PsDs – Pseudo Dynamic Control System to assess large-scale civil constructions

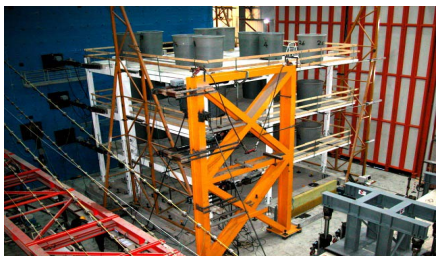
Description

The "Pseudo Dynamic Control System" is a complete package designed to perform conventional or continuous pseudo-dynamic (PsD) testing of large-scale civil structures. During the last two decades, this method has increasingly been used for seismic testing of civil structures. Its features include global testing, testing with substructuring as well as complex cyclic testing.

The "PsD control system software" is designed to control multi-actuator experiments and to conduct hybrid tests with substructuring that may be distributed in several laboratories. It includes the most advanced technologies in development for on-line testing including the capability to perform continuous PsD tests with sub-structuring, at high speed and with tele-presence functionalities.

Testing large structures or sub-assemblages in laboratories is a way to complement the lessons learned from the behaviour of real constructions during natural earthquakes. High accuracy sensors and devices are used under a flexible system architecture with a fast interconnection among the servo-controllers. The software also includes tools to remote control, manage data acquisition, and manage data repository.

Continuous PsD tests can also be used in many multi-actuator configurations such as cyclic and fatigue tests or structural control engineering to assess the behaviour of protection devices.
The intrinsic qualities of PsDS are recognised and several laboratories in Europe have adopted it and contributes to its further development.



Bi-axial PsD test of a 3-storey asymmetric RC structure

Innovative aspects and main advantages

➢ Accuracy, performance, real time capabilities, effectiveness/cost

➢ Testing algorithm programmable by the user make of this system a unique tool for development and research

➢ Internet based telepresence and remote control capabilities.

Areas of application

➢ Civil engineering and mechanical departments of Universities and other research centres equipped with structural testing facilities.

➢ Automotive and aerospace (hydraulic actuators)

Remote-control workstation

Stages of development

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