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Lynkeos MIS: A Muon Imaging System for Nuclear Waste Containers

The Lynkeos Muon Imaging System (MIS) uses cosmic-ray muons for the 3D-imaging of the contents of shielded nuclear waste containers. The detector system consists of four scintillating fibre tracker modules using 64 channel MPAMTs as readout, two above and two below the object to track the muons. Complex imaging algorithms then reconstruct a 3D image of the object and its contents.

The Lynkeos MIS is the result of a 7 year joint research project between UK National Nuclear Laboratory and the University of Glasgow, funded by the Nuclear Decommissioning Authority with £4.8 million from 2009 to 2016. Lynkeos Technology Ltd. was founded in 2016 and in 2017 was awarded a £1.6 million contract from Innovate UK for the First-of-a-kind deployment of the Lynkeos MIS on the Sellafield site. The Lynkeos MIS is operating on the Sellafield site since October 2018 as the worldwide first muon imaging system that is deployed on a nuclear site. It also is the first CE-marked large-scale particle tracking detector.

This talk will present the detector itself, the steps towards commercialisation of the technology, especially the CE-marking process, and present results from the imaging of two different waste containers - 500 l Intermediate Level Waste (ILW) drums and GeoMelt containers with vitrified waste.

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