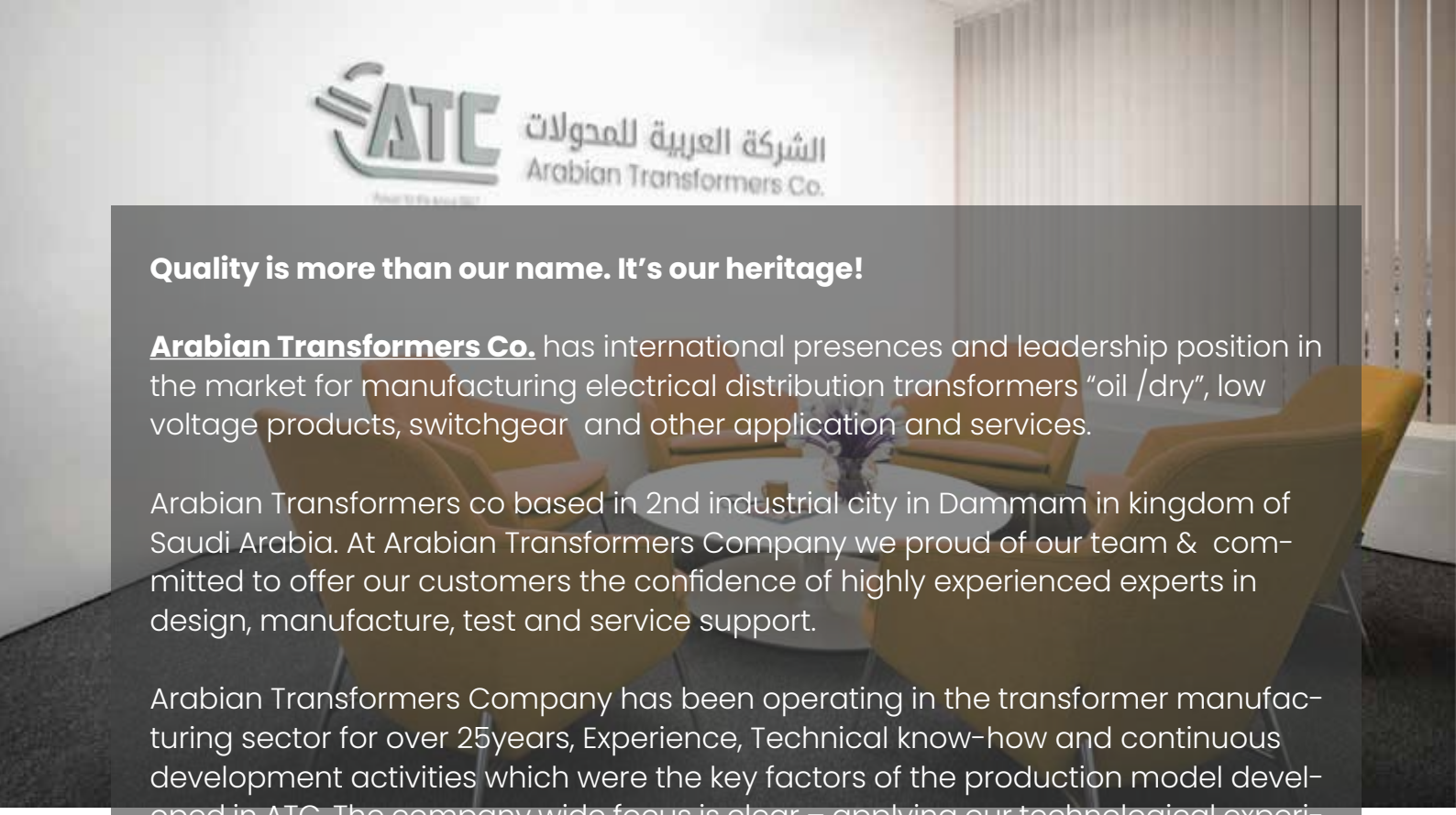
الشركة العربية للمحولات
Arabian Transformers Co.

Power to life since 1997

25 YEARS OF INNOVATION

Arabian Transformers

ATC, Saudi Local Manufacturer Company established in 1997 with philosophy of (Power to life) which relentless pursuit in excellence through attention to details in the production of high-quality electrical products .



الشركة العربية للمحولات
Arabian Transformers Co.

Quality is more than our name. It's our heritage!

Arabian Transformers Co. has international presences and leadership position in the market for manufacturing electrical distribution transformers "oil /dry", low voltage products, switchgear and other application and services.

Arabian Transformers co based in 2nd industrial city in Dammam in kingdom of Saudi Arabia. At Arabian Transformers Company we proud of our team & committed to offer our customers the confidence of highly experienced experts in design, manufacture, test and service support.

Arabian Transformers Company has been operating in the transformer manufacturing sector for over 25years, Experience, Technical know-how and continuous development activities which were the key factors of the production model developed in ATC. The company wide focus is clear – applying our technological experience to contribute to society and enhance quality of life around the global.
From manufacturing base in Saudi Arabia, we deliver solutions to a wide variety of industries and customers around the world.
ATC has Successes to gain a substantial market share in the Saudi Arabia & regional markets through suppling thousands of high-quality electrical transformers to leading public and private utilities which lead ATC products to be popular & widely known.
ATC aims to disseminate and apply the guiding principles of the lean manufacturing model by continuous improvement , adding value to processes & using Lean tools and techniques.

For ATC, The quality of the products it supplies, the protection of the health of workers and the community, risk prevention and environmental protection are strategic, priority equal objectives which's lead ATC to pursue the continuous improvement over time of a Management System compliant with ISO standards.

In ATC, we believe that Power to Life is always a solution represent superior value through our world class capabilities, relationships, specialist knowledge, proven reliabilities and comply with all applicable regulation and standards, Here our customers can be assured the Quality Solution.

Proudly Arabian Transformers company is Saudi Local Manufacturer Company.

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Who We Are

ATC, Saudi Local Manufacturer Company established in 1997 with philosophy of (Power to life) which relentless pursuit in excellence through attention to details in the production of high-quality electrical products.

VISION

01

ATC strives to lead Electrical Industry in the kingdom of Saudi Arabia and MENA region.

PURPOSE

02

Enriching Power to life through providing innovative and sustainable Electrical distribution solutions.

MISSION

03

Provide the highest level of satisfaction to our valued customers through enhancing their experience by supplying innovative products design excellences & services with a commitment towards applying best quality practices in manufacturing & comply with all applicable international regulation and standards.

ATC **PROMISE**

ATC products are designed and manufactured to meet your needs, with clever innovation delivering quality solutions.

ATC products comply with Saudi and international standards and the company is committed to a consistent quality approach.

With the ISO 9001:2015 standard, it guarantees our clients a product and service that meets their needs as well as applicable legal and regulatory requirements.

ATC **PEOPLE**

ATC Company proud of our team whose combined technical and operational knowledge to provide our customers the confidence of ATC offered solution in every aspect of design , manufacturing ,testing , logistic and in field services .

ATC team developed over many years of experience in daily challenges and accumulate vast experience in depth understanding to build a unique solution & allow our customers enjoying partnership experience .

ATC committed to provide an excellent and challenging work environments, supporting and training our people to led industry-leading staff retention.

Our core values towards our employees are the same that we apply to our customers: providing all the elements to succeed and build a greener future of Energy cooperating with our partners, customers and employees.

Transformer Electrical Specification

Industry Standards:

ATC transformers and their parts comply with the most widely applied International industry standards IEC & ANSI in most countries where local electric authorities have either adopted one of these standards or created one that suits the needs, laws and regulations of their country.

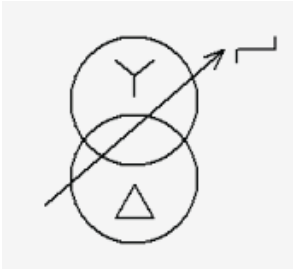
ANSI - ATC transformers meet the following industry standards ANSI C57.12.00, ANSI C57.12.22, ANSI C57.12.26, ANSI C57.12.60 and ANSI C5712.90, NEMA TR1, NEMA TR-P9
IEC - ATC Transformers comply the IEC standards 60076& 00354.

Transformer Constructions:

Corrugated or rigid tank , hermetically sealed immersed in mineral oil (IEC 60296-Class I) , MIDEL 7131 Oil or Natural easter Oil according to required specification.
Natural Cooling for oil immersed Transformers as follow:
ONAN "Oil Natural Air Natural", ONAF "Oil Natural Air Forced". The ONAN transformers can be operated with normal rating and ONAF with an increased rating of approximately 25%.

Windings Conductor:

The HV & LV winding is made of CU or AL material according to customer requirement.
Different types of windings are produced as per design (Foil winding ,Wire windings , Layer windings) etc.
The Vector Group determines the phase displacement between the primary and the secondary winding, A vector group Dyn11 is delta on primary, star on secondary, with neutral brought out and 330-degree phase displacement.
More configurations like YND11 , YNAO , Zigzag , Loop feed ,etc. can be provided upon Client requirement and specification.



Electrical characteristics:

- Frequency 50-60 Hz.
- Medium voltage “System voltage” : 6.6,11,13.8,22 ,33,34.5 KV.
- Low voltage “system voltage” 231 ,380,400 ,415,433,480V.
- Any other voltage will be designed refer to client requirements.

Machines and Testing Capabilities

Arabian Transformer company have world class manufacturing facility, ATC recently upgraded to increase production capacity and capability Using latest technologies in machines and testing systems.

Manufacturing facility is divided into more than 20 workstations using the latest fully automated machine technology major workstation to cover four major workshops of the electrical section operations, mechanical workstation section operations, the painting treatment operations, and the final assembly and testing operations complying with all international standards.

01 Electrical section:

Cores: Transformer Core Cut-to- length Machine equipped with automatic lamination stacking transformers core step lap in different shapes and sizes with hole punching and V notching. ... Operated thru PLC control to ensure full automation process for availing different angles, hole positions, cutting lengths and V notching position.

Windings: LV & HV winding machines incorporate with latest technology of dynamic tension control and conductor flattening to achieve a high quality windings. Aluminium or copper conductors are used with Different types of windings according to design & client requirement (Foil winding, Wire windings , Layer windings) etc.

02 Fabrication Workshop:

A wide range of computer controlled manufacturing machineries used for process steel for transformers , LV & MV enclosers and Substations which can process all kind of operations in metal sheets and steel frame type. ,capabilities include metal sheet shearing, laser cutting, punch pressing, fins folding, bending and iron frame cutting and forming.

03 Surface & painting Treatment:

A two professional systems are provided to cover all type of surface treatment as :

- Grit blast, metal pre-treatment, zinc rich/ Epoxy prime and polyester powder.
- Grit blast, metal pre-treatment, zinc rich prime/Epoxy and Enamel flood paint.

Surface treatment processes is reliable to withstand the most extreme industrial and climate conditions (On & Off shore).

04 Testing:

Test: Testing is very important functions of the transformer & substation manufacturing. To ensure the quality requirements and the working conditions of the transformer.

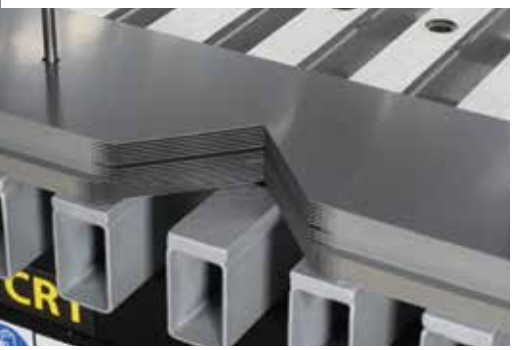
ATC has in house testing facilities which able to confirm the performance of our products which are subject to comprehensive routine tests and other tests to comply with customer requirement and relevant international standards as per company procedure.
The following tests are carried out on all transformers ,Package substation, Unit Substation,Low Voltage Switchgear, Low Voltage distribution System.

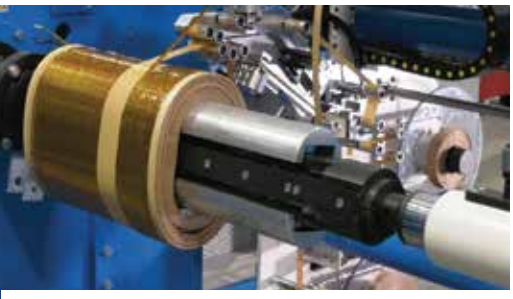
STANDARDS:

1- IEC 60060 High-voltage testing techniques.
3- IEC 60156 Method for the determination of Dielectric strength of Insulating oil.
4- IEC 60551 Determination of transformer and reactor sound level.
5- IEC 61439 Low voltage switchgear & control gear.
6- IEC 62271 High voltage switchgear & control gear.

Transformers Constructions

The Transformers meet the requirements of IEC 60076 and Saudi Standards.





Core: The core is constructed using thin sheets of cold rolled grain oriented magnetic silicon steel of low losses insulated on both sides. The steel sheets of 0.23 to 0.3 mm thick cut at an angle of 45° allowing Max. Magnetic fluxes to minimize the core losses & to increase the efficiency the lamination sheets are stacked in layers overlapping each other and are compressed to form a firm bonded whole which minimized the sound.

Windings: The winding is made of enamelled high conductivity copper & aluminium coated with polyester- IMED (PEI) of class H (200C) and each layer isolated with electrical insulation paper of high Temp. Class "between" 120–200C according to the required specification which specify the Temp. Class of the transformer as A, B, F & H.

Active Part Assembling: The core is stacked as E shape and the winding is pushed over the core legs & fill the space between the core and winding as much as possible. Then close the upper yoke with the lamination of the core legs to complete magnetic circuit &Then we start connecting the winding to the bushing & tap changer if available, and then we make the ratio test.

Enclosure: Dry type: Fabricated from 1.5 – 2 mm thick steel sheet treated and painted with curing powder of colour RAL- 7033 (Cement Grey). Removable parts are bolted together to provide flexibility during assembly. Sufficient Ventilation is provided for maximum air circulation for longer life of the transformer.

Closing Transformers: Before closing the transformers we keep the active part in drier room for 24 to 36 hours then under vacuum to remove all the moisture from the insulation materials, then the oil transformers is filled with high quality mineral oil.

Painting: Tanks fabricated from heavy gauge steel sheet are electrically welded to make sure that no oil leaks & humidity or dust entering inside the tank is treated & painted with curing powder paint RAL-7033 or RAL-7035 (Cement Grey) over which a coat of liquid paint is applied.

Testing: will be done on each transformer According to IEC or any relevant international standards to comply with client requirement as per company procedure .

Sound Level: High quality materials, suitable design & proper construction reduce sound level. Core design, grain oriented silicon steel laminations, solid mechanical clamping, varnishing & impregnation methods all guarantee a rigid core assembly minimizing the noise generation resulting transformer with low sound level.

Sound Level:

KVA	5-9	10-50	51-150	151-300	301-500	501-700	701-1600	1666-3000	OVER
Sound level DB	40	45	84	56	25	28	26	66	65

Standard Accessories

Bushing: Transformer bushings connect the network cables to the primary and secondary windings through a metallic cover while electrically isolating them.

Oil Level Indicator: Transformers can be equipped with an oil level indicator on the conservator, on the cover or on the side, depending on the design.

Thermometer: The dial type thermometer indicates the maximum highest oil temperature reached during a certain period.

Pressure Relief Valve: Hermetically sealed transformers can be equipped with a pressure reliefdevice

Earthing Terminal on Tank: Two Earthing points are integrated in each tank, stainless stud, stainless flag with 12mm hole and stainless threaded M10 terminal are the available Earthing point types.

Draining Valve: The drain valve is used to drain or sample the transformer oil from the transformer tank.

Tap Changer: The transformer by default comes with 5 position and steps 2x±2.5, other types of tap changers and number of position are available upon request.

Optional Accessories

DGPT

Celica Jel Breather

Buchholz Relay

Temp. Gauge with contact

Oil Level indicator with contact

Temp. Control with Display

Pressure Valve with contact

Brief of Products

OIL TYPE TRANSFORMER:

- From 50 to 10,000 KVA

DRY TYPE TRANSFORMER:

- Cast resin from 300 to 3000 KVA
- From 5 to 1000 KVA

SPECIAL TRANSFORMERS:

- 400 HZ Transformers special for airport.
- Pump Transformer, multi taps up to 25 taps
- Transformers for green energy Applications

LOW VOLTAGE PANEL:

- Switchgear is commonly found throughout electric utility transmission and distribution systems as well as in medium to large sized commercial or industrial facilities.
- (LVS) up to 3200 A.
- (MDP),(SMDP) up to 6300 A .
- (FDP),up to 250A.

PACKAGE SUBSTATION:

- The PSS is Mostly an Outdoor application of a Prefabricated Secondary Substation with a RMU, Distribution Transformer and Low voltage Switchboard, connections and associated equipment in a Package unit.33&13.8 KV, Rating 50 to 4000 KV.

UNIT SUBSTATION:

- Unit substation is consist of distribution transformer and low voltage panel up to 36kvaluminum transformer /aluminum busbar lvdp with main and outgoing circuit breaker, kVA rating up to 1500, the protection degree of the lv compartment is ip54.
- Type tested according to IEC 62271, as per Saudi electricity company specifications 56-sdms-07, 56-sdms-09.

STREET LIGHTING:

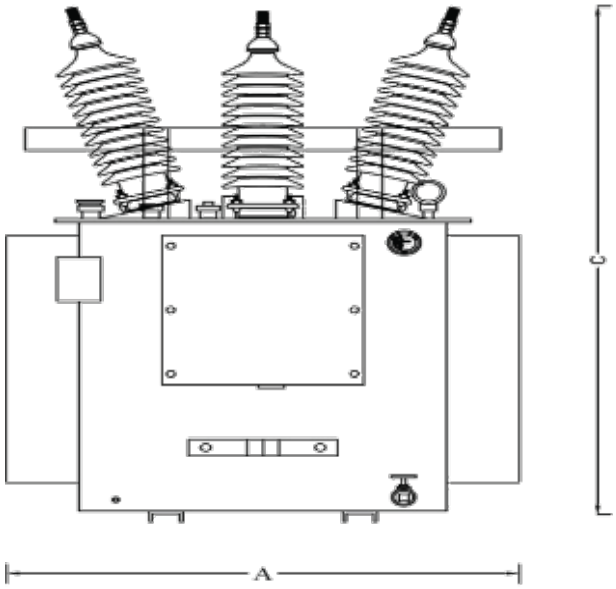
- The LSS an Outdoor application of a Prefabricated Secondary Substation with a RMU, Distribution Transformer, and Low voltage connections and designed with control lighting system.
- Lighting Panel controlled through photocell, Timer, equipped with contactor refer to the project requirements

Pole Mounted Transformer

Pole-mounted distribution transformers: are mounted above ground on poles. It is the transformation system of energy, made up of the nucleus ferromagnetic, windings and Medium Voltage connections and Low Voltage.

Key Features:

- Metal enclosure, type elastic, with cooling fins Increased heat dissipation surface
- Absorption of variations in volume of the dielectric liquid caused by temperature changes in the same
- Mechanical and electrical protection
- Integral filling tank, hermetically sealed
- No degradation of the liquid dielectric as it is not in Contact with air
- Reduced maintenance
- Size reduction
- Without expansion tank or Vacuuming
- Less weight
- Shielding of electromagnetic fields
- Immersed in dielectric liquid
- Noise level reduction
- Improved behaviour against overloads and harmonics
- Surface treatment and Painting.
- Protection against corrosion, atmospheric agents, insolation and impacts



FRONT VIEW

SIDE VIEW

Standard Accessories:

- Oil temperature indicator
- Oil level indicator
- Tap changer
- MV Bushing porcelain/Silicon Rubber
- LV Bushing Porcelain
- Pressure Relief Valve
- Oil Drain Valve
- Earthing Terminals
- Lifting Lugs

Pole Mounted Transformer Rating:

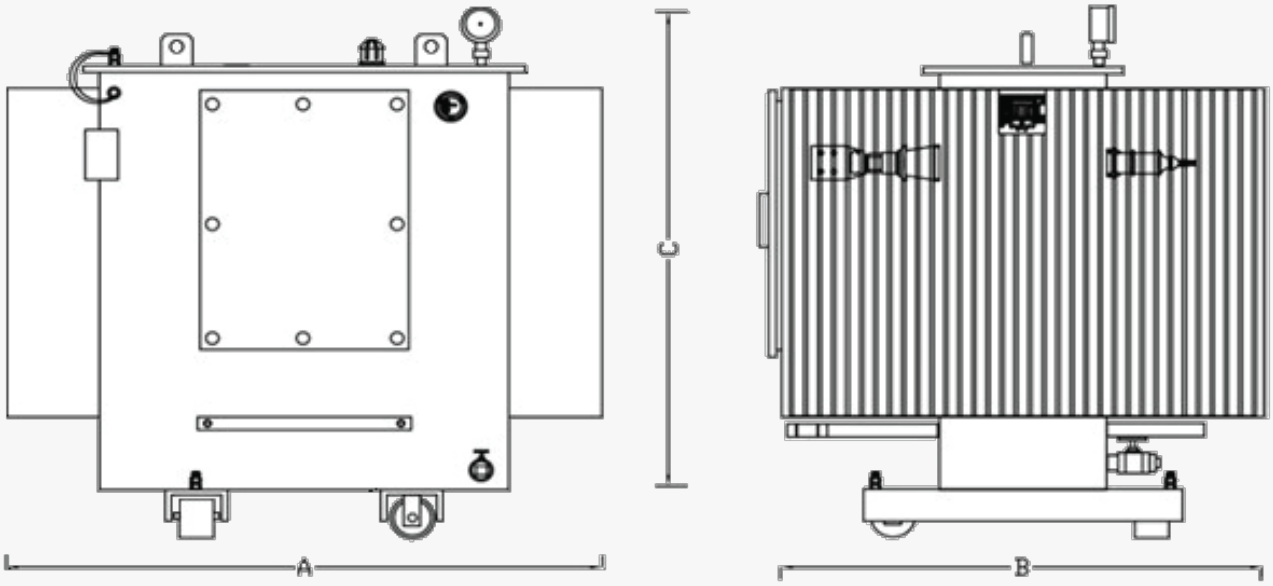
Rating		KVA	50	75	100	150	200	250	300	500
Length	A	MM	765	1000	1100	1200	1230	1250	1400	1650
Width	B	MM	745	650	810	850	900	1000	1150	1150
Height	C	MM	1450	850	1500	1500	1650	1650	1650	1700
Total Weight		KG	550	600	680	1000	1100	1300	1500	2200
Note: Data Dimensions and weights are indicative										

Ground Mounted Transformer

Pad-mounted transformers: are generally mounted on the ground for underground distribution networks. It is the transformation system of energy, made up of the nucleus ferromagnetic, windings and Medium Voltage connections and Low Voltage.

Key Features:

- Metal enclosure, type elastic, with cooling fins Increased heat dissipation surface
- Absorption of variations in volume of the dielectric liquid caused by temperature changes in the same
- Mechanical and electrical protection
- Integral filling tank, hermetically sealed
- No degradation of the liquid dielectric as it is not in contact with air
- Reduced maintenance
- Size reduction
- Without expansion tank or desiccator
- Less weight
- Shielding of electromagnetic fields
- Immersed in dielectric liquid
- Noise level reduction
- Improved behaviour against overloads and harmonics
- Surface treatment and Painting
- Protection against corrosion, atmospheric agents, insolation and impacts.



FRONT VIEW

SIDE VIEW

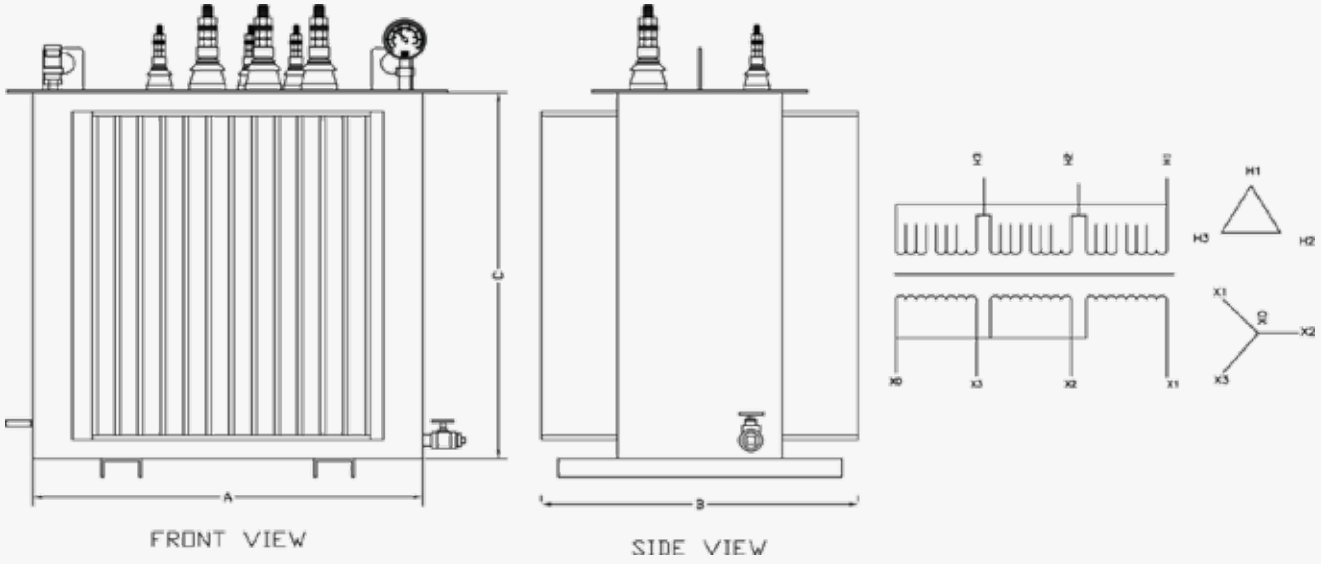
Standard Accessories:

- Oil temperature indicator
- Oil level indicator
- Tap changer
- MV Bushing porcelain/Silicon Rubber
- LV Bushing Porcelain/ Polyamide
- Pressure Relief Valve
- Oil Drain Valve.
- Earthing Terminals
- Lifting Lugs
- Wheels

Ground Mounted Transformer Rating:

Rating		KVA	100	200	300	400	500	630	750	800	1000	1250	1500	2000	2500	3000
Length	A	MM	1100	1600	1450	1800	1800	1850	1850	1850	1950	2100	2150	2200	2200	2500
Width	B	MM	1000	1100	1150	1250	1250	1250	1250	1300	1450	1600	1600	1600	1600	1600
Height	C	MM	1120	1200	1350	1400	1450	1500	1500	1500	1600	1620	1620	1900	2000	2000
Total Weight		KG	680	1100	1500	1500	2000	2200	2400	3000	3500	3700	4500	5000	5500	6600
Note: Up to 10MVA Subject to client requirements / Date Dimensions and weights are indicative																

(LV) Type Pad Mounted Transformers Rating IEC -60076



Rating		KVA	50	75	100	150	200	250	300	400	500	600
Length	A	MM	750	750	760	860	1350	1400	1400	1600	1600	1700
Width	B	MM	450	600	650	700	1200	1200	1200	1250	1250	1300
Height	C	MM	800	800	810	810	1000	1000	1100	1100	1200	1300
Total Weight		KG	500	550	600	700	1100	1200	1200	1800	2000	2200

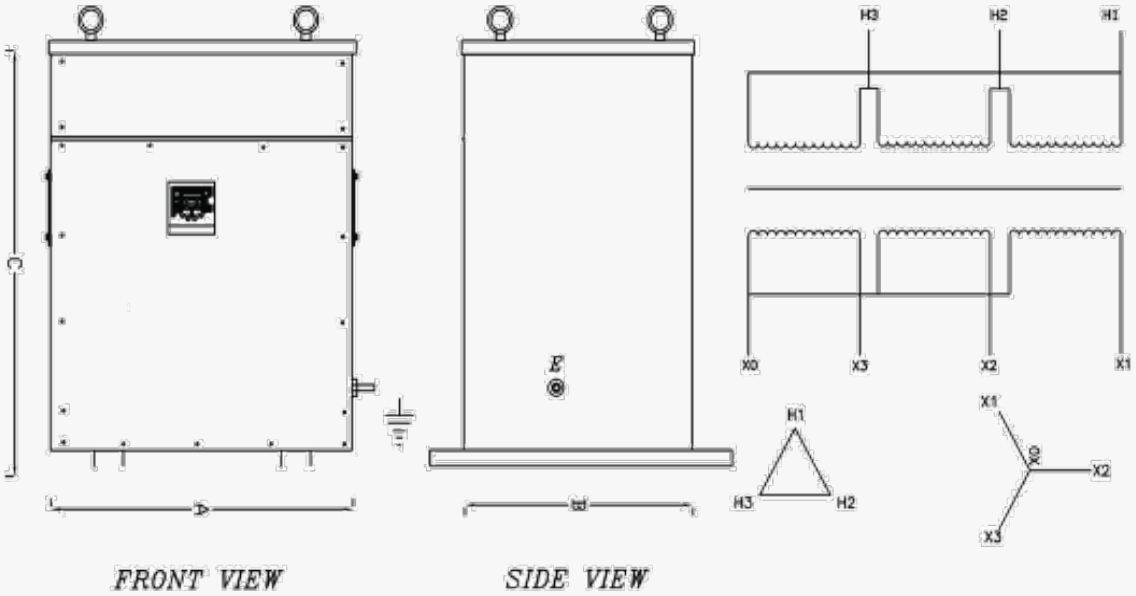
Standard Accessories:

- Rating Plate
- HV Bushing
- LV Bushing
- Oil Level Indicator
- Thermometer Gauge
- Drain Valve
- Pressure Valve & oil filling
- Lifting Lugs
- Ear Thing Terminal

Options:

- Temp. Gauge with contact
- Oil level indicator with contact
- Pressure Valve with Contact
- Wheels
- Tap changer up to size 150 KVA max

Dry Type Isolation Transformer
Outdoor Type



Rating		KVA	15	20	30	40	50	60	70	100	150	200	300	400	500	600	750	1000
Length	A	MM	750	800	800	850	850	850	870	950	1150	1200	1200	1350	1400	1470	1500	1700
Width	B	MM	400	400	420	450	450	450	450	520	600	800	800	850	900	900	900	1000
Height	C	MM	900	900	950	1000	1000	1000	1050	1100	1100	1100	1100	1400	1500	1500	1500	1800
Total Weight		KG	200	225	265	345	375	395	470	520	650	880	1170	1450	1750	2000	2200	3000

Note: This Dimensions is indicative & maybe change according to voltage and duty , before designing and panel should revert back to factory for the built in dimension.

Dry Type Auto Transformers Motor Starter

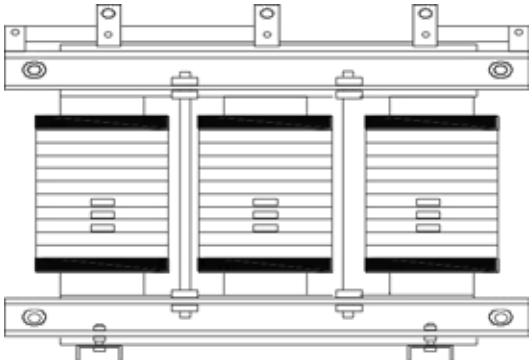
AUTO-TRANSFORMER FOR REDUCED VOLTAGE MOTOR STARTING:

Large squirrel cage induction and synchronous motor pose unique problems during start-up these motor types have the undesirable characteristic of drawing six to eight times normal running current from the power source. Start -up current is at its peak the moment power is applied and gradually diminishes to running load current as the motor speed reaches normal during start-up there is often a substantial voltage drop on the feeder lines this can cause lights to flicker, contactors to drop out and malfunctions of other electrical and/or electronic equipment. Full voltage starting is the least expensive way to start a motor, but utility restrictions on voltage drops may not allow it.

HEAVY-DUTY AUTO TRANSFORMER REDUCED VOLTAGE STARTERS ARE THE ANSWER:

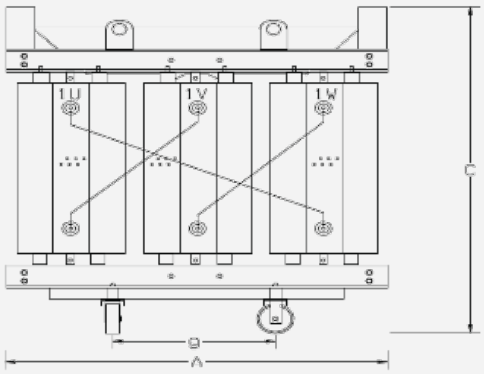
This modified starting system reduces motor inrush current and provides reduced starting torque to cushion the application of mechanical power to the drive n load. Heavy-duty uses a three coil way connected auto-transformer design this provides superior motor operation and eliminates the problem of unbalanced voltage regulation common on each of the three phase lines of two winding open delta designs. Heavy-duty autotransformer is designed for closed-circuit transition utilizing three contactors sequenced to provide a smooth transition from start to run. Once the motor is connected in the start condition it is transitioned to run by autotransformer acting as a reactor during the switching interval.

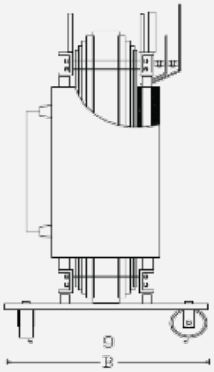
Rating	HP	30	45	50	75	100	150	200	300	400	500
Length	A	350	350	400	450	450	550	600	650	700	750
Width	B	170	170	180	185	190	200	215	225	240	250
Height	C	350	350	400	400	450	500	600	650	700	800
Note: This Dimensions is indicative & maybe change according to voltage and duty , before designing and panel should revert back to factory for the built in dimension											



On	15 Seconds	**Off**	3 minutes and 45 Seconds
Off	3 minutes and 45 seconds	**Repeat**	14 times
Repeat	14 times	**Tap**	65%
Rest	2 hours	**Tap Current**	300% of motor full load current
On	15 seconds	**Power Factor**	50% or less
Note: Dimension for voltage 380 to 500v			

Dry Type Cast Resin Description And Rating





Dry type - high voltage transformer (Cast Resin):

With cooperation of ZENNARO ELECTRICAL CONSTRUCTION, the high technology of ZENNARO. Cast resin plant the care taken in making the moulds combined with the high quality raw materials enable ARABIAN TRANSFORMERS CO to used ZENNARO cast resin coils and technology to produce the highest quality cast resin transformers.

The Core:

Zennaro transformers are manufactured with cores according to the latest knowledge in design, production and materials. The magnetic circuit is the core type with its section inscribed in a circle and with inserted couplings. It is constructed with positioned crystal transformer core electrical sheets, annealed in a continuous furnace and insulated from each other with Carlit. Conventional grain oriented steel (cgo steel) is used for transformers with normal no-load losses, while transformers with reduced no-load losses are built using higher quality hib steel. These steel sheets are usually 0,27mm and 0.30 mm thick. The core sheets are cut at an angle of 45°, thus allowing maximum magnetic flux in the rolling direction. Then the sheets are stacked in layers of either single or multiple overlaps. The multiple overlap or step-lap method offers additional benefits in terms of lowering no-load losses and noise levels. Once the sheets are stacked, the core is compressed and glued to form a firmly bonded whole.

Medium Voltage Windings:

The high voltage windings are made of aluminium strips and are designed to avoid the thermal expansion causes slips between conductors and resin. They are carried out as affectively resist stresses caused by short circuit. The method of manufacture guarantee a perfect distribution of the electrical filed and the absence of partial discharges as well as an excellent resistance to impulse stress.Guarantees have also been planned to resist the external dynamic effects of short-circuiting the dielectric materials employed (resin, conductors and insulators) are class (F). 150 C.

Low Voltage Windings:

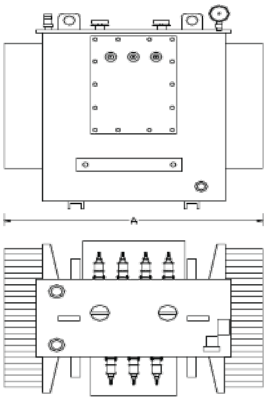
The low voltage windings are obtained from aluminium or copper strips with same height of primary limb to reduce the axial strain due to short circuit currents; a class F insulating block insulates the coils. Before mounting the LV windings are immersed in alkyd resin and then polymerized at 150C this process guarantee excellent resistance to external agents (humidity and pollution of the atmosphere). The winding is designed and made out that the maximum working temperature rise at full load is equal to class F (delta T=100C). The concentric shape of the tow windings (HV & LV) is maintained by special spacer-supports, which allow the supply flux to be uniformly distributed, and avoids the onset of abnormal vibrate.

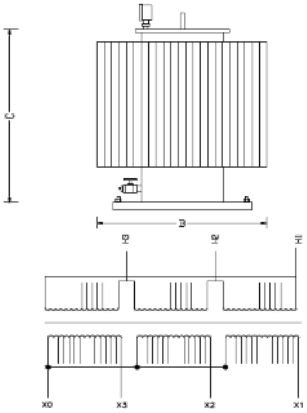
The Casting Plant:

The high technology of our casting plant, the care taken in making the moulds, combined with the high quality raw materials used, enable Zennaro® to produce the highest quality cast resin coils. The daily tests carried out to verify the level of partial discharges in the coils and measure the glass transition TG coefficient, underline the high quality manufacture of Zennaro® cast resin transformers he epoxy resin used by Zennaro® is class F and H thermal stability and the product is manufactured in conformity with the temperature limits given by the IEC 60076-11 standards.
The standard of the plant, the control system software, and particularly the epoxy resin allow Zennaro® to obtain a high level product under constant computerized monitoring. The resin used in the casting system is an epoxy resin charged with very fine quartz powder, giving the transformer the necessary characteristics to pass successfully every test. The computerized monitoring ensures the accurate control of all phases of the process, from the preparation of the resin to the temperature control in the polymerisation stages and to the corresponding TG measuring.

Rating		KVA	250	315	400	500	630	800	1000	1250	1600	2000	2500	3000
No Load Losses		w	850	990	1300	1400	1700	1900	2000	2500	3000	3500	5000	5800
Load Losses		w	3400	4000	4600	5500	6000	7000	8500	9000	11000	14000	21000	25000
Impedance		%	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	7.00
No load current		%	1.7	1.5	1.3	1.3	1.3	1.0	1.0	1.0	0.8	0.7	0.6	0.6
Regulation	Cosfi 1.0	4/4 %	1.46	1.33	1.15	1.24	1.1	118	1.01	0.95	0.76	0.73	0.74	0.8
	Cosfi 0.8	4/4 %	4.66	4.57	4.45	4.52	4.41	4.47	4.36	4.31	4.17	4.15	4.16	4.21
Efficiency	Cosfi 1.0	4/4 %	98.36	98.44	95.52	98.58	98.66	98.96	98.82	98.88	98.94	98.97	99.01	99.05
Nosie Level	Cosfi 0.8	3/4 %	98.23	98.44	98.67	98.61	98.80	98.78	98.92	98.99	99.16	99.17	99.18	99.16
		2/4 %	98.25	98.48	98.71	98.76	98.87	98.90	99.01	99.06	99.19	99.19	99.22	99.22
		1/4 %	97.59	97.94	98.26	98.27	98.54	98.68	98.76	98.81	98.94	98.92	98.99	99.04
		4/4 %	97.95	98.05	98.16	98.23	98.33	98.37	98.53	98.61	98.68	98.72	98.77	98.81
		3/4 %	97.79	98.06	98.34	98.26	98.50	98.48	98.66	98.73	98.95	98.96	98.98	98.95
		2/4 %	97.82	98.1	98.39	98.34	98.58	98.63	98.76	98.82	98.99	98.96	99.03	99.03
		1/4 %	96.99	97.43	97.83	97.83	98.18	98.35	98.46	98.52	98.68	98.65	98.73	98.98
	DB		61	63	64	65	67	69	71	72	74	75	77	80
Length	MM	A	1380	1380	1400	1450	1510	1650	1665	1880	1950	2000	2180	2200
Width	mm	B	700	770	820	840	850	1000	1000	1150	1200	1300	1300	1500
Height	mm	C	1300	1400	1600	1650	1700	1750	1850	2000	2000	2150	2450	2500
Rollers	mm	G	520	520	670	670	670	820	820	820	820	1070	1070	1070
Total weight		KG	1150	1300	1500	1700	1800	2200	3000	4000	4000	4500	6800	8200
Note: Data , dimension and weights are indicative														

Special Transformers Oil & Water Submersible Pumps Rating





Standard Accessories:

- Rating Plate
- Cable box for Pri.& Sec.
- Oil level indicator
- Thermometer cage
- Drain Valve
- Pressure Valve & oil filling
- Lifting Lugs
- Tap changers
- Earthing terminal
- Cable clamp

Options:

- Temp , Cage with contact
- Cable box for Pri.& Sec.
- Oil level indicator with contact
- Pressure valve with contact
- Thermometer cage
- Wheels

Rating		KVA	200	300	400	500	600	750	800	1000	1500	2000
Length	A	MM	1250	1350	1600	1650	1700	1750	1800	2000	2150	2300
Width	B	MM	1200	1200	1250	1250	1300	1450	1450	1500	1600	1600
Height	C	MM	1200	1300	1100	1300	1350	1500	1500	1700	1700	1800
Total Weight		KG	900	1300	1800	2200	2100	2200	2500	3000	2600	5500
Note: 13800/230V TO 4800V) up to 25 Steps - Data, Dimensions and weights are indicative.												

Transformers for **Green Energy** Applications

FR3™ a Cargill brand

The cooperation between Cargill and ATC flows through FR3™„ who has unlocked new potential for technical advancement and sustainability in our transformers.

ATC R&D team has cooperating with Cargill to develop a new-generation transformer that can make the most of the features of FR3™ whilst enhancing its performance to bring innovative, renewable solutions that enhance performance, optimize cost structures and processes and have a positive environmental impact, like the SPL series.

Envirotemp FR3 fluid is a natural ester derived from renewable vegetable oils – providing improved fire safety, transformer life/load ability, and environmental benefits that are superior to mineral oil and unsurpassed by any other dielectric coolant. Because it is derived from renewable raw materials, it has a very low carbon footprint – unequalled by any other dielectric fluid option.

FR3 fluid has the ability to extend the life of insulation paper 5-8 times that of mineral oil transformers, improving grid reliability and reducing maintenance costs.

Transformers can have the same load capability but a smaller foot-print, without raising concerns about the life of the transformer.

Key Figures :

- 20% Volume
- 10% Footprint
- 15% less dielectric fluids in transformer
- +20% Load Capacity
- 99% Readily Biodegradable
- 360 C fire point

Package Substitution Transformer

Package substations: are coordinated assembly consisting of three phase transformer, HV ring main unit and LV distribution panel. These are widely used in areas where underground power distribution is required, such as in residential, commercial and industrial developments.

Key Features:

- High integrity, compact design and aesthetic appearance
- Portable
- Weather and vermin proof
- High security
- Economic and efficient to reduce operation cost
- Safe, reliable and easy for operation
- Sealed construction to prevent the entry of moisture
- Low temperature rise and long service life
- Low noise
- ATF standard proven surface treatment
- Robust construction for long time transportation under various conditions.
- Flexibility in designing transformers to meet customer requirements (Optimum cost)
- Competitive short delivery time

Rated up to 4000KVA

- Rated operating voltage up to 33KV
- Indoor & Outdoor applications
- Common skid for all equipment
- Housing fabricated from high quality galvanized steel
- Separate doors for individual compartments for easy operation maintenance
- powder coated paint finish RAL 7033,7035.... colors available if required
- Oil immersed Transformers
- SF6 Ring Main Units.
- LV up to 6300A.
- Transformer connection direct or through cable to RMU and LV Breakers
- Internal lighting

Unit Substation

Unit substation : consist of distribution transformer and low voltage panel up to 36kva aluminum transformer /aluminum busbar lvdp with main and outgoing circuit breaker, kVA rating up to 1500, the protection degree of the lv compartment is ip54 type tested according to IEC 62271, as per Saudi electricity company specifications 56-sdms-07, 56sdms-09.

Lighting Street

The LSS an Outdoor application of a Prefabricated Secondary Substation with a RMU, Distribution Transformer, and Low voltage connections and designed with control lighting system. Lighting Panel controlled through photocell, Timer, equipped with contactor refer to the project requirements.

Low and Medium Voltage

ATC Energy and Asset Management

Understanding power and assets

With our ATC solutions in cooperation with ABB we empower our customers to drive their digital transformation by delivering safer, smarter, more sustainable electrification.

BUILDING

E-MOBILITY

DATA CENTER

UTILITIES

FOOD & BEVERAGE

OIL &GAS

Data-driven insights enable our customers to reduce costs, increase comfort, and drive efficiency.

A new approach to energy and asset management With an intuitive web app interface accessible via smartphone, tablet or PC,
ATC and ABB Ability™ Energy and Asset Management makes it simple to:

Monitor:
Oversee site performance, supervise the electrical system and allocatecosts.

Explore:
Visualize the system structure, verify asset health and get actionable insights following predictions and prescriptions.

Analyze:
Schedule and analyze automatic data exports,improve the use of assets and make the right business decision.

Act:
Set up alerts to notify key personnel while remotely implementing an effective efficiency strategy, managing maintenance activities and schedulingnext actions.

Advantages and value for customers:

- Support to comply with environmental national and international normative
- Reduce inefficiencies and eventually fines and extra-costs (e.g.: Power factor)
- Full awareness and visibility on Energy and Assets (incl. Alarms)
- Cloud base solution meaning remote accessibility, so more efficiency and operator's safety
- Plug & Play – no need for external consultancy needed
- Inter-operability with SCADA, BMS and ERP through API
- Easy upgrade in case of need also with add-ons and services

ATC Energy and Asset Management solutions can be used in different kinds of segements

Buildings:
- Commercial buildings
- Offices
- Shopping malls
- Hotels
- Retail or chainstores

Public facilities:
- Schools
- Sport centers
- Healthcare facilities

Industrial sector:
- Small to mid-size
- production plants
- Infrastructure
- Process plants
- Utilities and power generation

Data centers:
- Micro and Small
- Colocation
- Enterprise and Hyperscale

Law voltage
Products

1. Main distribution Boards
2. Sub-Main Distribution Boards
3. Final Distribution Boards
4. Motor Control Center Panels
5. Capacitor Banks
6. Feeder Pillars or Lighting Control Panels
7. General Control & Synchronization Panel
8. Automatic Transfer Switches (ATS)

Main Distribution Panels (MDB)

Main Distribution Panels (MDB) : A key element to distribute the electrical power supply from power source (Transformer, Switchgear, Generator, etc...) to the sub-distribution system in the plant. Electrical switchgear refers to a centralized collection of circuit breakers, fuses and switches (circuit protection devices) that function to protect, control and isolate electrical equipment.

- Main Distribution Panels LV Switchgears
- Type tested assemblies to, IEC-61439
- Rated operating voltage up to 1000 V
- Rated current up to 6300A
- Type tested panels
- IP up to IP-66
- Segregation ,Form 1 up to Form 4B
- Galvanized Sheet steel thickness: 1.2 mm to3 mm
- Maximum safety and reliability
- Adequate spacing for incoming and outgoing cables
- Customized design as per client requirements
- Front & Rear Cable
- Top & Bottom Cable

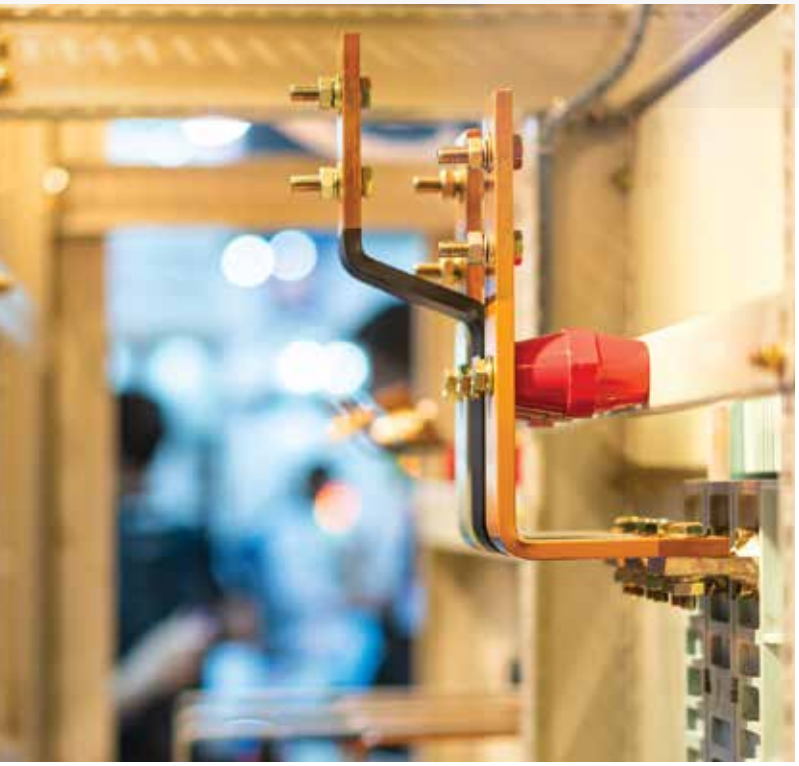
Main Parts :

- Breaker compartment
- Bus compartment
- Cable compartment

Sub-Main Distribution Panel

The MDB then feeds SMDBs, which is installed generally at the point where a large distribution cable terminates and several smaller sub-circuits start. These are the switchboards that although similar construction, are larger than a final distribution board circuit. The boards are installed midway through the power distribution system, at the point in a large distribution cable ends, and several smaller starting sub-circuits.

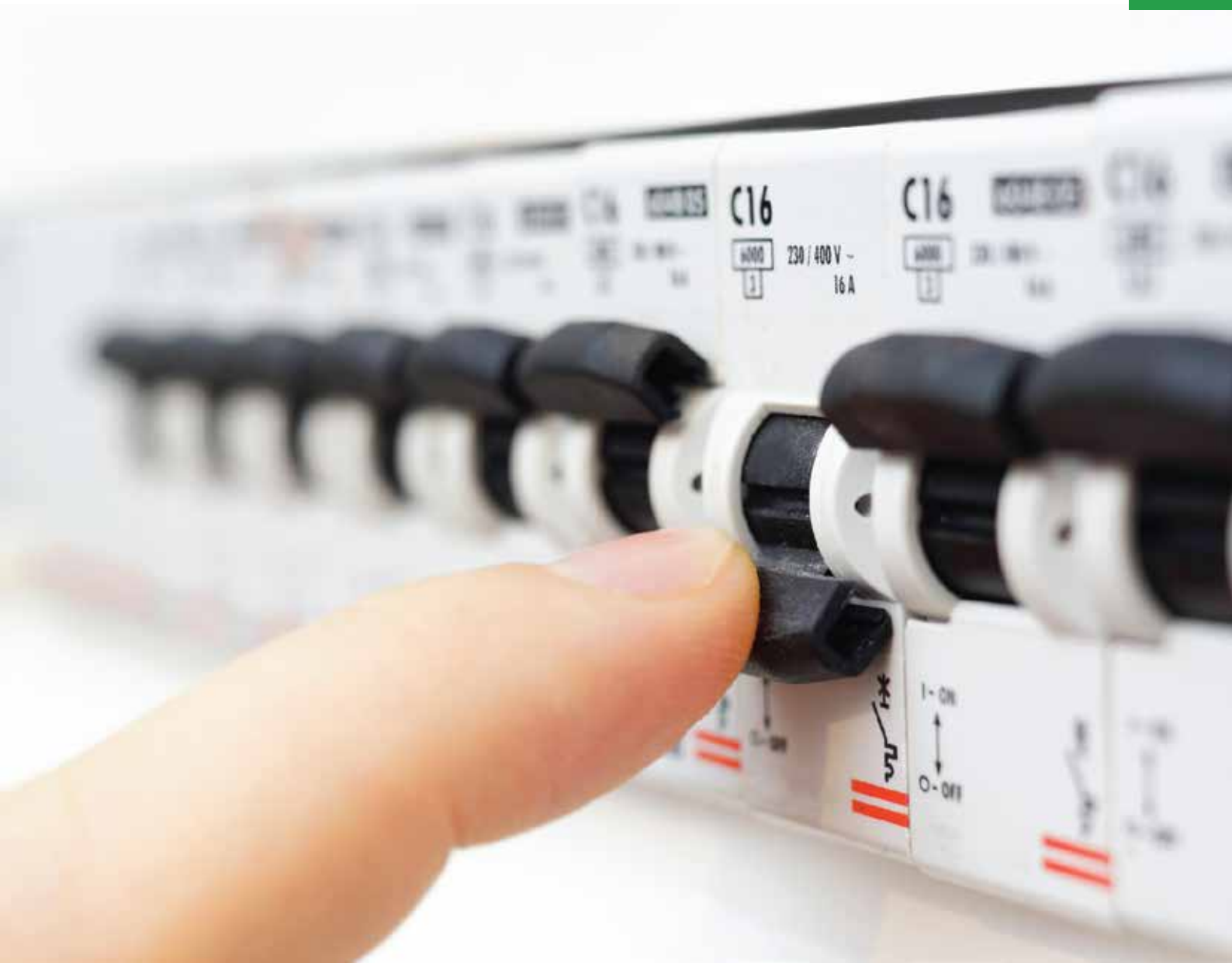
- Fully type tested assemblies as per IEC 61439-1
- Rated up to 1250A
- Rated operating voltage up to 690V
- Manufactured to Form 2 & Form 4 construction
- Type tested for 50kA/1 sec
- Ample cabling space for easy connections
- Top and bottom cable entry
- Panels for front or rear access to suit application
- Index of protection : IP 31 & IP 54
- Wall mounting or free standing to suit application



Final Distribution Boards

The Sub-main distribution boards feeds the **Final Distribution Board**, which then feeds electrical energy to the end users.

- Compliant with IEC 61439-3
- Current rating upto 250A
- Index of protection : IP 41 & IP 55 as per IEC 60529
- Available in Row type distribution, pan assembly (single or multi split arrangement) in flush or surface versions
- Short circuit withstand : 17kA for 200ms
- Adopted range to local regulations, quality makes and easy installation

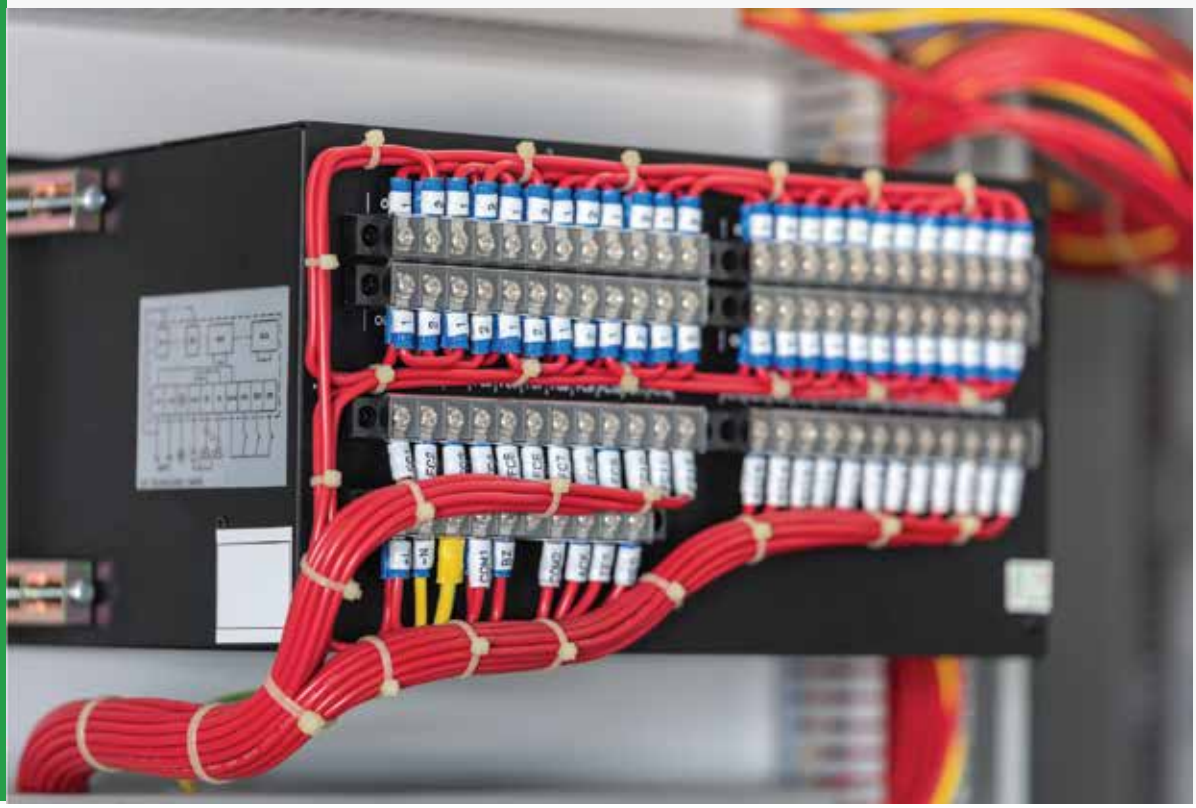


Motor Control Centre Panels

Motor control centres: are simply physical groupings of combination starters in one assembly. A combination starter is a single enclosure containing the motor starter, **fuses or circuit breaker**, and a device for disconnecting power. Other devices associated with the motor, such as pushbuttons and indicator lights may also be included. These usually comprise of incoming Air Circuit Breakers, main horizontal and vertical bus bars, outgoing starter modules with MCCB / Switch Fuse Unit, overload relays, contractors, etc. with adequate space for connection of cable and are easily extendable on either side and have excellent short circuit withstand performance of Bus Bars comprised of bolted / riveted modular construction.

Key features of Motor control centres offered by AGS

- Fully type tested assemblies as per IEC 61439-1
- Rated up to 6000A
- Rated operating voltage up to 690V
- Manufactured to Form 2 & Form 4 construction
- Type tested for 85kA/1 sec, 50kA/3 sec
- Designed for both withdrawable & fixed versions
- Tailored control using VFD, Soft starter & DOL
- Ample cabling space for easy connections
- Top and bottom cable entry.
- Panels for front or rear access to suit application
- Index of protection : IP 31 & IP 54
- Floor mounting
- Maximum safety & reliability
- Modular system with Customized design to meet end user requirements.



Capacitor Banks

Capacitor Banks improve the power factor by adding capacitive reactance in steps as per the power factor requirement.

Power factor controller constantly monitors the load (and power factor) of the system on LV Panel and switch on/ off the capacitor steps to maintain the system power factor to the set value. It provides optimum power factor improvement to compensate for lagging Vars in the system, seen as a clean and reliable solution to providing quality power to the distribution network and to economize the electricity charge to customer/consumer.

Key features of Capacitor Banks offered by AGS

- Type tested assemblies for busbars as per IEC 61439-1
- Rated upto 700 KVAR
- Power factor correction by multi step design
- Standard & detuned capacitor banks
- Manufactured to Form 2 construction
- Capacitors are Self healing, pressure sensitive disconnector & fitted with discharge resistors
- Detuned reactor tuning order 2.7 (135 Hz), 3.8 (190 Hz) and 4.3 (215 Hz)
- Microprocessor based power factor controller with various switching sequences
- Special contactors for power factor correction capacitors; equipped with limiting resistance for the inrush current.
- Easy installation & maintenance

Feeder Pillar or Lighting Control Panels

Feeder pillar or Lighting Control Panels are manufactured in galvanized/electro galvanized steel sheets or aluminium sheets. Single wall and Double wall constructions are available on request and are available in 4 / 6/ 8 way distribution. These include **instrument panel with voltmeters, ammeters, service fuses and selector switches.** The built, structure and designs are suitable to all kinds of lighting applications.

Key features of Feeder pillar or Lighting Control Panels

- Designed for internal & external applications
- 630A main busbar rating
- Offered in single/ Double walled aluminium or GRP enclosures
- Index of protection : IP 55 & IP 65

General Control & Synchronization Panel

Synchronizing panel will operate on an automatic mains failure system, so that when the main supply is interrupted on one or all phases (after an adjustable delay period) the generator sets will start-up together. After an initial warm-up period (adjustable) the generators will synchronize with each other by means of motorized circuit breakers or contactors onto a common busbar. Next, the motorized change-over switch will be closed and the load will be connected to the main distribution box.
The load share units continuously monitor the load and during low demand periods one or two generators will be shut down to save on fuel consumption. As demand rises again the second generator and third generator will be restarted, synchronized and reconnected to the load. When the AMF control unit detects that the main supply has been restored an adjustable observation period is activated before the main supply is reconnected. A cool down period will then follow, after which the generator sets will be shut down.

Key features of General Control & Synchronization Panel:

- 3-pole or 4-pole system as required
- Various combinations of load transfer by ACBs, MCCBs or Contactors
- Protection class up to IP 54
- Load sharing/load shedding
- Automatic and manual synchronizing
- Factory built to client's specifications
- Ratings up to 6000A
- Control functions available for engine monitoring, warm-up and cool down periods, emergency shutdown, multi attempt engine start control, engine test runs
- Main Distribution Boards

Automatic Transfer Switches (ATS)

A switchgear or panel board: made specifically for the purpose of the transfer from the main supply to the backup supply in case of failure.

The system is totally monitored and controlled through a controller which work as follows:

The controller will monitor the voltage and frequency of the incoming ac supply from two different sources, which could be from both generator or mains (utility), or a combination of both. the module will monitor source 1 and in the event of a failure will issue a start command to source two once source two is available and producing an output within limits, the module will control the transfer device and switch the load from source one to source two once the source one supply returns to within limits, the module will command a load return to source one and shut down source two. Systems that allow to sustain power by switching automatically between electric power source and standby generators power source, without interruption and keeping the power quality and loads safe.

ATC Services and **Maintenance**

ATC is providing special offers for plants maintenance and service works. STD aim for provide continuous and trouble-free working of electrical equipment, and improve power quality.

Our service & maintenance activities, targets and advantages:

- Increase the equipment's operation life and performance
- Decrease the operating cost
- Provide the operation of equipment's in continues and high performance
- Troubleshooting by predictive maintenance before equipment's failure
- Prevent the unexpected failure

7/24 Emergency Maintenance

- In case of unexpected faults, we can support our customers instantly
- We work 7/24 and support our customers at most 72 Hrs after the failure occurs
- We can support our customers within all kind of service (Test and Commissioning) activities

01

Transformers Installation:

One of our core business is installation of accessories , oil treatment, transformer oil's chemical and electrical tests for distribution transformer which we have been given a services with well equipped staffs and equipment's for a long time.

02

The Assembly of Transformers:

- Installation of Distribution Transformers
- The Site Test of Distribution Transformers
- Test & Commissioning Service
- Assembly/Disassembly of Transformer Accessories

03

The Maintenance of Transformers and Test:

- Life time of a transformer is 20-30 years in operation respectively.
- Life time of a transformer can be increase up to 40 years by periodical maintenances on yearly basis.
- ATC is your solution partner for the maintenance of transformers with specialist engineers and high tech test devices

04

Periodic Maintenance:

- Periodic maintenance is planned maintenance activities at predetermined time intervals, based on calendar days or runtime hours of machines.
- The point is repair or replacement of damaged equipment is carried out before obvious problems occur.
- ATC can provide special solutions for customers ,also we can support our customers within all kind of service (Test and Commissioning) activities.

05

High Voltage Substations and Equipments:

- Control and Distribution Panels
- Medium Voltage Substations, Cubicles and Circuit Breaker Maintenance

06

Transformer Maintenance:

- Dry Type Transformers
- Oil Type Transformers
- On Load Tap Changer Maintenance
- Relay Calibration and Maintenance
- Compensation Panel and System Maintenance
- Earthing Measurement
- Thermal Analysis
- Busbar and Bus duct Maintenance
- Customer Training

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