

**Field of use**  
Construction

**Current state of technology**  
Prototype developed and tested

**Intellectual property**  
Know-how

**Developed by**  
University of Ljubljana,  
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## Background

Past earthquakes in Italy (2009 and 2012) and Croatia (2020) showed that the seismic performance of cladding panels in precast industrial and commercial buildings was inadequate. The Department of Structural and Seismic Engineering at the Faculty of Civil Engineering and Geodesy, University of Ljubljana, has developed a special system for the protection of cladding panels which can be installed in existing buildings.

## Description of the invention

The subject of the invention is a second-line back-up system for the seismic protection of cladding panels with so-called seismic restrainers, which consist of high-strength synthetic fibre ropes and special anchoring elements. The restrainers are designed to be activated only in the case when the existing cladding-to-structure connections fail, with the aim of preventing several tons of heavy cladding panels from falling. This is an additional protection that can effectively prevent human casualties, equipment damage, damage to stored products, or other direct or indirect economic damage. It is intended primarily for the protection of claddings in existing buildings, but it can also be used in new buildings.

## Main advantages

- High strength/weight ratio
- Quick and easy installation in new and existing buildings
- The restrainers do not change the behaviour of the primary load-bearing structure, thus maintaining the predictability of the response both for seismic as well as for the other loads (e.g. wind).

