ABSTRACTS

ARIF RAHMAN HAKIM, 98 / 120949 / TK / 22719, The Design of 3 –Wheels Windsurfing Vehicle for 1 Passenger Capacity

Wind Surfing Vehicle (WSV) is a more or less complex alternative vehicle and for a through appreciation of the stresses and strain to an extensive knowledge of the mechanical engineering is necessary. As well as we know, the wind power are abundant energy sources often used by people. The vehicle powered by wind energy and having complex aerodynamics aspects, especially at sail design. This vehicle operates on open space like wide field, beach, even ice field (called ice yachting), where the wind availability is abundant. Generally, WSV divided into two main parts : Chassis (frame) and Sail. Chassis analyzed at the strength of materials like Bending Moment, Shear Forces, and their distribution at chassis bar. It constructed by Steel pipe St 37 and aluminum Alloy (AlMgZn) for its mast, stigger, and seat. Whereas sail analyzed at pressure distribution, C_L, C_D, and the relationship both of them. The Gross Vehicle Weight (GVW) at full loaded are 909,58 N assumed that the passenger have 70 Kg weight. The man semi lie down position, foot handling steering, and sail controlled by their hands. Intended on sail characteristics, the model of sail tested at Sub Sonic Wind Tunnel, Laboratory of Aerodynamics, Department of Mechanical Engineering UGM during 7 days.