



11kV Compact Substation

Model:	11kV
OEM and ODM Services:	Available
Enclosure:	PINEELE standard
Brand:	PINEELE, a Brand Under ZHENGXI
Form:	All- packaged Type
Scope of Application:	Suitable for industrial power distribution, voltage stabilization, and transformer protection. Widely used in commercial buildings, manufacturing plants, and utility substations.
Reviewed By:	Zheng Ji, Senior Electrical Engineer at PINEELE 18+ years of experience in HV switchgear design & testing.
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Overview

The **11kV Compact Substation** represents a highly efficient and modular solution for medium-voltage to low-voltage distribution systems. Designed for rapid deployment and minimal spatial footprint, this integrated unit brings together a transformer, medium-voltage switchgear, and low-voltage panel, all housed within a weatherproof and tamper-resistant enclosure.

Widely used in urban developments, industrial zones, and utility distribution networks, 11kV compact substations have become a standard in modern electrical infrastructure.



Why Choose an 11kV Compact Substation?

- Ideal for space-constrained environments
- Pre-tested and factory-assembled for rapid installation
- Reduces site work and civil infrastructure requirements
- Enhances safety through isolated compartments and arc protection
- Fully compliant with IEC, ANSI, and utility-specific standards

Technical Specifications

FEATURE	DESCRIPTION
Power	100 kVA to 1600 kVA



FEATURE	DESCRIPTION
Secondary Voltage	400V / 230V
Transformer Type	Oil-immersed (ONAN) / Dry-type (Cast Resin)
Frequency	50Hz (Standard) or 60Hz (Optional)
Vector Group	Dyn11 (Common in 11kV networks)
Protection Class	IP54/IP55 for outdoor applications
Insulation Class	Class A / B / F
Cooling Method	ONAN / ONAF
Switchgear Type	RMU / LBS / VCB (SF6 or Vacuum)
LV Panel	ACB/MCCB with metering and monitoring

Component Breakdown

1. Medium Voltage Section

This compartment houses 11kV switchgear, which may include load break switches (LBS), vacuum circuit breakers (VCBs), or SF6-insulated ring main units (RMUs). Surge arresters and fault indicators ensure system protection and real-time diagnostics.

2. Transformer Chamber

The core of the substation, this segment contains a sealed, oil-immersed or dry-type transformer. Heat sensors, pressure relief valves, and oil level indicators are standard inclusions for safety and efficiency.

3. Low Voltage Section

Outgoing feeders, equipped with MCCBs or ACBs, allow for seamless connection to distribution panels. Metering instruments and protection relays offer full operational visibility and control.

Enclosure & Structure

- Modular, compartmentalized layout with isolated access
- Galvanized steel or stainless-steel enclosure with anti-corrosive treatment
- Cable entry: bottom or side, as per project layout
- Cooling: natural ventilation or forced air (optional)
- Earthing system: integrated copper ground bars and pits
- Tamper-proof and suitable for remote installations

Compliance & Standards

This product adheres to multiple global and regional standards:

- IEC 60076** – Power transformers
- IEC 62271-202** – Prefabricated substation enclosures
- IEC 61439** – Low-voltage switchgear assemblies
- ISO 9001 / 14001** – Quality and environmental management
- Custom configurations per utility (e.g., TNB, Eskom, DEWA)

Applications

Residential Projects

Essential in gated communities and apartment complexes where centralized power is needed.

Industrial Facilities

Ideal for workshops, warehouses, and light manufacturing units requiring stable medium-to-low voltage conversion.

Renewable Energy Integration

Used in solar PV fields or hybrid renewable systems to feed energy from inverters into the local grid.

Utility & Public Infrastructure



Advantages of the 11kV Compact Substation

- **Optimized for urban deployment:** fits into narrow utility corridors
- **Pre-engineered:** reduces on-site labor and commissioning time
- **Cost-effective:** lower civil and installation costs
- **High reliability:** components sourced from top-tier certified suppliers
- **Flexibility:** available in multiple capacities and configurations

Optional Add-ons

- SCADA compatibility for remote monitoring
- Arc-flash resistant switchgear
- Anti-condensation heater with thermostat
- Solar-ready LV section with dual feeder configuration
- Smart metering (Modbus/RS485/IP based)

Frequently Asked Questions (FAQs)

Q1: Is this unit suitable for outdoor use in coastal regions?

Yes, IP65 stainless steel enclosures are available for marine and high-humidity zones.

Q2: What is the delivery lead time?

Standard units can be delivered in 2–4 weeks. Custom designs may require 6–8 weeks.

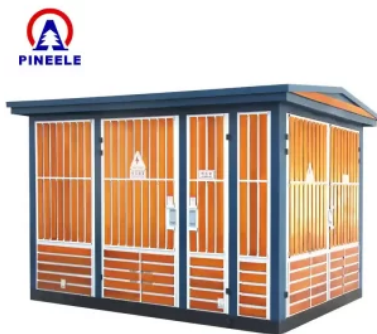
Q3: Can I connect multiple outgoing feeders to the LV side?

Absolutely. The LV section is customizable with up to 12 outgoing MCCBs or ACBs.

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