

Endurica User SPOTLIGHT

40th ANNUAL MEETING THE VIRTUAL TIRE



The Tire Society is the world's leading tire science research, engineering, technology, and innovation organization. The annual conference showcases tire industry innovation.



The keynote presentation, "The Move To Virtual", by Mike Anderson, General Motor's Executive Director of Global Virtual Design, Development and Validation spoke of GM's target of 100% virtual design.

Highlights included:

- Upstart competitors sprinting ahead through the use of simulation in areas like electric vehicles
- Simulation increasing the speed of discovery by
 - Engineering answers at the pre-build phase
 - Exploring more in the design space
 - Enabling greater performance outcomes

We need to go beyond just replicating physical tests with simulation. A "right the first time" culture must replace the old "discover and recover" culture.

— Mike Anderson
Executive Director of
Global Virtual Design,
Development and Validation
General Motors
*Tire Society 2021
Keynote Address*

Three Endurica users made presentations at the 40th Annual Tire Society Meeting.



CEAT presented "Incremental, Critical Plane Analysis and Experimental Verification for TBR Tyre Bead Endurance Applications."



Goodyear presented "A Model for Predicting Residual Casing Life of a Tire Following an Impact Event."

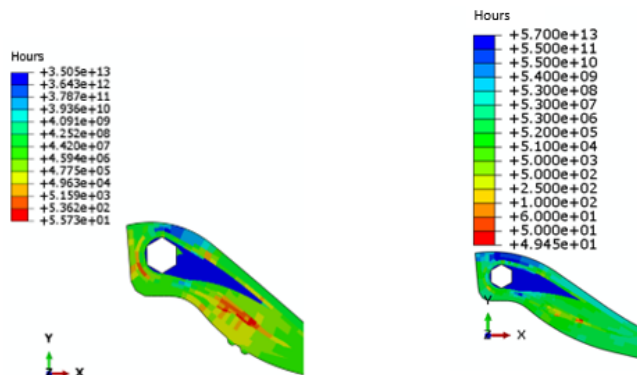


Maxxis Tires presented "Tire Durability Prediction Using Three-Element Layered Mesh for Cord-Rubber Composites."

WINNING ON DURABILITY

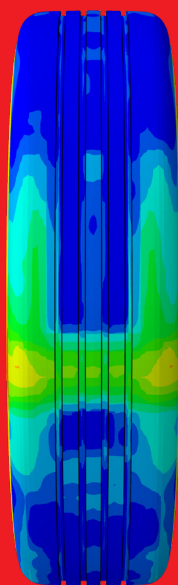
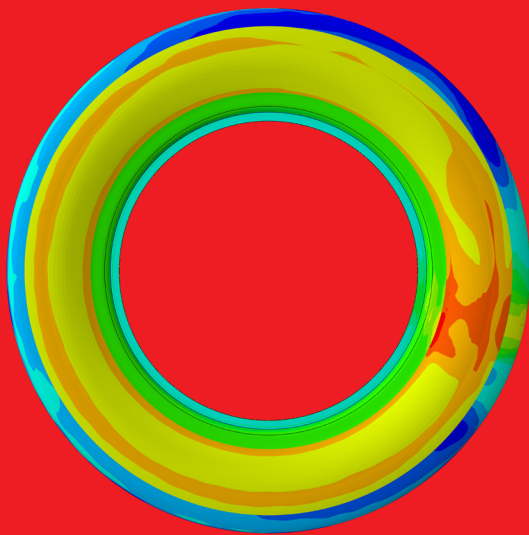


Bansal used Endurica DT™ to simulate a multi-step durability test with loads ranging from 80% to 250%.



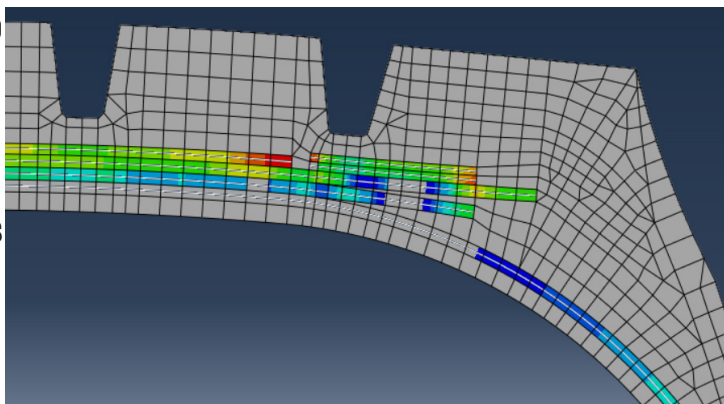
Ebbott and Gobinath used Endurica DT™ to demonstrate the consequences on tire damage development of a range

of impact event scenarios (speeds, impact angles, different wear states) early in the life of a tire.



Behroozinia shared a tire meshing technique for improving representation of interlaminar shearing.

Using Endurica DT™ to simulate the damage accruing across all 6 steps in a load durability test, Maxxis predicted the failure modes in multiple scenerios.



The CEAT and Maxxis papers show

- Multiple direct comparisons of tire durability tests with simulations
- Excellent predictions of both failure mode and tire life

The Goodyear paper illustrates

- An application that is difficult or impossible to evaluate with physical testing
- How the right physics built into the model increases the speed and scope of discovery beyond the limits of physical testing

All three perfectly illustrate that simulation provides for competitive advantage and 'right the first time' engineering.

Endurica

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