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## Development of under sodium viewer for next generation sodium-cooled fast reactor

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Inspection technique in opaque liquid metal coolant is one of important issue for sodium-cooled fast reactor. To facilitate operations and maintenance activities, various under sodium viewers (USV) has been developed in several research institutes and countries. For example, a horizontal USV, which detects obstacles on the long distance and an imaging USVs, which make images from a short distance and to a middle distance were developed. In this study, the imaging USV from a middle distance, approximately 1 m, was developed. The USV of this study adopts the optical receiving system which measures the vibration of displacement diaphragm by the laser as the receiving sensor. This study mainly focused on the improvement sensitivity in the transmission sensor and the receiving sensor. In addition, the imaging experiment in the water was conducted by using the developed transmission sensor and receiving sensors. From the experimental results, it was confirmed that the developed USV sensors can make imaging with high resolution from 800 mm distance.

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