



Australian Government
Department of Defence
Science and Technology

DST
GROUP

Science and Technology for Safeguarding Australia

New Generation Fibre Laser Technology

Next generation fibre laser technology for aircraft protection

Heat seeking missiles and sensors remain a threat to defence platforms – especially to ‘stealth’ platforms that are only stealthy in certain portions of the radio frequency spectrum. Currently deployed Directed Infrared Counter Measure (DIRCM) systems use bulk crystalline solid-state lasers and high voltage sources to produce the laser radiation required to defeat thermal heat seeker sensors on missile threats.

DST Group’s proposed new generation fibre laser technology replaces a large fraction of the solid-state laser with monolithic fibre laser amplifiers thereby reducing the manufacturing costs and eliminating the need for high voltages in the system.

Application

DST’s new generation fibre laser technology will significantly improve the stability of the laser in harsh conditions and reduce the manufacturing cost of the lasers used in DIRCM systems for protecting platforms against heat seeker sensors. They offer performance advantages: operating at higher average powers than bulk crystalline lasers, at higher peak powers and with better beam quality than diode

lasers. In addition, fibre-based systems are insensitive to vibration and mechanical deformations offering superior performance and cost savings when integrated on defence platforms.

Consumers

Users of DIRCM technology and manufacturers of DIRCM systems who demand more rugged and reliable laser solutions: ADF, civilian aviation, defence industry.

Partnership opportunities

DST is seeking industry partners to develop the technology from TRL 3-4 to TRL 4-5 and subsequent technology licencing/transition to industry for manufacture. This will ensure that the lasers currently built in Australia are leading global technology trends as well as improving on the performance to address more advanced threats and platforms.

For further information contact:

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Example of current generation DIRCM technology that has been transitioned from DST

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