

MOTIONEERING SERVICES

POOL SLOSHING ANALYSIS



motioneering

What is Pool Sloshing?

Swimming pools located near the top of tall buildings have become a common amenity in residential towers around the world. Careful consideration must be made in the selection of the pool dimensions (length, width, and water depth), otherwise the pool may inadvertently become tuned to the motion of the structure. When the pool becomes tuned with the structure, significant wave sloshing may occur on a regular basis during windy days. Pools have a minimal capability to dissipate sloshing energy, and as a result the sloshing response can increase to significant levels over relatively short periods of time. In extreme cases, the water in the pool will overflow on either side and spill into the surrounding areas. If the water is not properly contained, this can lead to damage to the pool area and the potential for water leaking to the lower levels of the building.

How Can We Help?

Motioneering leverages our extensive background analyzing the response of structures equipped with tuned sloshing dampers to investigate the sloshing response of pools. Our in-house capabilities in this area range from idealized sloshing models to quantify risk of sloshing to full computational fluid analysis.

More Than Pools

Motioneering's pool sloshing analysis methodology can be extended beyond pools to any liquid tank located in a building, such as rooftop water storage tanks. Motioneering can assess the risk of significant sloshing in these tanks and determine if there is the possibility of undesirable responses such as sloshing wave impacts with the tank ceiling. Our analysis results can be used by tank manufacturers to determine if the tank can withstand the sloshing response as well as structural engineers for design of the interface connections between the tank and structure.



By retaining Motioneering early in the design process before the pool configuration is set, we can help to identify if a pool is likely to experience a significant sloshing response. If the sloshing is determined to be significant, Motioneering can work with the design team to discuss various mitigation options.



Motioneering can work with the design team to discuss various mitigation options. For cases where the mitigation measures are not available or do not adequately reduce the sloshing response, Motioneering can complete a detailed assessment to quantify the pool response in terms of sloshing wave heights, forces and pressures acting on the pool structure, and the amount of water overtopping the pool walls during wind events.



Contact Us

Reach out to learn more about the work we do, and how we can support the technical and business success of your next project.

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