

AMATEUR BOAT BUILDERS' ASSOCIATION

MAR/APR '04

ABBA COMMITTEE

Geoff Leggatt,	President,	ph 9494 9999 (Wk)	9316 8624 (Hm)
John McKillop,	Secretary,	ph 9437 6666 (Wk)	9313 7442 (Hm)
Chris Davis,	Treasurer,	ph 9440 2317 (Wk)	9387 5042 (Hm)
Mike Beilby,	Newsletter,	ph 9397 6209 (Hm)	

Contact any of these four people for clarification of association activities.

WOODEN BOAT SHOW VIDEO NIGHT

On Tuesday, January 27th Les Simpson and Peter Leggatt, presented videos of the Goolwa Wooden Boat Festival and Tasmania Wooden Boat Show respectively. The Timber vessels depicted in the videos ranged from small dinghies through to large paddle steamers. Thankyou very much to Les and Peter for the evenings presentation.

VEEM PROPELLERS

On Saturday, 7th February we were able to visit the factory of Veem Engineering in Canning Vale. We were given an extensive tour of the facilities by Veem General Manager Brad Mioceovich together with Naval Architect Peter Ivanac and Marine Production Supervisor Dale Smith.

Veem are capable of most heavy casting and engineering type works however have recently made a conscious decision to increase their focus on the design and production of propellers. Brad is investing in both design and manufacturing technology to ensure that Veem are capable of meeting future design requirements and product delivery times.

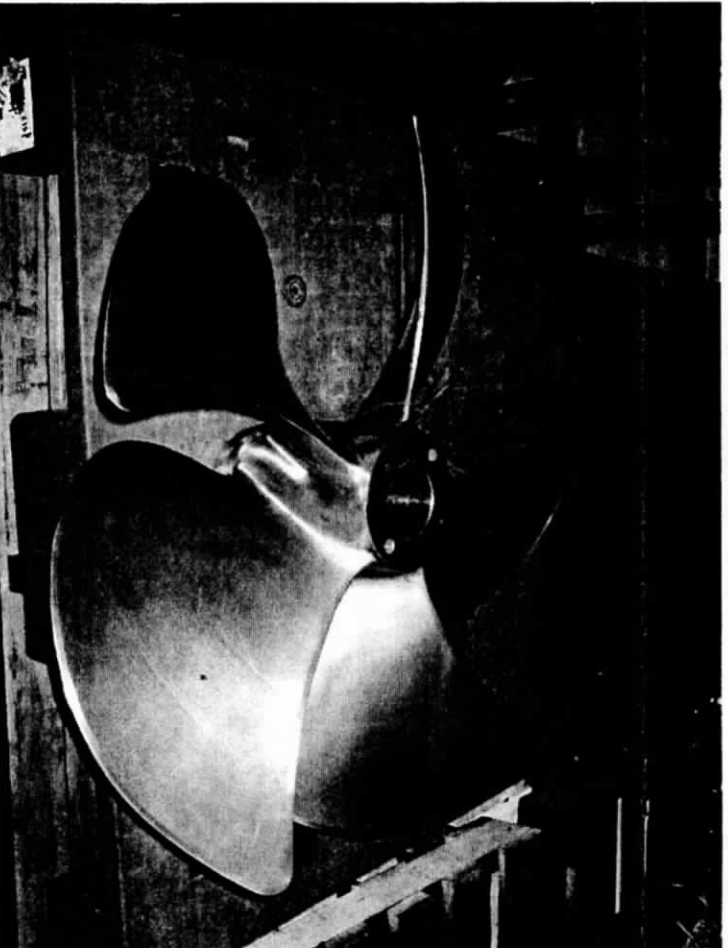
The tour began in the foundry where we were informed that Veem do all of their own alloying to achieve the desired material properties. They are also capable of testing the chemical composition of the alloy on site to ensure the quality of the casting material. The majority of the propellers cast are from Nickel Aluminium Bronze, however Veem are capable of mixing and casting in a number of other non-ferrous materials. The majority of Veems propellers are built to the requirements of a Classification Society and as such are surveyed for chemical and physical material properties.

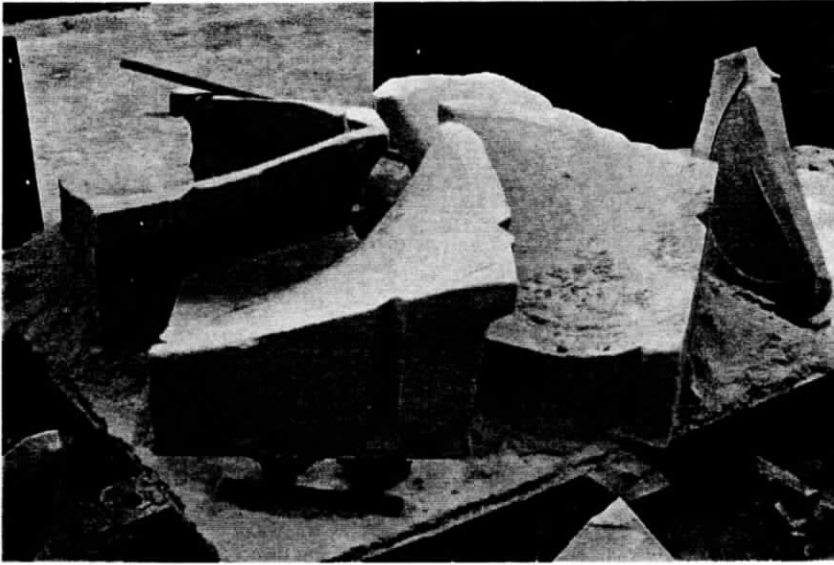
After discussing casting materials we were shown several propeller moulds. The first was known as a biscuit mould. This is comprised of a number of identical individual moulds (one for each propeller blade) which are accurately positioned around a central axis on a base plate. Packing in the form of additional moulding sand is packed around these biscuit moulds in order to form the bottom half of the overall propeller mould. The moulding sand consists of fine silica sand mixed with a binder which, when combined, takes 30 minutes to harden. A similar mould is then placed on top of the base mould to form an enclosed cavity into which the molten metal is poured. The first photo

Veem's in house Naval Architect Peter Ivonac (left) explains aspects of the propeller pattern to Mike Igglesden.

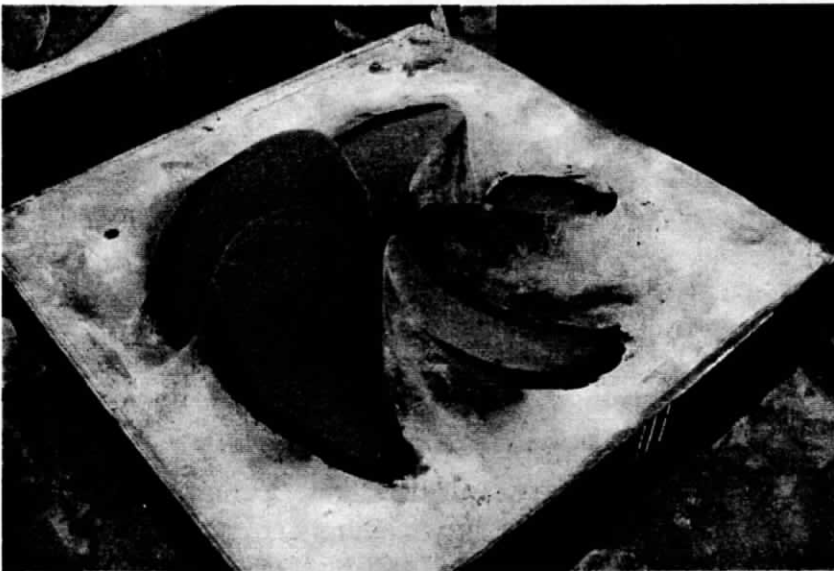


The finished product. A five blade fixed pitch Nickel Aluminium Bronze propeller.

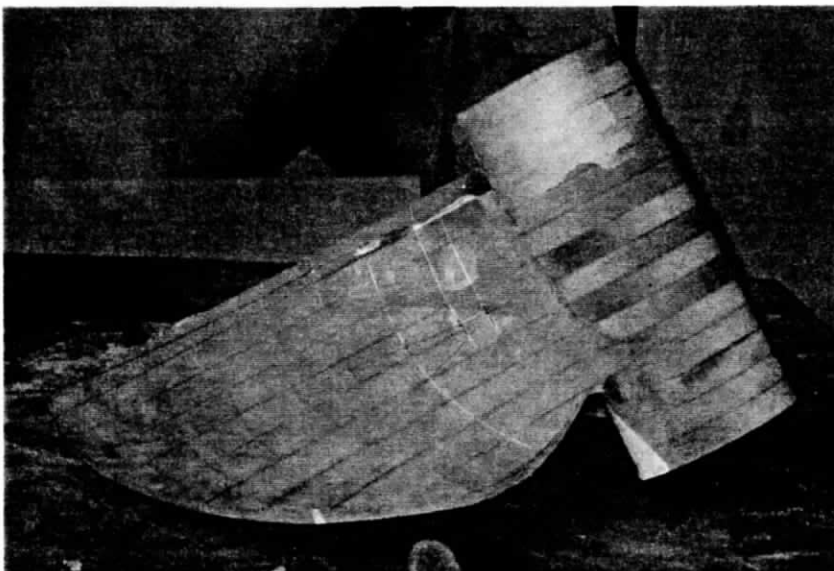




A biscuit mould constructed from a number of identical blade moulds accurately positioned around the proller boss. Top half of mould removed for clarity.



A monoblock mould initially formed using a rough undersized pattern and CNC machined to final size and shape.



Propeller blade pattern used to form a biscuit mould. Note the bread and butter method of construction. Pattern material is Medium Density Fibre Board (MDF).

attached shows the base of this mould prior to packing.

The second mould we were shown was a monoblock mould consisting of an upper and lower half each formed by packing moulding sand around a rough undersized full propeller pattern. Each half of the mould is then CNC machined to the correct shape and dimensions allowing for shrinkage of the metal during cooling. The top half of the mould is accurately positioned on top of the bottom half and the moulds are clamped together prior to pouring of molten metal. The second attached photo shows the lower half of this mould after machining.

Adjacent to the above mentioned moulds was a five bladed propeller which had been cast on Friday for a WaveMaster vessel and as such was still warm. The pattern for this propeller had had raised 'O' Dymo labels stuck to the surface in predefined reference locations. This resulted in raised 'O's appearing on the final as cast surface of the propeller. Each of these reference locations is then later checked to ensure that the coordinate of this point corresponds to the as designed propeller coordinates.

The next area of Veem's facilities we moved onto was the pattern making shop where we were shown a single blade pattern destined to be used for creating a biscuit mould. The pattern was constructed from medium density fibre board (MDF) using the bread and butter technique. A picture of this pattern can be seen in the third attached photo.

Finally we visited the finishing shop where the castings are ground using hand tools (angle grinder) to the final dimensions and surface finish. If the propeller is to be built to classification society requirements, propeller geometry will be checked to ensure it fits within specific tolerances. There are four levels of tolerance in propeller construction, namely Class S, Class I, Class II, Class III, with Class S having the smallest tolerances. Naval vessel specifications typically specify Class S propellers in order to reduce noise signature. The majority of propellers manufactured by Veem are to Class I, however Brad Miocevic

stated that the majority of these would fall within the Class S tolerance.

Our tour concluded with a viewing of the latest piece of technology purchased by Veem in order to push them into the next generation of propeller manufacturing. This computer numerically controlled (CNC) machining centre combines both a lathe and 5-axis milling machine and is the size of a small room. It is capable of self loading the work piece off a conveyor belt, comes with a tool changer with what appeared to be well in excess of 100 different tools, and even has its own air-conditioning system in order to maintain the lead screw dimensions for a high degree of precision. Brad stated that this machine is capable of completing the entire propeller manufacturing process by itself including post finishing, once provided with a block of material to start with.

Thanks very much to Brad, Peter, and Dale for allowing us to tour the factory and for the drinks and nibbles provide at the end of the tour which was second to none.

FORTHCOMING EVENTS

Tuesday, 30th March – Evening Meeting

Martin Grimm, of Austal Sea State Ride Control Systems and former Defence Naval Architect, talks on hydrofoils, their history, vessel application, types and section shapes. Sounds great; don't miss.

Saturday, 10th April, Toolbox Visit

Bill Leonard, of "Endeavour" and "Duyfken" fame, now Maritime Museum restorer, opens his workshop (in Slip Rd, Fremantle, ex-Tupp's Wooden Boat Works) between 2pm and 4pm. Lots of old boat projects.

CALENDAR

TUESDAY, 30TH MAR – Evening Meeting.

RPYC Junior Clubhouse, 7.30pm for 8.00pm

SATURDAY, 10TH APR – Toolbox Visit

WEDNESDAY, 21ST APR – Committee Meeting