

PUBLIC SELECTION BASED ON QUALIFICATIONS AND INTERVIEW FOR THE AWARDING OF NO. 2 EARLY STAGE GRANTS LASTING 12 MONTHS FOR CONDUCTING RESEARCH PURSUANT TO ART. 22 OF LAW NO. 240/2010 AT THE GITT (CENTRE ON INNOVATION MANAGEMENT AND TECHNOLOGY TRANSFER) A.R.F. 09/A2 – APPLIED MECHANICS - A.D. ING-IND/13 – APPLIED MECHANICS – TYPE B - (CUP: E36D17000090009) FINANCED BY LOMBARDY REGION IN THE CONTEXT OF THE “BANDO LINEA” FOR RESEARCH AND INNOVATION COFINANCED BY POR FESR 2014-2020

announced with decree of the Chancellor Rep. no. 121/2019 of 27.02.2019 and posted on the official registry of the University on 06.03.2019

Research structure: GITT (Centre on innovation management and technology transfer)

Duration of the grant: 12 months

Scientific Area: 09 – Industrial and information Engineering

Academic recruitment field: 09/A2 – Applied mechanics

Academic discipline: ING-IND/13 – Applied mechanics

Scientific Director: Prof. Paolo Righettini

RESEARCH PROJECT – CODE 1

Methods and criteria for the development of systems to determine the performance characteristics of electric motors

Description

In the field of automatic systems for electric motors' assembly, it is important to take into consideration also the presence of an End of Line machine for the verification of the motors' characteristics.

In particular, the characteristics to be verified are both electrical and mechanical. As far as the electric characteristics are concerned, tests shall be performed in order to measure phases' resistance, phases' current in specific operational conditions, back electromotive forces at different running speed.

As regards mechanical characteristics, torque/speed characteristics in some specific running conditions has to be measured, as no-load running speed, zero speed torque, maximum torque, besides dynamic forces induced on the frame.

For tests performing, some standard references are available. Such tests have to be performed inside the production line for all the motors produced, not random or in laboratory environment.

The research activity deals with the definition of methods and criteria to determine the characteristics of electric motors, with reference also to the design of automatic machines/systems integrated into the production line aimed to determine such characteristics.

The development of the activity should include also the use of numerical methods to simulate the measurement operations that have to be performed on the motors, which are mainly brushless.

Expected results

Definition of methods and criteria for the determination of the characteristics of electric motors.

RESEARCH PROJECT – CODE 2

Methods and configurations for the co-ordination of multi-robot machines for assembly and components' handling

Description

In the field of automatic production systems, assembly and components' handling are very important topics; often, they are addressed by means of robotic systems.

These systems are frequently used as servo devices of the automatic machines of the production line and may also have to interact each other to manage products along the line itself. Hence there is the need for methods and criteria for coordination.

The research activity addresses the issue of using multi-robot systems inside production lines, with main reference to the development of flexible and re-configurable solutions in the context of industry 4.0 typical paradigms.

More in details, the research activity deals on the definition of methods and configurations of multi-robot solutions by means of flexible and re-configurable systems, aimed to assembly and components' handling.

Expected results

Methods and configurations definition for the co-ordination of multi-robot systems for assembly and components' handling.