Vibration Monitoring, Analysis, and Mitigation

Vibration is a common concern that can impact the performance of in-service structures, infrastructure, mechanical systems, consumer products, and even the human body. Drawing from backgrounds in structural dynamics, instrumentation, data science, and related fields, CTLGroup engineers are equipped to help clients identify, manage, and mitigate risks related to vibration from a variety of sources, assess causes of accidents and failures when they do occur, and improve system design.

Common vibration related concerns include interference with operation of sensitive equipment, discomfort to human occupants, or even damage to buildings and infrastructure. CTLGroup experts are equipped to address vibration caused by a variety of sources ranging from natural phenomena, such as wind and seismicity, to artificial sources such as industrial processes, construction, mining, and traffic. CTLGroup's services include:

Vibration Monitoring

Applications of CTLGroup's custom-engineered monitoring solutions range from verification of regulatory compliance, to in-depth investigation of vibration effects on sensitive facilities, and to development of evidence-based limits for ground-borne, structural, or process-related vibrations. We routinely work in challenging industrial environments and construction environments; we also develop and deploy unobtrusive systems suitable to occupied facilities, commercial properties, historic buildings, and public spaces.

Vibration Mitigation & Risk Management

CTLGroup experts apply analytical tools such as modal analysis and system identification to determine vibration characteristics of practically any system, including mechanical components, large structures, and the human body. Once the system is characterized, we work with our clients to develop a solution to control or suppress vibration at the source, or to isolate the system from harmful vibrations.

Computational Modeling

CTLGroup engineers can develop computational models of nearly any structural or mechanical system to evaluate dynamic load effects. Models range in complexity from single-degree-of-freedom analysis to explicit finite element analysis with full geometric and material non-linearity.

Whether the need involves large civil structures, mechanical systems and components, process equipment, consumer products, or even the human body, CTLGroup is a one-stop technical consultant to investigate and solve vibration problems.