STRENGTH AND ELONGATION ANALYSIS OF SUPRA X 125 DD CHAIN

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Abstract

Motor cycle is the one of many vehicles which is usually used to reach many places with low cost. Motor cycle could be ride with one or two passengers. The one of main crucial factor to motor performance is the power of chain. The elongation of chain will make reducing performance of vehicle. The power of chain can be analyzed while that motor is running with the biggest force analyze while the vehicle hrough the uphill road. While the vehicle moving around sometimes, it got unexpected shock load which will cause extension of chain elongation. The chain will get faster elongation to the vehicle that often had heavy load and shock load.

The experiment is started by searching and learning the supporting theory which is related with the power and elongation of chain, and then find the vehicle data through vehicle’s brochure specification and direct measurement. And then conducting power analyze and elongation of chain to motor bike by making the equation force, moment of inertia, and chain stress, with the uphill road.

From the analyze which had been done with maximum road angle is 60° then we got maksimum chain stress \( \sigma = 499,6194 \text{ N/mm}^2 \), and the total chain elongation \( L_{\text{Total}} = 95,5016 \text{ mm} \). So for the total chain elongation \( L_{\text{Total}} = 95,5016 \text{ mm} \), and then chain setting bolt pulled back long \( S = 10,05615 \text{ mm} \) and from Endurance Limit graph with stress cycles (n cycles)
we got $= 6.5 \times 10^5$, so according to those data the chain life cycle is predicted 5,4167 years.