AMATEUR BOAT BUILDERS' ASSOCIATION

JAN/FEB '03

SIKA AND YE SHALL FIND

Yes, I know it's a lousy headline, but can you think of anything better? Actually it should be followed by "----- a huge range of state of the art adhesives and sealants." because that's what we we given an insight into at the technical meeting on Tuesday, 26th of November. Our speaker was Glen Lyons, technical representative for Sika (Aust) in this state and he came equipped with a car-load of samples and enough sample bags for everyone present at the meeting.

The Sika company dates to 1910 and these days manufactures its products in eight different countries, including Australia. It's nice to find someone who hasn't concentrated their production on Taiwan or Korea! It was soon made obvious that if Sika had to rely on amateur boat builders alone for their profits, they'd go broke pretty fast. The company supplies products, particularly elastic bonding chemicals, to the aircraft, railway, automotive and construction industries, and in a big way. For example, we were told, new Volgren buses assembled for Transperth somewhere in the northern suburbs have their bodywork largely held together with Sikaflex and similar products. It obviously provides a more continuous attachment for sheet aluminium than pop rivets, getting closer to a monocoque structure, at the same time as providing a thermo-elastic bond that takes up different rates of expansion and contraction while leading to reduced noise levels as well. In fact, Sikaflex was largely developed for cars and has been extensively tested in crash simulations at $100,000 a time.

In terms of stickability, Glen told us, conventional silicon rates about 1, m.s. polymers rate about 2, other hybrids rate about 4 while most Sikaflexes rate 8 - that's a big difference. It immediately led to the question, "How do you unstick Sikaflex when you want to, as in winch bases, etc?" Glen suggested that allowing one surface of the adhesive "skin off" for twenty minutes or so would ensure separation later. He also agreed that a light film of grease on the surface to be separated would do the trick,

although this latter idea would mean no adhesive properties at all, just padding or caulking. Without either of these techniques you're guaranteed a very secure bond and you'll usually break chisels, screwdrivers and the usual collection of other levers while trying to separate the bonded joint.

Sika manufactures its products mainly in cartridges for gun application and doesn't provide a lot of labelling information so it's as well to start with a technical sheet before making a purchase, but in general, low numbers refer to a caulking or filler compound, while high numbers indicate better adhesive properties. A good middle of the road compromise is Sikaflex 291 which is the one you're most likely to find stocked in your friendly neighbourhood yacht chandlers. However, 290 is more usually specified for deck caulking and other filling jobs while 292 is regarded as optimum for most adhesive jobs, especially metal to metal or metal to wood.

For deck caulking between teak planks a Sika primer is first applied along the inside faces of the seams and allowed to dry between 1 and 24 hours. Bond breaker tape of the appropriate width is then laid in the bottom of the seam to stop Sikaflex adhering to the bottom. If it did, thermal expansion might break the joint at a later date. Then, and only then, is Sikaflex 290 or 291 laid in the seam. This is preferably done with a triangular bead to better fill the bottom corners of the seam. We were even shown how to cut the nozzle of the cartridge to generate a triangular bead for this purpose.

When it comes to adhering metal to metal or metal to wood, the old wood working techniques no longer apply - one mustn't overclamp. A suitable thickness of Sika must remain in the interface to allow for later expansion and contraction under temperature changes. In fact, Sika specify the use of little spacers to keep the surfaces a pre-determined distance apart. Typical spacers, depending on the size of components and other things can vary from 0.5mm to 5mm. Of course even 0.5mm is a huge amount of adhesive compared with the usual quantity left in a wood to wood joint using conventional epoxy.

295 UV is a very elastic adhesive which is very good for plastics while 209 is a black, UV protection best applied with a foam dauber to stop UV getting at the Sikaflex under plastic windows, etc. For big jobs requiring more than a cartridge or two, many of the products are obtainable in long "sausages" and with a special gun can save 20% or so over cartridges. There is, of course, a full range of Sika cleaners, primers and removers which are applicable before or after the application of Sikaflex adhesive or caulking materials. Although turps can be used as a cleaner at a pinch, it's not recommended because of an oily residue that can be left behind. The same applies for clean-up operations - turps will often do but Sika 208 remover is relatively cheap and does a better job.

One item that it was suggested is not so cheap (although no prices were mentioned) is a two-part adhesive, Sikafast, which is mixed in the outlet nozzle of special gun which takes the two, odd sized cartridges together. It's claimed to be flexible, high strength, non-sag and gap filling. However the only cartridges and gun on display were quite small and compact and I don't think you'd use them to build a 40 footer, price regardless.

Be that as it may, Glen's talk generated a huge level of interest amongst those attending and there were many questions and much discussion from the floor at various stages. It was a pretty technical sort of evening but one that was clearly in demand and we are deeply indebted to Glen for being able to meet that demand.

ANOTHERWEBSITE: Try <http:/www.jglen.com.au> for stainless fasteners and a catalogue.

FLYING, REALLY FLYING, THIS TIME!

I know that last issue we were flying a yacht, but the Toolbox Visit of 14 Dec was about real flying, in real, DIY airplanes. By way of a change we visited the Serpentine airfield, home of the Sport Aircraft Builders' Club. These people build their own aircraft the way we build our own boats, but they're under a lot more bureaucratic control than we are.

Until recently control was administered by the Department of Civil Aviation (DCA) which became the Civil Aviation Safety Authority (CASA), which became Air Services Australia (ASA). Why do they keep changing names? More recently control has been handed over to the Sport Aircraft Association of Australia (SAAA), which sounds to me like either privatisation or self-assessment. Generally, up to the ASA stage, various work samples had to be submitted at different stages of construction for inspection and where necessary, testing. This latter particularly applies to wooden and composite structures. Physical inspections also took place at the construction site at various stages during the build. Things have changed a little since the conversion to the SAAA system, in particular the appointment of a technical counsellor at the commencement of construction and that one person acts as supervisor and mentor. I gather that this system is much more like the American Experimental Aircraft approach, which has been going over there for many years. Whichever system you go with, aircraft building is much more closely supervised than our hobby is and in that way the wings and other important bits don't start falling off soon after take off. With boats, of course, a survey is usually required by the insurance company, but that's about all.

The club's home is a small airfield with two strips at right angles to accommodate most winds, a fairly commodious clubhouse, some caravan camping area and no less than about 70 small hangars leased to individual members to construct and/or store their aircraft. I gather that most leases are currently taken up, and being about 60km south of the Perth GPO, many members spend a whole weekend there, camping either in their hangar or a caravan.

Unfortunately, on the day we visited the place was very nearly deserted, probably because (a) the club had had an Open Day only a couple of weeks earlier, (b) it was getting dangerously close to Xmas and (c) it was getting pretty hot in Serpentine at that time of year anyway. However we did get to see a small range of extremely pretty aircraft where their owner-builders were "in residence".

Most of the 'planes were low wing monoplanes and the first of these was a very smart little Vans RV6 belonging to Andrew Tainsh, our host and workmate of Geoff's. This little two-seater holds its occupants side by side in a wide fuselage over a fairly low aspect-ratio wing so that it looks a little dumpy when directly overhead, but it looks very pretty from any other angle. I think it's of all-metal construction. Andrew's plane sported the standard 160hp Lycoming powerplant, with which it is fairly aerobatic.

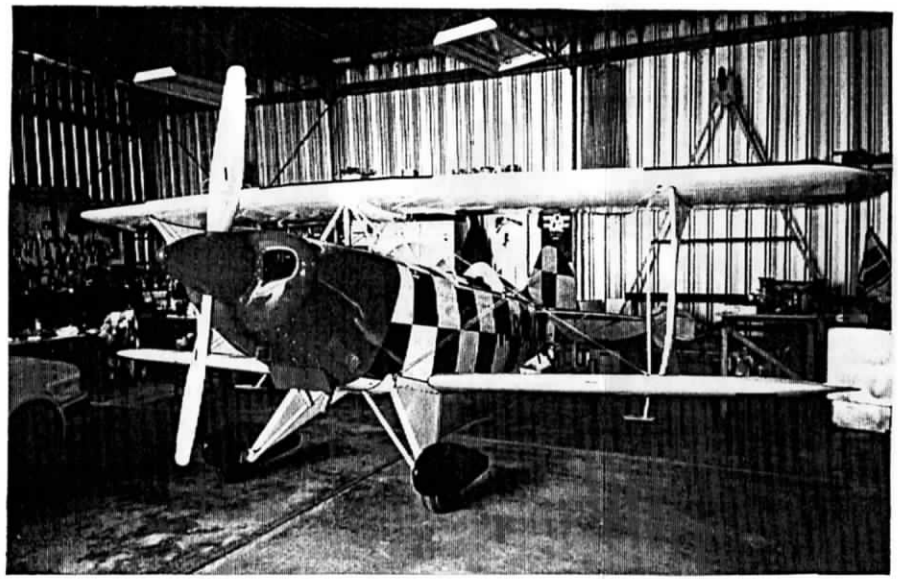
Further up the line of hangars we ran into Wally Nilan who must be one of the club's members of longest standing. Wally completed his French-designed Bebe Jodel, largely in wood, around 25 years ago, and it's still flying so the original DCA supervision really worked. The Jodel has cute little turned up wing tips rather than straight dihedral, for stability, and is powered by a 100hp Continental engine.

Next in line was something rather different - a real Pitts Special stunt aircraft belonging to Steve Angelopoulus. This is a very neat tandem seater biplane well powered by a 260hp Lycoming. The design is a reknowned competitor in stunt competitions all around the world but Steve flies

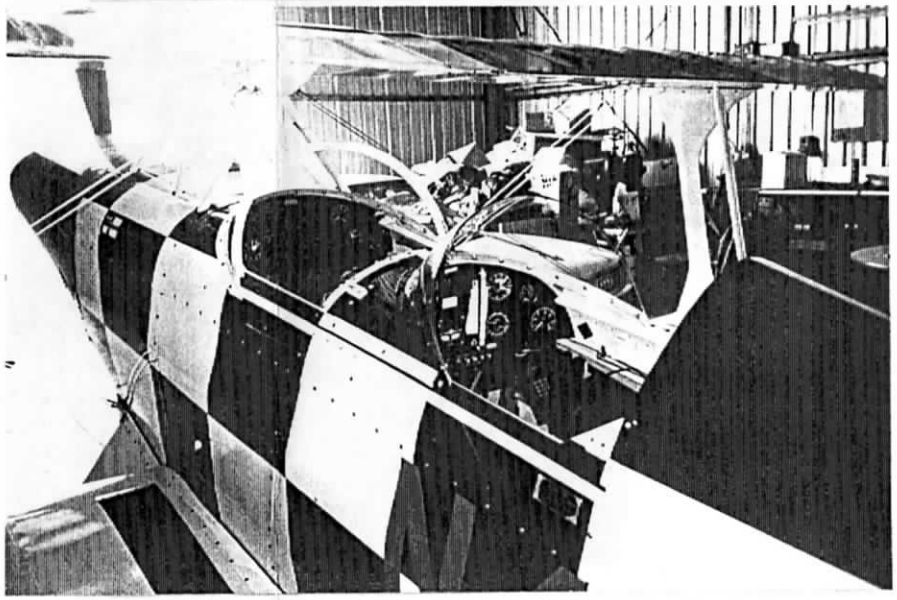
A DAY AT THE AIRSTRIP

The Vans RV6 of Andrew Tainsh , simple but pretty in its straight yellow colours. Note forward-hinged canopy.

Plenty of dials in the RV6 cockpit - enough to take your eyes off the horizon, anyway. Dual control.



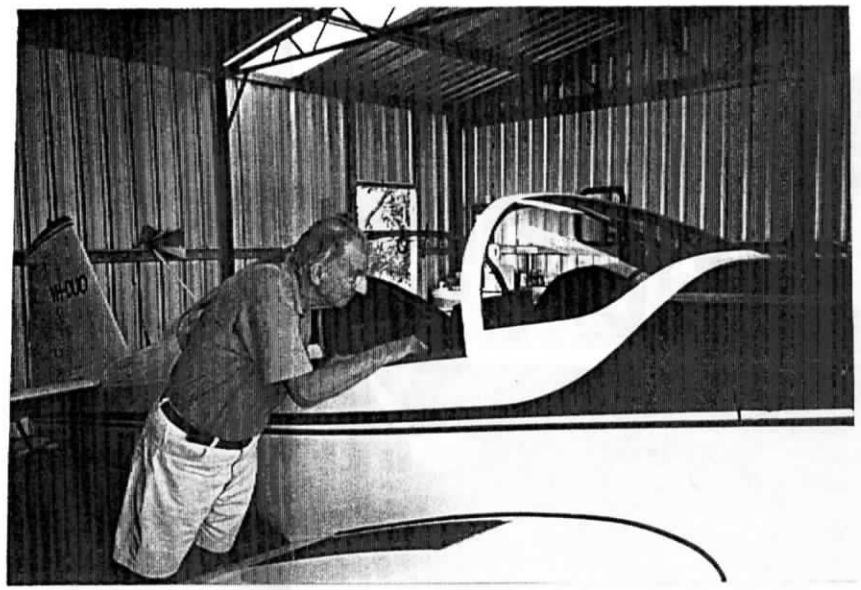
A thoroughbred stunter, the Pitts Special belonging to Steve Angelopolous. Small wingspan, high performance.



Tandem cockpits of the Pitts. The main flying seat appears to be the rear one.

Wally Nilan's Bebe Jodell, now about 25 years old. Note the neat, turned up wingtips. 100hp Continental.

Bill Bell (centre) shows one of the wing tanks for his stretched RV6 to Geoff Leggatt and Clive Jarman.



Mike Igglestone inspects the cockpit of Bob Tarrant's RV6. Mike resisted the temptation to climb in and fire her up. The hangar door was open, too.

The SABC clubhouse at Serpentine, set off by Andrew Tainsh's RV6, shortly after taking Geoff for a spin.

his pretty conservatively, he says, since a prang would be horrendously expensive at today's replacement costs. The whole thing comes from the US and with the altered exchange rate, increased US prices and Australian GST he now values the aircraft at Aus$500,000! Even a replacement propeller would set him back Aus$20,000. So Steve's stunting is a pretty quiet affair, no doubt at high altitude.

We saw another Vans RV6, this one with a tricycle undercarriage and a sliding rather than hingeing canopy, but otherwise the same as Andrew's, belonging to Bob Tarrant. Bob later took off solo and flew a few loops over the strip for us. But perhaps the most interesting aircraft was all but invisible to us. This was yet another Vans RV6 just starting construction by Bill Bell in his larger than average hangar/workshop. Bill has been a ferry pilot for two or three decades and has frequently flown the Pacific Ocean. Now he wants to do it in an aircraft of his own construction - the RV6. He will power it with a 300hp Lycoming with the skin increased from 0.025" to 0.032" and wingspan increased by two feet to accommodate extra wing tanks. He's currently working on the mainspar and fuel tanks. Hmmmm. All in all, a brief but very interesting visit to see how the other half lives. Many thanks, Andrew.

THREE MORE WEBSITES FOR YOU TO PERUSE:

<http://www.aerorig.com> - Provides many links to related subject sites as well as giving specific reference on the aerorig itself as described at a recent ABBA meeting.

<http://www.sparkmanstephens.com> - For those who would like to research the yachts of yesteryear as well as ongoing current designs, boats for sale etc.

<http://www.antarcticacup.com> - Keep track of the upcoming developments for this historic race around Antarctica.

<www.KITTYHAWK.ca> - If you've got a spare $1.5 million US or so, check out Orvillle Wright's motor launch currently up for sale in Canada

ADMINISTRATIVE NOTES

NEXT EVENING MEETING:

This will be on Tuesday, Jan 28, at RPYC Junior Club, 7.30 for 8pm. The guest speaker will be Brad Miocevich, who purchased Ye Ed's "Isis", a Victorian-style riverboat, and then converted her to electric drive. Brad will describe the conversion, its ups and downs and the final result in an illustrated talk that should give many of us food for thought especially since we've not considered electric drive at all before.

NEXT TOOLBOX VISIT:

This will be to Mike Wade's workshop at 15 Enid Rd, Kalamunda (it's on all the maps so I won't describe how to get there). Mike's festive season extends into early February this year so we're going there on 22nd Feb, 2pm to 5pm . Mike's project is a 16' "Navigator" designed by NZ-er, John Wellsford. This is an open sailing boat, sloop rigged, with multi chines (4 per side). I think the only boat of similar construction which we've considered is is the 8' dinghy built by the Leggatts as a tender for "Restless III". Mike's boat will be eight times the size (twice as long, twice as wide,etc) and should make a very interesting visit.

LIBRARY:

We're thinking of buying a book on canoe construction to help our beginners. Experienced members are invited to submit their ideas of good titles to Geoff Leggatt.