

BETAMEK BERHAD - Sample

Lock-Out Tag-Out (LOTO) procedure

1. Preparation

- **Identify Equipment & Scope:** Determine the specific machine/system to service. Note all energy sources involved (e.g., electrical, mechanical, hydraulic).
- **Hazard Analysis:** Document the type (voltage, pressure, temperature) and magnitude of each energy source, including stored/residual energy

2. Notification

- Inform all **affected personnel**—operators, nearby staff, and supervisors—of:
 - Equipment being locked out.
 - Reason for shutdown.
 - Expected start time and duration.
 - Authorized person in charge.
 - Contact details for the LOTO coordinator

3. Shutdown

- Shut down the equipment following the **manufacturer's or facility's standard procedures**, ensuring all moving parts come to a complete stop

4. Isolation

- Use appropriate **energy-isolating devices**:
 - Switch off breakers, close valves, unplug cables, or disconnect hydraulic/pneumatic lines.
- Confirm that the equipment is fully separated from all energy sources

5. Dissipation & Restraint of Residual Energy

- Release or restrain any residual energy:
 - Drain hydraulic or pneumatic lines.
 - Discharge capacitors.
 - Relieve tension in springs or gravitational hazards

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6. Lockout & Tagout

- Attach **lockout devices** to each isolation point:
 - Use OSHA-compliant padlocks (e.g., key-retaining red padlocks).
 - For multiple workers, use **lockout hasps or group lock boxes**, ensuring each worker applies a personal lock
- Apply **tags** clearly stating:
 - “Do Not Operate”
 - Authorised person’s name, date/time, and reason for LOTO

7. Verification of Isolation

- Verify energy isolation by:
 - Attempting to start the machine (e.g., pressing the start button).
 - Checking gauges or indicators for zero energy status.
- Confirm no movement or power activation before proceeding

8. Performing Maintenance

- Conduct maintenance/repairs safely.
- If the job spans multiple shifts, ensure **LOTO continuity** by transferring locks and tags among authorized personnel.

9. Restart / Removal of LOTO

- **Inspect work area** and ensure all tools/parts are removed.
- Confirm all guards are back in place, and employees are clear.
- Notify affected personnel that equipment will be re-energized.
- Remove locks and tags **only by the person who applied them**, or via documented management procedures when necessary.

10. System Reactivation

- Reconnect all energy sources and restart machinery per standard operating procedures.
- Observe for normal operation without abnormalities.

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11. Periodic Audits & Training

- Conduct **annual inspections** of LOTO procedures by someone other than the user
 - Provide **training** to:
 - **Authorized employees:** Energy source identification, isolation methods, lock and tag devices
 - **Affected employees:** Purpose and restrictions of LOTO.
 - **Other employees** in the vicinity: Not to restart locked equipment
 - Repeat training when procedures or staff change .
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Integration of Quality Controls

| Element | Description |
|-------------------------------|---|
| Standardized Equipment | Padlocks, tags, hasps, and boxes must be durable and recognizable (e.g., red, labeled “L–O–T–O”) |
| Documentation | Maintain LOTO records including: equipment ID, energy sources, personnel, dates/times, verification checks, and inspections |
| Audit & Feedback | Regularly review procedures, correct non-compliance, and share improvement opportunities |

Why This Works

This example aligns with the **seven-step LOTO procedure** and core program elements required by OSHA—covering equipment identification, device application, verification, training, and audits . It ensures a systematic, safe, and compliant approach suited for diverse industrial environments.

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Managing Equipment Maintenance and Safe Work Procedures

1. Purpose & Scope

Outlines responsibilities and processes to ensure equipment remains operational, safe, and compliant throughout its lifecycle—from routine servicing to decommissioning.

2. Preventive Maintenance Schedule

- Each machine (e.g., smog-hog, forklifts, AOI, BGA tools) is scheduled for periodic inspections—daily checks, weekly lubrication, monthly performance reviews.
- Maintenance tasks include oiling, cleaning, corrosion control.

3. Roles & Responsibilities

- **Equipment Technicians:** Ensure maintenance tasks are executed, report defects, perform minor repairs and 6S housekeeping.
- **Maintenance Supervisor:** Approve maintenance schedules, manage spare parts, track equipment lifespans, decide on decommissioning.

4. Inspection & Logging

- Use standardized checklists (e.g., lubrication points, guard conditions, dust build-up, coolant leaks).
- Document date, findings, actions taken, technician's name.
- Records kept electronically for audit and equipment lifecycle tracking.

5. Repair & Breakdown Handling

- Immediate report via work order system.
- Technicians conduct repairs or escalate.
- Post-repair testing ensures equipment returns to safe operation.

6. Asset Lifecycle Management

- Fully depreciated equipment still in use unless it fails efficiency checks.
- Decision matrix based on performance and obsolescence determines disposal.

7. Spare Parts & Upgrades

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- Inventory buffer maintained as part of working capital to prevent downtime.
- Coordinate with R&D or suppliers for sourcing parts or upgrading (e.g., automating soldering, robotic machines).

8. Training

- All maintenance personnel undergo induction and ISO 45001-aligned training.
- Annual refresher trainings via e-learning or dojo programs.

9. Audits & Continuous Improvement

- Quarterly internal audits by HSE and ISO 14001/45001 teams.
 - Findings feed into corrective action plans and equipment/process upgrades.
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Safe Work Procedure

1. Risk Assessment

- Conduct job safety analysis for each maintenance task—identify hazards (moving parts, electricity, hot surfaces, chemicals).
- Define controls: shutoffs, isolations, PPE, authorised personnel only.

2. Lock-Out/Tag-Out (LOTO)

- Standardised LOTO process ensures machines are fully de-energised before maintenance.
- Verification before commencement.

3. Permit-to-Work (PTW)

- Required for high-risk tasks such as chemical exposure, confined spaces, heavy lifting.

4. PPE & Safety Equipment

- Technicians wear gloves, safety glasses, steel-toed boots, hearing protection as relevant.
- Emergency facilities: eye wash, showers, sickbay, defibrillator.

5. Hazardous Materials Handling

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- Proper disposal of coolant, solvents, rags, gloves as scheduled waste per DOE codes (SW110, SW104, SW322, SW410, SW409).
- Use of certified waste partners.

6. Fire Safety

- Regular inspection and maintenance of extinguishers, sprinklers, alarms.
- Staff trained in fire drills and evacuation.

7. Safe Work Checklist

- Before starting: confirm barricades, protection, buddy system.
- During: maintain clean workspace, report anomalies, avoid shortcuts.
- After: secure tools, restore guards, clean area, sign off LOTO/PTW, update maintenance logs.

8. Incident Response & Investigation

- All accidents or near-misses are recorded, investigated via root-cause analysis.
- Implement corrective actions to prevent recurrence.

9. Communication & Review

- Weekly toolbox talks to share updates and safety reminders.
- All incidents and audit findings reviewed by Safety Committee including management and employee reps.

Key Highlights from Betamek’s Practices

| Emphasis Area | Strategy Summary |
|-------------------------|---|
| ISO-Certified Framework | Procedures align with ISO 45001 for OHS and ISO 14001 for environmental stewardship |
| Zero-Incident Culture | Record of zero workplace injuries in FYE 2023 & FYE 2024 |
| Scheduled Waste Control | High compliance in handling hazardous materials; ~80% recycling achieved |

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| Emphasis Area | Strategy Summary |
|----------------------------|--|
| Training & Dojo Programs | 16+ hours annual training via e-learning and dojo systems |
| Safety Committee Oversight | Cross-functional HSE team drives compliance, incident review, and drills |

Sample Workflow: Routine Maintenance on Smog-Hog Machine

1. **Schedule Task:** Monthly maintenance with pre-approved PTW.
2. **Prepare Work Area:** Set LOTO, establish barricades, confirm PPE.
3. **Inspection:** Clean filters, check fans, inspect guards, lubricate moving parts.
4. **Record Findings:** Log any issues (noise, wear) and perform adjustments or escalate repairs.
5. **Waste Handling:** Dispose rags or cleaning solvents as SW322/SW410 scheduled waste.
6. **Cleanup & Restoration:** Remove LOTO tags, restore guards, clean area.
7. **Sign-Off:** Technician and supervisor sign checklist; update logs.
8. **Review:** Discuss any anomalies in next toolbox talk; escalate serious issues to HSE committee.