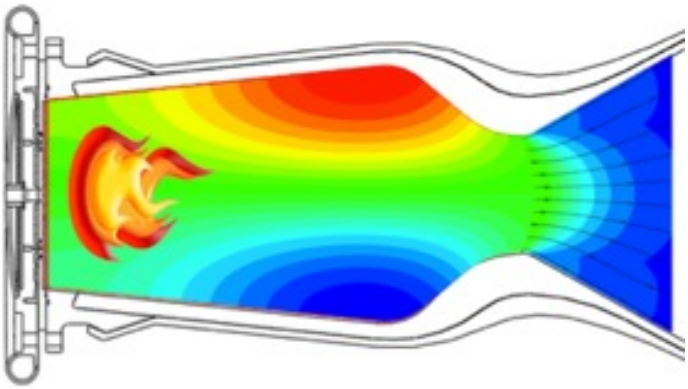
GTL SUPERIOR STABILITY ENGINE (SSE™)

Demonstrated 1st step to engine scaling; the holy grail of engine design!



- Developed engine design to optimize for stability
- Analyzed using UCDS tools
- Predicted engine performance and stability

- Fabricated SSE engine and static fired.
- Testing data showed performance and stability matched predictions for first time
- Next step is to scale and test to demonstrate scaling

- In a NASA GRC Ph II SBIR, GTL applied the Universal Combustion Device Stability™ (UCDS™) process in a "Design for Stability" mode
  - Demonstrated Design for Stability Process
  - Computed and Tracked Stability Margin During Design for Stability Process
  - Developed New Engine Design with Stability and High Performance
- Superior Stability Engine™ (SSE™)
  - Uses Mode Shaping™ to decouple acoustics from combustion and injection processes to achieve a high stability margin
  - Enables stability characteristics to be maintained during engine scaling
- In a follow on RIF Air Force program, SSE Validation included
  - Cold flow testing verified mode shaping predictions
  - Flame testing verified combustion response reduction
  - Hot fire engine testing verified stability margin; consistent with predictions – complete success!
  - Successful Hot Fire Tests Completed Feb 2018

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