Industrial Equipment & Processes

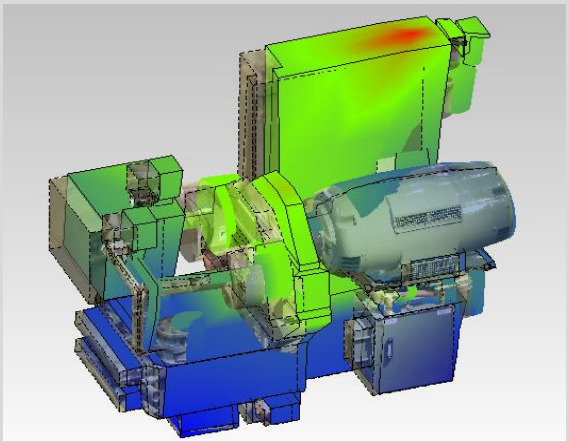
Dynamic and Modal Analysis

Where there is industry there is vibration, from resonances and harmonics of structures, to forced and driving frequencies from moving equipment. Knowing, understanding and managing these vibrations is key to ensuring efficiency, reliability, and maximising productivity. Xi have supported clients in a host of sectors from sensitive, delicate clean room equipment in the semi-conductor industry to heavy plant in the likes of oil and gas sector. If your equipment is suffering from undue vibration or you suspect efficiencies could be gained, give Xi a call and our specialist engineers would be happy to discuss.

The first stage to resolving vibration issues is to understand them and effective measurement is key to this. A characterised vibration provides the knowledge necessary to efficiently progress to a solution and removes the risk of trial and error. Measurement can be used as a standalone tool but is fundamental in DS modelling and can add valuable refinement and confidence in modal and dynamic models.

Vibration – Resonance – Forced – Orbital Plots – Acceleration – Velocity – Displacement – Acoustics

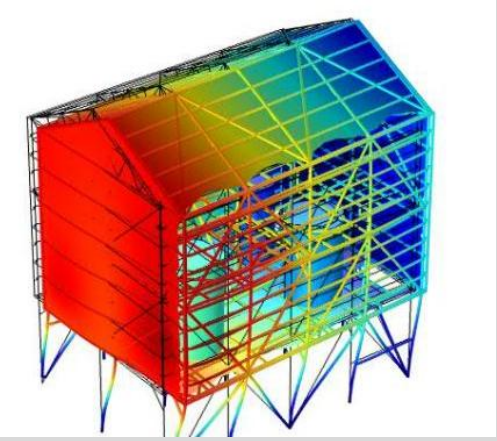
OPERATIONAL DEFLECTION SHAPE ANALYSIS



ODS analysis is a powerful technique to help visualise the motion associated with vibration. A representative model of the object is created and then driven by sensor measurements.

- Uses input from real world sensors
- Absolute dynamic behaviour of a machine and or structure
- Time domain response of typical running and start and stop
- Frequency or spectral ODS to view specific frequencies
- Visualise the relative motion of system components
- Highlight excessive flex or decoupling.

MODAL AND DYNAMIC MODELLING



Xi's modal and dynamic model is an extremely powerful tool that virtually represents a system recreating its motion through simulation.

- A geometrically accurate model is with full dimensions and material properties represented
- Use the model to assess resonant frequencies and associated mode shapes
- Assess the systems response to dynamic forced input
- View the systems motion and response to specific frequencies
- Use structural vibration to assess acoustic emission
- A virtual tests bed to trial mitigation techniques before costly real-world tests

Call Xi's Engineering Team to discuss in confidence how we can help you with your noise and vibration issues

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