

Intervento realizzato da



Politecnico
di Torino



In consideration of the determination of the Regione Piemonte – Direzione Istruzione, formazione e lavoro No. 218 of 2022, May 3 which listed the higher institutions authorized to activate PhD positions in the apprenticeship format for the years 2022-2024 in the framework of a specific regional call for proposals (Apprendistato di Alta Formazione e Ricerca - Avviso Pubblico 2022-2024 per l'individuazione e la gestione dell'offerta formativa pubblica approvato con Determinazione 114 del 3/3/2022 e s.m.i.)

MECHANICAL ENGINEERING

Design of an autonomous agritech rover

Company	ECOTHEA SRL [Piva/CF:11928890018]
Supervisor	SOMA' AURELIO - aurelio.soma@polito.it
Contact	PABLO GRIOTTI
Context of the research activity	<p>This proposal is part of the development of energy saving vehicles in the NMRM "Non Road Mobile Machinery" sector and AGRITECH field.</p> <p>The activity refers to the design, dynamic simulation and prototyping of a self-driving electric rover.</p> <p>Ecothea has planned for the winner of this position a collaboration within a contract of high apprenticeship according to the Italian Legislative Decree 81/2015, art. 45.</p>
	<p>This proposal is part of the development of architectures for energy saving in the "Non Road Mobile Machinery" NMRM sector.</p> <p>The electrification of the NRMM represents a strategic objective of the reductions of emissions from the PNNR and the LIFE trajectories of the European Community.</p> <p>In recent years, the demand for efficient and high-performance work machines in their specific operational tasks it has pushed the scientific community and the major producers industrialists in this segment towards the exploration of new technological and design solutions.</p> <p>The adoption of hybrid or fully electrified propulsion systems has recently demonstrated, in the automotive environment, the benefits that can be achieved in terms of reducing emissions of substances pollutants in the atmosphere. Beyond environmental benefit, deriving from the achievement of better overall efficiency of the machine, the adoption of electrical subsystems with control very precise power delivery can lead to an overall increase in productivity of the machine compared to equivalent models with traditional</p>

Objectives	<p>propulsion.</p> <p>The doctoral path in question that aims to fit into this scenario to investigate new problems of electromechanical design and resistance and safety in very critical working environments in terms of vibrations and high stress with particular reference to the design and simulations of compact self-driving vehicle architectures.</p> <p>Objectives:</p> <ul style="list-style-type: none"> • Mechanical design and simulation of self-driving electric propulsion systems • Design and development of modular test benches for the performance evaluation of innovative propulsion systems for vehicles in the Agri-Construction field for testing the control algorithms developed through numerical simulations. • Development of data acquisition systems for field tests. Development of test protocols starting from experimental measurements. • Design and development of monitoring platforms for remote data collection with a view to Transition 5.0.
-------------------	--

Skills and competencies for the development of the activity	<p>The candidate shall be less than 30 years old at the moment of the hiring from the company.</p> <p>The skills of the candidate imply competences in: mechanical design, multibody simulation, use of CAD tools, knowledge of vehicle control unit programming with CANBUS protocol, knowledge of LIDAR sensors and related programming.</p>
--	--