NE-25-37556 – Radiation Test of Smart Electric Cable for Nuclear Power Plants

AiMiLight Sensors and Intelligent Systems Inc. (AiMiLi), located in Pittsburgh, PA is a tech startup founded to commercialize distributed fiber sensor technology. The company aims to lead the field in fiber optical sensor technology by addressing the high cost of sensors and instruments and the high technical barrier to deploying the technology.

The need to ensure reliable operation of safety-related cables in nuclear reactors is paramount. Real-time understanding of local cable environments (temperature and dose rate) could be key in cable aging management. AiMiLi has developed a fiber-embedded prototype for distributed radiation and temperature measurement. This project will demonstrate a smart-tape solution that can be applied to electrical cables in adverse environments.

AiMiLi will partner with Pacific Northwest National Laboratory (PNNL) to access the Accelerated and Real-time Experimental Nodal Assessment (ARENA) Cable Test Bed and High Exposure Facility (HEF) gamma irradiation capabilities. These facilities can simulate adverse power plant environments in a testing environment. This project will not only further the online monitoring of cable environments, but also open the door to sophisticated condition-based maintenance using machine learning and artificial intelligence to support efficient operator decision making.