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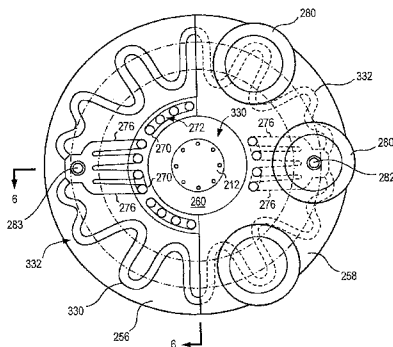
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(54) Title: METHOD AND APPARATUS FOR COOLING MAGNETIC CIRCUIT ELEMENTS



(57) Abstract: An apparatus and method for providing cooling to a magnetic circuit element having a magnetic core disposed around a centrally located core support member having at least one core support member wall is disclosed which may comprise a core support coolant inlet; a core support coolant outlet; a plurality of interconnected coolant flow passages contained within the core support member wall and

interconnected and arranged to pass coolant from one coolant flow passage to the next within the core support member wall along a coolant flow path within at least a substantial portion of the core support member wall from the core support coolant inlet to the core support coolant outlet. The apparatus may also comprise each core support coolant flow passage is in fluid communication with a fluid communication plenum at each end of each respective core support coolant flow passage, with each respective fluid communication plenum forming an outlet plenum for at least a first one of the respective core support coolant flow passages and an inlet plenum for at least a second one of the respective core support coolant flow passages along the coolant flow path from the core support coolant inlet to the core support coolant outlet. The core support member may comprise a flange extending from the core support member, the flange having an inner dimension and an outer dimension, which may also comprise a plurality of interconnected flange coolant flow passages extending alternatively toward the inner dimension and away from the outer dimension and then toward the outer dimension and away from the inner dimension, between the core support coolant inlet and the core support coolant outlet. The core and core support may be contained in a housing which may comprise a housing wall; a housing coolant inlet; a housing coolant outlet; and a plurality of interconnected housing coolant flow passages contained within the housing wall and interconnected and arranged to pass coolant from one coolant flow passage to the next within the housing wall along a coolant flow path within at least a substantial portion of the housing wall from the housing coolant inlet to the housing coolant outlet. The housing and core support may form a part of at least a portion of an electrical current flow path forming two turns around the magnetic core. In another aspect of the invention buswork may be coated with a thin film of electrically conductive material.

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