Earnings Improvement Program (EIP)

Electrical Disconnects for Injection Molding Machines

NASP Plastics facilities have initiated a major project to install a second, dedicated electrical disconnect for power to hydraulic pumps on over 125 injection molding machines that do not already have one.

When performing set up and repair activities, such as mold or insert changes, OSHA regulations and MPS policy requires total isolation and control over the hydraulic power which clamps the mold sections together. The mold halves close quickly under tremendous force and the consequences for our workers would be catastrophic if the machine suddenly or unexpected operated during maintenance activities. The standard that protects workers from this hazard is called "the Control of Hazardous Energy", or more commonly "Lock-out/Tag-out". Reliance on a switch, push button, or programable logic controller is not permitted to control hazardous energy because they are subject to failure - something that must never happen when our workers are in the hazard area.

The safest way to conduct set up and repair activities is to completely disconnect power from the hydraulic system. On machines with a single disconnect, this isolates power from other parts of the machine as well, including the heater bands. Depending on the type and size of the press, as well as the length of the set-up or maintenance activity, it can take several hours for the heater bands to return to temperature and meet required soak times once power is restored. Many maintenance and set-up activities can be safely performed without shutting off the heat bands

The cost in parts for this additional disconnect can be from $700.00 to $1,500, depending on the machine. A dedicated disconnected to the hydraulic pumps would only take a minute or so to completely isolate and lock-out the hazard for most maintenance activities. By installing a second disconnect, power can be isolated from the hydraulic pumps without impacting the heating bands. This results in significantly less down time for set up and repair activities on the injection molding machines.

CURRENT STATE

On many Injection Molding Machines power must be disconnected from the entire machine to isolate power to the hydraulic system when conducting maintenance or set up operations.

SAFETY IMPLICATIONS

When performing set up and repair activities, such as mold or insert changes, OSHA regulations and MPS policy requires total isolation and control over the hydraulic power which clamps the mold sections together. The standard that protects workers from this hazard is called "the Control of Hazardous Energy", or more commonly known as "Lock-out/Tag-out".

THE PROBELM

Isolating power to additional parts of the machine, specifically the heating bands, results in a significantly longer down time for the machine since the heating band can take several hours to return to temperature and meet required soak times once power is restored.

FUTURE STATE

The instillation of a second electrical disconnect for the hydraulic pumps allows power to be isolated to the hydraulic system without removing power to other machine parts.

"The time savings alone will pay for this investment in short order and result in significant cost savings for the life of the machine. In addition to providing safety for our employees, the overall result will be an increase in machine utilization and production while ensuring compliance with our high standards and applicable safety regulations. This is a prime example on how the protection of our employees can demonstrably improve our business."

- Allen Coppolo, NASP Director of Environmental, Health and Safety

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