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C1Po2C-05: Performance modeling and test of an electrical induction motor at cryogenic temperature

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Barber-Nichols has significant experience successfully applying induction motors in cryogenic fluid pumping applications between 100 and 4.2 Kelvin. These induction motors typically include metallic materials of silicon steel laminations, aluminum rotor bars, and copper windings. Barber-Nichols recently validated an analytical model for induction motor performance with dynamometer testing at ambient and liquid nitrogen temperatures. The test results support understanding of the electromagnetic behavior of these materials at cryogenic temperatures and the design and application of induction motors to rotating cryogenic machines. The findings are relevant and important to terrestrial and aerospace cryogenic systems where design validation by analysis and test are critical to achieving system performance objectives. Results and conclusions to be presented at the conference.

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