

	Standard and Procedure for Work Permit System		
	Ref: Corp/EHS/8.1.2/002 Rev: 01	Dated: 15.09.2024	

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1.0 Purpose

- To ensure safety of people & property in non – routine jobs like hot work, work at height, confined space entry, excavation work, working with energy and general work including majority of non-routine contractual jobs.
- To define the “specific safety requirements” while undertaking such jobs with detailed checklists.
- To fix-up responsibility and accountability for adherence of permit requirements.

2.0 Definitions

“**Hazard**” a hazard is typically defined as “anything that has the potential for harm or a potentially damaging energy source”.

“**Work Permit**” means a clearance granted to work in a specific area for specific task with recommended control measures for associated risk.

“**Confined space**” is an enclosed or partially enclosed space that is under atmospheric pressure and

- (a) is not designed for continuous occupancy as a place of work and, or
- (b) has an oxygen deficiency or excess and or presence of toxic/flammable/inert gases and, or
- (c) has restricted means for entry and exit

“**Hot work**” is defined as welding, cutting, brazing, grinding or any activity involving open flames, production of spark or generation of heat.

“**Excavation work**” means the making of any man-made cavity, trench, pit or depression formed by cutting, digging or scooping; management of any task requiring the penetration of the ground to a depth greater than 30 cm.

“**Working at Height**” Work at heights greater than 1.8 meters where they could fall, should be authorised through issue of work permit.

“**Isolation**”: Process of “cutting off” plant and equipment from all energy sources with the help of Lock Out and Tag Out, so that certain work can be carried out on the plant or machinery without the risk of injury from that energy source.

“**Competent Person**”: is any person having the knowledge, training, experience and qualifications specific to the work or task being performed. Provided that where appropriate qualifications and training are registered in terms of the provisions of the Factories Act 1948 and Electricity Act 2003, these qualifications and training shall be deemed to be the required qualifications and training.

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3.0 Scope

This standard applies to:

- CUMI manufacturing units
- All employees associated with CUMI (Workmen, Contractors, Trainees, volunteers, visitors and associated organisations).
- Plant machinery and equipment (including equipment on hire / lease contracts)

Exemption: Routine welding/cutting and similar maintenance/fabrication jobs carried out inside or adjacent to any plant unit workshops and central workshops or the area designated/allotted by the approval of the facility in-charge. **These exempted activities must have a proper risk assessment and Standard Operating Procedure.**

#	Permits	Activities
1	Height work permit	Working above 1.8 meters height from the ground. Exemption: For structures such as staircases, ladders, walkways, platforms etc with sufficient fall prevention.
2	Hot Work Permit	Hot work like welding, gas cutting, chipping, grinding other processes capable of generating heat, sparks or flames requires this permit. Hot work is prohibited in the following Dangerous areas without the approval of Plant Head and Safety officer : 1. Fuel Storage Yards 2. Gas Cylinder Storage 3. LPG/PNG/HSD/FO – Pipelines (Including activities undertaken 5m from LPG/PNG lines) 4. Boiler Area, 5. Chemical Storage Area, 6. Electrical sub stations /Transformer yard 7. Work beneath or adjacent to uninsulated electrical power cables (Within 3m distance)
3	Excavation Work Permit	Excavation / digging work more than 30cm depth
4	Confined Space entry	Working in areas where > Oxygen level is less than 19.5% or there is presence of toxic/flammable/inert gases. > Entry and exit is restricted. > Area is not designed for continuous occupancy. Ex., Vessel, tank, boiler, duct, chimney, drain pit, sewerage, scrubber

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		tank, Silos etc. > Respective BU/Plant should prepare a list of confined spaces and follow this procedure.
5	Energy Isolation Work Permit	Working on LT/MT/HT lines/power panels/substations, overhauling of machineries/equipment/process plants which requires isolation of all energy sources.
6	Lock-Out Tag-Out (LOTO)	Machinery intervention Exemptions : Inspection, Minor repairs which doesn't require isolation of energy. (Based on Risk Assessment) List of exempted activity must be prepared by Maintenance, reviewed by Safety and approved by Plant Head (Based on Risk Assessment).
7	General work permit	Permit issued for jobs of general nature such as cold work which cannot generate spark /heat. Ex., Machinery/Material shifting, Chemical handling, Lifting , Inspection/Monitoring of rotary equipment.

4.0 Roles & Responsibilities

Permit Requester:

- Permit requester is the person who has responsibility of executing the job.
- Must be a CUMI employee and Management staff, trained by Safety Officer and authorized by Plant Head
- Responsible for filling up permits, inspecting work area and ensure adequate safety precautions as per the work permit requirements.
- For critical activities, SOP (Method statement) and Risk Assessment need to be jointly prepared along with the Issuer and associated stakeholders.
- Ensuring all workmen (incl. contractor supervisors) are briefed about permit procedures and risks associated with the work.
- Get clearance from Permit issuer for the work activity.
- Ensure the conditions identified in the work permit are complied at all times during the execution of the work
- Carryout inspection and certification for the tools, tackles, equipment used for the activity.
- After work completion, requester is responsible for ensuring guards are in place, housekeeping of the area is restored to normal and equipment are safe for handover.

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Permit Issuer:

- Permit issuer can be the Immediate supervisor of requestor or Section In-charge/Area Manager/ Respective Dept. Head/Plant Head.
- Must be trained by safety officer and authorized by Plant Head.
- Must be Management Staff and controls the entire work permit process.
- Shall check competency of manpower as per the activity requirement.
- Ensure availability of effective supervision as per job requirement.
- Ensure workmen are aware of emergency preparedness, rescue plan for the work activity
- Before issuance of the work, the issuer and requester shall jointly inspect the job location and identify the requirements of job preparation and special PPE required for safe execution of the job.
- Conduct site visit ensure that adequate safety measures have been taken before the job execution.
- The issuer is responsible for getting the approvals of Section In-charge/Area In-charge before the permit is handed over to the Requester.
- Stop the work activity and cancel the permit incase working conditions are not conducive to the requirements
- In case of permit extension/renewal, the incoming In-charge shall review the on-going work permit activities.
- For multiple activities at the same site, Permit issuer shall coordinate for smooth functioning.
- Permit issuer and permit requester cannot be the same person.

Safety officer / Coordinator:

- Conduct training programs on work permit procedure and certify Permit requesters and Issuers.
- Safety Officer shall randomly inspect/audit permits based on criticality to verify system adherence and check for compliance with procedures, conditions and precautions.
- Shall stop work activity and cancel the permit in case of any violations or if work conditions deviate from the requirements in the work permit.
- Authorized to enforce additional safety precautions apart from the existing precautions entailed.
- Where differences arise in the interpretation of work permit procedures, the same shall be resolved by Safety Officer/ Div. EHS Head, which shall be considered final.
- Responsible for periodic review and updating of work permit procedure in consultation with Divisional and Corporate EHS Head.

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Plant Head:

- Plant Head shall identify and authorize Requesters and Issuers, who have the competency to address the requirement of Work Permit Procedures.
- The plant head shall approve the permit in dangerous areas, any work beyond 5.30pm and any exceptional work.
- Plant head shall review work permit system adherence periodically and improve the system.
- He is authorized to cancel the work permit incase of any deviations.

All individuals of the work group working within the site have the responsibility to

- Have a good understanding of the permit-to-work system and Contractor Management System at CUMI.
- Follow the procedure briefed to them before commencing the job.
- Ensure work is only started after authorization and issue of permit
- Ensure only inspected, certified tools and tackles are used.
- Follow all the precautions and comply with permit requirements.

5.0 General Guidelines

- Work permit shall be made in triplicate.
- The first copy shall be displayed at the job location for awareness and be retained by execution team
- The requester shall send the second copy to the Safety Officer via whatsapp or hard copy. Incase of critical works, permit issuer shall inform the safety officer before start of the work.
- The permit issuer retains the third copy for controlling work activities and for record purposes.
- No work shall be commenced without due signature from the issuer.

Cancellation of Permit to Work

Conditions which require a permit to Work to be either suspended and or cancelled:

- a. An emergency event
- b. Change in conditions/Violations
- c. A shift change and or change in Permit Requester/Authorised person. If not extended by the issuer.
- d. All permits beyond 5.30pm, if not extended by the Issuer
- e. In the above events, the permit can be cancelled by Plant Head, Section Heads, Functional heads, Area Incharges, Safety Officer

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Rescue Plan

For activities related to Confined Space, Height work, Excavation – Rescue plan is mandatory.

6.0 Competency Requirements

Role	Requirement	Competency	Training
Permit Requester	Must be a CUMI employee and Management staff, certified by Safety Officer and authorized by Plant Head	Knowledge of SOP/ Risk Assessment / JSA / LOTO and Work Permit System Minimum one year experience in manufacturing & min 6 months experience in the area of operation. Work permit training	HIRA/JSA, Energy Isolation, Work Permit Procedure
Permit Issuer	Must be a CUMI employee and Management staff, certified by Safety Officer and authorized by Plant Head	Knowledge of SOP/ Risk Assessment / JSA / LOTO and Work Permit System Minimum one year experience in manufacturing & min 1 year experience in the area of operation. Work permit training	HIRA/JSA, Energy Isolation, Work Permit Procedure
Acceptance of work permit	Site supervisor /Contractor supervisor	Minimum 06 month experience	Training on Work Permit Procedure

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7.0 Lock Out & Tag Out Procedure For Energy Isolation

This procedure involves an authorized person disconnecting the plant or machinery from its energy sources to prevent anyone from re-energizing the plant or machine.



Example of lock-out device

Lock Out Provisions Examples :



Electrical panels



Pipeline valves



Circuit Breakers

- Lock-out device provides a physical restraint that maintains the isolation device in a safe or 'off' position
- It can only be removed with a key, which can only be used with the authority of the person in charge of the work permit system.
- For safety reasons, each lock must only have one key. No master keys are allowed on a lock-out system.

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Example of Tag-Out device

A tag-out device is a warning system that an authorized worker applies to the isolator to indicate work is being carried out on the plant or machine. This does not isolate energy and is only notifying, and must be used along with a LOCK OUT.

The general procedure for implementing lock-out and tag-out devices:

- The issuer for the Energy Isolation will identify the source(s) of energy to be controlled and the control method to use.
- All personnel who may be affected by the isolation caused by the lock-out and tag-out action shall be informed.
- The process/equipment or system shall be shut down as normal, and confirmation made that all controls are in the off position and that all moving parts have stopped.
- The process/equipment or system shall be isolated from its energy source, following the safe working procedure as set out by the issuer (authorized person) during energy identification and as recommended by the manufacturer.
- Depending on the source of energy, the procedure will vary as follows: -

(i) **Electrical energy** – the isolator to be switched to the off position and the breaker connections to be visually verified to be in the off position. The isolator switch is locked in the off position with a lock-out or tag-out device.

(ii) **Hydraulic/Pneumatic energy** – the isolator valve shall be set in the closed position and locked in the closed position with a lock-out or tag-out device. Pressure shall be bled off by opening the pressure relief valve.

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(iii) **Mechanical energy** – energy shall either be carefully and slowly released from compressed components in the system or process which has the potential to be moved or activated by residual energy. If the components are blocked from moving, the block shall be locked in position with a lock-out or tag-out device.

(iv) **Thermal energy** – All residual thermal energy sources or isolator valves shall be identified and controlled to ambient temperatures before any interaction.

(v) **Chemical energy** – the isolator valve on the supply lines shall be set in the closed position. The isolator valve shall then be locked in the closed position with a lock-out or tag-out device. Where possible or appropriate, chemicals shall be bled off by opening the bleed valve.

8.0 Special Instructions for work permits

8.1 Additional Hazards/Risks/Control measures (JSA) – Mandatory for Critical Activities

- A Job Safety Analysis shall be made of the potential hazards and the operations to determine the appropriate safeguards before starting work.
- Specific statements describing what action(s) is to be taken and how it can be performed to be added to the sheet.
- JSA shall be work and site/location specific.

Few examples of critical activities are listed below :

1. Flammable material storage area
2. Any roof work activity
3. Entry into confined spaces.
4. Working near the vicinity of LT, HT lines or Maintenance of Transformers/ HT Breakers, MV and LV Panels, Capacitor bank, Live testing of Electrical equipment.
5. Shifting of machineries and auxiliary equipment
6. Lifting operation of material (having weight more than 0.5MT) in which lifting height is more than 6 meters.

Other High Risk activities can be identified and added by the respective plant management team based on their specific site conditions.

Special precautions for height work:

- Workers engaged in height work more than 15meters (like roof work, Chimney work etc.,) should be medically fit for the conditions (acrophobia, hypertension, blood sugar, cardiac abnormalities and any history of epilepsy.)
- Wooden scaffolding shall not be used.
- No roof work shall be carried out without authorization from Maintenance/Utility Team

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- No work shall be carried out near exposed electrical cables (LT/HT) lines without approval from concerned authorities.
- Ensure availability of SOP/Risk Assessment for critical activities.

Special precautions for hot work:

- Hot work to be carried out in dangerous areas only after proper risk assessment and suitable method statement is available.
- Only spark igniters shall be used for lighting up the torch.
- Work area must be checked by Firewatcher before, during and after completion of work.
- Only Non-sparking tools to be used in Dangerous Areas.
- Adequate fire protection measures (wetting the nearby area by spraying water or wet fire blanket) should be specified to avoid spread of sparks
- Oxy-Acetylene/LPG cylinders approved by CCOE must be used for gas cutting.
- Hot work permit obtained for a specific location shall not be used for another location.

Special Precautions for excavation work:

Following risks need to be considered by the permit issuer while issuing the permit:

- Soil type and excavation depth needs to be identified to provide suitable shoring/shuttering/benching/sloping (~45 degrees)
- Restrict vehicle movement/equipment, not be allowed within 2m from the edge of an excavation
- If people are working inside the pit, then vehicular movement shall not be allowed within 5m distance.

Special precautions for confined space entry:

- One trained person must be on guard outside the confined space for rescue and emergency operations
- All persons entering inside a confined must be medically fit and certified by a doctor.
- It is the duty of the standby person to arrange for the rescue or raise the call for help.
- In case a hot work, one person trained in fire-fighting should be posted near the work area.
- Persons required to use respiratory equipment must be trained and validated.
- Purging using nitrogen or suitable inert gas is mandatory to remove traces of hazardous chemicals and gases.
- Additional ventilation to be made using either air hose/air blower.
- All hazardous pipelines must be isolated (double block and bleed)
- Use of 230v hand lamps are prohibited.

Gas tests

- Should be done prior to issuance of work permit to the acceptor and be repeated just prior to starting of hot work, or confined space/vessel entry.
- Gas tests should be done at every renewal and revalidation of the work permit.

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- Oxygen level must be monitored during entry and engagement of workmen inside the confined space.

Special precautions for Energy Isolation Work permit

- It shall be the responsibility of the Utility/Electrical/Job originator/Maintenance of the respective area to identify equipment and isolation points to which this permit system shall apply.
- All energies (ELECTRICAL, MECHANICAL, PNEUMATIC, HYDRAULIC, THERMAL, CHEMICAL) must be identified and suitable action must be taken to prevent sudden release.
- Residual energies must made to “Zero-state” prior to work activity.
- Isolation points and lock out points are to be properly identified on panels and Distribution systems.
- Only trained and authorized personnel are to be employed for electrical work on these systems.
- It is to be ensured that PPEs issued to the workers are rated for the line voltage.
- Limit of approach to live conductors has to be strictly adhered to and to be recorded in the permit.
- All personnel involved in the work and those in the vicinity are to be notified prior to re-energization.
- Any activity in the LT, MT, HT lines shall be undertaken in accordance to the local statutory regulations applicable to the state.

Medical Requirements for Contractors :

Medical Examination				
Sl.No	Nature of Job	General Fitness	Vision	PFT
1	General Work	✓	✓	Not Applicable
2	Hot Work	✓	✓	Applicable
3	Height Work	✓	✓	Not Applicable
4	Excavation	✓	✓	Not Applicable
5	Confined space Work	✓	✓	Applicable
6	Chemical Handling	✓	✓	Applicable

General – Clinical Examination, CBC, Random Blood Sugar, BP, BMI, Vision Test
Vision Test - Color Blindness, vertigo test, Vision screening(Depth Perception)
PFT - Pulmonary Function Test