

# PhD In Mechanical Engineering

## Research Area n. 3- Manufacturing and Production Systems

**Specific Research Subject: Smart manufacturing via  
sensor data fusion applied to additive manufacturing**

**Cluster Tecnologico Nazionale\_High performance  
manufacturing**

<b>Scholarships and Financial support</b>	
Monthly net income of PhD scholarship (max 36 months)	€ 1200 (In case of a change of the welfare rates during the three-year period, the amount could be slightly modified)
Number of scholarships	1
Beginning of PhD	1/5/2015
Deadline for application	23/03/2015
<b>Context of the research activity</b>	
Motivations and objectives of the research in this field	Discrete part manufacturing is facing a new digital era, characterized by multiple sources of information that have to be properly managed in order to decide whether the product quality is stable at its target level. Nowadays, quality data can be easily gathered from smart sensors monitoring the manufacturing processes and from non-contact sensors measuring the final quality of the machined workpiece. On the other side, research on additive manufacturing and solutions to add smartness to the process is an urgent need in many productive scenarios.
Methods and techniques that will be developed and used to carry out the research	New approaches should be designed to develop model- and data-driven approaches to connect or fuse sensor and surface data. We plan to couple manufacturing knowledge with statistical data analysis.

Educational objectives	We provide doctoral candidates with high-level scientific training, fostering and refining research and problem solving abilities by focusing on both theoretical and experimental skills. A PhD in Mechanical Engineering will be able to layout, draft and carry on original research, by leading a research group or working in a team.
Job opportunities	National and international academic and non-academic institutions and organizations, engaged in innovation, research and technical development; high-tech SMEs, government departments. List of Universities, Companies, Agencies and/or National or International Institutions that are cooperating in the research: <ul style="list-style-type: none"> <li>• Penn State University Engineering Statistics Laboratory</li> <li>• Harvard University (Statistics department);</li> <li>• Hong Kong university (industrial engineering);</li> <li>• University of Southern California</li> <li>• MUSP laboratories <a href="http://www.musp.it">www.musp.it</a></li> </ul>
Composition of the research group	Number of Full Professors. 5 Number of Associated Professors : 3 Number of Assistant Professors: 7 Number of PhD students: 15
Names of the research directors	BM Colosimo, Q. Semeraro, B. Previtali
E-mail address, phone number and web-page	<a href="mailto:biancamaria.colosimo@polimi.it">biancamaria.colosimo@polimi.it</a>
List of 5 Universities, Companies, Agencies and/or National or International Institutions that are cooperating in the research	<ul style="list-style-type: none"> <li>• Penn State University Engineering Statistics Laboratory</li> <li>• Harvard University (Statistics department);</li> <li>• Hong Kong University (industrial engineering);</li> <li>• University of Southern California</li> <li>• MUSP laboratories <a href="http://www.musp.it">www.musp.it</a></li> </ul>
<b>Additional support</b>	
<u>Funding for educational activities:</u> (purchase of study books and material, funding for participation in courses, summer schools, workshops and conferences): financial aid per PhD student per year	2 <sup>nd</sup> year: 1.370 euro per student 3 <sup>rd</sup> year: 1.370 euro per student
<u>Teaching assistanship:</u> availability of funding in recognition of supporting teaching activities by the PhD student	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.
<u>Computer availability:</u>	1 <sup>st</sup> year: <i>individual use</i> 2 <sup>nd</sup> year: <i>individual use</i> 3 <sup>rd</sup> year: <i>individual use</i>
<u>Desk availability:</u>	1 <sup>st</sup> year: <i>individual use</i> 2 <sup>nd</sup> year: <i>individual use</i> 3 <sup>rd</sup> year: <i>individual use</i>