Advanced seismic retrofit of a low-rise R/C building

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Abstract. The paper offers a synthesis of the design study on an advanced seismic retrofit solution of a low-rise reinforced concrete building, which consists in the installation of a dissipative bracing system incorporating pressurized fluid viscous spring-dampers as passive protective devices. This demonstrative case study represents the latest step of the research activities carried out by the authors on this protection technology, also in the framework of international Research Projects. The structural characteristics of the building make it representative of a large stock of similar edifices designed in compliance with earlier Technical Standards editions, in Italy and in other European seismic-prone countries. The paper presents the mechanical parameters and layouts selected for the constituting elements of the system, and the performance assessment analyses of the building in original and rehabilitated conditions. The results of the analyses show a remarkable enhancement of the seismic response capacities of the structure, which allows reaching the high performance levels postulated in the retrofit design.