

# Overview of Current CORC<sup>®</sup> Cable and Wire Performance for Accelerator Magnets

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Advanced Conductor Technologies has been developing Conductor on Round Core (CORC<sup>®</sup>) cables and wires wound from REBCO coated conductors for use in high-field magnets. An overview of the current status and ongoing developments of CORC<sup>®</sup> cables and wires is presented. CORC<sup>®</sup> cables with thickness of 5 to 8 mm have been developed for use in large magnets such as CICC magnets or large diameter common coil geometries that require very high in-field (beyond 20 T) currents in excess of 10 kA with limited bending of the cable. Much more flexible CORC<sup>®</sup> magnet wires with thickness of 2 to 4 mm are also being developed for accelerator magnets that require small bending radii below 25 mm at current densities  $J_e$  as high as 600 A/mm<sup>2</sup> at 20 T. We present test results of various CORC<sup>®</sup> wires being developed for high-field demonstration coils. Specifically, we will present the recent development of an 80 mm clear-bore insert solenoid to reach at least 3 T in a 14 T background and a series of insert canted cosine theta magnets to create accelerator quality dipoles with a goal to generate magnetic fields beyond the current state-of-the-art. In addition, we present the current status of CORC<sup>®</sup> conductors with record  $J_e$  of over 400 A/mm<sup>2</sup> at 20 T as part of an intensive research and development program to make the next generation of isotropic CORC<sup>®</sup> conductors with current densities of over 600 A/mm<sup>2</sup> at 20 T in the near future.

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