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William V. Mars, Ph.D., P.E. Named 2022 Herzlich Award Winner

Endurica Founder to receive prestigious Tire Industry Award

The Harold Herzlich Distinguished Technology Achievement Medal is bestowed biennially, recognizing a tire industry pioneer whose career and accomplishments have changed the industry for the better, leaving a lasting impact on tire design, development and manufacturing.

Dr. Will Mars is an international leader in the failure mechanics of rubber. He has over 30 years of experience developing testing and simulation methods in the rubber industry, including 16 years at Cooper Tire & Rubber Company. Dr. Mars' career has focused on applying experimental and computational mechanics in pursuit of better-performing rubber products and has been an invited lecturer in numerous international venues. Dr. Mars is the author of the Endurica fatigue life solver – the world's first commercially available and most highly-validated simulation for fatigue analysis of rubber. He is founder and president of Endurica LLC. Endurica's mission is to revolutionize how durability is achieved for rubber product developers worldwide by delivering right-the-first-time engineering capabilities. 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 served as the chief editor of both *Rubber Chemistry and Technology* and *Tire Science and Technology*. He has over 60 peer-reviewed scientific publications and four patents in the area of elastomer durability.

Key Impacts:

- Pioneered Critical Plane Analysis which enables accurate prediction of tire life under complex loads.
- Explained the phenomenon of improvement in fatigue life of the sidewall compounds in inflated tires (strain crystallization).
- Expanded Futamura's deformation index, to predict tradeoffs between stiffness, mode of control and durability.
- Developed incremental calculation method for elastomer fatigue analysis, enabling simulation of multi-step durability tests including FMVSS and high-speed protocols for tires.
- Developed rapid test method to determine the long-term durability of rubber. The method reduces testing time from weeks (or months) to under one hour and is based on intrinsic strength/fatigue limit physics.
- Introduced fatigue crack growth testing protocols that produce more reliable data relative to prior methods.
- Current market adoption: 13 of top 20 of global rubber product producers are using Endurica methods today.

Regarding Endurica's impact Dr. Mars notes that "we estimate that 4% of GDP is spent on costs of poor durability/unexpected failure. Better design via early simulation can reduce these costs by 50%. For the United States rubber industry alone, with $200 billion in annual revenue of which perhaps 75% is tires, this could translate into $4 billion/year of potential impact."

Dr. Mars will receive The Herzlich Award medal on September 14, 2022 at the International Tire Exhibition & Conference (ITEC) –the largest tire manufacturing tradeshow and conference in North America. Held every two years, ITEC is dedicated exclusively to tire makers and those that serve the industry. The Herzlich award recognizes a person whose innovations have advanced a substantive or major change in tire manufacturing, tire reliability or performance.

About Endurica LLC

Endurica provides the world's most comprehensive tools and workflows for fatigue analysis of elastomers. Clients include 13 of the top 20 global rubber product producers. Endurica solutions include simulation software, material characterization services, testing instruments, and training to answer your key question: "How Long Will It Last?" The company was founded in 2008 and received the 2020 Tibbetts Award for cutting-edge technology from the U.S. Small Business Administration.

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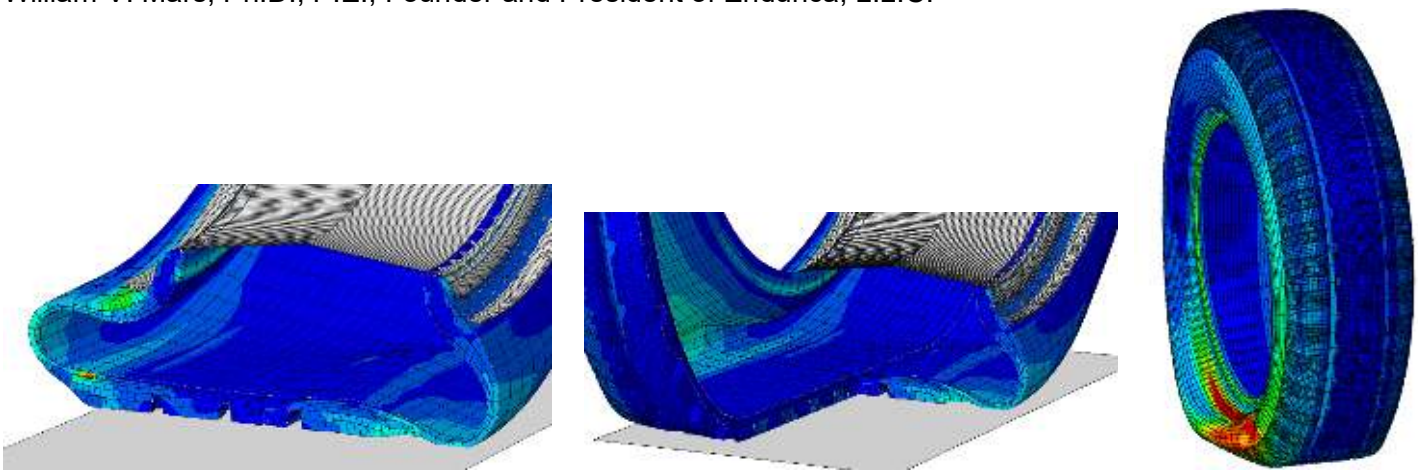
William V. Mars, Ph.D., P.E., Founder and President of Endurica, L.L.C.



Endurica simulation results showing damage accrual in a tire under conditions of steady state cornering. Cross section view (left), cutaway view (middle) and whole tire view (right).

Additional graphics are available upon request. Email pwglaza@endurica.com