

Affordable Small Engines DAGSI Research Topic

1. **Research Title:** Affordable Small Engines

2. **Individual Sponsor:**

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3. **Academic Area/Field and Education Level**

Engineering Physics, Applied Physics, Mechanical Engineering, Aerospace Engineering, Chemical Engineering, Electrical Engineering (MS or PhD level)

4. **Objectives:** Improve the affordability, producibility, and capability of small engines.

5. **Description:** The rapid expansion of uncrewed aerial systems (UAS) necessitates small-scale propulsion systems that achieve a balance of affordability, producibility, and capability. Research in unit affordability and producibility focuses on design-to-cost frameworks, alternative materials, and advanced manufacturing methods to enable affordable, scalable, high-rate production. Concurrently, engine capability targets increased thrust, power density, or reduced specific fuel consumption. Projects may leverage the advanced diagnostic, computational, and experimental capabilities of the Small Engine Research Laboratory (SERL). This effort will develop, characterize, and validate novel propulsion concepts in the area of small engines to meet mission requirements.

6. **Research Classification/Restrictions:** Most aspects of this research are subject to export control restrictions. Some aspects may be considered basic research and can be released publicly.

7. **Eligible Research Institutions:** DAGSI (All DAGSI Universities)