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Remote handling of radioactive targets at the SPES facility

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SPES (Selective Production of Exotic Species) is a new facility being developed by Legnaro National Laboratories of INFN. Once operational, it will be able to generate high-intensity RIB (Radioactive Ion Beams) for research in the field of nuclear physics, and investigate medical applications through the ISOLPHARM project. The interaction of a 40 MeV 200 μA primary beam produced by a cyclotron proton driver with a multi-foil uranium carbide target leads to the production of the radioactive isotopes of interest. Collisions take place within the Target Ion Source (TIS) unit, which is the core of the SPES project. During the operation, a periodic replacement of the TIS unit is required to maintain process efficiency. Automated systems can perform critical tasks under such highly radioactive conditions, including handling, transporting, and storing the TIS unit without human intervention. For this reason, a remote handling framework is currently being developed to meet the functional and safety requirements of the project. In this talk, the SPES target area is presented. Here, remote handling systems ensure the proper operation of the facility, preventing staff from being exposed to high dose rates or contamination problems.

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