Contribution ID: **24** Type: **Poster**

C2Po1B-02: The SCL3 linac operation and improvements following RAON's 2nd beam commissioning

Tuesday 20 May 2025 09:15 (1h 45m)

RAON (Rare Isotope Accelerator complex for ON-line experiments) is a heavy ion accelerator built under the Institute for Basic Science (IBS) in South Korea. The RAON facilities are composed of SCL3 linac (QWR cavity (81.25MHz, 4.5K) & HWR cavity (162.25MHz, 2K)) and SCL2 (SSR1 cavity (325MHz) & SSR2 cavity (325MHz), 2K). The total capacity of the cryo-plant is 17.7kW, divided between two accelerator lines (SCL3 linac: 4.2kW, SCL2 linac: 13.5kW). SCL3 was completed in Q4 2022, and two beam services were conducted from 2023 to 2024. It is currently undergoing regular maintenance after warming up. The cryo-plant for SCL2 is in progress, with pre-commissioning expected to be completed in the second half of 2025 (covering cryo-plant pre-commissioning & SCL2 linac valve boxes (49 units) to the IF separator (Quadrupole magnet's cryostat (13 units)) valve boxes).

After the first beam test run of the SCL3 linac, the plug of the control valve for 4.2K of the QWR super-conducting cryomoduleg are canged from Kv=0.5 to Kv=0.1 to improve beam stability and liquid helium pressure stability. In addition, for the HWR super-conducting cryomodules, dampers were additionally installed in the 2K recovery line, and convection brakes were additionally installed in the 2K control valve to secure a thermal load margin of approximately 100 W along with prevention of TAO. Moreover, the SCL3 cryoplant has been operated stably without a single accident during two cool-down and warm-up processes, improvements are underway to improve beam operation time and stability, which will begin in Q2 2025.

Authors: Mr LEE, GyuHo (Institute for Basic Science); Dr JO, HyunChul (Institute for Basic Science); Dr PARK, InMyung (Institute for Basic Science); Mr HAN, JaeHak (Institute for Basic Science); Dr SHIN, JaeHee (Institute for Basic Science); Mr KIM, JinWook (Institute for Basic Science); Dr YOO, JungHyun (Institute for Basic Science); Dr LEE, MinKi (Institute for Basic Science); Dr KIM, SeoJeong (Institute for Basic Science)

Presenter: Dr LEE, MinKi (Institute for Basic Science)

Session Classification: C2Po1B - Large Scale Cryogenic Systems III: Operation & Design III