Injection Manifold Design for Rotation Detonation Engines

Researchers at Purdue University have developed an injection manifold for use in rotation detonation engines (RDEs) that can be integrated into existing systems to reduce backflow and instability. In RDE systems, the pressure waves associated with detonation travel too quickly for conventional valve designs, causing the flow through the fuel and oxidizer injectors to reverse. Purdue's system leverages tesla-valve based injectors that can be achieved via additive manufacturing techniques. This technology has applications in rocket propulsion or any fields where RDEs are used.

Advantages

- Improved stability, reduced backflow

- Can be integrated into existing systems

- Better engine longevity and performance

Applications

- Rotating Detonation Engines

- Rocket propulsion

- Combustion

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