

Safety Alert

Issue # 05-2026

ENERGY
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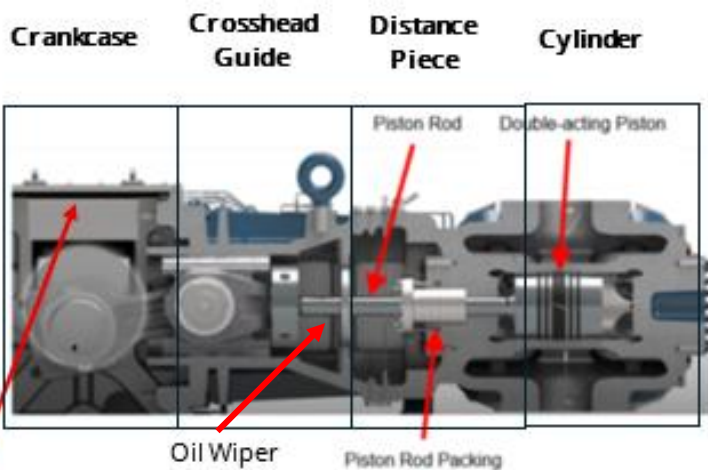
Crankcase Flash Fire

What Happened?

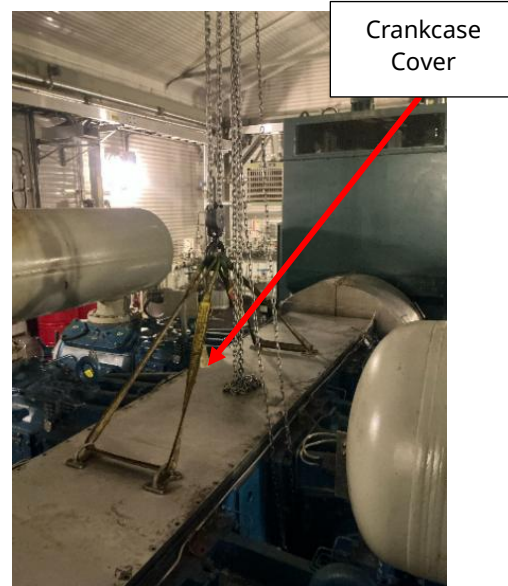
When starting a compressor after a major service/overhaul, the compressor is run unloaded for 5 minutes and then shut down to measure bearing temperatures. The crankcase cover must be removed so a technician can measure bearing temperatures using a handheld infrared thermal gun.

During a recent startup, process gas accumulated within the crankcase. When the crankcase cover was removed, a combustible atmosphere was exposed in the crankcase and immediately next to it. The gas-air mixture was most likely ignited by the technician's thermal gun, which was not intrinsically safe, resulting in a flash fire.

One worker sustained a minor superficial burn to their hand. The unit was immediately shut down, personnel evacuated the area, and all personnel were accounted for at the muster point.



Compressor Component Diagram



Crankcase Cover Hoisting Setup

Why Did it Happen?

- Process gas migrated from the compressor cylinders, through the packing and distance piece, and accumulated within the crankcase.
- A limited amount of process gas migration into the compressor crankcase is recognized by both the OEM and service providers as an expected operating condition. But current startup procedures don't address the risks this creates during startup checks.
- Lifting the crankcase cover to measure bearing temperatures exposed or created a combustible atmosphere in the crankcase.

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Why Did it Happen? - Continued

- A non-intrinsically safe infrared thermal gun, held near the edge of the crankcase, was identified as the most likely ignition source. Infrared thermal guns are commonly used for bearing temperature checks across the industry.
- Combustible gas concentrations in the crankcase were much higher than technicians expected. Because personal gas monitors sampled a different atmosphere a few feet away (outside the crank case), they should not be relied on to identify hazards at the temperature measurement location.
- In this case, static discharge was considered unlikely; however, controlling static ignition sources near the crankcase remains critical, particularly during lifting of the crankcase cover because the cover is no longer grounded once suspended in the air.

What Did They Learn?

- Ensure gas testing in / around crankcase is completed immediately after crankcase cover removal and before bearing temperature checks are performed.
- Prohibit non-intrinsically safe equipment within the work area until the atmosphere has been verified gas-free.
- Reinforce breaking-containment requirements associated with crankcase access activities, including risks from Simultaneous Operations (SIMOPS).
- Update startup procedures and communicate combustible gas hazards associated with compressor crankcases.
- Address the potential static hazard from lifting the crankcase cover (e.g., grounding requirements) in startup procedures.
- Assess alternative tools / methods for collection of bearing temperature measurements.
- Apply learnings to other compressor installations where similar startup conditions may exist.

Ask Yourself and Your Crew

- When is non-intrinsically safe equipment being used in your operations?
- Do your crews know when a personal gas monitor is not sufficient to verify a safe atmosphere?
- Are your ignition source controls as strong as you believe them to be? Talk to your workers to understand any vulnerabilities.

Resources

Tool | [The Energy Wheel](#)
 Guide | [The Fire and Explosion Guideline](#)
 Program | [Hot Work Life Saving Rule](#)



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