

## Abstract

In areas subjected to large earthquakes, the **seismic protection of major buildings** is a priority for the society. Operational administrative centers, fire stations and hospitals are required for the crisis management. Other buildings such as schools and main museums represent as well a huge social value.

## Benefits of seismic base isolation

- **Protects** occupants and equipment in the building
- Reduces overall seismic demand
  - **Generate savings** in structural material quantities
- Structure remains elastic for design earthquake
  - **Reduced maintenance cost**

Device name	Isosism® HDRB	Isosism® LRB	Isosism® PS	Isosism® FD
Meaning	High Damping Rubber Bearing	Lead Rubber Bearing	Pendulum System	Fluid Damper
Device scheme				
Behavior law				
Spring function	Rubber properties	Rubber properties	Pendulum radius	
Damping	Rubber properties	Lead ductility	Friction between primary sliding surface and sliding material	
Before earthquake	Structure free to move			
During earthquake	Energy dissipation due to fluid viscosity			
After earthquake	Structure free to move			

Figure 1. Freyssinet ISOSISM products used in buildings' base isolation

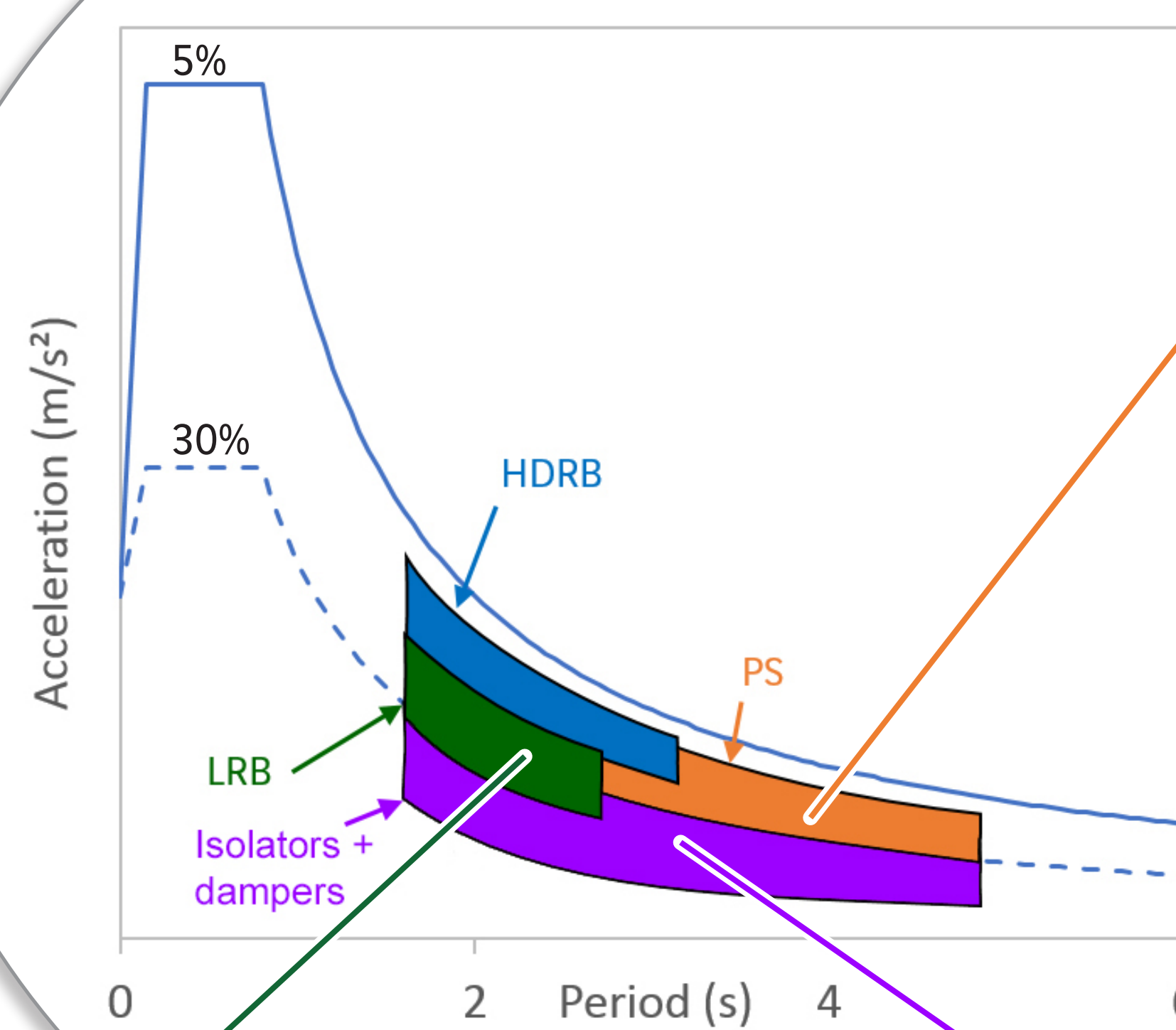
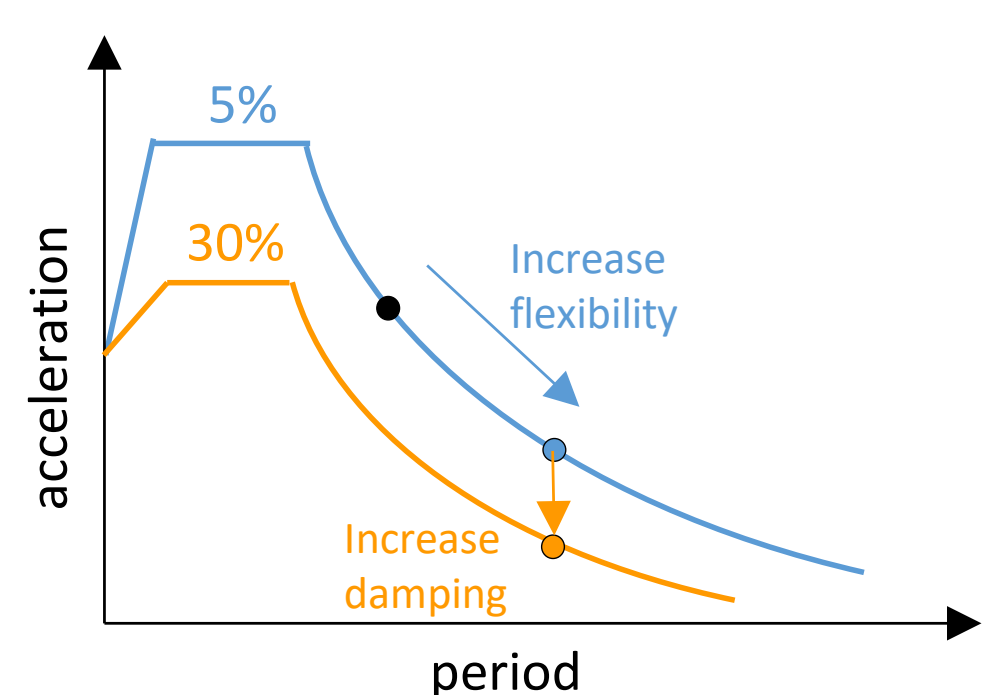
## FREYSSINET offers full service

- Building isolation system design
- Device design, production and testing
- Device Installation on site

## Introduction

Key parameters for overall seismic demand reduction:

- Increase flexibility
- Increase damping



## NATIONAL PALACE MUSEUM, TAIWAN (new)

- 210 Friction Pendulum (PS)
- From 4,000 kN to 20,000 kN vertical capacity
- Radius R=4 m
- Effective period  $T_{eff} = 3.45$  s
- Effective damping  $\xi_{eff} = 16\%$
- Displacement capacity  $\pm 500$  mm



## MARMARA HOSPITAL, TURKEY (retrofit)

- 687 Lead Rubber Bearing (LRB)
- Along with sliding bearing
- Effective period  $T_{eff} = 3.3$  s
- Effective damping  $\xi_{eff} = 30\%$
- Displacement capacity  $\pm 380$  mm



## BUCHAREST CITY HALL, ROMANIA (retrofit)

- 262 rubber isolator Ø1000 (HDRB)
- Along with 36 Fluid Viscous Damper (FD) 1750 kN capacity
- Isolation period of 3.3 s
- Displacement capacity  $\pm 700$  mm



## Contact

[www.freyssinet.com](http://www.freyssinet.com)

Follow us on:    

## Contact

To discover the whole range of the ISOSISM® products you can ask for our brochure

