

SWITCHGEAR SOLUTIONS

Mahyan Engineering Solutions — Power Distribution, Retrofitting & Safety Technology

At **Mahyan Engineering Solutions**, our Switchgear Solutions division delivers comprehensive, end-to-end management for critical low, medium, and high-voltage power networks. Switchgears represent the primary safeguard and distribution mechanism within modern power grids. We specialize in providing bespoke engineering modifications, custom panel assembly, strategic supply chain distribution, and meticulous field retrofitting services. We optimize power architectures to shield downstream industrial operations from unpredictable network fault conditions.

Operational Intent: When website users click "Read More" on the Switchgear Solutions segment of the homepage, this comprehensive document details our engineering capabilities, component integration, and product ecosystem.

1. TURNKEY SWITCHGEAR ENGINEERING CAPABILITIES

Mahyan provides flexible, robust services that ensure continuous uptime, operational safety, and local regulatory compliance for substations and heavy industrial plants:

Custom Assembly & Design Vetting

- Engineering main low-voltage (LV) boards and medium-voltage (MV) motor control centers according to client-specific physical layouts.
- Advanced structural configuration calculations validating copper busbar sizing, fault level ratings, and thermal dissipation thresholds.
- Systematic implementation of climate control accessories inside panels to protect core automated electrical systems.

Modernization & Retrofit Services

- Seamless replacement of aging circuit breakers with modern, high-speed Vacuum Circuit Breakers (VCBs) or Gas Breakers.
- Upgrading mechanical protective relays with microchip-driven digital protection relays to enable advanced grid monitoring.
- Extending the reliable operational lifecycles of older plant switchboards with minimal installation downtime.

2. INTEGRATED COMPONENT ECOSYSTEM

We source, stock, and deploy a robust inventory of high-creepage insulation products, precision mechanical parts, and specialized heavy hardware to meet strict grid engineering conditions:

A. Insulation & Bushing Products

- **12kV to 36kV Epoxy Bushings:** Solid-cast insulation blocks engineered to withstand strong mechanical and environmental stresses.
- **Panel Support Insulators:** Conical standoff insulators molded from premium PVC, Epoxy, and Porcelain to completely prevent electrical tracking.
- **Specialized Bushing Controls:** Heavy-duty Current Transformer (CT) bushings and disconnecter terminal links built for maximum voltage stability.

B. Control Panels & Safety Accessories

- **Enclosure Control Boxes:** Rugged low-voltage panel boxes providing excellent IP protection ratings against dust and water ingress.
- **Panel Heaters & Thermostats:** Proactive moisture control systems that keep interior temperatures optimal and prevent inner condensation.
- **Safety Alerts & Interlocking:** High-decibel warning hooters, limit switches, and mechanical key-interlocks preventing manual operation errors.

C. Plant Mechanical Spares & Heavy Fasteners

Switchgear panels require strong mechanical connections to ensure physical longevity and stay reliable under heavy operational vibrations and fault stresses:

- **Structural Hardware Compositions:** Hex head cap screws, square head bolts, and flat washers machined in high-tensile 200, 300, and 400-series Stainless Steel and specialized protective zinc platings.
- **Physical Sealing Frameworks:** Premium silicon extrusion profiles, custom-cut round bonded gaskets, and heavy brass glands providing completely sealed entries for cable arrays measuring 1mm to 75mm.
- **Panel Mechanical Spares:** Long-life door locks, locking knobs, heavy-duty metallic cams, structural hinges, circlips, and heavy pins to maintain tight enclosure seals.

3. PRODUCT CLASSIFICATION AND ASSET DISTRIBUTION PORTFOLIO

Mahyan distributes and configures high-grade equipment lines designed to keep primary power systems completely stable:

Product Group	Technical Range & Distribution Scope
Low Voltage (LV) Boards	Main Distribution Boards (MDB), Sub Distribution Boards (SDB), and customized Motor Control Centers (MCC) for factories.
Medium Voltage VCBs	11kV to 36kV Vacuum Circuit Breakers, high-speed interruption earth switches, and robust spring charging mechanics.
Power Quality Modules	Thyristor Capacitor Switching Modules (TSM-3) enabling rapid, transient-free power factor correction for industrial loads.
Heavy Substation GIS	High-voltage, highly compact Gas Insulated Switchgear installations utilizing sulfur hexafluoride (SF6) gas for superior insulation.

4. UNYIELDING TESTING, STANDARDS & SAFETY ADHERENCE

Every panel we build and modify undergoes rigorous routine testing—including contact resistance logging (ductor testing), high-potential insulation checks, and high-speed breaker timing analytics. We guarantee our work meets strict international standards (IEC 61439, IEC 62271), ensuring that downstream operations operate with maximum safety, total reliability, and continuous efficiency.

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