STUDY OF NUMERIK TRAILING ARM AT BOGIE OF TRAIN

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Abstract

A train is a land transportation which is important to support people’s activities. PT. INKA is demanded to design a safe and comfortable train for the passengers. Therefore, a research on Trailing Arm is conducted. Trailing Arm is a part of train suspension system. There are two suspension systems on the train’s bogie; they are primary suspension and secondary. This study only focuses on primary suspension system because this suspension influences the first muffling from disorderliness of railway. Primary suspension on bogie generally uses coil spring suspension and wearing plate as the movement border. The weakness of this suspension is the dynamic performance because there is clearance between axle box and bogie frame. One of the ways to solve the problem is abolishing the wearing plate as the movement border and replacing it with trailing arm which longitudinally connects the axle box and the bogie frame.

The preliminary study is conducted to know the powers in trailing arm. The data that obtained from the
train’s actual condition are used to count the pushing power on the train which includes the pulling and pressing power. Those powers are used as an input to be stimulated by ansys program to get the maximum tension value from the trailing arm. The maximum tension value should not be more than the permitted tension on materials; it is 345 MPa.

Of research in the thrust to get the wheels when accelerating at 29575.325 N, when the deceleration -46424.67 And torque when the road turned at 4378.03 Nm Therefore, the powers that work on the trailing arm can be obtained. The obtaining powers are stimulated by using ansys software. The maximum tension while the accelerating condition is 6.26 x 10^7 Pa, 2.3 x 10^7 Pa in decelerating condition, and 1.124 x 10^8 Pa on a curving railway. The result shows that the trailing arm is in a safe condition since the tension is below the permitted tension.

**Keywords:** Bogie, trailing Arm, tension.