

Tower Of Pisa: Restoration Proposal For An Issue That Has Not Yet Been Resolved

The proposed technique includes the solution of two problems. The first consists of the immediate removal of the instability caused by the north-south rotation movement. The second problem is that of maintaining stability in the event of two different phenomena:

- renewed instability, due to a potential uneven subsidence in the foundation soil;
- instability due to an earthquake.

Both phenomena could be avoided by means of the following complex operations:

- planning and laying a sub-foundation with geometrical and structural characteristics ensuring the stability of the foundation soil;
- operation for maintaining or decreasing the present inclination and even an operation for conferring perfect verticality, and also counter-inclination, if desired;
- interruption of the solidarity between the building and the sub-foundation-soil complex, by using multidirectional movable bearings with low sliding or rolling friction, with or without sub-undulatory seismic energy dissipators and the lateral laying of rigid connections with the alternative function of being elastic linkages.

This technique has two significant advantages:

- possibility of removing immediately a future rotation of the Tower, due to potential subsidence in the soil;
- easy maintenance of the sub-foundation structural elements, of the movable bearings and the side connections.

This technique makes it possible to remove only the present instability, disregarding the seismic risk. It is therefore less complicated and less expensive. Moreover, all operations for maintaining or decreasing the present inclination, and even for conferring verticality and counter-inclination are also possible.