Design, Manufacturing and Commissioning of Compact Superconducting 250 MeV Cyclotrons for Proton Therapy: A Short Report from the Field

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Abstract – During 2004, ACCEL installed two superconducting cyclotrons, one at PSI, Switzerland and another at RPTC, Germany [1,2], the first machines of their kind engineered and built completely by industry. The first, at PSI, has since been commissioned successfully and commissioning of the second, at RPTC, is imminent. The cyclotrons are capable of efficiently delivering a continuous 250 MeV proton beam with a maximum current of 800 nA as needed for tumor irradiation in proton therapy. Expectations for a much superior beam extraction efficiency from the cyclotrons and reliable performance by using superconducting coils have been fully confirmed. We report on design goals, commissioning results and operating experience.

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