

Project

A digital terminal voltage controller for a Pelletron Accelerator

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Task: The existing terminal voltage control system on the Pelletron is over 20 years old and limits the energy stability performance of the accelerator for some modern applications. It is planned to replace this with a digital system that gives improved monitoring and performance capabilities.

The goal of the project is to develop a modern terminal voltage control system based on the modern Field Programmable Gate Array (FPGA) data monitoring and control system.

The project involves: (i) determining the response characteristics of the measured values (either from a generating voltmeter or beam position) as well as the controlling signals (chain charge and corona probe stabiliser); (ii) Selecting an optimal control strategy with appropriate fail-safe actions; (iii) Implementation of signal conditioners and the control on the FPGA unit; (v) Commissioning of the system.