Application of seismic retrofit technology to existing high-rise building against long period ground motions.

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In Japan, it is thought that great earthquakes may occur around the middle of this century and long-period ground motions will reach major urban areas, and shake high-rise buildings violently.

A problem with ordinary dampers is that they require reinforcement of surrounding columns and beams to support large reaction forces generated during earthquake ground motion.The deformation-dependent oil dampers reduce the damping force at the moment when the frame deformation come close to its maximum value. Because the reaction force acting surrounding frame is reduced, no enforcement of columns, beams and foundation are required.

The Shinjuku Center Building located at Tokyo meets the current earthquake-resistance standards. However, from the viewpoint of business continuity in case of damages by the long-period ground-motion, we carried out the seismic retrofitting with deformation-dependent oil dampers to upgrade the asset value.