

Steam Systems, Inc.

"Providing all your steam system needs"

SAFETY ALERT

Subject: Opening Manholes

Ladies and Gentlemen,

I feel the need to share a 'near miss' situation we recently experienced during a paper machine shutdown. During the first day of an annual shutdown, our crews were opening manholes on 6' diameter paper dryers, to eventually perform internal inspections and repairs.

The first, of two, 'manhole retaining bars' was removed like normal.

WHILE THE SECOND WAS BEING REMOVED, USING A 3/4" DRIVE ELECTRIC IMPACT, THE MANHOLE, RETAINING BAR, AND THE IMPACT WITH SOCKET, WERE INSTANTLY SUCKED TO THE BACKSIDE DRYER HEAD. THE APPROXIMATE WEIGHT OF THIS ACCUMULATION OF ITEMS IS 100 POUNDS. THE ELECTRIC CORD TO THE IMPACT WRENCH WAS TORN IN HALF. LUCKILY, OUR CREW MEMBER HOLDING THE ROPE WHICH IS USED TO PREVENT THE MANHOLE FROM DROPPING INTO THE DRYER, HAD NOT WRAPPED IT AROUND HIS HAND OR ARM. THE MANHOLE HIT THE LAST HOOP RING OF A DRYER 'BARS' SET AND WAS DAMAGED TO THE POINT IT HAD TO BE REPLACED. WHILE NO ONE WAS INJURED, THERE WERE MANY SHOCKED FACES ON THE CREW.

HOW DID THIS OCCUR?

Sometime prior to the machine shutdown, mill personnel had closed the steam and condensate valves, isolating the dryer from both systems. The reason for valving out this dryer is unknown.

CLOSING THESE VALVES 'STORES ENERGY' IN A DRYER, WHETHER IT BE PRESSURE, VACUUM, OR HOT WATER.

In this case, the steam trapped inside the dryer was condensed, putting the interior of the dryer into a near absolute vacuum. As we all know, if the seal of a rotary joint leaked even a minute amount, this vacuum would slowly decrease to zero pressure. In this case, the seal must have been near perfect.

HOW TO PREVENT THIS IN THE FUTURE?

During the shutdown of a machine, lockout of energy potentials occur. In this case, the steam and condensate systems were correctly locked out/open, and at zero pressure. As the 'isolation' valves on this dryer were closed, it essentially was 'isolated' from the lockout procedures, so it still stored energy.

BEFORE OPENING ANY DRYER MANHOLE, THE ISOLATION VALVES SHOULD BE VERIFIED THAT THEY ARE OPENED, AND IF NOT, OPENED BY THE APPROPRIATE PERSONNEL. THIS EXPOSES THE DRYER TO THE LOCKED OUT SYSTEMS AND WILL BALANCE IN PRESSURE. ANY POTENTIAL HOT CONDENSATE LEVEL WILL DECREASE TO THE CENTER LEVEL OF THE DRYER.

WHY AM I INFORMING YOU?

As a company, my employees open and close over 1000 manholes per year and this is a very rare, but very real experience. I'm hoping that sharing this with you will allow you to review your company safety policies regarding this situation, and implement the correct steps to prevent this situation from happening at your facility. While some may expect a 'line breaking' event to prevent this, it exposes the mechanics to stored energy also. Opening the valves, making the dryer part of the 'locked out' systems, is the first corrective action. Line breaks, after this occurs, would then be an acceptable step, if so desired.

Please share this with those in your group who should know.

Please think of other processes in your facilities where 'isolating' components of a system, may actually isolate them from being safely part of a 'lock out system'.

If you have any questions, feel free to contact me.

Respectfully,
Mark Franks
Steam Systems Inc.
2860 Cincinnati-Dayton Road
Middletown, Ohio 45044
P (513) 727-8330
F (513) 727-8338
C (877)-221-1167
mfranks@steamsystems.com

2860 Cincinnati-Dayton Rd
Middletown OH 45044
Phone: (513) 727-8330
Fax: (513) 727-8338

Visit us on the web at:
www.steamsystems.com

Call Toll Free
(800) 821-4203