

Fire Safety and Prevention

Fire hazards pose significant risks in NCC T&D operations, particularly during substation construction, cable jointing, welding, and maintenance of electrical equipment. Adherence to Saudi Civil Defense regulations, client standards (SEC, Saudi Aramco), and NCC T&D's HSE management system is critical to preventing fires, protecting personnel, and safeguarding critical infrastructure.

NCC T&D Project Leaders Key Responsibilities

Project Leaders must ensure:

- **Risk Assessment:**
Identify fire hazards (flammable materials, electrical faults, hot work) during project planning.
Classify fire risks based on Saudi Civil Defense categories (Class A: solids, Class B: liquids, Class C: electrical).
- **Preventive Measures:**
Eliminate ignition sources (e.g., enforce no-smoking zones, control static electricity).
Store flammable materials (fuels, solvents) in approved containers and designated areas.
- **Emergency Preparedness:**
Develop site-specific fire emergency plans with evacuation routes and assembly points.
Coordinate drills with Saudi Civil Defense (if required) and client HSE teams.
- **Equipment Compliance:**
Provide fire extinguishers, suppression systems, and alarms compliant with SEC and Saudi Aramco standards.
Ensure all equipment is inspected, labeled, and accessible.
- **Training:**
Train workers in fire prevention, extinguisher use (PASS technique: Pull, Aim, Squeeze, Sweep), and evacuation.
Certify personnel performing hot work (welding, cutting) with permits.

Fire Safety Protocol

NCC T&D implements fire safety through a four-tier hierarchy:

- **Prevention**
Ignition Control: Use intrinsically safe tools in explosive atmospheres.
Housekeeping: Remove combustible waste (rags, packaging) daily.
Electrical Safety: Inspect cables for damage; avoid overloading circuits.
- **Detection**
Install smoke detectors, heat sensors, and gas monitors in high-risk zones (e.g., cable tunnels, fuel storage).
Integrate alarms with NCC T&D's site-wide communication systems.
- **Suppression**
Portable Extinguishers: Deploy ABC-type extinguishers (for multi-class fires) near electrical panels and workstations.
Fixed Systems: Install automatic sprinklers or CO₂ systems in substations and control rooms.
Sand/Blankets: Use for small liquid fires (e.g., fuel spills).
- **Evacuation**
Mark clear escape routes with photoluminescent signage.
Assign fire wardens to guide evacuations during drills and emergencies.

Worker Responsibilities

Workers must:

- **Daily Inspections:** Check equipment for leaks, damaged wiring, or blocked fire exits.
- **Hot Work Permits:** Obtain authorization before welding, grinding, or cutting.
- **PPE Compliance:** Wear flame-resistant (FR) clothing near ignition sources.
- **Report Hazards:** Flag malfunctioning extinguishers or unsafe storage immediately.
- **Evacuation Readiness:** Know assembly points and avoid re-entering burning zones.

Additional Considerations for NCC T&D Projects

High-Risk Activities:

- **Cable Jointing:** Use fire-retardant materials and monitor for overheating.
- **Transformer Installation:** Install oil containment systems to prevent pool fires.

Environmental Factors:

- Extreme Heat: Store gas cylinders in shaded, ventilated areas to prevent pressure buildup.
- Sandstorms: Protect electrical equipment from dust ingress, which can cause short circuits.

Multilingual Training: Provide fire safety materials in Arabic, English, and Urdu.

Technology Integration:

- Use thermal imaging cameras to detect overheating in transmission lines (if possible/available).
- Equip vehicles with GPS-linked emergency alerts for remote sites.

Key Takeaways

- Prevention First: Eliminate ignition sources and combustibles before work begins.
- Prepare Rigorously: Conduct monthly fire drills and maintain suppression systems.
- Train Everyone: Ensure all workers know how to use extinguishers and evacuate safely.
- Equipment Readiness: Inspect fire tools weekly and replace expired units.
- Document Everything: Log permits, inspections, and incident reports in NCC T&D's HSE portal.

For further details, consult NCC T&D's relevant IMS procedures or contact the HSE Department for expert guidance and training resources.