Mercury RT® Guide for use in Industry

Based on latest market experience and our software modularity, here is a list of which **Mercury RT® modules** can be used for **specific tests** in each industry:

CIVIL ENGINEERING:
Roof beams, cranes, bridge constructions, riveted joints, timber, concrete structures, and building statics: Use 2D, 3D, Crack, and Vibrography modules.

RAILWAYS:
Rails, welded joints, suspension & brakes endurance, transmissions & engines, power line poles: Use 2D, 3D, Crack, and Vibrography modules.

SHIPYARDS, VESSEL BUILDING:
Welded joints, gearing, propellers, anchor chains, loading systems & cranes, rivets shearing, rope flexibility: Use 2D, 3D, Crack, and Vibrography modules.

MINING INDUSTRY:
Drilling rigs, transporters, jackhammers, and sharpening tools:
Use 2D, 3D, Crack, and Vibrography modules.

AUTOMOTIVE:
Torque & vibration transfer, welding quality, body twisting, various tests of engine, clutch, brakes, transmissions, thermal influence: Use 2D, 3D, Crack, Vibrography, and FormSys modules.

AEROSPACE:
Wings deflection, joints, body structure pressure resistance, hydraulic systems leakage, jet-engine components, various struts & rods, rivets shearing: Use 2D, 3D, Crack, Vibrography, and FormSys modules.

ARMY:
Impact tests on helmets & body armour, firearms & cannon resistance: Use 2D, 3D, and Crack modules.
Blast loading on structures and vehicles: Use 2D, 3D, Crack, and Vibrography modules.
Ballistic impact on transparent armour: Use 2D and 3D modules.
Military vehicle suspension and drivetrain: Use 2D, 3D, Crack, Vibrography, and FormSys modules.

Please note that some specific tests or industries might require additional or customised modules, but this list provides a general guideline on which modules to use for the given tests in each industry.

Here are more specific **tests** and **results** that can be generated using the Mercury RT® system in each industry mentioned:

CIVIL ENGINEERING:

1. **Roof beams:** Detecting deflection and bending stresses under loads.
2. **Cranes:** Evaluating structural integrity and deformation under operational loads.
3. **Bridge constructions:** Monitoring deformation under live loads, thermal expansion, and vibration analysis.
4. **Riveted joints:** Assessing the displacement field and local strains.
5. **Timber:** Identifying material properties, such as modulus of elasticity and Poisson's ratio.
6. **Concrete structures:** Analyzing crack propagation, shrinkage, and stress distribution.
7. **Building statics:** Evaluating load-bearing capacity and stability.

RAILWAYS:

1. **Rails:** Investigating wear and fatigue, track buckling, and stress distribution.
2. **Welded joints:** Assessing quality and fatigue life of welds.
3. **Suspension & brakes endurance:** Analyzing performance and wear under various load conditions.
4. **Transmissions & engines:** Studying vibration, stress, and strain distributions.
5. **Power line poles:** Monitoring deformation and stresses under wind and ice loads.

SHIPYARDS, VESSEL BUILDING:

1. **Welded joints:** Evaluating weld quality and fatigue behaviour.
2. **Gearing:** Analyzing contact stress, tooth deformation, and wear.
3. **Propellers:** Studying hydrodynamic performance, cavitation, and structural integrity.
4. **Anchor chains:** Assessing stress distribution and fatigue life.
5. **Loading systems & cranes:** Investigating load capacity, structural stability, and deformation under operational conditions.
6. **Rivets shearing:** Analyzing the stress distribution and potential failure points.
7. **Rope flexibility:** Studying the material's elasticity, fatigue life, and deformation under load.

MINING INDUSTRY:

1. **Drilling rigs:** Evaluating structural integrity, wear, and stresses under drilling loads.
2. **Transporters:** Assessing vehicle suspension, chassis deformation, and component fatigue.
3. **Jackhammers:** Analyzing impact forces, tool wear, and vibration effects on operators.
4. **Sharpening tools:** Investigating material removal, tool wear, and surface quality.

AUTOMOTIVE:

1. **Torque & vibration transfer:** Studying driveline components under various load conditions.
2. **Welding quality:** Assessing the strength and fatigue life of welded joints.
3. **Body twisting:** Evaluating vehicle body rigidity and deformation under cornering and torsional loads.
4. **Various engine, clutch, brakes, transmissions tests:** Analyzing performance, wear, and thermal influences on components.

AEROSPACE:

1. **Wings deflection:** Monitoring wing deformation under various load and aerodynamic conditions.
2. **Joints:** Assessing the quality and fatigue life of bonded, welded, or riveted joints.
3. **Body structure pressure resistance:** Evaluating the deformation and stresses in the fuselage under pressure changes.
4. **Hydraulic systems leakage:** Detecting leaks and assessing the structural integrity of hydraulic components.
5. **Jet-engine components:** Analyzing engine components' stress distribution, vibration, and fatigue.

ARMY:

1. **Impact tests on helmets & body armour:** Evaluating the effectiveness of protective gear by analyzing deformation, energy absorption, and stress distribution under various impact scenarios.
2. **Firearms & cannons resistance:** Assessing the structural integrity, fatigue life, and stress distribution in firearms and cannon components under repeated firing loads.
3. **Blast loading on structures and vehicles:** Studying the deformation, stress propagation, and failure mechanisms of structures and vehicles subjected to blast loading.
4. **Ballistic impact on transparent armour:** Investigating the deformation and failure mechanisms of transparent armour materials, such as bullet-resistant glass, under ballistic impact.
5. **Military vehicle suspension and drivetrain:** Analyzing the performance, durability, and stresses in suspension and drivetrain components under various operating conditions.

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MERCURY RT

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