

AEROSPACE ENGINEERING

DIMEAS - Aeroacoustics of propellers operating at low Reynolds number and subjected to inflow turbulence

Funded By	DIMEAS - Progetti ricerca di base
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Context of the research activity	Drones' propellers operate at low Reynolds numbers. Recently, several noise generation mechanisms have been described for such propellers when operating with clean inflow conditions. However, in more realistic scenarios, they operate with turbulent inflow or non-axial inflow, which are the conditions of interest in this research.
Objectives	<p>In order to describe the noise generation mechanisms, the PhD candidate will:</p> <ul style="list-style-type: none"> - build a computational setup to realize turbulent inflow conditions using a grid or boundary conditions. - perform high-fidelity numerical simulations using as reference experiments that have been carried out at Delft University of Technology. - analyze the data and investigate how the turbulent inflow affects the noise generation mechanisms. - build a low fidelity approach to predict aeroacoustics noise.
Skills and competencies for the development of the activity	<p>The PhD candidate has:</p> <ul style="list-style-type: none"> - background knowledge of aeroacoustics. - background knowledge of propeller noise operating at low Reynolds numbers. - experience with numerical simulations.