



# PhD in INGEGNERIA MECCANICA / MECHANICAL ENGINEERING - 39th cycle

**PNRR 117 Research Field: TRANSPORT OF RAW MATERIAL FOR THE CONSTRUCTION OF  
ROLLING STOCK: IMPROVEMENT OF THE AMBIENTAL FOOTPRINT**

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

<b>Context of the research activity</b>	
<b>Motivation and objectives of the research in this field</b>	<p>The improvement of environmental sustainability in the logistics sector is one of the milestones within the PNRR (M3C2).</p> <p>The research activity is based on close collaboration between business and university, again in full coherence with M4C2 (<i>From Research to Business</i>).</p>
<b>Methods and techniques that will be developed and used to carry out the research</b>	<p>The research activity concerns the analysis of the transport of goods necessary for the construction of rolling stock, trying to reduce its impact while preserving production constraints. As a case study, the logistics of the METRA company which produces aluminum extrusions for the production of railway bodies will be analysed. The period abroad will presumably be in a company where extrusions are assembled to produce the railway casing.</p> <p>Specifically, the following aspects will be analysed:</p> <ul style="list-style-type: none"> <li>- Analysis of the finished material warehouse (improvements on storage/positioning/stackability/handling)</li> <li>- Analysis of the environmental impact due to transport, considering different solutions for its reduction (truck/train)</li> <li>- Shipping support: reusable, more sustainable and multifunctional systems</li> </ul>
<b>Educational objectives</b>	Analysis of best practices in the logistics sector and



	<p>evaluation of applicability to the specific sector. Development of models for the analysis of the different solutions identified both from the economic point of view and from those of overall emissions.</p> <p>The candidate will be inserted in a research group which encompasses various disciplines related to the fields of mechanical and management engineering.</p>
<b>Job opportunities</b>	<p>Nowadays all companies dealing with logistics pay great attention to the environmental footprint due to the execution of their activities. For this reason, the skills acquired during the doctoral programme will facilitate the doctoral student in finding employment in companies in the sector.</p> <p>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.</p>
<b>Composition of the research group</b>	<p>0 Full Professors 2 Associated Professors 0 Assistant Professors 0 PhD Students</p>
<b>Name of the research directors</b>	Prof. Davide Tarsitano, Prof. Claudia Colicchia

#### Contacts

Prof. Davide Tarsitano *Phone* 02 2399 837 *Email* [davide.tarsitano@polimi.it](mailto:davide.tarsitano@polimi.it)

Prof. Claudia Colicchia *Phone* 02 2399 404 *Email* [claudia.colicchia@polimi.it](mailto:claudia.colicchia@polimi.it)

For questions about scholarship/support please contact [phd-dmec@polimi.it](mailto:phd-dmec@polimi.it)

#### Additional support - Financial aid per PhD student per year (gross amount)

<b>Housing - Foreign Students</b>	--
<b>Housing - Out-of-town residents (more than 80Km out of Milano)</b>	--

#### Scholarship Increase for a period abroad

<b>Amount monthly</b>	700.0 €
<b>By number of months</b>	6



<b>National Operational Program for Research and Innovation</b>	
<b>Company where the candidate will attend the stage (name and brief description)</b>	Metra S.p.A.
<b>By number of months at the company</b>	6
<b>Institution or company where the candidate will spend the period abroad (name and brief description)</b>	to be defined
<b>By number of months abroad</b>	6

<b>Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information</b>
<p>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.</p> <p>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.</p>