

## LOTO Without An E-Stop

LOTO requires that energy be physically prevented from flowing. Use the following to assist in the development of a LOTO procedure if you have relied on E-Stops in the past.

1. Identify all energy sources in the system. Possible sources can include: electrical, mechanical, hydraulic, pneumatic, thermal, chemical, radiation, and gravity.
2. Establish the procedures to de-energize or physically prevent the energy from flowing into the system.
3. Establish procedures to bleed residual energy from the system; ex. Pressure.
4. Train your employees per OSHA training requirements.
5. Audit the procedure annually for effectiveness.



For more information, see OSHA 1910.147, OSHA 2254, or contact Safe Workforce Development.



## *E-Stops LOTO or Not?*

Emergency Stops, or E-Stops, are commonplace in modern manufacturing and fabricating facilities. This hasn't always been the case though.

As the industrial revolution accelerated, energy production and distribution technology greatly increased. Energy could be produced in large quantities allowing factories to be built around centralized power sources; water wheels, steam engines, and large crude electric motors. The energy was distributed to individual machines via pulleys, clutches, and belts.

Engineers soon realized that they needed a way to stop malfunctioning machines without shutting down the main power supply. E-stops were born. This functionality, disconnecting the energy from the main source, allowed them to act as safety devices 200 years ago. However, they no longer serve that function today.

**Myth #1 – The Emergency Stop is a safety device.** This is probably the most misunderstood idea behind an E-Stop. Yes, in the event of imminent danger or injury, the E-Stop could be considered a safety device. After all, your safety and well-being are in immediate danger. However, E-Stops should only be used in emergency situations.

In comparison, automobile airbags are emergency safety devices but are not used in place of seatbelts and safe driving behavior. E-Stops should never be used as a preventative safety device.

**Myth #2 – E-Stops are considered an energy isolation device.** Negative. OSHA defines an energy isolation device as, "A mechanical device that physically prevents the transmission or release of energy. . . Push buttons, selector switches, and other control circuit type devices are not energy-isolating devices." [OSHA 1910.147(b)]. When isolating electrical power to a machine, piece of equipment, or system, there must be a physical break in the circuit that prevents the flow of energy. An E-Stop is basically a light switch. For example, if you've ever changed a ceiling fan, you know that the wall switch being in the off position does not mean that the power has been isolated from the fan. The fan is just "off".

**Myth #3 – Workers can use the E-Stop as a means of stopping a machine to clear jams.** This is incorrect. Per OSHA, clearing a jam from a machine or system falls under maintenance and servicing, and as such requires proper lockout/tag out.