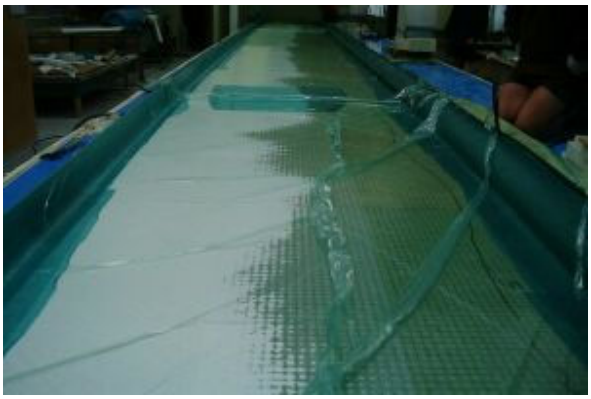
THE RESIN INFUSION STORY

By Derek Kelsall

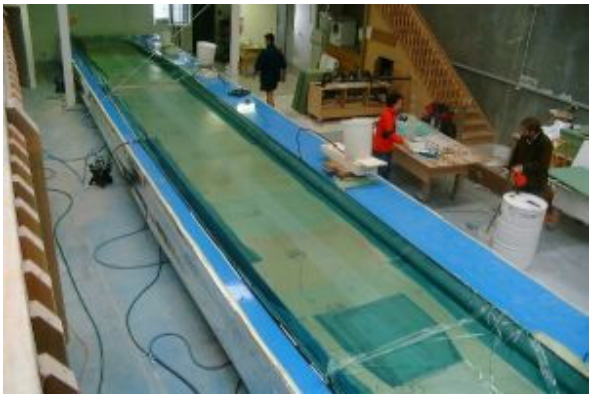
The first laminating I did was more than 40 years ago, but the basic process had not changed over all those years till 2002. The Vacuum resin infusion process (VIP) to replace bucket and rollers, is the first real change that we have been able to apply to our methods of laminating in our business of supplying boat designs and guiding our clients through the building process. VIP has played a major roll in almost all that we have done since early last year.



70' top side panel - 10min. into resin infusion.

It is my belief that VIP will become ever more important in boat building everywhere, and hence the story of its introduction is an important one. My business is entirely based on a method of building boats which we call KSS. Kelsall Swiftbuild Sandwich. Every project starts as a kit of flat panels of foam and fiberglass. This kit is a lot more than plain panels. Most importantly, there is a smooth finish to one side, but additionally, many of the tasks which are usually applied to a boat during assembly can be applied much more efficiently to the panel as that panel is made. This is the KSS approach. See more details elsewhere on the web-site. As KSS kits are made on a table, VIP which is a lot easier to apply this way than in moulds, is the perfect partner to KSS.

Let me describe two similar projects - one the previous hand laminating method in Opua and one seen today using resin infusion. We made a 54 foot hull panel. All the materials had been prepared beforehand and set to one side. The first resin was mixed and the 6-7 hands went to work and worked hard to get the job under vacuum 2.5 hours later. Plenty of resin dripped onto the floor, shoes etc. The inside fiberglass skin came later.



70' top side panel on the table - deck edge radius on left, knuckle on right.

A similar area topside panel for 70 footer had all the materials prepared beforehand, but with the difference that they were left in place on the table. These materials included the second skin. The vacuum bag was put in place over the dry materials with provision for resin inlets and vacuum suction points. I arrived 5 minutes after the catalyst had been added to the resin and saw the resin slowly creep across the panel. Less than 30 minutes later and all the glass was fully infused. The resin level in the containers was monitored and check made on the resin flow, but otherwise, the vacuum pressure did all the hard work. To me, having made panels the other way for 30 years, the contrast is that touch of magic that VIP adds to KSS. The old way was better than the any alternative I know, but now VIP is cleaner, better, more accurate and more versatile and involves less time.

Resin infusion is open technology. It is best known in the US for 2, 3 companies using to laminate hulls in conventional moulds. Their claim is that it is environmentally much more friendly but is not necessarily less cost in their mould operation. Other companies reports of infusion problems produced the skepticism reported below. My attention was drawn to this publicity by a client in Florida. Could this be the next step for KSS??

I was in discussion with Innovation Lamination Ltd. at the time. The company then set up with the full intention of marketing panels to the boating industry and that resin infusion was the way it would be done. It just made sense. However, when it came to the details, there was no one to consult. I was confident that it could be done due to my many years of experience of the general panel making process, but had no direct experience. Innovation talked to many people. Some had seen the process applied in moulds but could not suggest the setup we needed. Nuplex supplied the materials (and they were very helpfull), but it was clear that a full series of trials will be needed. In the meantime I had talked about VIP to some of my clients. Robin Shaw in Texas took the idea aboard and it so happened that I was to hold a KSS workshop at his location in October 2002. We then made panels for his 46foot cat during the workshop. Another client, also hosting a KSS workshop,

is in W. Australia. There we produced two panels and shaped them into a 33 foot hull for his cat - the first all resin infusion KSS hull - within 4 days. The VIP magic was working and now recommended to all my clients.

We make no claim to having invented the technology. What we have done is devise the techniques that do the best job for our application. We have learnt a lot.

In the meantime, Innovation were making first panels for clients. As I write, the topsides of a 70 footer are the last two parts still to be added to complete the basic structure, where more than 60% of the structure is resin infused.