Composites Research Network

Parallel Gelcoat Cracking in 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. Each product line is used in different outdoor environments and a variety of manufacturing practices have been adopted by Campion to produce high quality and robust products. One recurrent problem experienced by Campion is the cracking of the gelcoat on deck components, which are returned under warranty for repair. Each event can cost the company in excess of CAD$1000 when they are repaired in the field. CRN has investigated the cause of this problem and has issued a set of recommendations to help prevent it.

Campion Marine
Kelowna, British Columbia

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

Client Contact

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CHALLENGE

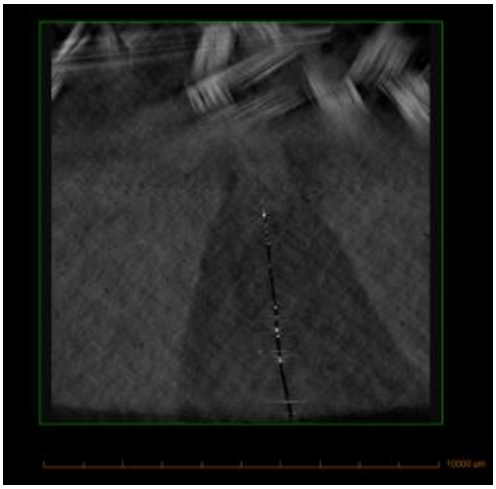
Despite being cosmetic in nature, gelcoat cracks leading to warranty repairs have extensive associated costs, often in the order of over CAD$1000. Campion Marine did not understand the cause of the cracking.

> ***Even a small gelcoat repair due to cracking will result in a 2 to 3 hour repair in Campion's shop. If the crack must be fixed in the field, the cost of repair could easily exceed $1000.***
>
> *Don Tamaki, Plant Manager*

Highlighted zone of gelcoat cracking.

APPROACH

Sections of damaged boat decks were prepared into specimens for closer inspection by CRN staff using X-ray Micro-Computed Tomography. Researchers imaged the cracks to note microscopic details that may point to their cause, and their gradual growth.



X-ray micro-CT of a sample of cracked gelcoat cut from a deck.

OUTCOME

CRN researchers concluded that improper cure management primarily caused the cracks. Post-cure in the field, and during operation, likely caused dimensional changes that led to cracking. Images taken by the X-ray Micro-CT also revealed resin bloating around the cracks due to the ingress of moisture, which exacerbated the problem.

IMPACT

In conjunction with other CRN-led projects related to better thermal management and cure, process modifications at Campion have led to tangible time and cost savings. This specific project led to a better understanding of how to tackle the long-term issue.

CONTACTS

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