Abstractbaja and dynamics literature and previous sae baja

ABSTRACTBaja SAE-INDIA ITER Collegiate Club was established in 2013. The team Posiedon Racing aims to design and fabrication of a rugged and marketable off-road vehicle. The development of the vehicle is governed by a set of pre-defined rules.

This report highlights key areas of design for vehicle#23. Design and analysis has been carried out extensively with use of softwares like SolidWorks, ANSYS, Lotus etc. Maximum parts have been manufactured in-house for the vehicle. Extensive testing have been carried out to ensure that performance approaches the theoretical ones at close quarters. INTRODUCTIONBaja SAEINDIA is a pan India intercollegiate competition to design, fabricate, and race a small, single passenger, off-road vehicle powered by a Briggs & Stratton 4-Stroke gasoline engine. All Baja SAE vehicles for the competition are governed by a set of rules and powered by a small engine, so the major part of vehicle performance depends on the acceleration and maneuverability of the vehicle which are in turn proportional to the weight of the assembled vehicle along with the driver. As weight is critical to achieve the greater performance of the vehicle, a trade-off must be found between the strength and weight of the vehicle while ensuring the safety of the driver.

Vehicle #23 has been designed to withstand the endurance event. Vehicle #23 is a first-generation prototype. Concept generation and revision have taken place without direct reference to previous designs by different teams. Automotive design and dynamics literature and previous SAE BAJA competitors have been meticulously studied to develop the knowledge base to field a competitive vehicle in the event as a new team.

Key design features include in-house manufactured parts, modular components, adjustable suspension and substantial rollover protection for the driver. Team Posiedon Racing SAE Baja ATV has been designed to maximize strength and durability, while minimizing weight and retaining manufacturability. Efforts have been made so as not to compromise the safety and the design rules have be adhered to at all levels of fabrication of the all terrain vehicle. CONCLUSIONTeam Posiedon Racing uses learned and established engineering practices to design, fabricate, test and race the all terrain vehicle against other student teams from all over India, in a series of competitive events which reward teams for good engineering and mechanical practices. The vehicle has performed well the various tests such as acceleration, steering, braking etc. The Mechanical Engineering Department of Institute of Technical Education and Research, Siksha ‘ O’ Anusandhan has developed an all terrain vehicle worthy of the Baja SAE India competition and a standing potential in the commercial all-terrain vehicle market.