TATA TECHNOLOGIES

Tata Technologies SAE World Congress 2013 Presenters

Gopal Athani

Gopal Athani has more than eight years of professional experience in automotive and related manufacturing. After working as a lecturer, and in after sales service, he joined ANZ International Manufacturing Private Limited in 2007, as Vehicle Testing Engineer. Following that, he worked with Reva Electric Car Company for one year before joining Tata Technologies in 2009. Gopal has worked with major automotive clients including GM, for a period of 2 years, and is currently engaged with Tata Motors Limited, working in Energy Management CoC, as a Systems Engineer for Micro Hybrid Systems. He earned a Bachelor's Degree in Automotive Engineering from Visvesvaraya Technological University, Belgaum, India, in 2005.

Abstract

Intelligent Alternator Control Mechanism for Energy Recuperation and Fuel Efficiency Improvement

With the current state of ever-rising fuel prices and unavailability of affordable alternate technologies, significant research and development efforts have been invested in recent times toward improving fuel efficiency of vehicles powered with conventional internal combustion engines. To achieve this, a varied approach has been adopted by researchers to cover the entire energy chain including fuel quality, combustion quality, power generation efficiency, down-sizing, power consumption efficiency, etc. Apart from energy generation, distribution and consumption, another domain that has been subjected to significant scrutiny is energy recuperation or recovery.

A moving vehicle and a running engine provide a number of opportunities for useful back-recovery and storage of energy. The most significant sources for recuperation are the kinetic energy of the moving vehicle or running engine and, to a lesser extent, the thermal energy from mediums such as exhaust gas. This paper describes and analyzes a method to recuperate electrical energy from a portion of the vehicle kinetic energy through an intelligent alternator control mechanism. The intelligent alternator control system, its implementation on a demonstrator vehicle including the control logics, and measurements of recuperated energy and fuel-saving under different test conditions are presented as part of this paper.

Gopal B Athani, Design Engineer
Tata Motors Limited, E&E - Energy Management COC

TATA TECHNOLOGIES

Roshan N Mahadule

Roshan N Mahadule has more than 11 years of industrial experience in the CAE domain. In 2004, he was associated with L&T Engineering Services, Baroda. In 2006, he joined Mahindra Engineering Services Pune, India, serving as Senior CAE Analyst in the commercial vehicle durability group. In 2008, he joined Tata Technologies, at the Pune, India Center for Advanced Engineering as Design, as a Team Lead in the Passenger Vehicle Durability Group, working for the Chrysler Technology Center in Auburn Hills, Mich. (USA) His technical interests include CAE simulation, fatigue prediction and solving complicated durability problems through a new and non-conventional approach. Roshan earned his Bachelor's Degree in Mechanical Engineering from YCCE Nagpur, India in 2001 and his Master's Degree in Design Engineering from BITS Pilani, India in 2003.

Abstract

CAE Simulation of Door Sag/Set Using Subsystem Level Approach

The performance of the door assembly is very significant for the vehicle design; and the door sag operating condition is one of the important attributes for the design of the door assembly.

This paper provides an overview of the conventional approach for door sag/set study based ondoor-hinge-BIW assembly (system level approach) and a new approach, based on a subassembly (subsystem level approach).

The door sag/set simulation at the system level is the most common approach, adopted across the automotive industry. This approach evaluates the structural adequacy of door assembly for sag load, but to learn the stiffness contributor for door sagging is always a time-consuming and iterative task.

This new approach of door sag/set, at the subsystem level, evaluates the structural stiffness contribution of individual subsystems for door assembly performance. It support for setting up the target at subsystem level, which integrate and regulate the system level performance. This approach is also useful for generating the design enablers and for optimization of door-hinge-BIW assembly with higher reliability.

Abaqus/Standard, from Dassault Systemes, is the software solution used as the FE solver to simulate the door sag/set by both the approaches with application of material, geometrical and contact nonlinearities.

Roshan Mahadule

Vehicle Durability | Chrysler ODC

TATA TECHNOLOGIES

About Tata Technologies

Tata Technologies, founded in 1989, is a global leader in Engineering Services and Product Development IT services to the global manufacturing industry; enabling ambitious manufacturing companies to design and build better products. Tata Technologies is a company of innovators, specialists in the design engineering space, who apply cutting-edge technology to provide a competitive advantage to customers in the manufacturing sector. The company is a strategic partner for developing complete vehicles (VPD group), engineering subsystems and components (E&D), managing the NPI process and collaborative engineering (PLM), and tying together information created and used throughout the extended manufacturing enterprise (ESG).

Tata Technologies is headquartered in Singapore, with regional headquarters offices in the United States (Novi, Michigan), India (Pune) and the UK (Coventry). The company has a combined global work force of more than 6,500 employees serving clients worldwide from facilities in North America, Europe and the Asia-Pacific region. www.tatatechnologies.com

Media Contact:
Daniel Saad, Director of Communications – NA
+ 1 248 426 1841
daniel.saad@tatatechnologies.com