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High-power modular GaN based power supply for MedAustron scanning magnets

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MedAustron is a synchrotron-based ion therapy center in Wiener Neustadt, Austria, constantly working towards the performance improvement of cancer treatment. A major improvement opportunity comes from the scanning magnets system – a crucial element of dose delivery system at MedAustron - that is influenced by the bandwidth and power density of the magnet power supplies. Therefore, a novel highly modular power converter, based on the latest GaN technology is being developed to tackle the aforementioned requirements. One sub-module of this power supply is based on two H-bridges that are operated in hard parallel and are integrated into a standardized 19" euro-crate card form factor with target output specifications of 300V and 33A. This design also includes a 4th-order output Bessel filter to meet the ripple requirements for clinical operation. Furthermore, those sub-modules offer the possibility of being connected, cascaded or interleaved, in order to meet different output power requirements, providing a high modularity aspect. The status of this development in terms of requirements, global topology, filter structure, modulation strategy and control structure is presented.

Funding Agency

Footnotes

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Yes

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