

APPLICATION SPOTLIGHT

TIRE MANUFACTURERS



Endurica provides the world's most complete CAE workflows for fatigue analysis of tires. Use our tool set and proven procedures to meet your development requirements.

CAPABILITIES

- Simulate the durability of tire compounds before molding a prototype tire.
- Check every potential failure site in the tire, and every potential crack orientation.
- Simulate your tire design's durability under realistic schedule of load, speed, inflation pressure and temperature.
- Simulate regulatory tests such as FMVSS and ECE R30 durability and high-speed tire tests.
- Simulate the effects of road hazards and tire abuse.
- Simulate full, multichannel track and road operating history.

SIMULATION PROCEDURES FOR TIRES

- Support for both steady state and transient rolling
- Support for real time road loads analysis
- Symmetric results transfer for 2D to 3D and 3D to 2D
- Support for axi- and cyclic- symmetry
- Material models:
 - Temperature
 - Ageing
 - Strain crystallization
 - Ozone attack

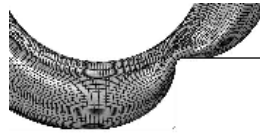
Endurica CL™
Fatigue Analysis Software

Endurica DT™
Incremental Fatigue Analysis

Endurica EIE™
Fast Loads Processing

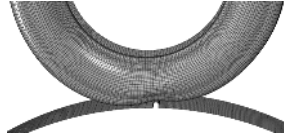
TRANSIENT ROLLING /IMPACT

- Compute damage due to impacts by combining results from steady state and transient rolling
- Combine steady state and transient rolling using Endurica's symmetric results transfer procedures 2D to 3D and 3D to 2D



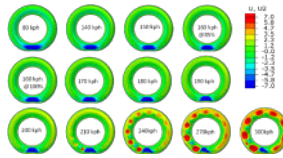
ROLLING RESISTANCE

- Use Endurica's steady state rolling features with hysteresis and temperature dependent material models.



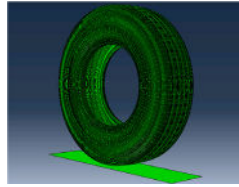
HIGH SPEED / FMVSS / ECE30

- Combine multiple-stress/strain and temperature solutions according to the FMVSS / ECE30 schedule to accrue damage and calculate tire residual life.
- Predict speed rating during design.



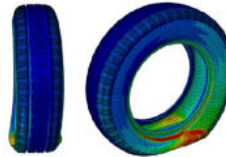
STEADY STATE ROLLING

- Endurica automatically recognizes Eulerian streamlines in steady state rolling analyses.



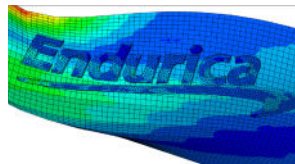
TREADED TIRE

- Steady state rolling also works for cyclic symmetry/ treaded tire.



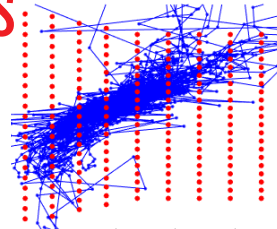
SIDEWALL LETTERING

- Surface cracking on tire sidewalls is a key indicator of ozone attack which can limit useful life.



REAL TIME TRACK AND ROAD LOADS

- Endurica EIE computes full field strain history for up to six (6) channels. Analyze durability impacts from real time track and road history: load, slip angle, slip ratio, speed, camber, inflation pressure.



C-SUITE INSIGHTS



DEAL WITH RUBBER'S "SPECIAL EFFECTS"

Endurica material models capture the essence of tire material behavior: strain crystallization, temperature and rate dependence, ozone attack, ageing, etc.

SUSTAINABILITY BEGINS HERE

Sustainable development does not have to risk performance. Validate durability with Endurica models. Pre-cycling is the key - Endurica's design for durability workflow saves energy, time, money, and materials.

RIGHT THE FIRST TIME

Avoid unnecessary development iterations by simulating early in the design phase. Right the first time equals new products to market faster.

PROVEN RESULTS

Endurica's workflows have been extensively validated over the past two decades. Find out why 6 of the top 10 global tire companies use Endurica in their operations.

Endurica
Get Durability Right®

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