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M3Or3K-03: [Invited] US Navy Developments in Large-Scale Superconducting Applications

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The US Navy has been investing in superconducting technology for the past 80 years. The most recent developments have been in the area of low- and medium-voltage direct current (DC) cables and large-bore magnets, and superconducting magnetic energy storage (SMES). Low-voltage DC cables are most useful in the control of a ship's magnetic signature as part of a degaussing system. Significant progress towards implementing this aboard US Navy vessels has been made and is currently being installed. Medium-voltage power system components have been under development the past several years through programs aimed at di-electrics, warm-to-cold transitions, connectors, etc.; as well as, cryogenic refrigeration. Large-bore magnets have been a focus over the past decade and are planned to transition in the next five years. Additionally, the Navy has launched an investigative study on the relevance of SMES for use in applications aboard naval vessels. The invited talk for will include current status of the Navy's recent transition of low-voltage DC cables to the Fleet, topics on medium-voltage power system components, the next stage of development and potential transition of large-bore superconducting magnets, and initial results and potential use of SMES in naval applications.

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