MARITIME AND NAVAL SHIPBUILDING TECHNOLOGIES

SOVEREIGN SHIPBUILDING CAPABILITY FOR AUSTRALIA

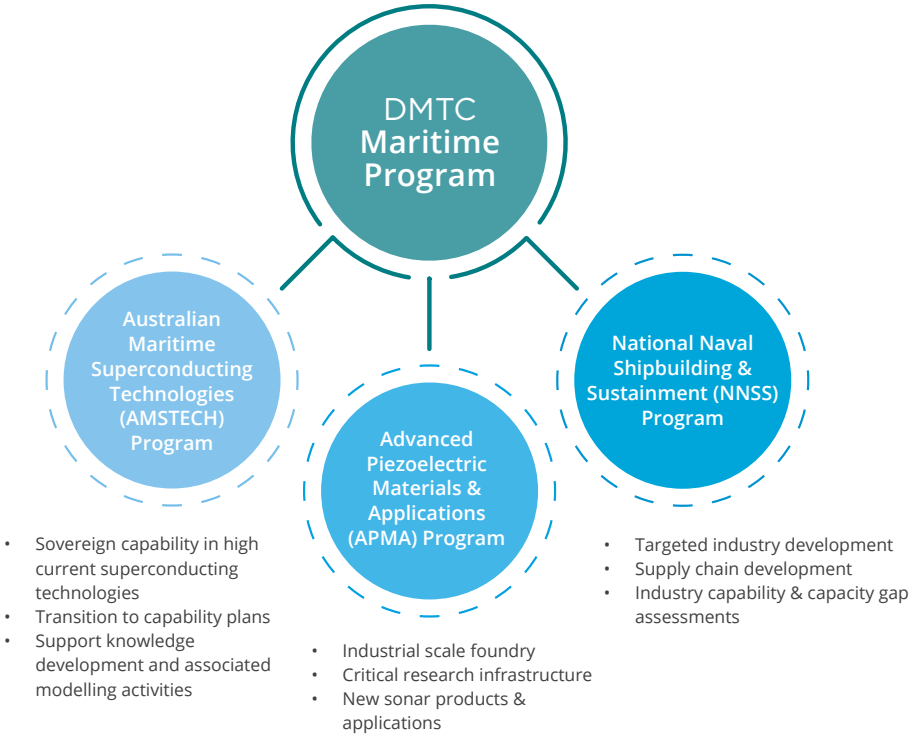
DMTC's Maritime Program plays a key role in ensuring Defence meets its stated ambition to build sovereign shipbuilding and sustainment capability for Australia. As a trusted partner across key stakeholders from Defence (including Defence Science and Technology Group (DSTG)), industry and the research sector, DMTC leads and manages collaborative projects that are achieving key industrial capability outcomes that enhance Australia's national interest.

DMTC's Maritime Program continues to respond to customer requirements and is well-positioned to scale in line with the needs and requirements of Defence across three key focus areas:

National Naval Shipbuilding and Sustainment (NNSS) Program, with support and funding from the Capability Acquisition and Sustainment Group, operates collaborative programs across the Naval capability lifecycle from design, to production, sustainment and operational capability assessments. Current priority areas include, but are not limited to, developing industrial capability across additive manufacturing, improved maritime steel production techniques, survivability assessments and shipyard welding productivity improvements for the Hunter Class Frigate Program.

Advanced Piezoelectric Materials and Application (APMA) Program, supported and funded by DSTG's Next Generation Technologies Fund, establishes an overarching framework to realise a coordinated, collaborative, and long-term strategic capability in advanced piezoelectric materials and their application as a key enabler for remote undersea surveillance. The Program will support the establishment of an industrial scale foundry facility to ensure security of supply of single crystal piezoelectric materials, investment in critical research infrastructure and national scientific expertise, and the development of new sonar products for ASW and USW applications, as well as sensors for aerospace platforms.

Australian Maritime Superconducting Technologies (AMSTECH) Program, supported and funded by DSTG's Surface Ship S&T Program, is developing a strategic national capability in the maritime application of superconducting materials. The Program is examining cryogenic cooling systems technology in a maritime environment, the minesweeping applications of superconductors, and conducting a feasibility study into the application of superconducting technologies for naval surface vessels.



DMTC's model is designed for technology development and innovation in the pre-competitive phase of development. We facilitate multi-party, collaborative and industrially-relevant R&D projects that are agile, scalable and geared toward delivering repeatable outcomes. Fundamental to our success is the support we receive from industry partners, research organisations and Defence and national security customers alike; and the backing of our systems benchmarked to meet ISO 9001:2015 Quality System and ISO 44001:2017 Collaborative Business Relationship Management Systems accreditations.

Case Study

ENHANCED SHIPBUILDING STEEL

Low temperature toughness performance is a key factor in steels used to build Australia's naval vessels. DMTC, Bluescope Steel, University of Wollongong and DSTG identified the link between microstructural characteristics and low temperature material toughness of shipbuilding steels under high strain conditions. This resulted in an enhanced DH36 shipbuilding steel produced in-country by Bluescope Steel through a modified production process. The steel has enhanced survivability characteristics which has the potential to extend the life of naval vessels.

Playing a key role in Australia's Continuous Naval Shipbuilding Program, this project forms part of a holistic program of activities that take a through-life approach to steel supply, its application to shipbuilding, and modelling and simulation of Life of Type capability assessments.

Case Study

ADVANCED WELDING TECHNOLOGIES

Weld sequencing for ship construction is a complex, manual and time-consuming process. DMTC, BAE Systems Maritime Australia, Australian Nuclear Science and Technology Organisation and the University of Wollongong are developing advanced welding technologies for use in naval shipbuilding, such as the Hunter Class Frigate Program. The project will establish a sovereign capability in optimising weld sequencing and builds on DMTC's long history of working on industrial projects to reduce weld-induced distortion across numerous defence platforms.

Read more here:

Case Study

NEXT GENERATION PIEZOELECTRICS

DMTC, in collaboration with DSTG, is investing in the in-country development and production of next generation single crystal piezoelectrics, which significantly enhance the sensitivity and performance of sonar and other undersea surveillance systems. Developing large-scale processing capacity and repeatability will ensure Australia has an enduring industrial capability to design and fabricate next-generation sonar equipment.

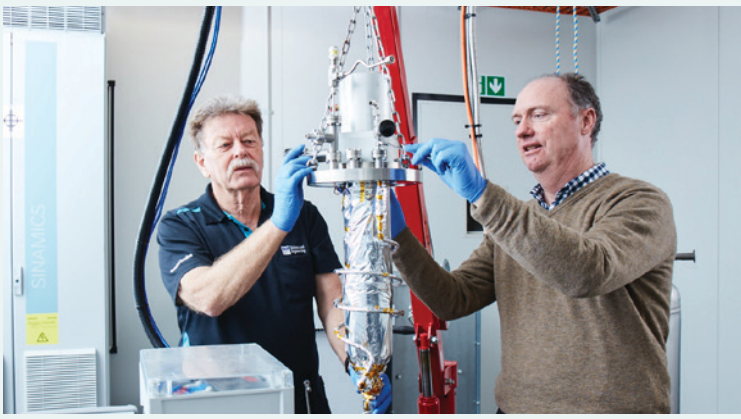
Read more here:

Case Study

HIGH TEMPERATURE SUPERCONDUCTORS

High temperature superconductors (HTS) have significantly higher current carrying capability over conventional copper wire, which is conducive for weight savings and increased energy densities in naval platform electrical systems. DMTC, the Queensland University of Technology (QUT) and DSTG are assessing the performance and signature of cryocoolers when subject to naval sea states.

DMTC, QUT, University of Wollongong, Thales and DSTG are designing a next generation mine countermeasure system to replace existing permanent magnet systems that utilise HTS coils to reduce size and weight.



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