value.

The aircraft is manufactured by Tomark s.r.o. in Slovakia and resulted from the CEO's desire to have his own aeroplane. Tomark's core business is the manufacturing of welded constructions and components, especially for the motor industry. The CEO engaged a university aeronautical graduate to design his aeroplane, some friends saw the result and production of the Viper started.

The Tomark factory is state-of-the-art with computer controlled production of metal parts, and the aircraft division currently employs 16 staff. A recent order to an undisclosed customer for 100 Vipers to add to the 40 Vipers already produced has led to an expansion of the factory.

The New Zealand agent for the aircraft, Wilson Aviation, led by controversial Waikato aviator Ewan Wilson, has the initial demonstrator in the LX version. As well as selling to individuals, Ewan sees potential to market the aircraft as a syndicate aeroplane, with Wilson Aviation purchasing shares in small syndicates to get them going, pending enough people for the syndicate to own the aircraft outright.

Ewan will also offer the syndicates the option of hiring management services if desired. Of course syndicate members would have to meet experience requirements for insurance and some syndicate rules would need to be agreed.



John King

Ewan's history includes founding Kiwi Air in the late 1990s, writing two books of his experiences in aviation — *Dogfight* and *Help, my plane is on fire* — and flying Douglas DC-4s on freight operations in Australia. He was looking for a light aircraft for his own use, and what made the Viper stand out for him were the build quality and the organisation of the factory.

Throughout aviation history, manufacturers have designed and built aircraft to similar specifications and under common regulatory regimes, with the resulting solutions being similar. From a distance who can tell the difference between a Piper Tomahawk and a Beech Skipper, or a DH82 and a Stampe SV-4?

It could be argued that the Viper is similar to half-a-dozen other LSAs and that it is hard to find a point of difference to choose between them all. Often it comes down to price, financial sweeteners, build quality, personality of the vendor, availability of parts and service, or even the manufacturer's name and reputation (Cessna versus Piper?). Prices for the Viper range start at \$95,000 for the Basic model, up to \$160,000 for the LX, plus extras depending on what other options are taken. Add shipping and GST to these prices.

Whatever it is that tips a buying decision, we are spoilt for choice of LSA types. I think the Viper is well worth considering as a fun, practical and easy to fly aeroplane if you are in that market.



John King

Ewan Wilson's Waikato-based Wilson Aviation is the New Zealand distributor for the Viper.



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Cooling air intake grilles to assist airflow are an unusual feature.



Scott McMillan receives his traditional reward for flying his first solo.

generous sponsors, the cost of flying is greatly reduced. To undertake the training anywhere else in New Zealand would cost three times the amount we had to front up with.

The morning was grey with a hint of rain, so I was relieved to get off the ground with CFI Craig Walecki who was undertaking my solo check. After a few circuits we pulled off the runway and he got out.

To be honest, I didn't feel as if I was ready to fly a plane alone, but the butterflies that I felt while waiting for takeoff clearance seemed to fly away as soon as the aeroplane lifted off. It seemed like the shortest flight of my life (it was — just one circuit of Woodbourne), but it was one that I will never forget.

Over the course, 14 first solos were achieved. Along with these first solos there



Thomas Race marshals Halley Sims and CFI Craig Walecki into line.

were a number of returnees who undertook advanced training and solo consolidation.

Side-by-side with our practical training was the ground training school. We were taught the theory of the flying in a classroom so that we were always a lesson ahead in the theory than what we were doing in the air. This allowed us to better understand what we needed to do in the air and enabled us to use our time airborne more efficiently. We were also taught the syllabus of the PPL

FRTO paper.

Despite the weather's best efforts, the 2013 National Aviation Course was a resounding success. This was due to the generosity of sponsors, the hospitality of the RNZAF, the instructors, other organising staff and the willingness of the cadets to learn.

I am confident that this course will continue long into the future, providing some of New Zealand's youth a unique and very special experience.



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