

PUBLIC SELECTION BASED ON QUALIFICATIONS AND INTERVIEW FOR THE AWARDING OF NO. 1 GRANT LASTING 12 MONTHS FOR CONDUCTING RESEARCH IN ACCORDANCE WITH ART. 22 OF LAW OF 30.12.2010 NO. 240 AT THE DEPARTMENT OF ENGINEERING AND APPLIED SCIENCES OF THE UNIVERSITY OF BERGAMO ACADEMIC RECRUITMENT FIELD 09/A2 – APPLIED MECHANICS – ACADEMIC DISCIPLINE ING-IND/13 – APPLIED MECHANICS

announced with decree of the Rector Rep. no. 673/2017 of 21.11.2017 and posted on the official registry of the University on 21.11.2017

RESEARCH PROJECT

"Dynamic modelling and control structures for high performances mechanical systems driven by hydraulic actuators"

When the behavior of hydraulic actuators driven systems, characterized by high dynamic performances, is analyzed, some peculiar aspects arise. Such aspects need an accurate analysis and a deep knowledge of the system as a whole.

In particular, it is very important to set-up a model of the driving system in order to accurately reproduce the dynamic behavior in order to be able to effectively synthesize the control system.

Objective of the research activity is to investigate the dynamic behavior of hydraulic actuators, with particular reference to the servovalve/cylinder system.

The activity is oriented to high dynamics hydraulic system such as shaking tables for the simulation of seismic events.

The investigation of the dynamic behavior of the system will be carried on through an innovative modeling of the whole oil hydraulic system, starting from the power generator device to the actuator, with reference also to the characteristics of the fluid.

In addition, the research activity deals with the study and the definition of control algorithms for the optimization of the dynamic performances of such kind of systems. The research will be carried on by means of both numeric simulations/co-simulations and experimental activities; the realization of a specific test bench is planned too.