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Home > Vol 8, No 1 (2018) > Habibi

ANALISIS TEKANAN UDARA, SUDUT SLIP DAN UKURAN LEBAR BAN TIPE RADIAL TERHADAP ROLLING RESISTANCE DENGAN METODE TAGUCHI

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ABSTRACT

Rolling resistance is one of the main factors affecting the fuel efficiency of a vehicle. Rolling resistance is resistance to the wheels that will and has been rolled due to the force of friction between the wheels with the road surface of the wheel, due to the deformation process on the tire structure, contact area and road surface. Radial tires are tires where the reinforcing fibers on the carcass are arranged radially, have a greater ability to withstand lateral forces and generally have high ratio aspect ratio, width smaller than the bias tires. The taguchi method is a new methodology in engineering aimed at improving product and process quality, minimizing cost and time. The purpose of this research is to know the air pressure influence, slip angle and tire width to rolling resistance. The research was conducted experimentally by using taguchi method. The result showed that the highest rolling resistance force occurred at a combination of air pressure of 175 kPa, 9° wheel slip angle and 90 mm width of tire size of 36.914 N. While the smallest rolling resistance was obtained with a combination of parameters at the air pressure level of 325 kPa, slip angle 1° and the size of the 70 mm tire width of 11.511 N at 350 rpm and normal load 580 N. From the result it can be concluded that the change in the level of the three air pressure parameters, the slip angle and size of tire width can affect the rolling resistance value.

KEYWORDS

Rolling resistance; Rolling resistance force; Taguchi method; Friction force

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