

RESUME

Name: Pavani S
E- mail: pavanisreekireddy@gmail.com
Mob:- 8942056450

Academic Qualification

Sr. No.	Degrees	University/Institution	Year	Total % of marks/ C.G.P.A
1	B. Tech (Mechanical Engineering)	SV University College of Engineering Tirupati	2004	62.3
2	M. Tech (Mechanical Engineering)	JNT University college of engineering Hyderabad	2008	78.2
3	Ph.D (Mechanical Engineering)	JNT University college of engineering Hyderabad	Thesis Submitted	Supervisor: Prof. T. Kishen Kumar Reddy

Area of Research

- Chemical cracking, Thermo-structural design, Active panel design, Numerical modelling

Experience

- 2008 - 2010: Lecturer in Gurunanak Engineering College, Hyderabad.
- Oct 2014 - Mar 2016: Research Modeller in KAUST, Saudi Arabia.

Responsibilities:

- **Flow dynamic analysis near the Rupture disk for High pressure test rig (LFO 68)**

Design the rupture disk using ANSYS WORKBENCH and analysis the disk at 40bar pressure using FLUENT and ANSYS STRUCTURAL

- **Developing the code for Soot morphology at high pressure in counter flow diffusion flame**

Motivation of the problem: For devices such as gas turbine and diesel engines operate at high pressure to increase their efficiency. Pressure significantly increases the overall soot yield. Morphology of these ultra-fine particles determines their airborne lifetime and their interaction with the human respiratory system. Therefore, investigating soot morphology at high pressure is of practical relevance.

Matlab code was developed to find out the Morphology parameters such as, Mean primary particle diameter (d_p), Radius of gyration (R_g), Number of primary particle in an aggregate (N), Soot volume fraction (f_v), Fractal dimensions(D_f), Number densities (n_p), Aggregate size distribution (geometric mean (N_g), standard deviation (σ_g)), refractive index (m)

- CCRC Lab instruments responsibility and organization

Software Skills

- **Ansys (Majorly working on Workbench, Fluent and Structural)**
- **Matlab**
- **Chemkin**
- **Solidworks**

Ph. D Thesis: Thermal management in the design of active cooled panels for hypersonic air breathing vehicles

Intensive research is in progress all over the world in the arena of aerospace propulsion systems with the intent to deliver payload to the desired destinations in a shortest possible time and at an affordable cost. To meet such demands aerospace vehicles obviously have to be designed using air-breathing propulsion systems. Scramjet is the highest performing cycle in terms of specific impulse in the speed range of Mach 4-8. one of the key problem is thermo-structural issues are found to be severe for the long duration operation of the engine.

To address this issue, thermal management of scramjet engine is essential. Hence an active cooling approach has to be resorted to for effectively utilising the limited coolant (which is a fuel itself) available for the purpose.

The key points of the project are described below:

1. To comprehend heat transfer mechanisms involved in the scramjet engine casing and to formulate the governing equations to solve the heat transfer issues.
2. Selection of suitable materials.
3. Development of mathematical model to analytically study the various coolant channel geometries with respect to various materials and to arrive at the optimized channel configuration viz., channel size, its web thickness, no of channels, wall thickness, etc.
4. To generate the data base for various materials for safe operation of the engine within the prescribe constraints viz., materials thermal and mechanical stresses, fuel temperature and its pressure losses in the channel.

5. To optimize weight of the actively cooled heat exchanger penal for scramjet engine application.

Publications

International Journals

1. Pavani S, Reddy TKK, Selvaraj P, Reddy VM, Lee BJ, Analysis of active cooling panels in a scramjet combustor considering the thermal cracking of hydrocarbon fuel, Applied Thermal Engineering. 2019;147, 231-241.
2. Pavani S, Reddy TKK, Effect of Aspect Ratio of Active Cooling Panel on Cracking of the Fuel/coolant used Supersonic Vehicle Combustion Chamber, International Journal of Scientific & Engineering Research.2018; 9 (1).
3. Pavani S, Reddy TKK, Numerical heat transfer analysis of metal foam for scramjet application” International journal of engineering science & research technology.2018; 7(2).

International and National Conferences

- Pavani. S., Venu Dadi., T. Kishen Kumar Reddy“ Enhancement of solar water heater thermal performance by adding nanopariticsles in primary fluid” ICAER 2011-11/064, Mumbai. 9th-11th December, 2011.
- Pavani Sreekireddy, Dr. T. Kishen Kumar Reddy, Venugopal Dadi, Dr. P. Bhramara “CFD simulation of steam ejector system in high altitude test (HAT) facility” GTIndia2012-9615, Proceedings of the 2012 ASME GT India conference, Mumbai. Dec. 1st, 2012.
- Pavani Sreekireddy, Dr. T. Kishen Kumar Reddy, C. Chandrasekhar “Analytical analysis for Effect of Different thermal barrier coatings on Heat sink capacity in supersonic vehicles” HEFAT2014, Orlando.14-16th July, 2014.