Application of H∞ Control Theory to Adjacent Buildings Connected with Oil Dampers against Extremely Strong Ground Motions

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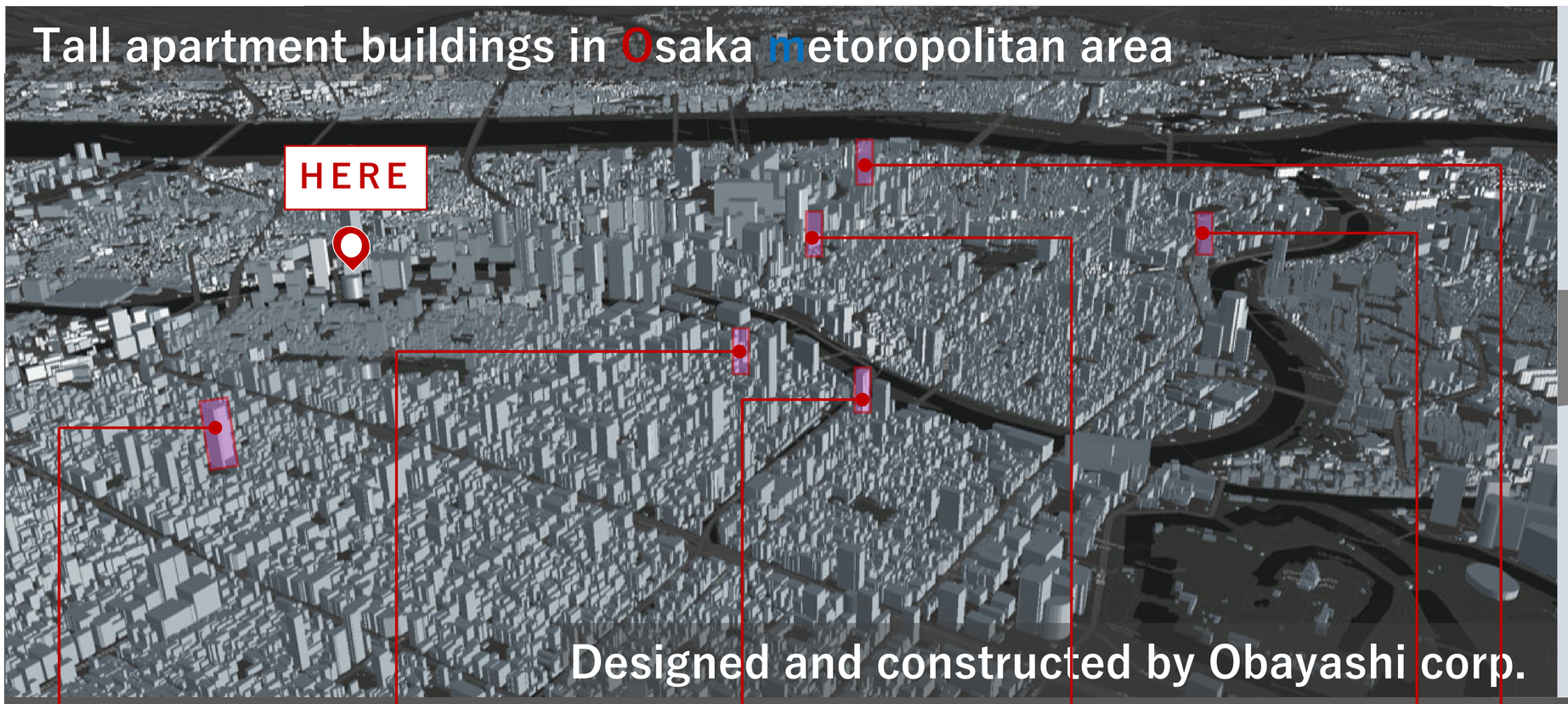


SHINMACHI
53-story (180 m)

KORAIBASHI
42-story (140 m)

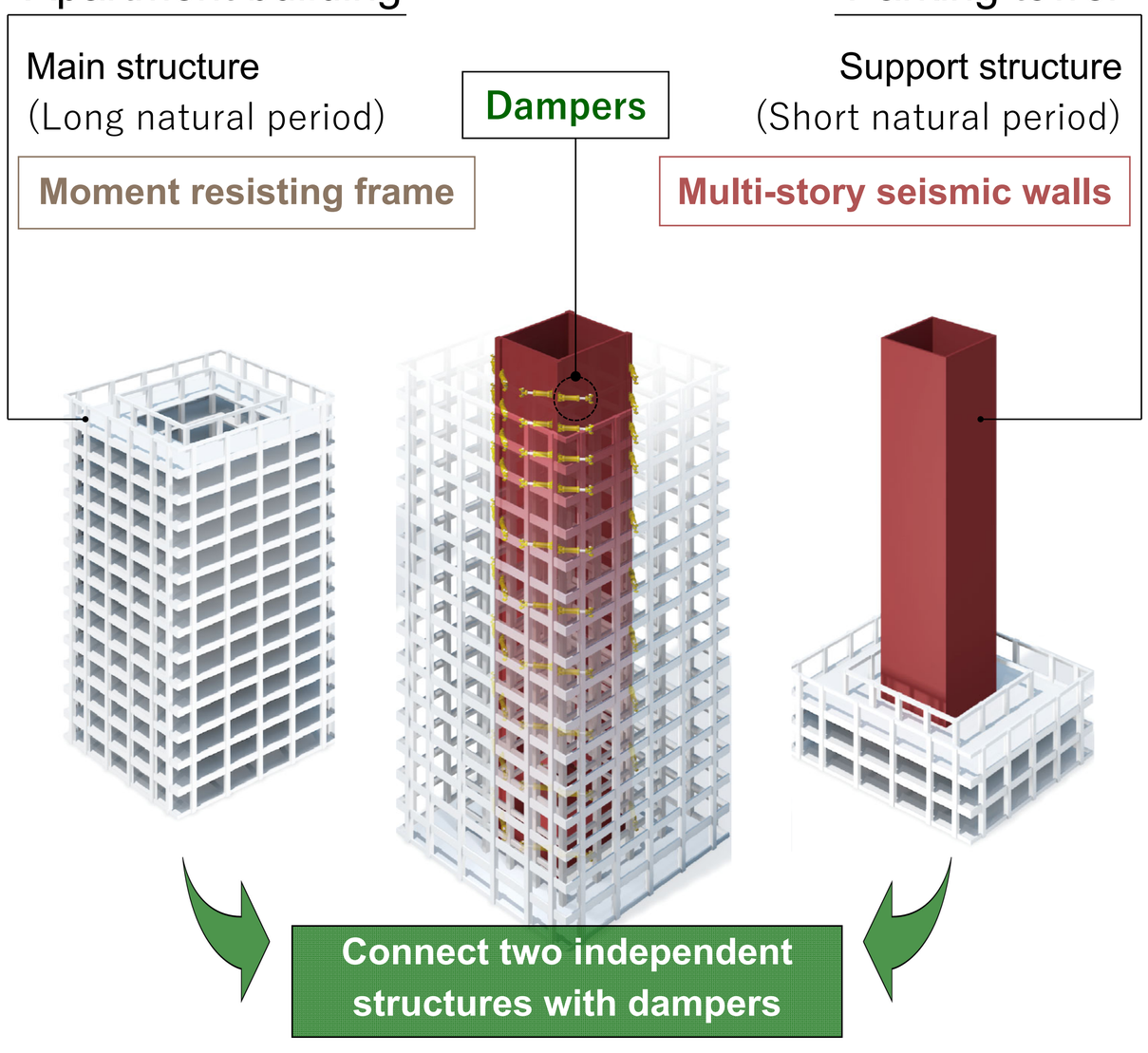
KITAHAMA
41-story (140 m)

SONEZAKI
56-story (190 m)

TENMA
45-story (150 m)

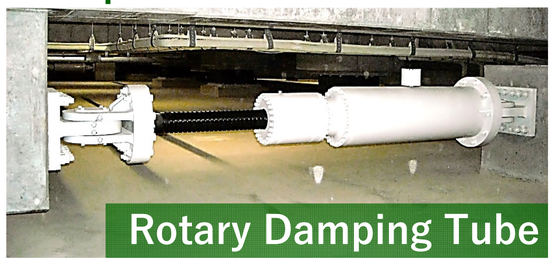
TOYOSAKI
50-story (170 m)

Schematic diagram of innovative building

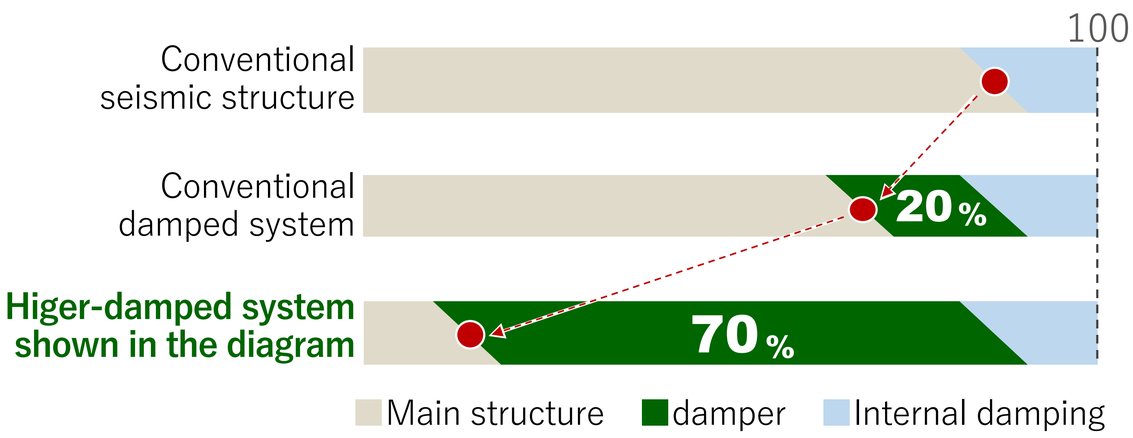


Damper for seismic

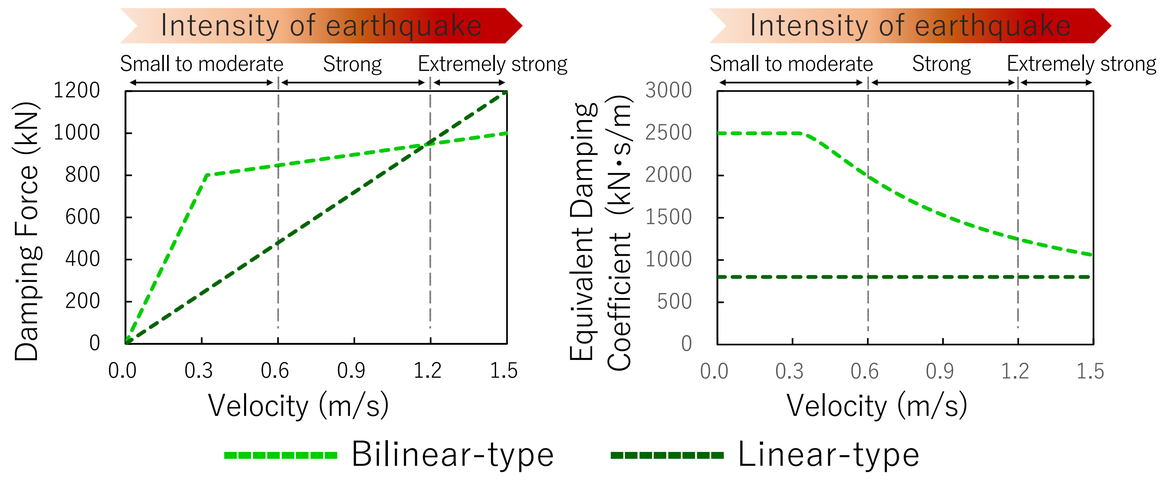
Damper for wind



Energy absorption rate



Characteristics of oil dampers



- The bilinear-type is effective for small to medium-intensity earthquake ground motions, but not for strong ones.
- On the other hand, the linear-type is equally effective for both small to medium-intensity and strong classes of earthquake ground motions, and it is more effective for strong ones than the bilinear-type.

⇒ **In this study, the authors advance the design methodology for connected tall buildings using bilinear-type and linear-type oil dampers to address a border class of earthquake ground motions, including extremely strong ones.**