Vibration, dynamics and noise
Improving the integrity, reliability and performance of piping systems, structures and rotating equipment.
Wood’s comprehensive approach to fatigue management ensures vibration integrity and reliability issues are managed throughout the asset’s life cycle.

This includes engineering design, field services, monitoring and solutions for production machinery, piping, structures and FPSOs. Our experience encompasses upstream, including subsea, downstream and LNG facilities.

Industry challenges

Most production facilities will face some type of vibration or noise issue. If not addressed, machinery, piping, or structural vibration will lead to long-term concerns with asset integrity, reliability, and safety with high-impact consequences. Besides the loss of production from downtime, there are even greater risks from effects on worker safety, the corporate liability.

Vibration, dynamics and noise is a highly specialised and complex field. This can cause challenges for facility operators because projects often use different suppliers, which results in a fragmented approach that creates confusion, integrity gaps, re-work, redundancy, and communication gaps. It also results in much higher costs.

Our solution

Our experts have the experience and capabilities to solve these challenges. We can address all vibration and dynamic needs across the entire life cycle of an asset, providing the most comprehensive service offering in the industry as part of our Asset Integrity Solutions service line. This includes:

- Vibration and noise engineering during FEED, detailed design
- Design solutions for rotating equipment, piping and facilities
- Risk-based inspections and baseline acceptance testing
- Monitoring and troubleshooting services to support operations and optimise maintenance
- Vibration solutions for piping, vessels and machines

Benefits

- Lower capital costs – through fit-for-purpose design recommendations; less conservative engineering, less re-work, and elimination of redundant activities
- Lower operating costs – cost-effective monitoring and reliability programmes, machinery optimisation, reduced maintenance costs, efficient vibration inspection program
- Improved integrity and safety – significant reduction in machinery and piping failures (a major HS&E concern), compliance with noise guidelines, and other process safety requirements
- Improved reliability and uptime – reduction in breakage and performance-related problems, targeted monitoring programs
- Improved asset management – from FEED to operations to life extension

We are

- Global leaders in our disciplines, based on decades of experience
- Superior in our capability offering: full complement of in-house advanced analysis
- Problem solvers: combination of desktop simulation and field experts for optimum solution development
- First-class in our service: in-house software tools, resulting in improved accuracy, faster service, and lower costs
- Thought leader based on our strong commitment to research, innovation and knowledge sharing in the industry
- Consistent in our delivery: standard processes and quality control for site inspections, simulations, anomaly management, vibration and noise mitigation
### Vibration, dynamics and noise services overview

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#### Support through the asset's life cycle

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- Design documentation and recommendations
- Qualitative risk reviews
- Technology qualification programs
- Specifications
- Value engineering, equipment assessments, layout reviews
- Quantitative risk assessments (EI guidelines)
- Design engineering studies (see above services)
- Code compliance checks and reviews
- Detailed FE; stress and fatigue life predictions
- Acceptance tests (FAT, SAT)
- Baseline measurements
- Vibration, stress and noise inspections
- Troubleshooting, problem solving
- Monitoring programs
- Reliability & maintenance support
- Periodic and proactive inspections
- Performance testing
- Debottlenecking, fatigue risk management
- Management of change (MOC) when adding new equipment or changing operations
- Remnant life assessments (RLA)
- Inspection audits
- Vibration and stress analyses
- Fitness-for-service assessments
- Training courses available for all service areas

#### Anti-vibration products

- Dampex™ clamps and braces
- Vibration absorbers
- Customized solutions

#### Support through the asset’s life cycle

- 21% of hydrocarbon releases are due to fatigue and high vibration (Source: UK Health and Safety Executive)
Wood is a global leader in the delivery of project, engineering and technical services to energy and industrial markets. We operate in more than 60 countries, employing around 55,000 people, with revenues of over $11 billion. We provide performance-driven solutions throughout the asset life-cycle, from concept to decommissioning across a broad range of industrial markets including the upstream, midstream and downstream oil & gas, chemicals, environment and infrastructure, power & process, clean energy, mining and general industrial sectors. We strive to be the best technical services company to work with, work for and invest in.