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COURSE BROCHURE

Industrial Building Design for Control Rooms, Substations and Warehouses Training Course

27 June – 1 July 2027
Doha

Industrial Building Design for Control Rooms, Substations and Warehouses Training Course

Ref: 3171_120502 **Date:** 27 June – 1 July 2027 **Location:** Doha **Fees:** 6500 GBP

Industrial Building Design for control rooms, substations and warehouses is a 1-week training course for engineers and project staff who plan buildings on industrial sites, and it ends with a building design brief and review checklist. Site buildings now house costly control equipment and people close to hazardous plant, so layout, separation and services choices decide safety and uptime. Jupiter Prime Training runs this industrial building design course.

Why Industrial Building Design Matters Now

Three forces shape industrial building design today. Plants are packing more electrical and control equipment into fewer rooms, which raises heat loads, cable density and the cost of a single fire. Owners and insurers expect occupied buildings near process units to withstand explosion overpressure and keep people safe until evacuation. Operations teams want buildings they can service without a shutdown. Settling these questions early avoids redesign and failed hazard reviews. The course rests on recognised principles of hazard siting, fire compartmentation and electrical room planning, described in general terms.

Who Gains Most from Industrial Building Design

- Electrical engineers responsible for switchroom, transformer bay and cable entry arrangements
- Civil and structural engineers who set loads, foundations and wall construction for site buildings
- Project engineers who coordinate disciplines and freeze the building scope
- Safety engineers who assess building siting, occupancy and escape routes near hazardous plant
- Facility and maintenance engineers who inherit the building and must service it

A site engineering team gains most when electrical, civil and safety members attend together.

Industrial Building Design Capabilities

Participants learn to fit a building to its equipment, people and hazards.

- Specify room sizes, clearances and access routes for switchgear and control panels — equipment layout approval
- Calculate dead, live, equipment and wind loads for a site building — structural design basis
- Assess building siting against explosion overpressure and fire exposure — occupied building decisions
- Design fire compartments, cable penetrations and escape routes — safety and insurer sign-off
- Weigh cooling, pressurisation and power supply options for electrical rooms — operations and maintenance teams

- Build a design brief and review checklist that every discipline can test — project managers and owners

Key Industrial Building Design Terms

- Blast resistant building — a structure designed to resist a stated explosion overpressure while protecting its occupants.
- Fire compartment — an enclosed area whose walls, floors and doors limit fire spread for a rated period.
- Cable cellar — a space below a switchroom floor where cables enter, are routed and terminate beneath panels.
- Positive pressurisation — keeping room air pressure above outside pressure so dust, gas or smoke cannot enter.
- Equipment clearance — the free space around panels needed for safe operation and maintenance.
- Occupancy assessment — an evaluation of how many people use a building and their exposure to plant hazards.

Industrial Building Design Day by Day

Day 1: Site Context and Building Types

- Site Plot Plans and Hazard Zones — Where Each Building Can Sit
- Control Room, Substation and Warehouse Functions — Defining Each Building's Purpose
- Occupancy Assessment — Deciding Which Buildings Need Hazard Protection
- Owner Requirements and Design Basis Documents — Freezing Scope Early
- Discipline Interfaces and Responsibility Matrix — Who Designs Which Element

Day 2: Layout, Loads and Structure

- Switchroom and Transformer Bay Layout — Clearances, Withdrawal Space and Access
- Cable Cellars, Trenches and Raised Floors — Choosing the Cable Entry Route
- Dead, Live, Equipment and Wind Loads — Setting the Structural Design Basis
- Foundations for Heavy Equipment and Vibration — Matching Support to Plant
- Warehouse Racking, Floor Loads and Crane Rails — Sizing Storage Buildings

Day 3: Blast and Fire Protection

- Explosion Overpressure and Impulse Inputs — Selecting the Design Blast Load
- Reinforced Walls, Steel Frames and Blast Doors — Choosing Protective Construction
- Fire Compartmentation and Rated Barriers — Limiting Spread Between Rooms
- Cable and Duct Penetration Sealing — Keeping Barriers Intact
- Escape Routes, Refuge Areas and Emergency Lighting — Protecting Occupants

Day 4: Building Services and Electrical Rooms

- Heat Load Estimates for Panels and Drives — Sizing Room Cooling
- Pressurisation, Air Intakes and Gas Detection — Keeping Hazards Out
- Auxiliary Power, Battery Rooms and Lighting — Supplying the Building Itself
- Earthing, Lightning Protection and Cable Segregation — Electrical Room Integrity
- Fire Detection and Suppression Selection — Matching Systems to Room Risk

Day 5: Practising the Building Design Brief and Review Checklist

- Plot Plan Case Study for a Control Room — Applying Siting and Occupancy
- Substation Building Layout Exercise — Applying Clearances and Cable Entry
- Blast and Fire Design Check — Applying Protective Construction Choices
- Peer Review of Services and Electrical Rooms — Testing Cooling and Power
- Building Design Brief and Review Checklist — Completing the Team Output

Applying Industrial Building Design After the Course

- Run an occupancy and siting review of one existing control room and record blast and fire gaps.
- Lead a cross-discipline layout check covering clearances, cable entry, compartments and cooling.

Industrial Building Design Questions FAQ

What is industrial building design and why does it matter now?

Industrial building design is the planning of control rooms, substations, warehouses and offices on hazardous sites. It matters now because these buildings hold dense, costly equipment and people near process plant, so layout, blast and fire choices decide safety and uptime.

Which roles gain most from industrial building design training?

Electrical, civil, project, safety and maintenance engineers gain most. Each owns part of the building, and you work faster when all share one design basis before drawings are issued.

How does industrial building design differ from industrial concrete structures design?

Industrial building design looks at the whole building: siting, room layout, blast and fire protection, services and electrical rooms. A concrete structures course goes deep into member sizing and reinforcement for plant foundations, racks and slabs.

What do you bring back from industrial building design training?

You bring back a building design brief and review checklist for a site building. It records the design basis, layouts, hazard protection and services, and gives every discipline a shared test.

Industrial Building Design: The Way Forward

The building design brief and review checklist first informs the siting and occupancy decision for a new control room or substation building. Project, safety and design engineers use it before layout drawings start. After its first use, revisit the blast and cooling assumptions, because equipment lists grow during detailed design and change what the building must protect.