WorldCargo news

Lock-out, Tag-out, Try-out

Locks are vital for the safety of anyone working on or inspecting a crane

This article was co-authored by Bill Casper, president, Casper, Phillips & Associates, based in Tacoma, and Bruce Koch, electronics technology manager, Port of Tacoma. It reflects their personal experience of working in and/or for a range of heavy industries. As a matter of fact, last year an employee of CP&A was at risk on two different occasions when inspecting a container crane, due to unexpected machinery movement. Both times the component moved away from danager but the odds were 50:50 that the event could have been fatal. Nothing other than a formal lock-out would have prevented both these incidents.

How safe is safe? That is a question risk managers and workers ask themselves every day. It is a complex issue involving costs as well as the tragic consequences of serious accidents.

It is the risk manager's responsibility to set a policy that reflects sound judgement about these complex factors. In the USA, cost factors include insurance, medical and indemnity payments, OSHA fines, litigation expenses, worker productivity, training costs, safety equipment costs, downtime, union policies and others.

Although each industry seems to have a rather consistent risk management policy, the overall policy from one industry to another is not necessarily consistent. The ports industry has relatively low safety standards when compared to the petrochemical, steel and aluminium industries, even though they are all subject to the same OSHA regulations. Why?

Clearly, the difference is driven by management's evaluation of the various cost factors. What is not clear is why ports as a group do not emphasise safety as much as these other industries do. Are ports inherently safer or do they suffer unnecessary expense by failing to recognise the benefits of enhanced safety?

Try it out

In the past few years a leading US container port, Tacoma, has implemented stronger safety rules, believing that safety pays. This policy is most visible in the port's procedures for controlling hazardous energy; more commonly termed "lockout, tagout and tryout."

Every year hundreds of workers are killed or seriously injured working on industrial equipment because they fail to take effective safety precautions. A machine suddenly moves; an electrical wire is still hot; pneumatic or hydraulic lines have dangerously high pressure; or a weight is free to fall. All it takes is an instant of lapsed attention and even the most experienced worker can lose life or limb.

The only 100 per cent safe way to deal with hazardous energy is to follow strictly established procedures designed to eliminate the basic hazard completely. Whenever a worker fails to do this he has, in effect, become his own risk manager. The worker's supervisor, managers and the entire company share this risk and therefore have the right and responsibility to govern such actions. In some industries there are only two ways to get fired on the spot without recourse: show up for work drunk or wilfully violate the company's lock-out rules.

The extent to which management defines, enforces and audits lock-out procedures is a direct measure of commitment to worker safety. People associated with machinery maintenance in other industries know that the ports industry is clearly not as committed to safety as most others. This is not an unfair criticism; just a non-judgmental fact.

Simple rules

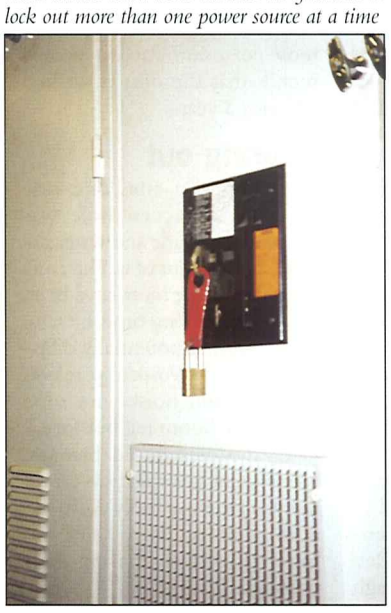
Lock-out procedures are not complicated. Every worker is assigned one or more personal locks. Whenever workers intend to work on a machine the power is shut off and then locked off to prevent it being turned back on. Locking is done with the personal lock of every worker who will be working in harm's way. If there is any possibility that secondary or residual power still exists the machine is tested before starting any work.

Upon completion, power cannot be restored until the lock-out is cleared by removing all personal locks. It is not permissible for anyone other than the assigned owner to remove a lock.

Power includes all hazardous energy sources: electric, hydraulic, pneumatic,

Co-author Bruce Koch is apparently exposed to unexpected machinery movement. The trolley can suddenly move forward and either crush him into the handrail or knock him off the window wash platform. He is holding the lock-out lock that should be securing the trolley power in the "off" position (but see picture at foot of page)

Actually the trolley power was locked out. Bruce Koch carries extra locks because he often has to lock out more than one power source at a time



This is Tacoma's lock-out panel board. The padlocks on this board are shift locks which are used when a shift change occurs before maintenance work is completed. The other tools are special devices to permit locking out different types of switches or valves. Tags are always used to indicate why the device is locked out. Tag-out tags are used when it is not possible to install a lock. Each worker's personal lock is marked or tagged to identify the lock's owner

gravity and stored. Stored energy exists in springs, capacitors, batteries, accumulators and various other sources.

Playing tag

If it is not physically possible to lock off a particular device then tags are used in lieu of locks. However, tags are seldom needed. An entire new industry now exists which invents and markets ingenious devices to permit locking almost every mechanical or electrical device.

Changing shift

If a shift change occurs before work is complete then a special transfer lock is installed before the departing workers remove their personal locks. The new crew then installs their own locks andg removes the transfer lock.

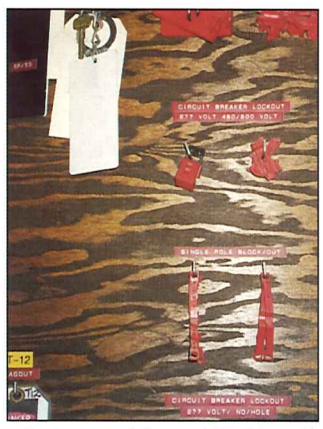
Often it is necessary to restore power to test a machine's operation. This is permitted subject to well-defined procedures and, if necessary, use of special safety equipment such as insulating gloves.

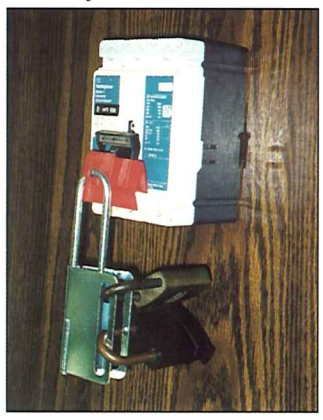
OSHA now requires that all energy isolating devices on new machines be designed to accept a lock-out device. Equipment OEMs, crane consultants and port engineers should be aware of this requirement when tendering new equipment.

Chancing their arm

Many workers feel that lock-out procedures take too much time and are not worth the effort. For obvious reasons most electricians readily endorse tag-out safety measures but mechanics are more inclined to take a chance.

Outsiders such as vendors, contractors, inspectors and other occasional visitors are often unaware that a hazard even exists. But this just reflects the relative laxness of the ports industry. Actively or passively, management determines the extent to which lock-out procedures are implemented and enforced. ❑





Above: some of the special locking aids that are now available. Below: typical lock-out of an electrical breaker