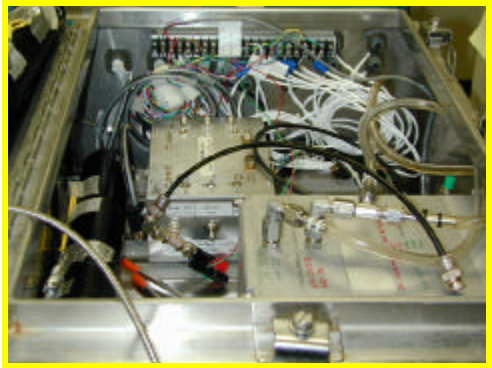
Optical Plume Anomaly Detection (OPAD)



Objective

The system performs automatic spectral analysis of hot gas stream to ascertain the metallic content and base emission curve shape such that health management decisions can be made in near real time. This technology is based upon optical emission and absorption physics. The system yields an information output consisting of elemental material content per unit of time and a confidence factor. This information can then be combined with other sources to provide full analyses.

Why Needed

This technology supports propulsion system diagnostics allowing fast turnaround philosophies and safety monitoring of launch vehicles. Specifically, when combined with real time vibration analysis, normal wear and incipient failure conditions may be forecast, thus allowing program decisions as to the need for engine removal or refurbishment, possibly saving time and labor, and therefore money.

Point of Contact

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Sponsor

Space Shuttle Program (SSP)