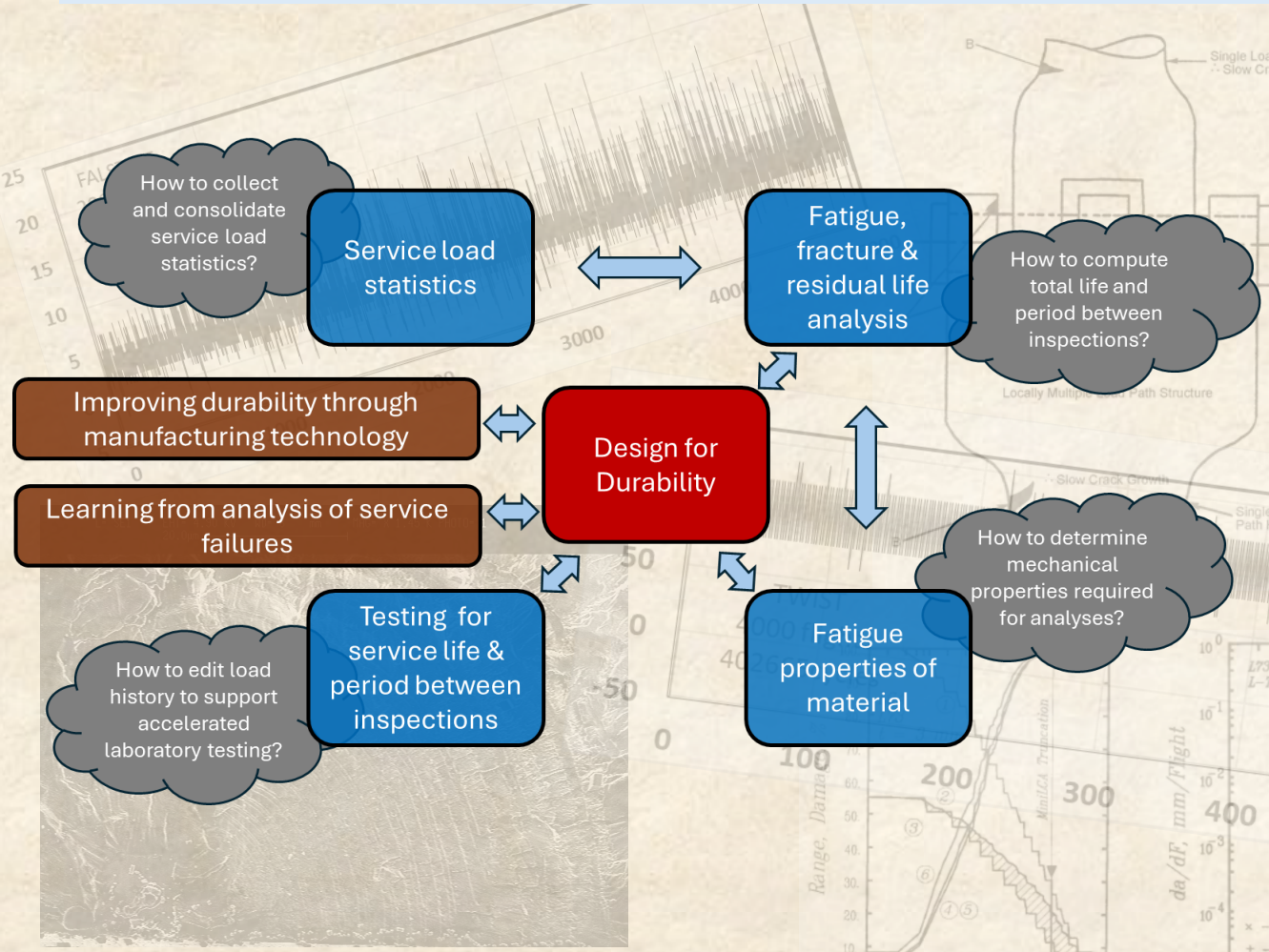
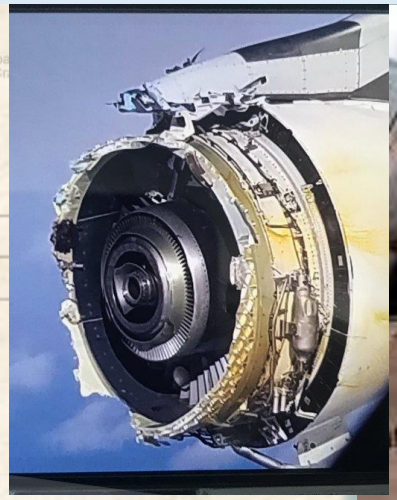
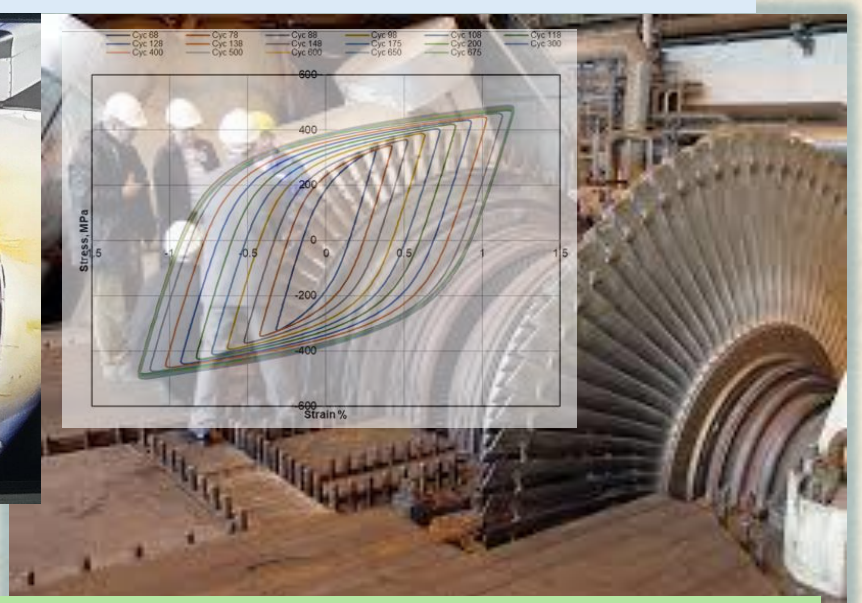
Fundamentals of Engineering Design for Structural Integrity under Fatigue Loading

Workshop for practicing engineers







August 12-13, 2025

@ Indian Institute of Science, Bangalore

Organized by

InSIS

Indian Structural Integrity Society

Take aways for participants:

- Understanding of the fundamentals of fatigue design and testing
- Ability to consolidate and edit service load-time histories
- Numerical techniques to compute life to failure and period between inspections, required materials constants and hands-on exposure to required test procedures
- Participants equipped with own laptops will be able to install, exercise and take away for personal use, the required application software to consolidate and edit load history, predict total fatigue life and period between inspections

Resource Persons

R. Sunder
ITW-India (P) Ltd

Satish Kailas
Indian Institute of Science

M. Sujata
CSIR-National Aerospace Laboratories

Praveen Kumar
Indian Institute of Science

Course outline

- **Introduction to Metal Fatigue:** micro-mechanisms, the S-N curve and its analytical representation, mean stress effects and Cumulative Damage under Service Loading
- **Service Load Analysis**, Field data acquisition and data compression, spectrum editing for accelerated testing
- **Analytical Modeling of Fatigue** under Complex Loading including notch root fatigue and crack growth
- **Engineering Application of Fatigue Analyses**, MS-Excel© - based fatigue analyses under service spectrum loading: fatigue life estimation for given load spectrum, construction of Kitagawa-Takahashi diagram to assign design stress level for fatigue life and period between inspections, determination of required material constants
- **Engineering Against Fatigue**, including application of failure analysis to product development and manufacturing processes that determine fatigue resistance
- **Interactive session**

Registration:

All delegates may register at - https://forms.gle/Ey6EWpbAbkd7QAwi7

Registration Fees payable to InSIS account before July 31, 2025

- **General Registration:** Rs. 30,000 plus 18% GST
- **InSIS members**: Rs. 27000 +18% GST
- **Students**: Rs. 21,000 + 18% GST

Students may provide a letter from their adviser / HoD as to their academic status and the relevance of the workshop to their degree

Registration at venue: Add 10%

Registration fees cover lectures and demonstrations, supporting material and refreshments during breaks

Bank details:

Bank: State Bank of India

Account Name: INDIAN STRUCTURAL INTEGRITY SOCIETY (InSIS: http://insis.in)

Account Number: 34643078190

Branch : NAL, Bangalore

Type: Current Account

IFS Code: SBIN0004815

Other information:

Participants are responsible for their own travel and accommodation. Requests for suggestions may be sent to Ms. N. Bharathi at: bharathin.cmc@vendor.iisc.ac.in / +91-8296177293.