

## **Development of Gamma Configuration Stirling Engine Using Polymeric and Metallic Additive Manufacturing for Education**

**Authors :** J. Otegui, M. Agirre, M. A. Cestau, H. Erauskin

**Abstract :** The increasing accessibility of mid-priced additive manufacturing (AM) systems offers a chance to incorporate this technology into engineering instruction. Furthermore, AM facilitates the creation of manufacturing designs, enhancing the efficiency of various machines. One example of these machines is the Stirling cycle engine. It encompasses complex thermodynamic machinery, revealing various aspects of mechanical engineering expertise upon closer inspection. In this publication, the application of Stirling Engines fabricated via additive manufacturing techniques will be showcased for the purpose of instructive design and product enhancement. The performance of a Stirling engine's conventional displacer and piston is contrasted. The outcomes of utilizing this instructional tool in teaching are demonstrated.

**Keywords :** 3D printing, additive manufacturing, mechanical design, stirling engine.

**Conference Title :** ICCEUT 2025 : International Conference on Combustion, Energy Utilisation and Thermodynamics

**Conference Location :** Tokyo, Japan

**Conference Dates :** April 22-23, 2025