

ISOLATING ENERGY SOURCES (CONTRACTOR WORK GUIDE)

Before any works begin, all energy sources that have the potential to cause harm must be identified and safely isolated to prevent energy being released while works are being carried out. It is important that all potential energy sources or situations where a release of energy or product may occur are considered, not just electrical.

Energy Sources

Energy sources can include;

- fuels
- heat
- steam
- fluids under pressure, such as water, air or hydraulic oil
- stored energy
- gravity
- radiation
- electricity, including mains, solar and generator

Serious and even fatal injuries can occur when plant inadvertently starts up, or stored energy releases, during works such as inspection, repair, maintenance or cleaning. Implementing and following effective isolation procedures is essential for preventing injuries occurring.

Isolation Rules

The following isolation rules apply;

- Isolations must only be undertaken by those trained, competent and authorised
- Before isolating any machinery, ensure you understand the site's isolation procedure. **Where an isolation procedure is not in place, the isolation process outlined below should be followed.**
- Emergency stop buttons, lanyards and similar stop devices on their own are not satisfactory isolation points – a physical lock should be used.
- A tag is not an effective isolation device. A tag acts only as a means of providing information to others at the workplace. A lock should be used as an isolation device, however where a lock is used a tag should also be incorporated to explain the purpose of the lockout.
- Personal Protection Locks must clearly identify the owner of the lock
- Tags should be attached to an isolator in a visible position
- Upon removal of locks or tags, ensure that the plant or machinery is operational and that all
- guards are replaced
- Never remove another person's lock or tag without authorisation of a line manager
- Notify affected parties before re-energising energy sources

Isolation Process (LOTO)

To undertake an isolation, the following process should be applied:

1. **Identify** isolation requirements for all energy sources and the person responsible to undertake the isolation. This should be undertaken during the planning stage of the works and documented in relevant documentation such as SWMS, permits etc.
2. **Communicate** to the affected workers and customers when the isolation is to occur to the plant, equipment and processes involved and the reasons.
3. **Plant/Equipment Shutdown.** Follow the correct process for shutting down relevant plant and equipment.
4. **Isolate all energy sources and isolation points.** Physically locate the energy isolating device that is relevant to the plant, machine or equipment and isolate or disconnect where necessary. Where the equipment to be isolated is part of an inline process, then isolation of equipment feeding or receiving must also be considered if there is the potential to impact on the equipment being isolated.

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5. **Lock and Tag application.** All workers tasked to perform the activity shall affix their personal lock and/or tag (ensuring that it is properly signed and dated) to the main isolating switch/s, valve/s or other control device. Personal locks must not be interlocked.

All Danger Tags should have printed on them:

- The name and contact phone number of the person placing the tag
- The company/department where that the person is employed
- The date and time that the tag was placed
- A brief description of the work or issue pertaining to the fitting of the tag



6. **Clear all personnel from the equipment to a safe distance.** Prior to verifying isolations all personnel should be cleared to a safe location.
7. **Test and verify isolation.** This can be achieved through testing circuits, de-energising systems (e.g. draining stored energy) and/or attempting to reactivate the plant. This assures that the energy source is off or released and the equipment is safe to work on.

Note: A qualified Electrician must prove electrical energy sources are de-energised/dead, by utilising an appropriate testing device. To test the integrity of the device to be used, it shall be checked on a known live source prior to and after testing for dead/de-energised. Testing devices that do not indicate a measured voltage (e.g. Volt Sticks, test pencils, etc.) must not be used as true voltage readings cannot be determined. Isolation of electrical equipment must be achieved by 'whole circuit isolation' and not a stop button on a control panel.

Note: Personal locks and/or tags are to remain in place whilst the individual owner of the lock and/or tag is working on or near the isolated plant or equipment.

Group Isolation

For large jobs where numerous energy sources are required to be isolated, a group lockout system shall be implemented.

All isolation points should be isolated by a responsible person and the keys for these locks placed in a lock box. The lock box will then have locks and danger tags fitted by all individuals working on the isolated system. The Lock boxes will not be able to be opened until all individual locks and tags are removed.

When all locks and tags are removed, the responsible person who undertook the isolation, will then be able to remove the isolation keys and release the isolation points.

Out of Service Tags

Where work on plant is not completed by the end of a working shift and the plant is required to remain isolated, arrangements should be made for out of service tags to be placed on each isolating point before the removal of personal danger tags. An out of service tag on an item of plant shows that the plant is unserviceable and should not be used. If work on the plant is to continue during the next shift, there should be a 'hand over' briefing by the shift leaving the site to the shift taking over the work. The briefing should include the status of the work and the removal or replacement of personal danger tags and locks.

Each Out of Service Tag should have printed on it:

- The name of the person placing the tag
- The project or work area that the person is employed by
- A brief description of the nature of the fault or defect
- The date and time that the tag was placed



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No Live Work

Work on live plant and installations must only be carried out where there is a proven risk of greater harm from working on de-energised equipment; or it is essential for testing or maintenance processes and all the following requirements are met:

- The work is carried out in accordance with State Electrical Acts and Regulations
- A Live Work Risk Assessment is completed and approved prior to performing the task (Speak to your Programmed contact who will provide you with the necessary documentation to be completed)
- The work has been formally authorised by the person in control of the premises and relevant Programmed Management (Speak to your Programmed contact regarding required authorisations)
- The work is carried out in accordance with a SWMS that outlines the safe system of work
- employees are trained and competent to complete the work on live equipment
- unauthorised persons are prevented from accessing the work area
- Appropriate PPE is available
- There is an electrical safety observer/spotter present (standing in the safe zone) who is trained in the work as well as relevant rescue and cardio-pulmonary resuscitation, and
- Suitable emergency response equipment is available