

Development of hybrid electrical air-cushion tracked vehicle for swamp peat

ABSTRACT

This study presents a developed hybrid electrical air-cushion tracked vehicle (HETAV) for the transportation operation of agricultural and industrial goods on the swamp peat terrain bearing capacity of 5 kN/m². The vehicle's design parameters are optimized by using the developed mathematical models which are made based on the kinematics and dynamics behaviors of the vehicle. A set of sensors are used with this vehicle to activate the air-cushion system and battery pack recharging system. The vehicle's air-cushion system is protected by a novel-design auto-adjusting supporting system. The air-cushion dragging motion resistance is overcome with additional thrust which is developed by a propeller. The vehicle is equipped with the air-cushion system to make the vehicle ground contact pressure 5 kN/m².