

DESCRIPCIÓN BIBLIOGRAFICA DEL TFE
IALaren DESKRIBAPEN BIBLIOGRAFIKOA

Grado/Gradua <input type="checkbox"/>	Año	Urtea	Título del TFE	IALaren Izenburua
Master/Masterra <input checked="" type="checkbox"/>	2018		Force measurements and flow visualization of a blade-strut model.	
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Inglés (obligatorio) Ingelesa (nahitaezkoa)	Abstract (resumen de 100-250 palabras)		Abstract (laburpena 100-250 hitzetan)	
	<p>This thesis describes the wind tunnel testing procedure that has been carried out in a VAWT blade-strut model formed by the junction between two NACA0018 airfoils at low Reynolds numbers. The full scope of the wind tunnel study was conducted at the Vrije Universiteit Brussels (VUB) Fluid Mechanics Department low-speed wind tunnel. The tests are performed to validate the results obtained previously by numerical simulation. In order to obtain information about the model 's aerodynamic performance, two different studies have been carried out.</p> <p>A quantitative research based on force and moment measurements is presented. Lift and drag measurements are analyzed for Reynolds numbers ranging between 100k to 500k and angles of attack from -24° to 24°. The results show an increase in the lift coefficient when increasing angle of attack up to a point where stall occurs. Drag coefficient also increases with increasing angles of attack and presents higher values with respect to a simple NACA0018 airfoil due to the effect of the junction between blade and strut.</p> <p>A qualitative examination based on the surface flow visualization is also presented. Tufts and oil visualization techniques are used to discuss the surface flow behaviour. Tufts give a basic first image of the phenomena, while oil visualization techniques bring out more information. Oil flow visualization reveals the presence of a laminar separation bubble which moves towards the leading edge with increasing angles of attack. The relation between the flow field 's most characteristic regions and the airfoil 's performance is presented.</p>			
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Wind tunnel, flow visualization, oil visualization, laminar separation bubble, VAWT				