

Dimensional Control of Boat Decks

SUMMARY

[Campion Marine](#) is the last remaining open-mould glass fibre reinforced polymer (GFRP) manufacturer of luxury boats in Canada, and has been active for over 36 years. It has released numerous product lines, ranging from closed-deck speedboats to open-deck pontoons. Over years of production, Campion has experienced a range of process-based defects, some of which are systematically occurring, while others are not. An example of a non-systematic defect is the dimensional control of boat decks, which leads to assembly difficulties (when the bowing of the deck prevents clean fit-up to the hull) and oftentimes forces technicians to make costly repairs. CRN investigated the problem on behalf of Campion.

CHALLENGE

Part deformation between the stages of de-moulding and component assembly has presented significant problems for Campion in the past. Typically deformation occurs during cold months and when production demand is high. Events can occur on a weekly basis with significant remediation costs for each occurrence.

Typically occurring during cold months and when production demand is high, major fit-up issues attributed to de-moulding storage practices can occur once or twice a week. This equates to a real cost of approximately \$600 per event of this type.

Don Tamaki, Plant Manager

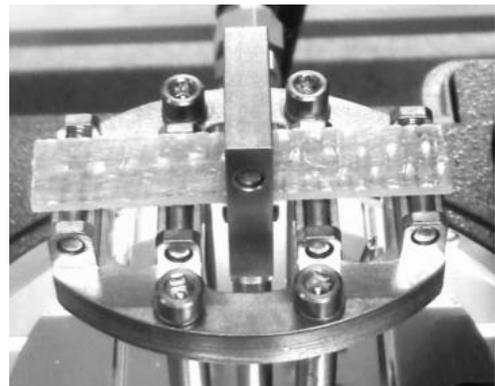


Campion Marine
Kelowna, British Columbia

Campion Marine is Canada's premier and largest independent builder of fiberglass power boats.

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Material sample in the three-point bending fixture of a TA Instruments dynamic mechanical analyser.

APPROACH

CRN staff observed production practices on the workshop floor. In combination with existing cure kinetics information on Campion's material system, a laboratory-scale experimental approach was taken to characterise the dimensional changes of the GFRP laminate when under scaled self-weight while stored on saw-horses.



Boat deck stored on saw horses.

OUTCOME

The tests revealed that the majority of deformation came from cure progression, which was occurring as demoulded parts permanently buckled under their own weight during storage. Better control of cure and de-moulding time will ensure parts are fully cured before demoulding, and will significantly reduce reworks arising from this source.

IMPACT

The work conducted with CRN on this topic has given Campion the knowledge to avoid a costly mistake, potentially saving the company time and thousands of dollars per production season.

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