

الشركة الوطنية للصناعات الكهربائية NATIONAL COMPANY FOR ELECTRICAL INDUSTRIES



Company overview

National Company for Electrical Industries (NCEI) for substations & panel boards has been established in the year 2000 located in kingdom of Saudi Arabia with a total area of about 10,000 sqm.

Since the Establishment Of National Company for Electrical Industries (NCEI) in year 2000, we decided to be one of the leaders in the field of manufacturing all types of the electrical low voltage switchgears in Saudi Arabia and that dream has been converted into reality.

(NCEI) has ISO-9002 Certificate since 2000.

(NCEI) has Platinum Franchise from Schneider Electric as a Partner.

Today (NCEI) is one of the leaders of producing modular electrical switch boards systems such as "Main Distribution Panel Boards" and sub-main panels for industrial and commercial purposes, motor control centers, automatic transfer switches, synchronizing panels for any number of generator sets and other industrial and residential panels designed and tested as per the IEC 61439-1, BS EN 61439-1 standards and in line with the latest design and practices of Schneider electric products. Also manufactures assemble, test & supply medium voltage substations.

NATIONAL COMPANY FOR ELECTRICAL INDUSTRIES





History of Establishment

National Company for Electrical Industries is specialized in manufacturing



all kinds of "Low Voltage Panels" such as main "Distribution Panel Boards" and sub-main panels for industrial and commercial purposes, motor control centers, automatic transfer switches. Syncronizing panels for any number of generator sets and other industrial and residential panels.

manufactures also package substation units, 13.8 & 36 kV, which consist of ring main unit compartments, transformer compartments and L.V. compartments.

Moreover, (NCEI) has been licensed from the Ministry of Industry and Electricity to manufacture medium voltage switchgears up to 36kV.

(NCEI) is a local Saudi Company that gained experience through the local time work with contractors. NCEI has well-trained and skilled technicians for after sale services to cover all comments and to help Contractors during installation of their equipments.

(NCEI) Quality Control Department strictly runs the necessary tests according to I.E.C. and ANSI standards prior to delivery. Test cetificates are issued to customers.

(NCEI) is at your disposal at any time to serve you and supply the most reliable equipments.

STANDARD ENCLOSURES

Enclosure:

(NCEI) uses any IEC standard circuit breakers, type tested enclosures, (Blokset & Prisma enclosures or approved equal) to accommodate the switch boards, which are mainly manufactured by SCHNEIDER ELECTRIC.

Such enclosures (Blokset) are functional system for electrical switchboards up to 6300A and classifieds as follows:







1. Electrical Switch boards up to 630 A:

These types of enclosures can be build all types of main, secondary and final low voltage switchboards up to 630 A for industrial and commercial buildings.

The same components, wheter for switchgear installation, current distribution, cable etc. may be installed in any of three types of enclosures or cubicles, depending on the size of the switchboard and the site installation requirements.

(NCEI) Apply to use a 3 "Enclosures Categories" as per IEC Standard and These categories can be determine as follows:

Category 1 - Local made enclosures (NCEI)

- Suitable for any commercial & Industrial facilities or Buildings can be Installed either indoor or outdoor location.
- Panel mounting can be wall mounted or floor stand/stand alone.

Enclosures Characteristics:

- Compliance to IEC Standard 60439-1
- Metal enclose made from a continous length of steel sheet, double folded at the front with back welded to the frame, internally and externally protected by epoxy grey resin paint.
- Color RAL 7032 polyster powder paint, after pre-treatment process (phospating)
- Thickness is 1.5 mm & 2 mm or more depends on customer request.
- Degree of protection IP-30, 43, 54, 55
- System voltage is 400/230 Volt AC, or any standard voltage, 3 phase 4 wires 60 Hz.

Category 2 - Universal Enclosure (Schneider Electric)

- Suitable for any industrial facilities, commercial, housing & buildings
- can be installed either indoor or outdoor location, panel mounting can be wall mounted or floor stand.

Enclosures Characteristics:.

- Compliance to IEC Standards 60439-1
- Metal Enclosures made from steel sheet continous double folded at the front, with back welded to the frame internally & externally protected by epoxy grey resin paint.







- Color RAL 7035 textured
- Thickness is 1.5 mm or 2 mm or more EGI sheet
- System Voltage 400/230 VAC, 3 phase 4 wire 60Hz.
- Degree of protection IP-55, 54, 43, 30
- Ambient Temperature 40'c

Category 3 - Type Tested Enclosure "PRISMA G"

Type -1 Enclosures:

Material: Anti-corrosion sheet metal IP 30,40,43 Can be dismantled Can be joined side by side. Or one on top of the other. Cable duct of 300 mm can be added on side, top, or bottom. Height starting from 200 mm to 1200 mm. Width is 550 mm.

Type - 2 Enclosures:

Material: Anti-corrosion sheet metal IP 30,40,43 Can be dismantled Can be joined side by side. A prisma G can be added on top. Cabale duct of 300mm can be added. Heights 1550mm and 1850mm. Width is 550mm.

Type - 3 Enclosures:

Material: Phosphatized sheet steel with 1.5mm minimum thickness. IP55 Can be dismantled Can be joined side by side or top bottom. Cable duct of 300mm can be added.(7) Heights from 450mm to 1750mm. Width is 550mm.

General Characteristics:

- A) Steel sheet anti-corrosion protection.
- B) Surface treated by anti-corrosion coating, smooth or Textured polymerized polyster epoxy powder. Color of prisma is biege.
- C) All plastic parts withstand fire orc excessive heat caused by internal phenomena as per IEC 695-2.1 for supports for live metal parts.
- D) Functional enclosure components can be used to build, switchgear assemblies that comply with standards IEC 439-1 and EN60349-1. with the following characteristics:

Rated voltage = 1000V

Rated operated current = 630A @40°C Peak withstand current IPK = 53 KA

Short time withstand current ICW = 25 KA r.m.s./s ec.

Frequency = 50-60Hz

2. Electrical Switch boards up to 4000A:

2.1 Dependability:

Total compability between Merlin Gerin switchgear device and this functional system helps to build dependendability into any electrical installation.







2.2 Evolved:

The design of the system has been validated by type test In compliance with the standard IEC 60439-1.

The modular in structure system can keep pace with evolving witch board needs and integrate new functional units as required maintenance is carried out with the switch board de-energized.

2.3 Total Safety:

Switchgear devices are installed behind a ptotective front plate leaves with only the operating handle visible. Other barries can be mounted inside the panels to provide from 2,3, or 4 separations. There are two types of electrical switch boards.

Type 1 Cubicles:

Type 1 enclosure can be used to build all types of main, secondary, and final switch boards up to 4000A for industrial and commercial buildings:

Material: Anti-corrosion protection sheet metal. IP20,30,31,54 Can be joined side by side can be dismantled 3Basic widths 700,900&1100mm depth 600mm. two Extension widths 700&900mm. Cable duct 600mm. Extension duct 300 or 400mm. Height 2000m

Type 2 Cubicles:

Material: Phosphatized sheet steel with minimum thickness 1.5mm. IP55 can be joined side by side Basic width 700mm. Duct width 300mm. 2Depths 500 and 700mm. Height 2000mm.

3. Custom Built Enclosures up to 6300A:

Such enclosures are applicable in special cases when the space is not enough to accommodate the standard enclosure. Fabrication of non-standard enclosures is necessary to maintain the quality, safety and reliabilty.

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Engineering design offices make their own design and calculations to meet the international electrical standards without deviations.

(NCEI) use type tested enclosures Blokset type (Schneider Electric) manufacture. or (NCEI) can be fabricate such enclosures which can be used to accommodate up to 6300A.





4. Package Substation & Units Substation

NCEI manufactures package & unit substations as per IEC standards up to 3150KVA capacity (Oil & Dry Type Transformer) with high voltage up to 36kV and LV as required. These types of enclosures are designed specially for medium voltage distribution networks.

The main parts of the kiosk and the general characteristics are:

4.1 Skid Base:

Skid base is made of U-Channel 120 x 120 x 12 mm and depends more or less on the equipments to accommodate. Special treatment has to be carried out on the U-Channel before galvanizing. Different sizes of skid bases are fabricated according to the equipment rating.

4.2 Canopy:

Canopies are made of dual roof galvanized steel sheets of 2mm thickness with air insullation provided between inner and outer roof to avoid internal temperature rising.

4.3 Side Covers and Doors:

Side covers and doors are made of galvanized steel sheets of thickness of 2mm minimum, well tightened to the skid base and canopy. Each side of the kiosk has a door provided with enough number of louvers to ensure sufficient natural air ventillation for cooling the transformer and the equipment. Inlets and outlets of air provided with screens for protection against access of vermin.

4.4 General Characteristics of Kiosk:

a.) Material: Anti-corrosion protection sheet metal with minimum thickness of 2mm (3mm thickness maybe manufactured as required).

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- b.) Outdoor installation.
- c.) IP. 55 for MV & LV side and IP. 35 for Transformers.
- d.) Can be easily dismantled.
- e.) Lifting guides for safety during transportation and carriag are provided.





Indoor Type Skid Mounted Substation (13.8 kV Dry Type)





These substations contain electrical equipment, often located in a public environment, requiring them to meet the highest safety standards.

Skid Mounted Substation is manufactured in various layouts, sizes and for different applications according to the customer's requirements. It is available as 13.8 kV, which is designed in house by our team of professional and experienced engineers to satisfy the customer's specific requirements.

It is a combination of Ring main unit,, Transformer and a Low voltage Section panel.which integrates by the followings;

- i. SF6 insulated Ring main unit with various config.
- ii. Dry type transformer
- iii. Metering and protection device

To ensure high operation reliabilty, Operating personel safety and suitabilty for building, infrastructure and industry.

Indoor type skid sub station are all factory assembled and Tested. And all interconnections between medium voltage, Transfomer and low voltage are factory tested.

Indoor type skid mounted Range up to 3150KVA









Skid Mounted Unit Substation (33 kV Dry Type)





We are providing the complete solution for the protection of Skid Base Substation 33 kV. It is provided with The Integrated Protection. Electric utilities continuously encounter the challenge of providing reliable power to the end-users at competitive prices, especially in developed countries. The substations should be properly controlled and monitored in order to take the necessary precautions accurately and timely.

It is a combination of SM6 33 kV Ring main unit,, Transformer and a Low voltage Section panel.which integrates by the followings;

- i. SM6 33KV Ring main unit with various config.
- ii. Dry type transfomer
- iii. Metering and protection device

To ensure high operation reliabilty, Operating personel safety and suitabilty for building, infrastructure and industry.

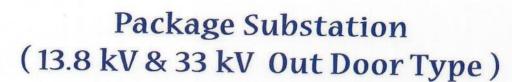
Our indoor type skid sub station are all factory assembled and Tested .And all interconnections between medium voltage, Transfomer and low voltage are factory tested.

Indoor type skid mounted Range @ 36KV up to 3150KVA.













Package Substations supply up to 3150KVA of Electrical power to LV Networks. These functional assemblies are:

- Factory Build & tested
- · Ready for network connection
- Equipped for Outdoor Operation
- Equipped for manual or remote controlled network management

Package substations range includes installed MV and LV switchgears, and accessories such as street lighting circuits, power factor improvement equipment, control and protection equipments, all providing a cost effective and efficient total installation

The Package substation Housing is made from a composition of galvanised sheet metel of 1.5/2mm thickness and a structural base of 6mm mild steel, hot dip galvanised.

The Substation is devided into three Compartments:

- R.M.U Compartment 630A 3P Ring Main Switches & 200A or 630A Vacuum CB.
- 2. Transformer Compartment Oil or Dry type Transformers
- 3. Low Voltage Section Up to 6300A

The LV Compartment houses the LV distribution Board connected to the LV bushings of the transformer by Cables, Rigid or Flexible busbars. The LV panel is designed to the specific requirements of the client with circuit breakers or fuse disconnectors, instrumentation and metering.

Our out door type substation (dry or oil type) are all factory assembled and tested. And all interconnections between medium voltage, Transformer and low voltage are factory tested.

Out door type substation (oil or dry type, 13.8 kV or 33 kV) range:

- Dry type transformer up to 3150 KVA
- ii. Oil type transformer up to 3150KVA.









Power Factor Correction (w/ Harmonic Filter)





To ensure the preservation of maximum energy and power we designed and manufacture the automatic power factor correction panel which can improve the system power factor from poor to the target value in AC power distribution system by reducing the circuit loss while increase and improving the power output of the transformer.

Capacitor bank range:

i. 100 KVAR vii. 400 KVAR ii. 150 KVAR viii. 450 KVAR iii. 200 KVAR ix. 500 KVAR v. 300 KVAR xi. 600 KVAR

vi. 350 KVAR

To determine the required capacitor bank ratings here is one sample of our calculation using simple equations.

a. Determining the required capacitor bank rating to improve PF From $\cos\emptyset$ to $\cos\emptyset$ (from $\cos\emptyset = 0.85$ to $\cos\emptyset 1 = 0.95$)

 $Qc = Q - Q1 = P \tan \emptyset - P \tan \emptyset 1 = P (0.62 - 0.33) = 0.29 P$

Where:

Q : reactive power before compensation Q1: reactive power after compensation

Qc: reactive power produced by the capacitor bank

 $cos\emptyset$: power factor before compensation $cos\emptyset1$: power factor after compensation

Considering of 1600 KVA load as sample the capacitor bank should be able to produce a reactive power of:

 $Qc = 1600 \times 0.85 \times 0.29 = 394.4 \text{ kVAr}$

The rating of the capacitor bank should be 400 kVAr in 8 steps of 50kVAr.









Automatic Transfer Switch Panels (Prisma Plus P. up to 4000 A)





Automatic transfer switches are used to automatically transfer the main source to standby genarators on failure of the main source/supply. Upon the main supply is restored, the system automatically change back and stops the generator, after the short period of cooling down the standby generator set it will be eventually shut down.

ATS panel can be contactor or breaker type from 100A to 4000A 3 or 4 pole depends on the requirements, assembled either on Prisma plus P Type tested enclosure ,Local enclosure or in universal enclosure.Provided by electrical and mechanical interlocking device and other special components to be:

- i. Operated both automatically and manually.
- ii. Employ to avoid current and voltage surges of instilled breakertime delay.
- iii. Employ automated sensing for over, under voltage, phase sequence and phase failure.
- iv. Installed with generator start/stop commands to indicate incoming voltage, engine running or faulty conditions, MCCB / ACB On / Trip conditions.
- **** Engine tests run position for routine test of engine
- **** Status signals for remote indications.









Blokset Enclosure up to 6300 A





The Blokset system is designed to provide a high level of reliability and safety, thus reinforcing the protection of life and property. Blokset mainly used for distribution, motor control and reactive power correction up to 6300A.

Blokset offers all the essential guarantees:

Fully type tested and compliance with IEC 60439-1 Compliance with Local Standards, thus meeting local legal and technical requirements. With a flexible and modular system, designed for maximum safety and reliability. The Blokset wide installed base, in all industrial & large sites sectors, is a guarantee to obtain the best equipment fitting your needs.

Blokset panels are available at a height of 2200mm, Depth-400, 600, 1000 and widths-500, 700, 900, 1200

Rated insulation Voltage: 1000 V

rated Conditional Short Circuit Current: 100 kA

Frequency: 50/60 Hz.

Degree of Protection: IP 20, IP 31, IP 42, IP 54

Form of Seperation: Form 1, 2b, 3b, 4

Colour RAL 9002 Light Gray

Installation : Indoor

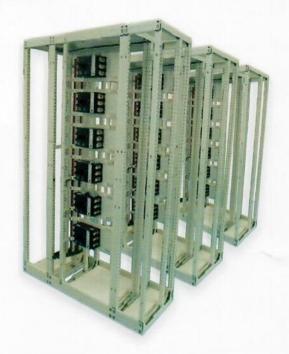






Prisma Plus P. Enclosure





Prisma plus fucntional system can be used for all types of low-voltage distribution switchboards (main, submain distribution and final) up to 3200A, in commercial and Industrial environments. With a frame work dimension of 4 widths.

w= 300mm cable compartment

w= 400mm cable compartment or device compartment

w= 650 mm device or cable compartment

w= 800 mm device compartment with busbar compartment or cable compartment.

With two depths of 400mm, 600mm and can combine frame work to side by side and back to back by 2000mm height. And it has the advantages of the followings:

- A Dependable electrical installation-System design has been validated by type test as per IEC 60439-1 and an benefits from the combined experience of our customer over many years.
- ii. An upgradeable electrical installation- Maintanance opeartions, carried out with the switch board de energised, are fast and straight- forward due to easy access to the devices.
- iii. Total safety for the personel- To insure the total safety of the personnel, devices are installed behind protective front plates only the operating handle are accessible. To create form 2,3,4 additional internal protection like partitions, barriers and other separations to protect against direct contacts with live parts together with terminal shields for installation of compact NSX and INS/INV devices in prisma plus enclosure.
- iv. Electrical switchboards bulit using Prisma Plus Functional system Schneider recommendations fully comply with International standard IEC 60439-1.
- Rated insulation level of main busbars: 1000 V
- rated peak withstand current lpk: 187 kÅ
- rated short-time withstand current Icw: 85 kA rms / 1 sec
- Frequency: 50/60 Hz.
- Degree of Protection: IP 30, IP 31, IP 55
- Colour RAL 9001 White









(General Synchronizing Panels)





To meet the power system requirements we are designing Synchronizing Panels on a different range depends on the number of the generators required to be synchronized

Using the newest state of the art synchronizing controller which control the generators and the panels on manual or automatic functions.

Our available Synchronizing panel reached the capacity for 30 Generator sets and fabricated using a high grade of electrical components including copper bus bar, insulator, wires/cables, pvc channels, transformers, meters and switches.









Universal Enclosure (Pump & Fan w/VFD/Soft starter)







Pump and Fan panels covers various range and the components and Equipment used are capable of giving higher out put and consuming less Power

These panels can be surface mounted, floor stand which bolted that provide the facility with extended future expansions in all levels to meet all the requirements to ensure our clients benefits.









Prisma Plus G. Enclosure





The Prisma Plus G functional system can be used for all types of low-voltage distribution switchboards (Submain & Final Distribution) up to 630 A, in commercial and industrial environments.

The components of the Prisma Plus system and those of the functional units in particular have been designed and tested taking into account device characteristics. This design approach ensures a high degree of reliability in system operation and optimum safety for personnel.

The complete accessibility of all mounting and connection points facilitates assembly and cabling in the workshop. The functional units are clearly identified: operations are intuitive and reliable, and connection and checking are performed naturally

Can be dismantled, combine side by side, eight heights from 330 to 1380mm (Wall Mounted Enclosures) and 1530 to 1830 (Floor Standing Enclosures) widths :

w = 595mm functional section width of duct = 305mm can be combine side by side. depth = 250 mm with door

And it has the advantages of the followings:

- Made up of Centralised distribution blocks and vertical busbars installed on the side or in the rear
 of the switchboard
- ii. Each device is part of a functional unit comprising A dedicated Mounting plate for device installation
 A front plate to block direct access to live parts Prefabricated busbar connections
- iii. The functional units are modular and are arranged rationally, one on top of another, within the enclosure.
- iv. The system includes everything required for functional unit mounting, supply and on site connection.
- rated insulation level of main busbars: 1000 V
- rated peak withstand current lpk: 53 kÂ
- rated short-time withstand current Icw: 25 kA rms / 1 sec
- Frequency: 50/60 Hz.
- Degree of Protection: IP 30, IP 31, IP 43, IP 55
- Colour RAL 9001 White

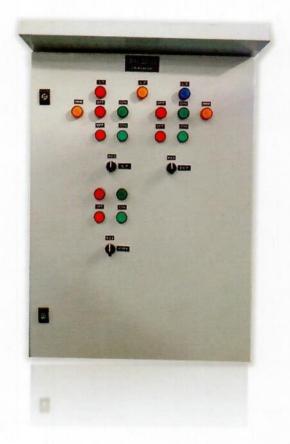








(Air Handling Unit Panels)





This Air Handling Unit panels in universal enclosure designed and fabricate to control various fan ratings and different stages of heater Using a premium quality of relays, contactors and other control components, switches and others.

These type of panel can installed outdoor with the canopy added. Degree of protection of the universal enclosure is up to IP 66.



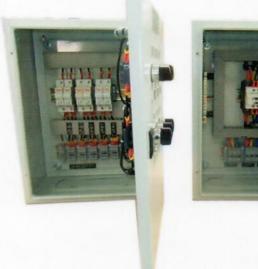




Universal Enclosure (Remote Control Box Panel)















Provided by a premium class of components such as relays, contactor and high grade of panel accessories these remote control panel are capable of giving higher efficiency output and consuming less power, can be installed outdoor or indoor depends on the requirements, manufactured and assembled in the universal enclosure with the IP degree up to IP 66.









Final Distribution Board



For the final Distribution Boards we are using Schneider Electric Disbo Extra Panels & NCEI Load Centers.

Disbo Extra Straight is a fully Designed panel, manufactured by Schneider Electric premises in Saudi Arabia. Disbo Extra Straight is an innovative fully type tested panel, tested by 2 prestigious third-party labs: ASTA (British) and BUREAU VERITAS (French). It complies with the highest standards for personal protection (IEC 60439-3). It is available in all sizes and all ratings that satisfy your needs, 12 ways up to 54 ways and ratings up to 250A. Available single phase as well as three phase system These are available as Flush mounted and Surface mounted type also having Curved shape door & Flat Doors.

rated short-time withstand current Icw: 17 kA rms / 1 sec

Frequency: 50/60 Hz.

Ambient Temterature: 500C

Degree of Protection: IP 3X, IP 41

· Colour RAL 9002 Creamy White









NCEI Enclosure (Local Enclosure Panel)





NCEI Low Voltage Panel Boards. has great demand in the market place in industrial supplies. Our panels covers a wide range of switchboards such as:

- i. Main distribition boards
- ii. Submain distribution boards
- iii. Sychronizing panels
- iv. Automatic transferswitches
- v. MCC panels

Others.

NCEI low voltage panels suited to installed any components without violating the International standards as well as local andard up to maximum incomer capacity of 6300A.

These panel ensure also the safety of the operating personel & the equipments by adding the parts for separation of its functional units to one another, acheived equivalent forms up to form 4b.

Extensible on both side for future expansion, can be modular or top of the other installation. Incoming cable can be also top or bottom as well as the out going customer cable. Busbar can be on top Stream or down stream rigid copper for horizontal common and Lateral bar left or right side on busbar duct for power distribution of Downstream feeders.

NCEI low voltage panel can be installed indoor or outdoor depends On the requirements. It carries IP degree of Protection :

- i. IP 31 for indoor installation
- ii. IP 55 for outdoor installation











Platinum Partner Certificate

This is to Certify that

National Company For Electrical Industries (NCEI)

As its Platinum partner and hereby authorizes it to work on the below highlighted programs. The manufacture, assembly, test and supply of Low Voltage Equipment and systems through our certified partners are governed by certification and validation policy of Schneider Electric in line with IEC-61439-1 & 2.

This certificate is valid until 31-12-2020.





Syed Shakiluddin

Partner Support Manager

Vice President -