

Abstract

Development of a 100 MeV CW proton LINAC has been planned at CAT. This LINAC will be needing CW rf power in the frequency ranges of 350 MHz and 700 MHz for its RFQ and DTL/CCDTL/SFDTL structures respectively. The power to the accelerating structures will be produced by either 1MWCW or 250 kW CW klystrons/inductive output tubes (HOMIOTs). The power needed by respective feed points in the structure is max. 250 kW which will be powered by splitting the power from 1 MW klystron/klystrode into four channels by using a wave-guide system. In case of using 250 kW tubes the power to the structures will be provided directly from each tube. Two types of wave-guide transmission system have been considered, viz, WR 2300 for 350 MHz rf needs and WR 1500 for 700 MHz rf needs. The typical wave-guide system has been designed using the 1 MW CW klystron followed by wave-guide filter, dual directional coupler, high-power circulator, three 3 dB magic TEE power dividers to split the main channel into four equal channels of 250 kW each. Each individual channel has dual directional couplers, flexible wave-guide sections and high power ceramic vacuum window. The circulator and each power divider is terminated into the isolated ports by high power CW loads. Out of the four channels three channels have phase shifters. Present paper describes the technological aspects and design specifications-considerations for these stringent requirements.

Keywords: Proton LINAC, RFQ, klystron.