

ENFORM

SAFETY ALERT

Explosion and Flash Fire Caused by a Controller Box Failure

Safety Alert: #02 - 2011	Release Date: Jan 11, 2011
Incident Type: Equipment Failure	Country and Region: Alberta

Description of Incident:

- An operator arrived at a location and found a screw compressor building blown out.
- There was minimal damage to the pressure equipment and piping.
- The damage noted was representative of an explosion and flash fire.

What Caused It:

- It was determined that the explosion and flash fire were caused by a suction controller's regulator diaphragm failure that allowed gas to enter the controller box.
- The ¼" vent line was not large enough to vent the volume of gas passing into the controller box, allowing the gas pressure inside the controller box to build to the point where the door seals failed and gas escaped into the poorly ventilated building.
- With 10 psi applied to the controller box, the door allowed gas to escape even though the door gasket was in good condition and the door was latched closed.
- The hot manifold or ignition system may have provide the ignition source for the migrating gases (the ignition systems on these engines are not intrinsically safe).

Corrective Actions:

- Buildings should have adequate venting to lower potential LEL content.
- Hazard and Operability assessments should be utilized for hydrocarbon and pressure systems to evaluate the need for fire and LEL detection.
- Verify that the venting from controller boxes will provide adequate escape for the excess gas pressure created in the event of failure.
- New packages and reconditioned packages would benefit from rupture panels (explosion relief) in the walls.
- Preventative maintenance and inspections should include pressure control devices.

CONTACT:

For more information on this event, please contact safety@enform.ca

DISCLAIMER:

This Safety Alert is designed to prevent similar incidents by communicating the information at the earliest possible opportunity. Accordingly, the information may change over time. It may be necessary to obtain updates from the source before relying upon the accuracy of the information contained herein. This material is presented for information purposes only. Managers and supervisors should evaluate this information to determine if it can be applied to their own situations and practices.