



Contribution ID: 732 Contribution code: WEPB099

Type: **Poster Presentation**

Advancements in linac performance for enhanced stability and control: integration of the Libera LLRF systems into the ScandiNova modulators

Wednesday 4 June 2025 16:00 (2 hours)

For years, Instrumentation Technologies and ScandiNova have developed advanced products to optimize RF performances in LINAC applications. In 2024, the companies began integrating the Libera LLRF system into ScandiNova modulators during assembly. This innovation enables the modulators to offer enhanced operational flexibility and improved performances.

This paper will focus on mechanical integration and performance results. The integrated system enables real-time monitoring of critical signals such as drive power to the RF amplifier and klystron, as well as forward and reflected klystron power. Performance metrics include amplitude stability $<0.01\%$ RMS and phase stability $<0.01^\circ$ RMS.

Experimental results are presented using a ScandiNova modulator with an Sband klystron and a standard Sband Libera LLRF. Pulse-to-pulse stability measurements demonstrate consistency between conventional electrical methods and RF-based methods, achieving stability in the 10 ppm range. Electromagnetic compatibility tests confirm that the modulators do not interfere with the LLRF system. Additionally, new tools are introduced to identify components with the greatest impact on phase stability.

Footnotes

Paper preparation format

Region represented

Europe

Funding Agency

Author: PEPITONE, Kevin (Scandinova Systems AB)

Co-authors: CARGNELUTTI, Manuel (Instrumentation Technologies); GUSTAFSSON, Jonas (Scandinova Systems AB); LIND, Mikael (Scandinova Systems AB); LIND, Zacharias (Scandinova Systems AB); LINDHOLM, Mikael (Scandinova Systems AB); LINDSTRÖM, Johan (Scandinova Systems AB); ROBBERTS, Ola (Scandinova Systems AB); BARICEVIC, Borut (Instrumentation Technologies)

Presenter: PEPITONE, Kevin (Scandinova Systems AB)

Session Classification: Wednesday Poster Session

Track Classification: MC7: Accelerator Technology and Sustainability: MC7.T16 Pulsed Power Technology