

Ductile seismic anchor - compact, efficient and stable

Background

Current events in the world impressively demonstrate that the subject of earthquakes continues to gain in importance. This applies not only to highly industrialized countries such as the USA or Japan, which want to keep the damage to their valuable infrastructure to a minimum in the event of an earthquake (building security, nuclear power plants, etc.), but also to the very large market in emerging countries with rapidly growing urban development (Brazil, India, China, Asia, etc.).

Problem

At present, these fasteners are made of a uniform material with only one (restrictive) ductility, so that up to now either a very solid design or a lower level of safety has had to be accepted.

Solution

The unique thing about this anchor is its intelligent ductility behavior, which it derives from an innovative combination of conventional materials. This makes an earthquake anchor available for the first time, which absorbs the violent impact loads such as those occurring during earthquakes particularly effectively in the longitudinal and transverse directions. Due to its energy-dissipating behavior, it will make a significant contribution to ensuring that the components fastened with anchors are retained after an earthquake.

The special structural feature of this new type of anchor is that the anchor section on the one hand and the shaft section on the other are made of materials with different ductility. In contrast to the state of the art, a uniform material with only one (limited) ductility is not used here, but an optimally matched combination of ductility values is achieved. This anchor thus represents a consistent further development and is at the forefront of what has so far been possible.

The heavy-duty anchor was designed as an expansion or undercut anchor as well as an injection anchor and can also be adhesively secured. A further advantage is that, due to its high performance and innovative design, smaller anchors can be produced that have the same performance as conventional anchors.

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Phase I trials / TRL6

Patent Situation

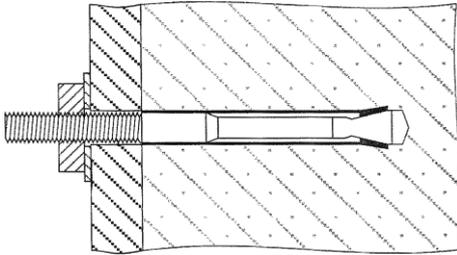
EP 2683953 B1 granted
CH validated
DE 502012011526.4 granted

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10/057TLB

Service

TLB GmbH manages inventions until they are marketable and offers companies opportunities for license and collaboration agreements.



Schematic drawing of the ductile seismic anchor.

Advantages

- specially designed to withstand the dynamic loads of earthquakes
- energy-dissipating due to high ductility behavior in transverse & longitudinal direction
- reduces force load on fastenings so that the mounted components are less stressed (lines, falling parts, etc.)
- designed according to common standards
- can be manufactured using standard materials
- significantly improved performance compared to conventional anchors
- high demand and high quantities may lead to high turnover expectations

Application

In particular, due to its significantly increased performance, this seismic anchor can also meet the highest safety requirements in the event of an earthquake.