ABSTRAK

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Program Studi : Teknik Mesin

Judul : Pembuatan, Penerapan dan Pengujian Mekanisme Komponen Suspensi Depan Mobil Listrik

Pembimbing : Marsono, S.T, M.T.

Pembuatan suspensi depan pada mobil listrik KMLI (kompetisi mobil listrik Indonesia) bertujuan untuk menciptakan suspensi yang sesuai regulasi dan layak untuk digunakan dalam berkendara diajang balap.

Pembuatan komponen suspensi depan mulai dari proses desain suspensi menggunakan software solidwork berdasakan bentuk rangka dan komponen lain, lalu proses pembuatan gambar teknik, rencana proses, persiapan proses, proses pembuatan suspensi depan meliputi pembuatan upper arm, lower arm, kingpin, bell crank, bushing pipe arm, dudukan shock absorber dan dudukan push rod, bracket caliper. pada proses pembuatan ada kesulitan dibagian proses pengelasan kurang memuaskan dan harus dilakukan proses perbaikan dan finishing yang cukup banyak, lalu dilanjutkan dengan proses perakitan komponen agar terbentuk suspensi depan kendaraan mobil listrik KMLI serta proses terakhir adalah proses pengujian komponen suspensi depan meliputi pengujian ground clearance , pengujian sudut putar bell crank serta pengujian defleksi pegas.

Masing-masing roda depan mengaplikasikan shock absorber dari Honda Revo. Hasil pengujian ground clearance tanpa beban adalah 165 mm dan pengujian ground clearance beban 121 kg adalah 123 mm dengan standar ground clearance 100-170 mm. Hasil pengujian sudut putar bell crank 11^{o}, hasil tersebut dengan itu bisa mendorong dengan baik. Hasil pengujian defleksi pegas tanpa beban menyisakan 84 mm langkah pemegasan dan defleksi pegas saat beban 121 kg menyisakan 56 mm langkah pemegasan. Dari hasil pengujian tersebut, maka sistem suspensi depan mobil listrik dapat dikatakan baik dan layak untuk digunakan.

Kata Kunci: *Suspensi, Pembuatan, Pengujian*

ABSTRACT

Name : Andri Hidayat

Study Program : Mechanical Engineering

Title : Mechanism Manufacture, Application and Testing Electric Car Front Suspension Components

Counsellor : Marsono, S.T, M.T.

The production of the front suspension on the electric car KMLI (Indonesian electric car competition) aims to create a suspension that complies with regulations and is suitable for use in racing.

The manufacturing of the front suspension components starts from the suspension design process using solidwork software based on the form of the frame and other components, then the engineering drawing process, the process plan, the preparation process, the front suspension manufacturing process including the manufacture of the upper arm, lower arm, kingpin, bell crank, bushing pipe Arms, shock absorber mounts and push rod mounts, caliper brackets. In the manufacturing process there are difficulties in the welding process that is unsatisfactory and a lot of repair and finishing processes must be carried out, then the component repair process so that the front suspension of the KMLI electric vehicle is formed and the last process is the process of testing the front suspension components including testing ground clearance, testing the turning angle of the bell crank and spring deflection tester.

Each of the front wheels applies a shock absorber from the Honda Revo. The result of the no-load ground clearance test is 165 mm and the 121 kg load ground clearance test is 123 mm with a standard ground clearance of 100-170 mm. The result of the turning angle of the crank bell is 11^{o}, the result is that it can push well. The result of testing the spring deflection without load leaves 84 mm of the spring and deflection of the spring when the load is 121 kg, leaving 56 mm of the spring. From the results of these tests, the electric car front suspension system can be said to be good and feasible to use.

Keywords: *Suspension, Manufacture, Testing*