

# WINNING ON DURABILITY

## Endurica User SPOTLIGHT



Rassini is a global company that designs and manufactures components for suspension, brake and anti-vibration systems for the automotive industry, including both electric and internal combustion urban, family, off-road, sport, luxury and commercial vehicles. More than a manufacturer, Rassini is a design and solutions company, recognized worldwide as a pioneer in the development of new technologies as well as constant innovation in product and process engineering.

The company's 6,500+ employees work from eight production plants, five technology centers and offices in Mexico, the United States, Brazil, Germany and Japan. Rassini provides components to automakers in 10 countries supplying over eight million vehicles every year. Furthermore, 51 vehicle models around the world use at least one Rassini product amid major original equipment manufacturers including General Motors, Ford, Toyota, Volkswagen, Tesla, Daimler, Audi, Mercedes Benz, Nissan, Volvo and Mitsubishi.

**Our customers value durability, and we deliver it with confidence.**

— Jaime Galvan  
Engineering Manager

### *Elastomeric Products Include:*

- Bushing assemblies for springs
- Engine bumpers | Jounce bumpers
- NVH reducing products
- Single and double bonded bushings for shock absorbers
- Shot bushings
- Bar pin single bonded bushings for shock absorbers



### TECHNOLOGY LEADERSHIP AND CUSTOMERS' RECOGNITION

Throughout 2017, Rassini continued to look for opportunities around the world, focusing primarily on new technologies on products, processes, materials, software and robotics.

In the second half of 2018, North American Suspensions Division anticipates that its efforts will focus on research and development of new lightweight materials for the production of leaf springs, and will begin the delivery of its hybrid leaf springs for one of the best-selling light commercial vehicles in the world.

At our Bypasa facility in Queretaro, special emphasis has been given to the technological development of elastomers. In 2017, the following milestones were achieved:

- Implementation of Finite Element Software (Endurica) was carried out for the purpose of predictability in fatigue. By the end of 2018, Bypasa will be one of the few companies in the world that will be able to predict with 90% assurance, the performance and life of a suspension bushing.
- Inauguration of a new elastomer laboratory, one of the best-equipped in North America.
- First double compound bushing was developed at the prototype level, which opens up important business opportunities.
- A 3D carbon fiber printer was acquired.



### *Endurica Value Add for Rassini:*

- Win new business
- Shorten product development cycles
- Get to market faster
- Make the best design decisions for durability



Being a leader in technology means having the freedom to create, connect, manage, protect, discover, share and, most importantly for us, to work efficiently and safely.

In keeping with this, for Rassini 2018 was a year of using disruptive technologies looking toward the digitization of improve productivity, cybersecurity and

Robotics Process Automation (RPA) is a digital tool focuses on error-free and program increased productivity by

Transformation strategy, a cloud-based model, which in addition to improving

An Augmented Reality (AR) prototype was also developed to monitor shopfloor, giving the operator feedback from the equipment and the ERP system in real time, using an immersive technology.

The cybersecurity initiatives implemented have aided in ensuring the continuity of the business in the face of new threats. A cyberstack simulation tool to prevent identity theft was added to staff training and experts were contracted to develop an integral cybersecurity strategy.

A cutting-edge software was launched based on finite element modeling. This simulation software predicts failures due to material fatigue. Additionally testing equipment was put into operation, which can test at 700Hz, in addition to the previous capacity of 250Hz, to validate anti-vibration products.

***Rassini wins customer recognition of their technology leadership using Endurica solutions.***



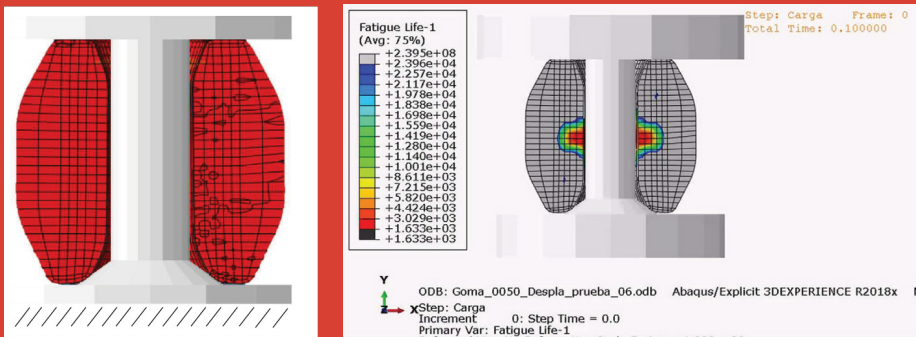


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## CLIENT DURABILITY REQUIREMENT

The jounce bumper is a key element of a vehicle's shock absorber system. It prevents the metal shock absorber spring from reaching full compression during big impacts, and it improves the noise, vibration and harshness (NVH) characteristics. The jounce bumper design must qualify by enduring a sufficient number of load cycles without cracking. Rassini quickly gets the bumper material and design right before building a prototype by using Endurica to simulate the fatigue tests that will be used for qualification.

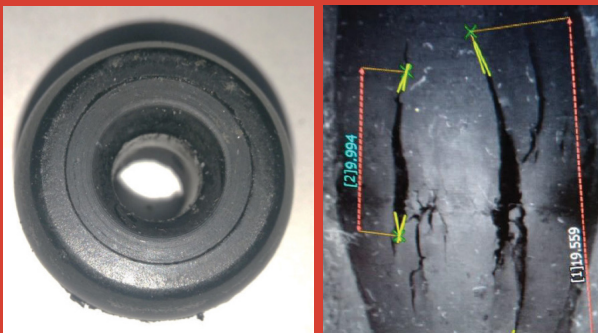
## SOLUTION APPROACH



Cross section view of the jounce bumper in the unloaded state. Displacement is applied sinusoidally along the vertical direction so that the jounce bumper is compressed between rigid end plates. Material properties for the simulation were tested using Endurica protocols implemented in Rassini's lab.



Endurica CL™ correctly predicts fatigue cracking on the inside diameter of the jounce bumper for this load case.



Top down view of jounce bumper (left). Cracks in the fatigue test occur on the inside diameter (right), in accord with the location and orientation predictions of the Endurica CL simulation.



Durability is a principal requirement of our customers as defined in their specifications. With Endurica we have an advantage.

We offer our clients the best technical information and a shorter overall project development time.

— Vladimir Pedraza Otero  
Product Engineer

## Endurica

Get Durability Right®

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