ME Seminar

Computational Mechanics in Industrial Applications

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ABSTRACT

Thermo-Mechanical Fatigue (TMF) analysis and lifetime prediction of components running at mid-to-high temperatures such as engine cylinder heads and exhaust manifolds constitute an important class of engineering problems. A nonlinear kinematic hardening model due to Chaboche and his co-workers is enhanced with static recovery terms that capture annihilation of dislocations at high-temperatures. This leads to a more accurate prediction of creep strains, and hence a reliable TMF lifetime prediction. In addition, a summary of computational mechanics solutions for various other applications will be presented.

ABOUT THE SPEAKER

After getting his PhD in Mechanical Engineering and Applied Mechanics from the University of Pennsylvania, Sekar joined the ABAQUS development team. For nearly 18 years, Sekar developed and deployed computational mechanics solutions (material models, elements and field equations) in the ABAQUS finite element program. After a short stint at MSC and a hand at a research start-up, Sekar joined the FE development team at Siemens in 2017. He also serves as an Adjunct Faculty in the department of Mechanical Engineering at the University of Cincinnati, where he enjoys teaching graduate level courses from time to time.

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