



Australian Government
Department of Defence
Science and Technology

DST
GROUP

Science and Technology for Safeguarding Australia

Biologically Inspired Shape Optimisation Technology

Rebirth of fatigue-damaged structural components

What if you could repair a component in such a way that resets the lifespan clock AND extends the component life considerably?

The DST has developed a novel in-situ repair technology, based on optimal rework shaping. It has been applied successfully to critical RAAF airframe components with local fatigue or environmental damage. The technology can also be applied to structural components in other domains.

Technology Features

- ▶ The rework shape is optimised using a biologically-inspired algorithm to reduce peak stresses.
- ▶ Unique software has been developed to automate the design.
- ▶ Local in-situ machining is enabled by customisable compact tooling.

Benefits

- ▶ Extend fatigue life while removing cracks.
- ▶ Avoid replacement of critical load bearing components.
- ▶ Robust design tolerates fleet variations.

- ▶ In-situ machining reduces repair time and costs.
- ▶ Precise machining facilitates certification.
- ▶ Applicable for both repair and pre-emptive rework.

Proven Successes

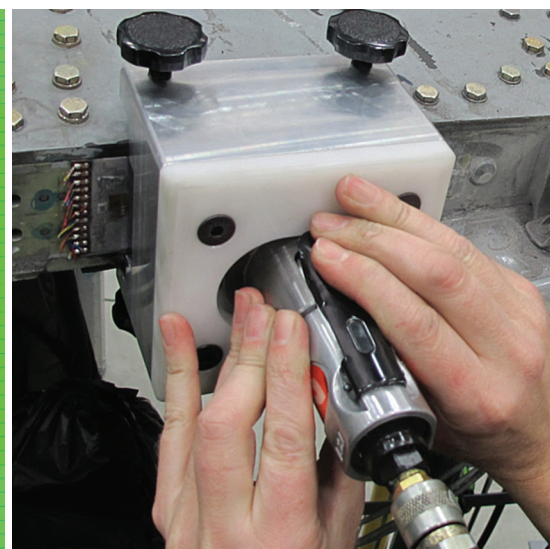
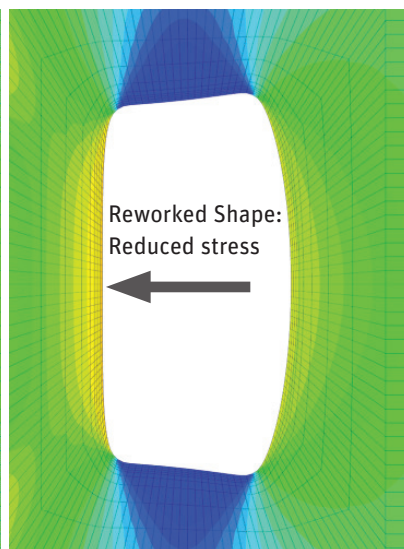
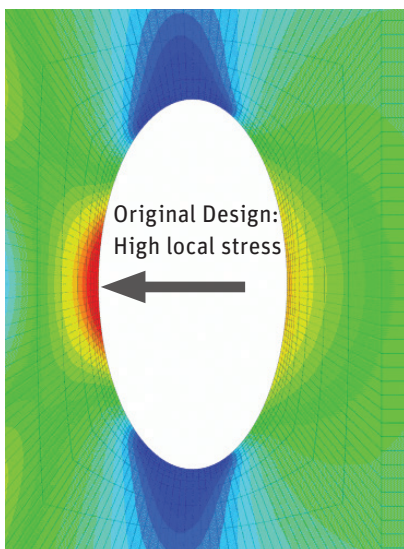
DST has used this technology to effectively repair and extend the life of a number of F/A-18 A/B and F-111 critical aircraft components.

Partnering Opportunities

We are interested in entering into collaborative or commercial arrangements to apply the technology more widely, and for its further development and refinement.

For further information contact:

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