



# ROTATING EQUIPMENT SAFETY

## TOOLBOX TALK: Rotating Equipment Safety

RATTLIR Safety Series – "Strike Before It Bites"

### Purpose

Rotating equipment, including pumps, fans, compressors, motors, couplings, and turbine auxiliaries, poses significant risks due to high speeds, stored energy, and the potential for entanglement or impact. This toolbox talk combines general rotating equipment safety, power-plant hazards, and maintenance considerations to ensure workers understand the dangers and required safe work practices.

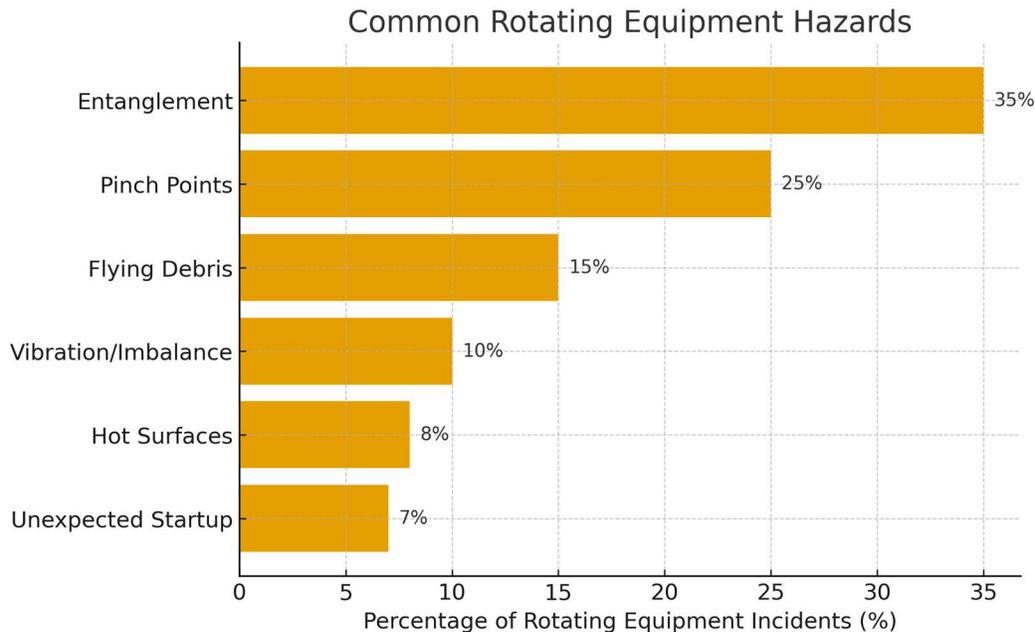


Figure 1 – Common Rotating Equipment Hazards

### General Rotating Equipment Hazards

Rotating equipment exposes workers to movement hazards that can cause severe injury if proper precautions are not taken:

- Entanglement from loose clothing, gloves, jewelry, or long hair.
- Pinch points around belts, pulleys, shafts, and couplings.
- Impact hazards from flying debris if components fail.
- Unexpected startup if equipment is not properly locked out.



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- Noise and vibration that mask abnormal conditions.

## **Power-Plant-Specific Rotating Equipment Hazards**

Power-generation environments include rotating machinery that operates at high speeds and high energy levels:

- Turbine auxiliaries such as lube oil pumps, vacuum pumps, and hydraulic skids.
- Cooling tower fans with large rotating blades and drive shafts.
- Feedwater and condensate pump systems operating at high RPM.
- Forced-draft and induced-draft fans with strong suction and discharge forces.
- Couplings and shafting in turbine decks and mechanical rooms.

## **Maintenance and Inspection Considerations**

Maintenance activities around rotating equipment require careful planning and verification to prevent injury:

- Always apply Lockout/Tagout (LOTO) before removing guards or working near moving parts.
- Verify zero-energy state and test for absence of rotation before beginning work.
- Confirm rotational direction after maintenance using bump tests or approved methods.
- Reinstall all guards before restoring power – partial or missing guards are a major hazard.
- Use proper tools and alignment procedures to prevent vibration and coupling failure.

## **Human-Performance Considerations**

Rotating equipment tasks introduce human-performance traps that require deliberate attention and verification:

- Avoid rushing – take time to verify equipment condition before approaching.
- Use STAR (Stop-Think-Act-Review) before interacting with moving equipment.
- Maintain focus and avoid distractions, especially during startups or testing.
- Communicate clearly with control room personnel when equipment will be started or stopped.

## **Safe Work Practices Around Rotating Equipment**

Safe behaviors prevent injury and reduce the consequences of abnormal conditions:

- Keep hands, tools, and clothing away from rotating components at all times.
- Never bypass or remove guards unless equipment is fully locked out.



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- Stay out of rotational planes and avoid standing in line with couplings or shafts.
- Wear proper PPE including fitted clothing, hearing protection, and safety glasses.
- Report abnormal vibration, heat, noise, or leaks immediately.

## Discussion Questions

- Do you understand the hazards associated with rotating equipment in your work area?
- Are all guards, shields, and LOTO procedures in place before approaching rotating machinery?
- Do you have the proper PPE, tools, and communication plan for today's rotating equipment tasks?

## RATTLIR Takeaway

Rotating equipment is unforgiving – one moment of contact or one missed step can result in life-altering injuries. By respecting movement hazards, applying disciplined LOTO, maintaining guards, and using strong human-performance habits, workers prevent incidents before they occur. RATTLIR strikes before it bites by promoting deliberate verification, communication, and awareness around every rotating machine.