

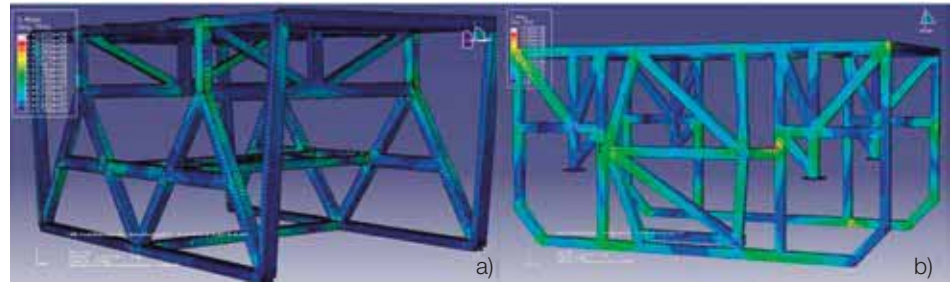
Design Analysis of a Passenger Bus Tri-axle Suspension Frame

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Modern suspension systems improve vehicle performance in passenger buses. Developing a new suspension design requires a careful examination of packaging needs, load transfer and structure characteristics to produce a safe design. In this paper we provide a design proposal for a passenger bus frame to incorporate a commercial tri-axle pneumatic suspension. A system-level CAE evaluation validates and optimizes the proposed design.

The initial inputs for the design process were a set of finite element analysis simulations of the suspension. The space requirements were determined by the design of the global bus structure. With these inputs, a series of concepts for the frame design were proposed and evaluated; a detailed design for each one of the three axles was presented and refined to a final stage, then evaluated as assembled into the final structure.

By following this methodology, a structure that is capable of sustaining the selected



Abaqus models of the suspension structures for the bus a) front axle structure b) drive axle structure.

commercial suspension was obtained. The final proposal consists of detailed CAD files created in SolidWorks for each of the portions and bus frame assemblies to be constructed.

Additional details about this project can also be found in the paper: *Analysis and Optimization of a Passenger Bus Frame*, Reyes Ruiz Carlos A., Ramírez Díaz Edgar I., Ruiz Cervantes Osvaldo, and Ortiz Prado Armando, Universidad Nacional Autónoma de México.

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