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## **Wed-Mo-Po3.02-03 [13]: An Alternative Conductor Design for the K-DEMO Toroidal Field Coils**

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The conceptual design for the superconducting coils of the K-DEMO tokamak has been proposed and continues to be updated. The toroidal field coils rely on Nb3Sn technology with new generation high  $J_c$  strand. The design is that of a cable-in-conduit conductor (CICC) consisting of multistage Nb3Sn cable inside a rectangular stainless steel jacket. There are huge Lorentz forces on the cable due to the large currents and magnetic field. A large aspect ratio for the rectangular conductor is proposed to reduce the accumulative pressure on the cable strands. Further increases in the aspect ratio would be advantageous. However, manufacturing such a conductor in a conventional way would be difficult as compaction of a cable to extreme aspect ratios damages the strands. To overcome this limitation, an alternate cable design for the conductor is proposed. The perceived advantages and expected difficulties and required complications of the design are discussed.

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