



# ELECTRICAL WORKS



# ELECTRICAL WORKS

Transform your spaces with our comprehensive electrical works solutions. From design to installation, we specialize in delivering reliable and efficient electrical systems for residential, commercial, and industrial projects. Our skilled team of electricians ensures safety, compliance, and top-notch craftsmanship in every aspect of electrical construction. Explore a spectrum of services, including wiring, lighting installations, power distribution, smart systems integration, and more.

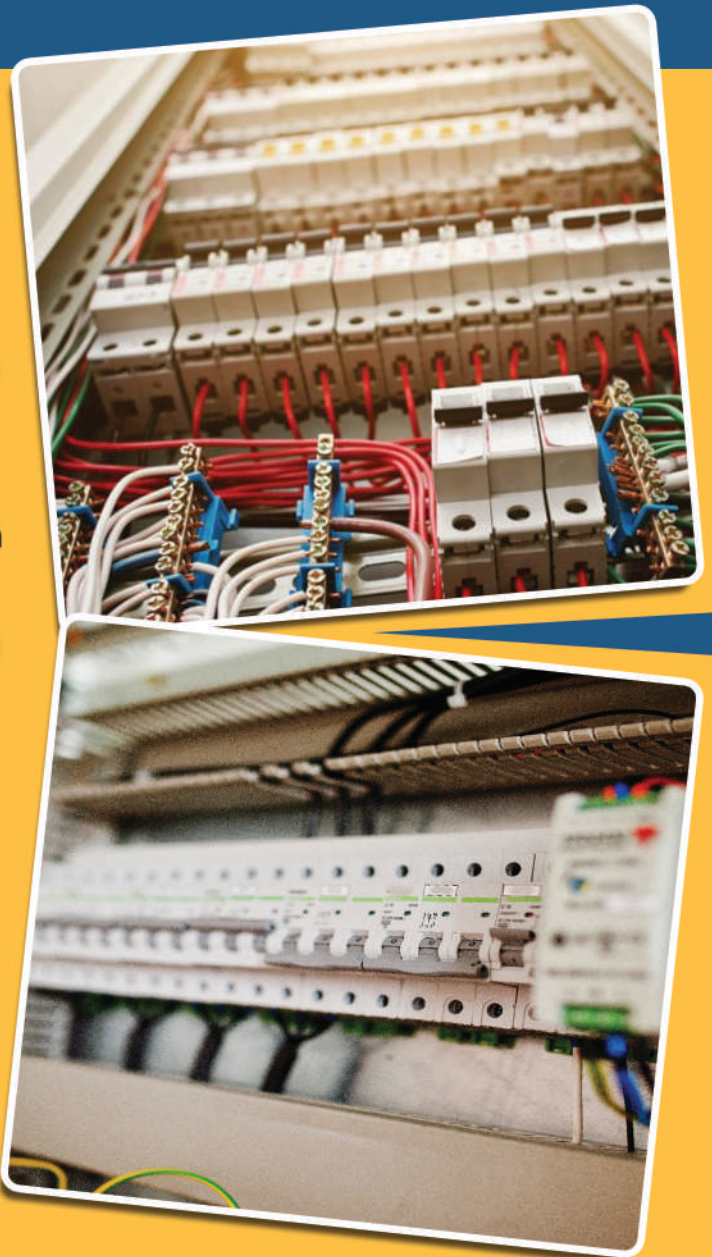
At Elite Group, we power your vision with excellence in electrical works.

We offer the following:

## ELECTRICAL PANELS

Electrical Panels are essential components in the electrical system of buildings and industrial facilities. They serve as central points for distributing electrical power from the main electrical service to various circuits within a structure. Electrical panels play a crucial role in controlling and protecting the electrical system by providing a way to isolate circuits, distribute power, and safeguard against overloads or faults.

And our expertise at Elite covers handling electrical panels from all aspects:



# DESIGN

When designing electrical panels, we consider the following:

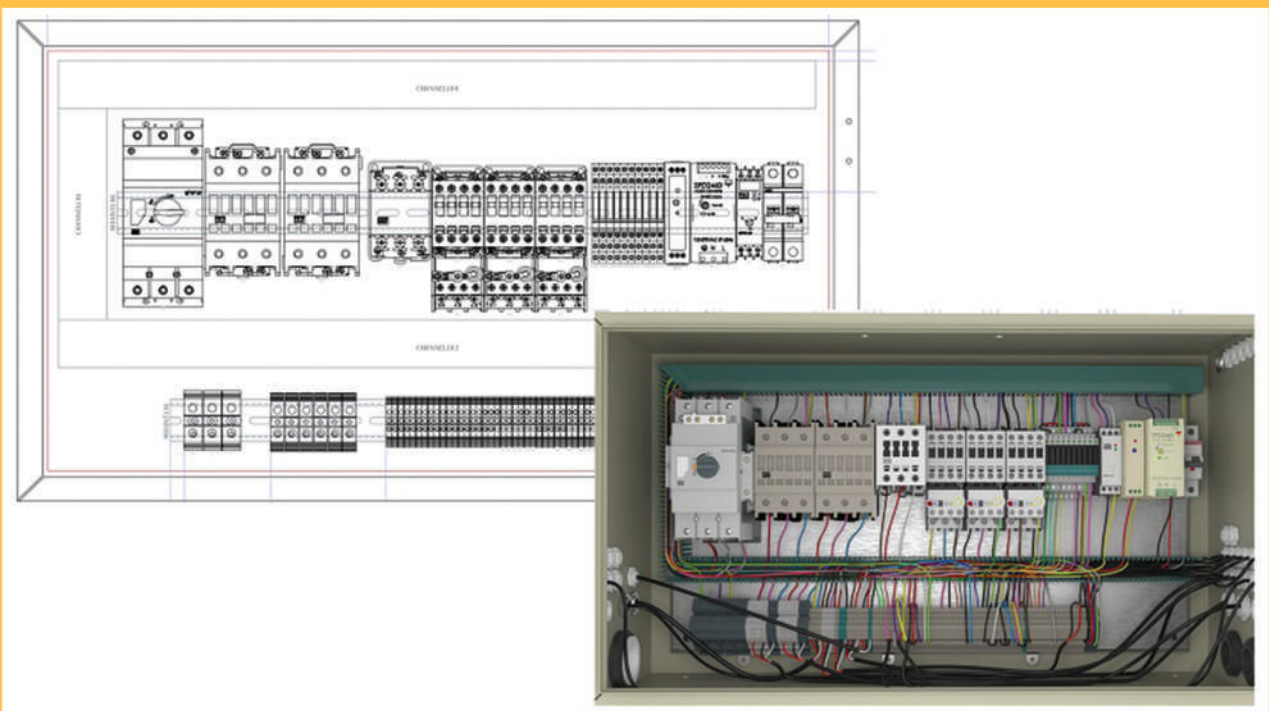
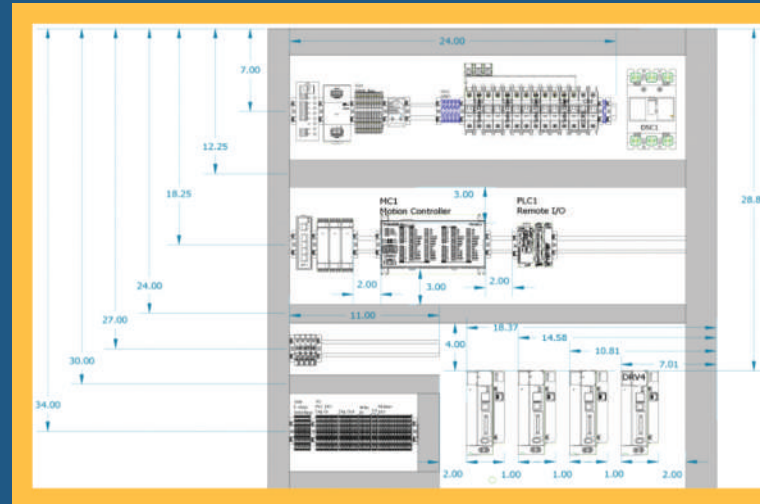
**Load Analysis:** We determine the electrical load requirements to ensure the panel can handle the anticipated power demands.

**Circuit Sizing:** We plan the distribution of circuits based on the load analysis and electrical code requirements.

**Safety and Codes:** We adhere to electrical codes and safety standards to guarantee compliance with regulations.

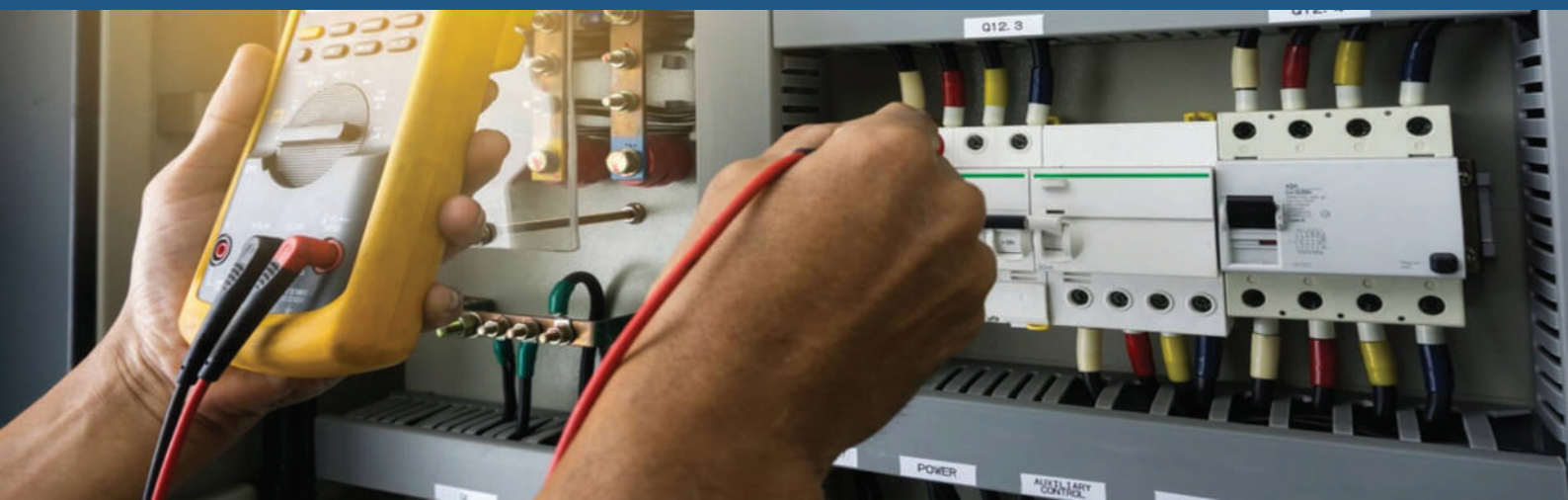
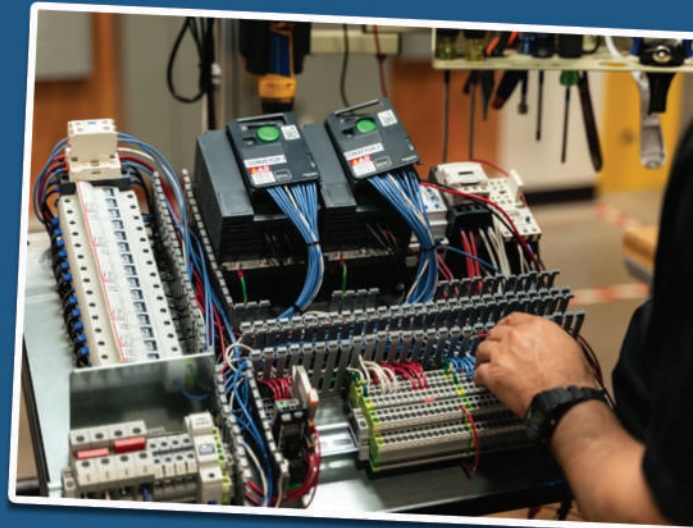
**Space and Accessibility:** We design the panel layout for easy access, maintenance, and future expansion.

**Type of Panel:** We select the appropriate type of panel based on the application, such as distribution panels, control panels, or motor control centers.



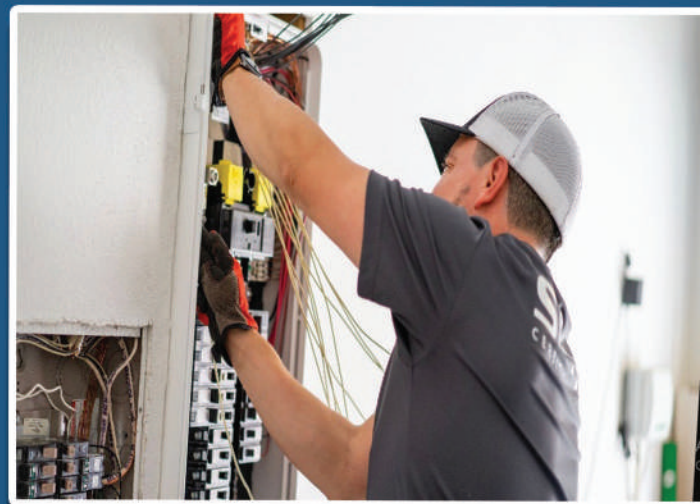
# MANUFACTURING

- We fabricate or procure a durable enclosure made of materials like steel or aluminum.
- We assemble busbars and conductors according to the wiring plan, ensuring proper insulation and termination.
- We mount and connect circuit breakers, fuses, relays, and other components as per the design.
- We label components, circuits, and safety information clearly for easy identification.
- We implement quality control measures to verify that the assembled panel meets design specifications and safety standards.
- After that we test the functionality of each circuit and component within the panel.
- Then simulate actual load conditions to ensure the panel can handle the specified loads.
- We perform safety checks, including insulation resistance and ground fault testing.



# INSTALLATION

- Our team conduct a site assessment to determine the optimal location for panel installation.
- We securely mount the panel on a suitable surface, ensuring proper ventilation and clearances.
- We connect the panel to the main power supply following the approved wiring plan.
- We wire the individual circuits to their respective loads, ensuring proper sizing and termination.
- We gradually power up the panel while monitoring for any abnormalities or faults.
- The team verify the functionality of each circuit, ensuring that all connected devices operate as intended.
- Then we complete as-built documentation, including updated wiring diagrams, panel schedules, and any modifications made during installation.
- We develop a maintenance schedule to ensure the ongoing reliability and safety of the electrical panel.



# SMART HOMES



To help you build your smart home, we at Elite Group offer a range of services that integrate advanced technologies and automation to enhance the comfort, security, energy efficiency, and overall functionality of residential properties, including the following:

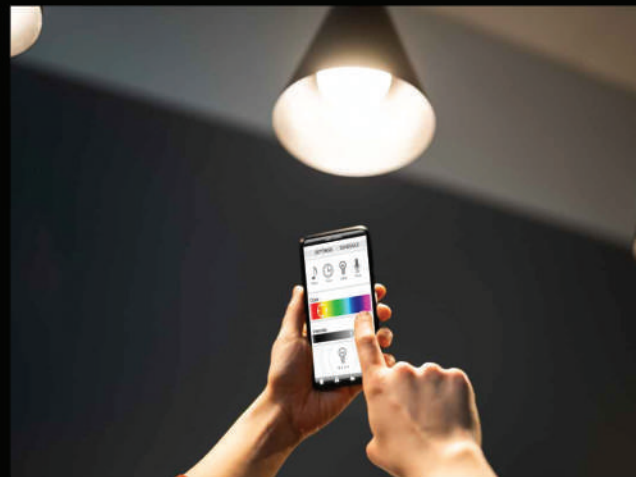
## HOME AUTOMATION SYSTEM

- Designing and implementing centralized home automation systems that control various smart devices and systems from a single platform.
- Integrating technologies for lighting control, HVAC (Heating, Ventilation, and Air Conditioning), security systems, audiovisual systems, and more.



## SMART LIGHTING SOLUTIONS

- Installing smart lighting systems that allow for remote control, automation, and energy efficiency.
- Incorporating features such as motion sensors, dimming controls, and customizable lighting scenes.



## SMART SECURITY SYSTEMS

- Installing state-of-the-art security systems, including smart cameras, doorbell cameras, motion sensors, and smart locks.
- Integrating security systems with home automation platforms for centralized monitoring and control.



## HOME ENTERTAINMENT SYSTEMS

- Designing and installing sophisticated audiovisual systems, including home theaters, distributed audio, and smart TVs.
- Integrating entertainment systems with automation platforms for seamless control.



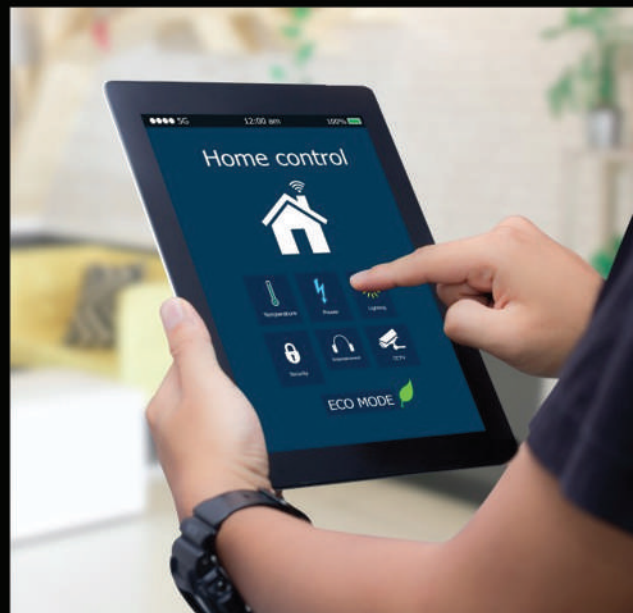
## SMART APPLIANCES FOR CONNECTIVITY

- Recommending and installing smart appliances and devices that can be connected to the home automation system.
- Ensuring compatibility and integration with voice-controlled assistants like Amazon Alexa or Google Assistant.
- Designing and implementing structured wiring systems to support the connectivity of smart devices.
- Installing robust home networks to ensure reliable and high-speed internet connectivity.



## REMOTE MONITORING AND CONTROL

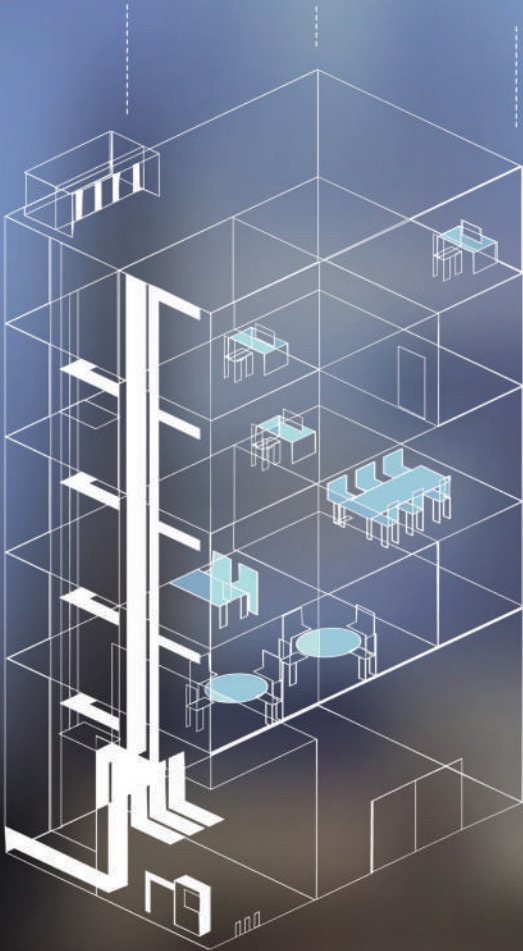
- Enabling homeowners to monitor and control various aspects of their homes remotely through smartphone apps or web interfaces.
- Implementing secure and encrypted communication protocols for remote access.





# BMS

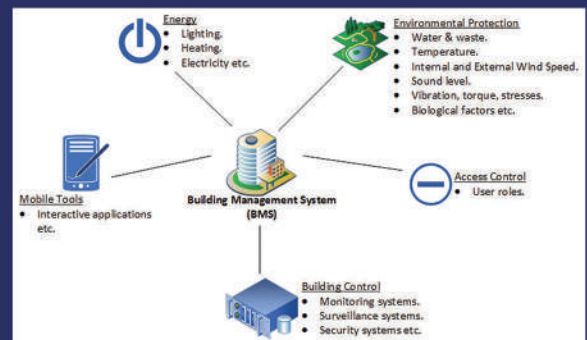
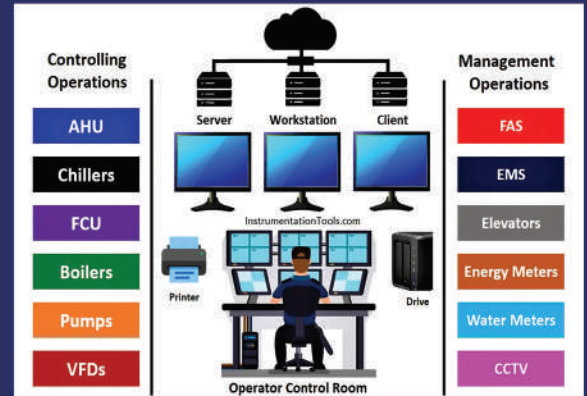
## BUILDING MANAGEMENT SYSTEM



Building Management System (BMS), also known as a Building Automation System (BAS) or Building Control System (BCS), is a centralized control system that monitors and manages various building services and systems to enhance efficiency, comfort, and safety. BMS works by integrating and controlling the operation of multiple building components, such as HVAC, lighting, security, fire alarms, energy systems, and more. It uses sensors, controllers, and actuators to collect data, make decisions, and execute commands to optimize the performance of building systems.

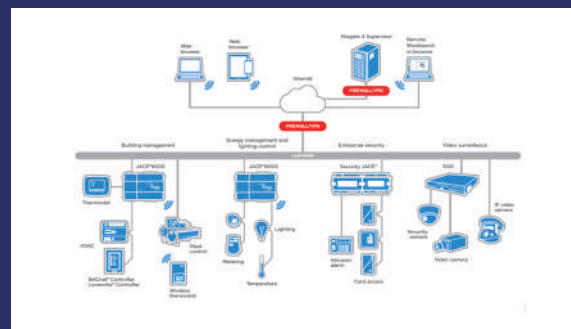
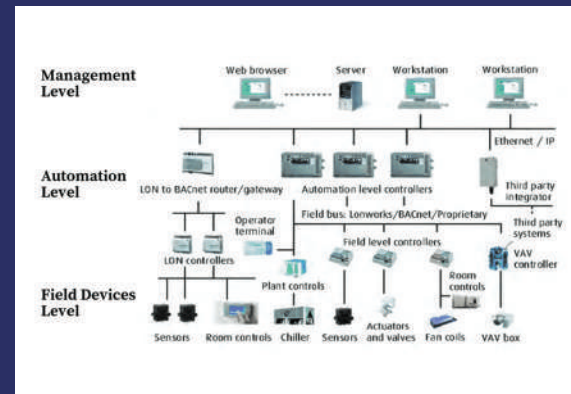
## COMPONENTS AND FEATURES

- **Sensors:** Devices that collect data from the building's environment, such as temperature sensors, occupancy sensors, humidity sensors, and more.
- **Actuators:** Devices that execute commands based on the data collected by sensors, such as controlling HVAC systems, adjusting lighting levels, or managing window blinds.
- **Controllers:** Centralized or distributed controllers that process data from sensors and send commands to actuators to regulate and optimize building systems.
- **Human-Machine Interface (HMI):** User interfaces that allow building operators or facility managers to monitor and control the BMS. This can include graphical interfaces on computers, tablets, or touch panels.
- **Communication Protocols:** They enable devices within the BMS to exchange data. Common protocols include BACnet, Modbus, LonWorks, and others.
- **HVAC Control:** Optimizing and controlling heating, ventilation, and air conditioning systems for energy efficiency and occupant comfort.
- **Lighting Control:** Managing lighting systems to optimize energy usage, adjust brightness levels, and respond to occupancy or daylight conditions.
- **Security and Access Control:** Integrating security systems, including surveillance cameras, access control systems, and intrusion detection, to enhance building security.



## COMPONENTS AND FEATURES

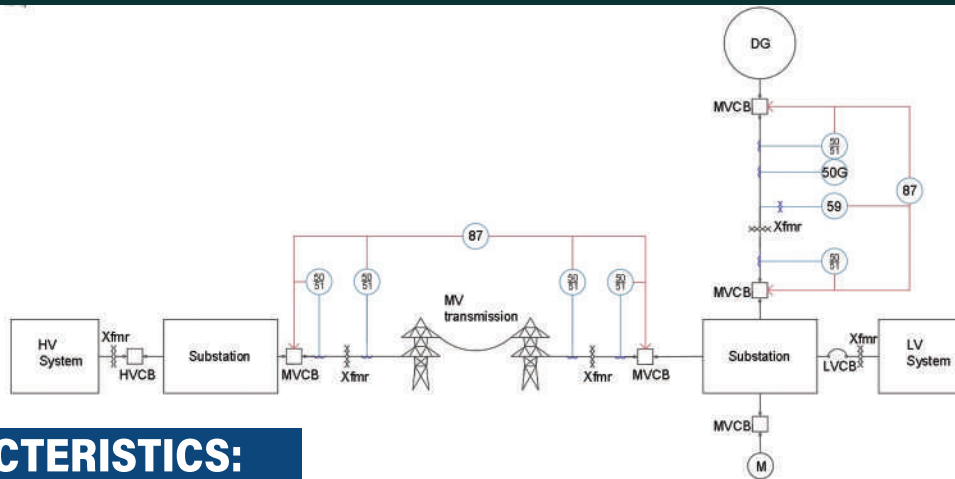
- **Fire and Life Safety:** Monitoring and controlling fire alarm systems, emergency lighting, and other life safety components.
- **Energy Management:** Analyzing energy consumption data, implementing energy-saving strategies, and optimizing the use of energy resources.
- **Occupancy Management:** Utilizing occupancy sensors to optimize lighting, HVAC, and other systems based on the number of occupants in specific areas of the building.
- **Remote Monitoring and Control:** Enabling building managers to monitor and control the BMS remotely through web interfaces or mobile applications.
- **Fault Detection and Diagnostics:** Implementing algorithms and analytics to detect abnormalities or faults in building systems, allowing for proactive maintenance and troubleshooting.
- **Integration with Other Systems:** Facilitating seamless integration with other building systems, including renewable energy sources, smart grids, and emerging technologies.



# Building Management System (BMS)

# MEDIUM VOLTAGE WORKS

Medium Voltage (MV) refers to the voltage range commonly used for electrical power distribution systems. The precise voltage levels classified as "medium voltage" may vary by region and industry standards, but they typically fall within the range of 1,000 volts (1 kV) to 69,000 volts (69 kV). Medium Voltage systems play a crucial role in the transmission and distribution of electrical power from power plants to various industrial, commercial, and residential facilities.



## CHARACTERISTICS:

- Medium Voltage is commonly used for power distribution networks that serve large industrial facilities, commercial complexes, and residential areas.
- It is often stepped down to lower voltage levels in substations before being further distributed to end-users. Substations play a vital role in the electrical grid, transforming and routing electrical power as needed.
- It is transmitted using overhead power lines or underground cables, depending on the application and location. Overhead lines are more common in rural areas, while underground cables are used in urban and densely populated regions.
- Switchgear and circuit breakers are employed to control, protect, and isolate circuits in Medium Voltage systems. They play a critical role in ensuring the safety and reliability of the electrical distribution network.
- Various power distribution equipment, such as medium voltage switchgear, reclosers, and protective relays, is used to control and manage the flow of electricity within the Medium Voltage system.
- Medium Voltage is commonly used in industrial applications where higher power levels are required. Industries such as manufacturing, petrochemicals, mining, and large-scale facilities

## AT ELITE WE ALSO PROVIDE THE FOLLOWING

### RMU

Ring Main Unit (RMU) is a compact and versatile gas-insulated metal-enclosed switchgear unit used in medium voltage (MV) electrical distribution networks. It serves as a key component in the distribution of electrical power within urban and industrial areas. The RMU is designed to provide reliable and efficient switching, protection, and control of medium voltage circuits. It usually consists of:

- Gas insulation.
- Metal-enclosed design.
- Switching devices.
- Ring main configuration.
- Protection and control systems.
- Voltage measurement.
- Remote monitoring and communication.



### SWITCHGEARS

Switchgear refers to a combination of electrical devices used to control, protect, isolate, and switch electrical circuits and equipment in a power system. It plays a crucial role in the safe and efficient operation of electrical networks by managing the flow of electricity, isolating faulty components, and providing protection against electrical faults. Switchgears are essential components in power distribution systems, substations, and industrial facilities.

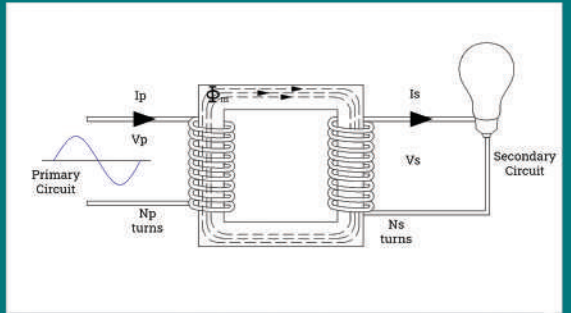
They consist of:

- Circuit breakers.
- Disconnect switches.
- Switches.
- Protective Relays.
- Busbars.
- Instrument Transformers.
- Control Panels.
- Earthing Switches.



# TRANSFORMERS

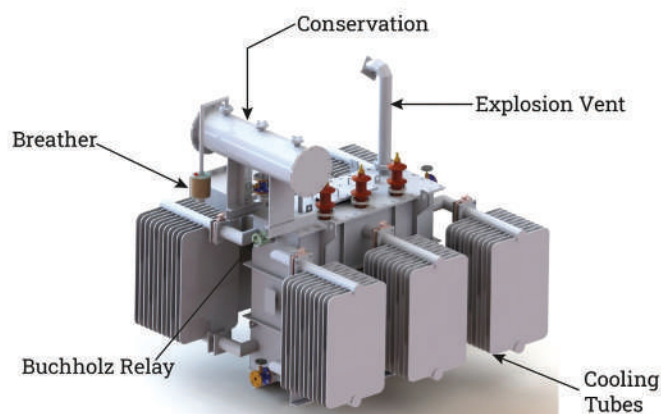
Electrical transformers are devices that transfer electrical energy between two or more circuits through electromagnetic induction. They play a crucial role in electrical power systems by changing the voltage level of an alternating current (AC) while maintaining the frequency of the electrical signal. Transformers are widely used in power generation, transmission, distribution, and various applications where voltage transformation is required.



## They are several types:

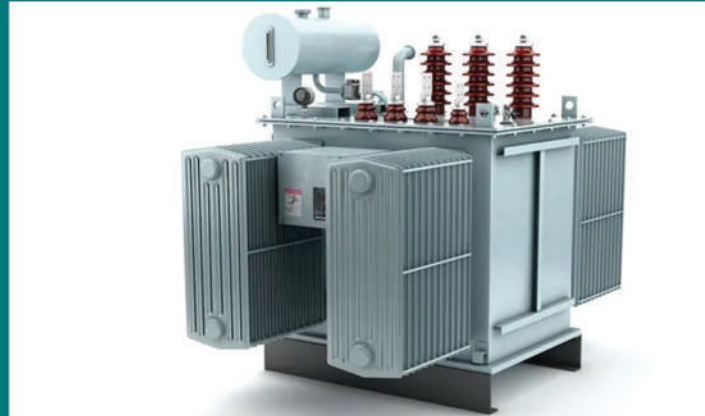
- **Power Transformers:** Used in power generation, transmission, and distribution to change voltage levels in the electrical grid.
- **Distribution Transformers:** Installed in distribution networks to further adjust voltage levels for local consumption.
- **Instrument Transformers:** Current transformers (CTs) and voltage transformers (VTs) are types of instrument transformers used for metering, protection, and control applications.
- **Auto Transformers:** Single-winding transformers with a tap changer that can adjust the voltage between the input and output.
- **Isolation Transformers:** Used to provide electrical isolation between circuits and to protect sensitive equipment.
- **Potential Transformers (PTs) and Current Transformers (CTs):** Specialized transformers for measuring voltage and current levels accurately.

## Transformer Components



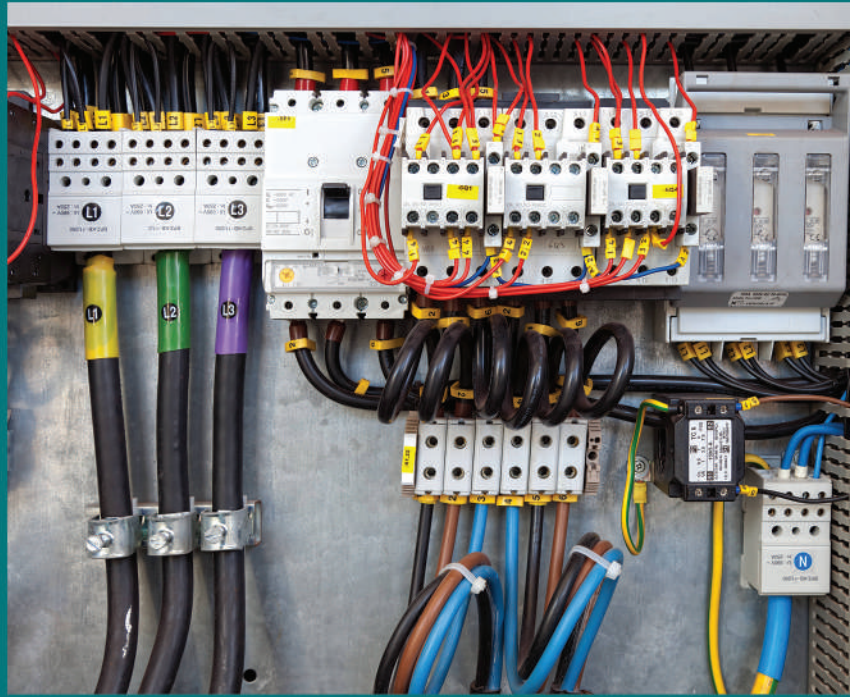
# THEY ARE USED IN THE FOLLOWING

- **Power Transmission: Step-up transformers** are used at power plants to increase voltage for efficient long-distance transmission.
- **Power Distribution: Distribution transformers** adjust voltage levels for local distribution networks and end-users.
- **Industrial Applications: Transformers** are used in various industrial processes for power supply and voltage regulation.
- **Commercial Buildings and Residential Areas: Transformers** are used in electrical systems to provide suitable voltage levels for commercial and residential applications.
- **Electronics and Appliances: Transformers** in electronic devices, such as power adapters, provide the required voltage for proper operation.



## CONTROL PANELS

Control panels are specialized enclosures that house electrical components and devices designed to control, monitor, and manage various systems and processes. These panels play a critical role in industrial, commercial, and residential settings, enabling automation, regulation, and safety in electrical and electronic systems. Control panels can vary in complexity, size, and functionality, depending on the application.



At Elite we work with many types like classic control panels PLC and Micro control panels and cover many aspects regarding control panels like:

## THE DESIGN

We understand the specific requirements of the control system and consider the type of equipment to be controlled, safety regulations, environmental conditions, and communication protocols.

Then choose appropriate electrical components such as circuit breakers, relays, contactors, switches, meters, controllers, and any specialized devices based on the system's requirements.

After that, we develop detailed electrical schematics and diagrams that illustrate the wiring connections, component placement, and the overall configuration of the control panel.

We make sure to incorporate safety features such as emergency stops, interlocks, and proper labeling to ensure the safe operation of the equipment.



## MANUFACTURING

We procure the selected electrical components from reliable suppliers, ensuring that they meet specified standards and are compatible with the design requirements.

Then assemble the control panel by wiring the components according to the detailed electrical schematics and diagrams. We follow industry best practices for wire routing, bundling, and labeling.

Then we mount all components securely within the enclosure, considering the physical layout and organization of the control panel. Use mounting rails, brackets, or DIN rails as needed.

We also perform functional testing to verify that each component operates correctly, and the control panel functions according to the specified design. We also test safety features and ensure proper grounding.

## INSTALLATION

We conduct a site assessment to determine the optimal location for installing the control panel, considering factors such as accessibility, environmental conditions, and proximity to the equipment it controls.

Then we mount the control panel securely at the designated location, connecting power and communication cables according to the design specifications.

We power up the control panel and commission the system, then verify that all components operate as intended, and the control panel effectively controls and monitors the equipment.

We also provide comprehensive documentation, including as-built drawings, wiring diagrams, component lists, and any necessary user manuals. Finally, we ensure that documentation is easily accessible for future reference or maintenance.



# LIGHTING DESIGN AND INSTALLATION

Adding the right lighting can transform your place, and here at Elite we handle all aspects regarding lighting starting from designing and choosing to its installation. We work by the following principles:

- Conducting a thorough analysis of the client's requirements, considering the purpose of the space, desired ambiance, and any specific lighting needs.
- Developing a conceptual lighting design plan that aligns with the overall design and function of the space. Consider factors such as color temperature, lighting intensity, and fixture types.
- Incorporating energy-efficient lighting solutions and sustainable practices to reduce environmental impact and operating costs.
- Designing the lighting layout, and specifying the placement of fixtures to achieve optimal illumination. Select fixtures that complement the design theme and fulfill functional requirements.
- Providing customized lighting solutions based on the unique needs of the client, considering factors like task lighting, accent lighting, and decorative fixtures.
- Integrating advanced lighting control systems for automation, dimming, and scene control. This includes smart lighting solutions that enhance user convenience and energy savings.
- Ensuring that the lighting design adheres to local building codes, safety regulations, and energy efficiency standards.
- Utilizing 3D rendering and visualization tools to present the lighting design concept to clients, allowing them to preview the proposed lighting effects.



## INSTALLATION PHASE

- We install various types of lighting fixtures, including recessed lights, pendant lights, chandeliers, track lighting, and wall sconces, according to the design plan.
- We conduct wiring and electrical work to connect fixtures to the power source, ensuring compliance with electrical codes and safety standards.
- We install and configure smart lighting systems, including programmable controllers, sensors, and connectivity devices for seamless integration with automation systems.
- We set up lighting control panels to manage and control the overall lighting system efficiently.
- We conduct thorough testing of each lighting fixture and the entire lighting system to ensure proper functionality, safety, and adherence to design specifications.
- We also document the installation details, including wiring diagrams, fixture specifications, and any additional information necessary for future maintenance or modifications.
- We offer post-installation support, addressing any issues or adjustments required by the client.

