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Scientist cracks jet lifespan code

By **BRIDIE SMITH**
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MELBOURNE scientist Loris Molent has invented a way to detect cracks in metallic surfaces before they appear — handy if you're in the business of managing a fleet of FA-18s.

His invention, a mathematical model used to predict metal fatigue, has earned him the $15,000 Defence Science Award, to be awarded today, and has been credited with saving the RAAF an estimated $400 million over 10 years in costs associated with replacing the centre barrels of its FA-18 aircraft.

"The cracks we're talking about are generally undetectable to the human eye," Mr Molent said. "But they grow and by the time they are visible they are probably close to being catastrophic, and by that I mean, coupled with a big load, bang — we lose the aircraft."

Mr Molent, who trained as an aeronautical engineer and now heads the Defence Science and Technology Organisation's aircraft structural integrity group, oversees the management of RAAF aircraft including the F-111, FA-18, PC-9 and Hawk trainer aircraft. Over a decade's work with colleagues at Fishermans Bend, he observed it was the cracks which developed fastest that caused the most damage to aircraft. Significantly, these "lead cracks" grow in a particular and predictable way.

Knowing how they develop allowed him to predict, with computer modelling and simulated testing, the service life of aircraft. It has meant some aircraft have been kept flying safely well beyond the manufacturer's expected retirement date.

"We can demonstrate that there's no need for repair or replacement of these components, which is where the savings come in," he said. "But we also keep the aircraft [in circulation longer] because it can take at least one year to modify each aircraft . . . that's one more year that we don't have to buy a new aircraft."

This "simple mathematical model" developed in Melbourne has also gone global. The method, which has been outlined in industry journals, has been picked up in the US, Canada and the Netherlands.

Defence Science and Personnel Minister Warren Snowdon praised Mr Molent's work, which he said combined "fundamental scientific research with practical engineering".

Part progress: Aircraft technician Dario Endrigo works on an FA-18 air intake during testing at Fishermans Bend. PICTURE: JOE ARMAO

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