



PhD in INGEGNERIA MECCANICA / MECHANICAL ENGINEERING - 38th cycle

Research Area n. 2 - Sustainable Mobility

**PNRR_352 Research Field: SLIPSTREAM PHENOMENON DUE TO THE PASSAGE OF
TRAINS ON THE PLATFORMS OF A STOP/STATION IN THE OPEN FIELD AND IN THE
TUNNEL**

Monthly net income of PhDscholarship (max 36 months)
€ 1400.0
In case of a change of the welfare rates during the three-year period, the amount could be modified.

Context of the research activity	
Motivation and objectives of the research in this field	<p>The research activity is related to Mission n.3, C1 of PNRR (Piano Nazionale di Ripresa e Resilienza), focusing on investments on railway infrastructures. The research activity aims at the evaluation of the slipstream phenomenon considering the effect of confined spaces, train types, etc. and the corresponding effects on passengers on platform and on workers trackside.</p>
Methods and techniques that will be developed and used to carry out the research	<p>Current approaches for vehicle aerodynamics testing and simulation will be applied and extended as part of the project. In particular, the student will:</p> <ul style="list-style-type: none"> • adopt CFD numerical models/experimental techniques (full scale tests) for the evaluation of the slipstream physical phenomenon and the probabilistic assessment of the effects on passengers and workers trackside; • identify the main parameters having an effect on the phenomenon; • develop a numerical/experimental methodology for the evaluation of the slipstream phenomenon in different sites and with different trains;
Educational objectives	The student will learn: research project management and



	publishing skills; numerical models and experimental tests development skills (particularly CFD numerical models and full scale experimental tests); presentation and teaching skills.
Job opportunities	Our last survey on MeccPhD Doctorates highlighted a 100% employment rate within the first year and a 35% higher salary, compared to Master of Science holders in the same field. Companies in the transportation sector (RFI but also Mercitalia Intermodal, Trenitalia and Hitachi Rail, Bombardier, Alstom) who have been collaborating for years with the POLIMI research group, will be very interested in hiring a PhD-graduate with application experience in the sector.
Composition of the research group	1 Full Professors 1 Associated Professors 2 Assistant Professors 1 PhD Students
Name of the research directors	Proff. Daniele Rocchi, Gisella Marita Tomasini

Contacts	
<i>Phone:</i> 02 23998480 <i>Email:</i> daniele.rocchi@polimi.it, gisella.tomasini@polimi.it	
phd-dmec@polimi.it	

Additional support - Financial aid per PhD student per year (gross amount)	
Housing - Foreign Students	--
Housing - Out-of-town residents (more than 80Km out of Milano)	--

Scholarship Increase for a period abroad	
Amount monthly	700.0 €
By number of months	6

National Operational Program for Research and Innovation	
Company where the candidate will attend the stage (name and brief description)	Rete Ferroviaria Italiana S.p.A.
By number of months at the company	6
Institution or company where the candidate will spend the period abroad (name and brief description)	DLR Germany Aerospace Center (or) Monash University
By number of months abroad	6



Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information

Financial aid is available for all PhD candidates (purchase of study books and materials, funding for participation in courses, summer schools, workshops and conferences) for a total amount of euro 5.707, 13.

Teaching assistantship: availability of funding in recognition of supporting teaching activities by the PhD candidate. There are various forms of financial aid for activities of support to the teaching practice. The PhD student is encouraged to take part in these activities, within the limits allowed by the regulations.