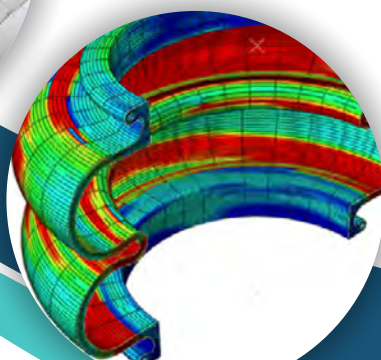
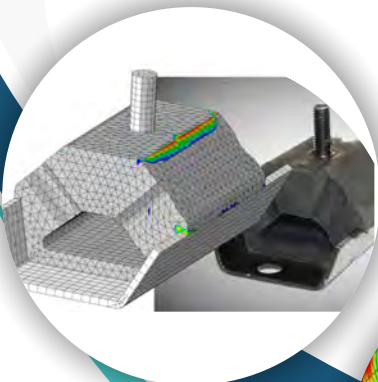
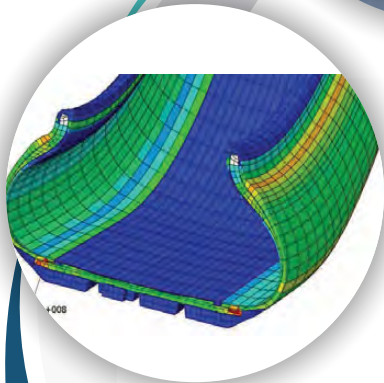
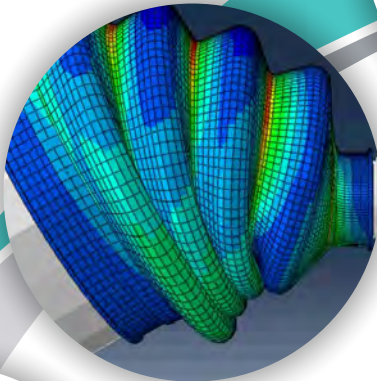
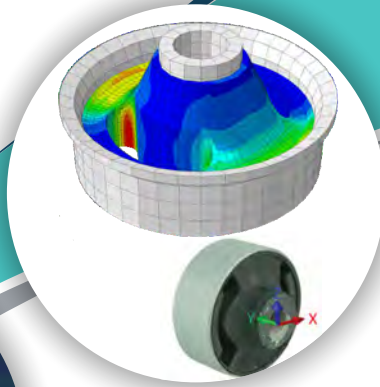


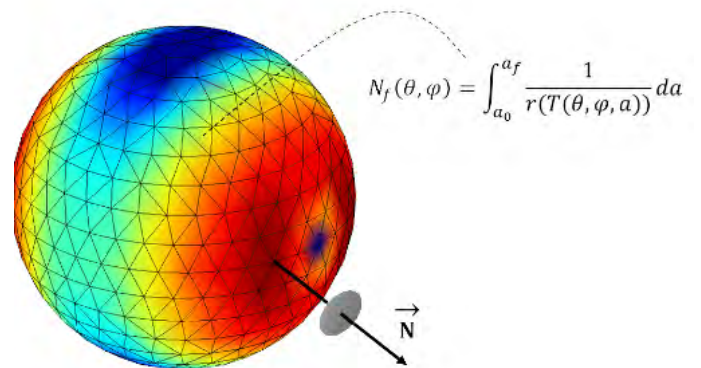
2 Day Training Course

# Simulating Elastomer Durability with Endurica Workflows

22nd & 23rd August 2023 @ Pune  
25th & 26th August 2023 @ Bangalore



## Rubber Durability Analysis



**Endurica**  
Get Durability Right

**dhio**  
center for excellence

# Dr. Will Mars

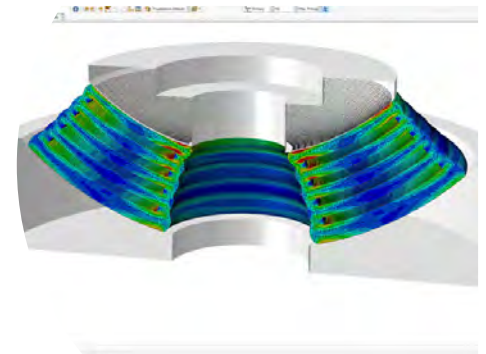
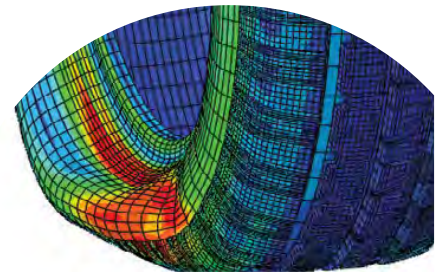
Founder and President,  
Endurica LLC



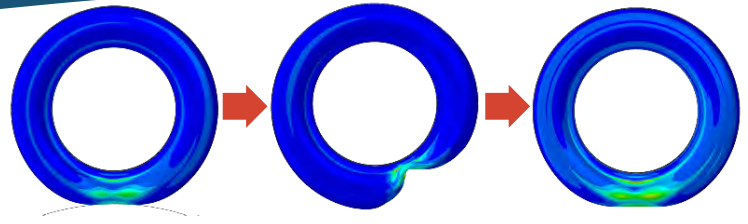
Dr. Will Mars is an international leader in the failure mechanics of rubber and elastomers. The comprehensive testing and simulation tools Endurica has developed under his direction help companies across the world to speed their product development process and compete on durability. He has received several awards for his scientific contributions and innovations including the 2022 Herzlich Medal for outstanding impact and innovation in the tire industry, the 2020 Tibbetts Award from the United States Small Business Administration in recognition of accomplishments in creating cutting-edge technologies, the 2017 Rubber Division ACS Arnold Smith Special Service Award, the 2007 Sparks Thomas award of ACS Rubber Division, and the 1999 Henry Fuchs award of the SAE Fatigue Design & Evaluation Committee.

Dr. Mars served as the editor of the Rubber Division, American Chemical Society journal Rubber Chemistry & Technology, and is also the past editor of Tire Science & Technology with 60+ peer-reviewed publications and four patents. His experiences and contributions span a topic range including material characterization, product evaluation, constitutive modeling, crack nucleation, fracture mechanics, and fatigue life prediction methods.

He has over 30 years of experience developing testing and simulation methods in the rubber industry. Dr. Mars' professional activity has focused on applying experimental and computational mechanics in pursuit of better-performing rubber products. He has been an invited lecturer at numerous international conferences and venues. Dr. Mars earned his Honors BSME with Polymer Specialization at the University of Akron, and his MS and Ph.D. degrees at the University of Toledo. Dr. Mars is the author of the Endurica fatigue life solver – the world's first commercially available and best-validated simulation system for fatigue analysis of rubber. As founder and president of Endurica LLC, he promotes the use of simulation worldwide through lectures and workshops.

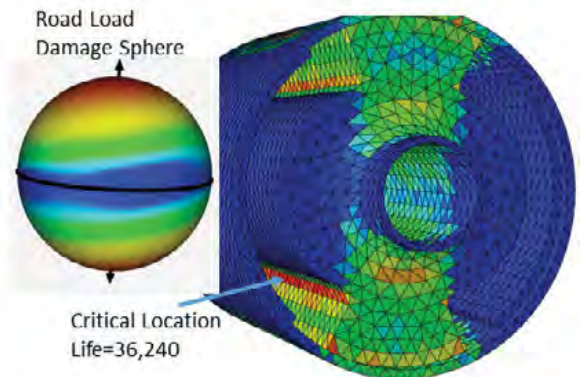


# 2 Day Training Syllabus



## Day 1: Fatigue Life Simulation with Endurica CL

- Software installation
- Overview of Fatigue Analysis Workflows
- Managing Duty Cycle: Setting up the Finite Element Analysis
- Fatigue Analysis principles
- Fracture Mechanics
- Critical Plane Analysis
- Rainflow counting / Damage accumulation
- Exporting strain history
- Material behavior
- Elastic behavior
- Crack growth behavior
- Crack precursor size
- Mean strain effects and strain crystallization
- Thermal effects



## Day 2: Common Workflows

- Infinite Life Analysis workflow
- Safe Life Analysis workflows
- Incremental Workflows with Endurica DT
- Specifying Complex Duty Cycles: Steps, Blocks and sequence effects
- Damage tolerant analysis workflows
- CoSimulation for Ageing and Cyclic softening
- Working with Real-time, multi-channel load history: Endurica EIE
- Channel Reduction
- Building a map of the load space
- Load interpolation
- Signal defeaturing and block cycle extraction



# Registration Details

22nd & 23rd August 2023 @ Pune  
25th & 26th August 2023 @ Bangalore

Name: \_\_\_\_\_

Designation: \_\_\_\_\_

Department : \_\_\_\_\_

Company : \_\_\_\_\_

Phone : \_\_\_\_\_

Mobile : \_\_\_\_\_

Fax : \_\_\_\_\_

Email : \_\_\_\_\_

Address : \_\_\_\_\_

**Registration Fee : INR 6,000.00/per person for two days**

**Mode of Payment :** Online Bank Transfer /  
Online Registration / DD / Cheque in favour of  
“ **Virtual Experiential Learning Private Limited**”

Beneficiary Name: Virtual Experiential Learning Pvt Ltd.,  
Bank Name: Bank Of Baroda  
Account number: 89420200002396  
Name of the Branch: Rajajinagar Main  
Account Type: Current Account  
IFSC Code: BARB0VJRABA

**Link to Register :** <https://virtual-engineering.com/courses/2-days-training-course-on-simulating-elastomer-durability-with-endurica-workflows/>

## Contact Details

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