



# Linear Variable Differential Transformers Calibration and Supply Chain

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*Changing the World's Energy Future*

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## Linear Variable Differential Transformer Calibration and Supply Chain

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**Project Description:** The Institute for Energy Technology (IFE) is a pioneer in linear variable differential transformer (LVDT) development for in-pile testing. INL and the international testing community depend on IFE for their supply of LVDTs and corresponding sensors. Budgetary constraints have limited IFE's ability to develop and deploy LVDTs. Fiscal Year (FY) 2021 activities will maintain and advance LVDT technology so it can be used by stakeholders requiring LVDTs in upcoming irradiation tests. Relevant test conditions include testing under inert gases at elevated temperatures. In addition, the U.S. supply chain of LVDTs and related components will be explored in order to extend the availability of robust LVDTs.

**Impact and Value to Nuclear Applications:** Through collaborative activities and direct procurement of equipment from IFE, this project supports the Advanced Sensors and Instrumentation Program's commitment to sustain and enhance instrumented irradiation experiments for the U.S. nuclear industry. Characterization of nuclear components in operationally inert environments is crucial for advanced reactor design demonstrations.

**Recent Results and Highlights:** First is the completion of a supply-chain assessment for LVDTs. Three companies were identified as potential LVDT suppliers for in-pile testing. Second is the assembly of a test rig to enable LVDT calibration under inert gas. Flow, temperature, and oxidation testing of the upgraded calibration rig were successfully completed. Both highlights were completed during FY 2021.



*The calibration test rig (under inert gas) keeps the linear translation Motor near room temperature and the central region of the test rig at 700°C.*

