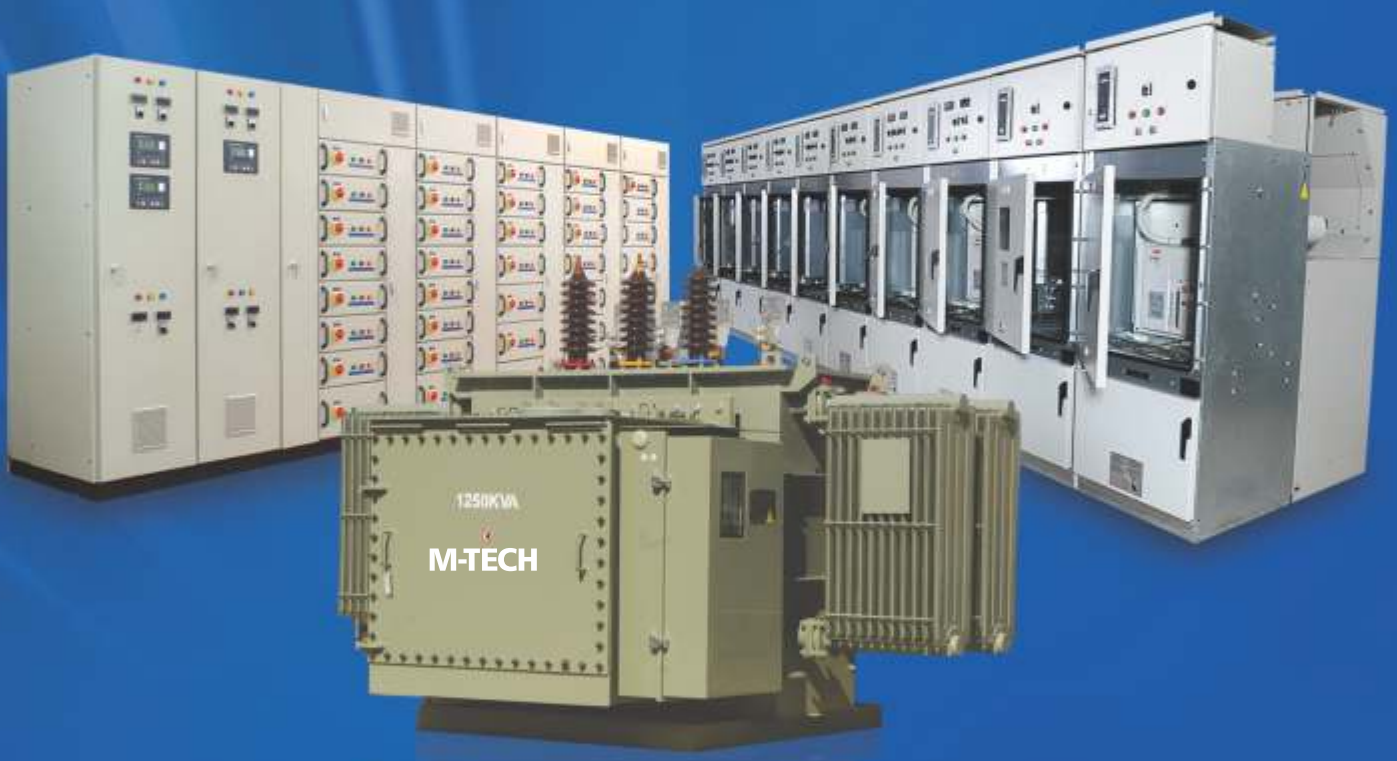
M-TECH

PRODUCTS DIRECTORY



Reliability with *excellence*

Power is continually in demand **around the globe...**

Today's world depends on vital technology and infrastructure. factories, hospitals, and aeroplanes. centres for data. Vehicles. Network stations. Colleges and universities. People rely on these things every day. And the businesses that support them rely on us to assist in resolving some of the world's most difficult power management problems.

We are committed to using power management technologies that are more dependable, efficient, secure, and sustainable to improve people's lives and the environment.

Our customers can manage electrical, hydraulic, and mechanical power more effectively, reliably, efficiently, safely, and sustainably thanks to our energy-efficient products and services. by offering individuals the means to make better use of their power. assisting businesses in doing more sustainably. And by inspiring every M-Tech employee to adopt a fresh perspective on our company, our neighborhoods, and the good deeds we can do for the world.

About us

M-TECH has been manufacturing electrical equipment since 2000 and conducts business in more than ten nations. Modern state-of-the-art technology is used in the manufacturing facilities, which cater to a broad range of diverse clients. All phases of DESIGN, PRODUCTION, & QUALITY CONTROL are supervised by a team of highly skilled and experienced engineers.

No Task is Insurmountable.

We at M-Tech provide our employees with more than just competitive perks and chances for career advancement. Every day, we work to create an environment where innovation, creativity, and discovery can flourish.

M-Tech Products Directory

Oil Immersed Transformers

M-Tech is the leading manufacturer of Electrical Distribution Transformers ranging in capacity from 10 KVA to 5000 KVA up to 33 KV system voltages including LV systems as well.

The manufacturing facilities are equipped with the latest state of the art technologies, serving a large base of versatile customers. A team of highly qualified and experienced engineers supervise all stages of Design, Production and Quality Control.

Design

M-Tech have versatile experienced team of Design Engineers who dedicatedly remain Involve by coming up with special purposes customer serving and friendly products.

They always foresee future requirements of the customers and remain geared up to fulfill by using advanced software e.g PRO- E, ANSYS CAD etc.

New technical designs of improved efficiency and quality against special orders of non-standard transformers are continuously being explored.

Special transformers according to client's specifications have been manufactured for use within and Outside Pakistan.

M-Tech manufactures oil immersed transformers with cooling mode ONAN and ONAF as per International Standards IEC 60076, BS 171,VDE 0532,ANSI C 57:12 etc.

M-Tech also follow the Public Utility companies specs. If it supersedes International Standards, M-Tech has the capability to meet these specifications in the design. This is the main **Design Strength** of M-Tech.

Manufacturing

M-Tech Transformers are designed for 33 KV (Max) to10V (Min), 3 phase DY or YD and Single phase as well, 50 Hz or 60 Hz, at any temperature as per IEC suitable for both indoor and outdoor installations.

The perpetual improvement in the **Design** is our **Passion** and therefore we supply transformers for special applications which are different in details given in this catalogue.

Special Application Transformers

Over and above the aforementioned specs, M-Tech is fully equipped to meet the requirements of special application transformers like Control Transformers, Booster Transformers, UPS Transformers, Furnace Transformers, Inductor Choke, Auto Transformers, Dual ratio Transformers, and many other type of applications.

KVA	Core losses W	Winding losses W	% Efficiency	% Regulation	% Z
10	52	256	97.01	2.61	4.0
15	68	348	97.3	2.37	4.0
25	98	512	97.62	2.11	4.0
50	140	936	97.89	1.93	4.0
100	248	1616	98.17	1.63	4.0
200	396	2728	98.46	1.43	4.0
400	740	4480	98.71	1.19	4.0
630	1080	6520	98.81	1.11	4.0
1000	2000	13500	98.47	1.47	5.0
1250	2250	17000	98.48	1.53	6.0
1500	2850	19500	98.53	1.47	6.0
2000	3350	23500	98.68	1.53	6.0
2500	3850	28500	98.72	1.31	6.0
3000	4400	34000	98.74	1.31	6.0
3500	4800	38500	98.78	1.34	7.0
4000	5250	43500	98.8	1.33	7.0
4500	5650	48500	98.81	1.32	7.0
5000	6000	53500	98.82	1.31	7.0

Testing Facilities & Certification

The **Quality of Transformers** cannot be established without calibrated state of the art testing facilities.
M-Tech is fully equipped with calibrated state of the art testing facilities to perform all routine tests and Temperature Rise Test and TYPE TEST as per IEC 60076 at their own premises. The oil testing facilities of routine tests are also available as per IEC 60296.

M-Tech Transformers are more robust against Short Circuit Faults and High Voltage Dielectric Faults. The said tests can be offered in any of the following International labs as per contractual agreements for type test certifications.

Type Test Certifications

- KEMA-Holland
- CESI-Italy
- KERI-Korea
- STRI-Sweden
- HV and SC Lab Rawat-Pakistan
- HV Lab UET Lahore-Pakistan

The transformer can also be offered to any other lab for type testing as per customer requirements with contractual agreement.

Dry Type Transformers

M-Tech introduces Dupont NOMEX® technology in the Dry type transformer manufacturing.

Dupont NOMEX® Paper based Insulation System

M-Tech introduces a series non-encapsulated dry-type transformers with the US Dupont Reliatran Technology and adopt Dupont NOMEX® paper based insulation system, which is safe and reliable, environmentally friendly, energy saving, fireproof and blast proof, insensitive to humidity dust and pollution, and of great surge capacity, small dimension and easy maintenance.

Salient Features for Safety

High level of safety, grade-H insulation class, fire-resistant, non-combustion-supporting, self-extinguishing, free from toxic gas, good fire protecting performance. Free from partial discharge and fissuration in service.

The insulation system of the winding is impregnated with solvent less insulation varnish time and again by VPI vacuum pressure equipment and solidified through high temperature baking, therefore it is damp proof, antifouling, dust proof, has intense thermal shock bearing ability, and is free from partial discharge" and fissuration. Small volume and light weight. The transformer adopts Dupont NOMEX® paper as the main insulating material and as the insulating system of its most heated point.

Reliable

Great surge capacity and excellent short circuit bearing ability due to its new design, new material, new techniques, and good heat radiation effect. It can run safely under 120% over loading for long.

Dupont NOMEX® paper based insulation system enables the transformer to maintain excellent electrical performance and mechanical property in its whole service life. NOMEX® paper is hardly aged, shrinkage resistant and compression resistant, and is of high elastic force, thus it can ensure that the windings will still keep tight structure and be able to endure short-circuit impact even after multi year service.

Environment Friendly

- No environmental pollution during the manufacture, transportation, storage, and the whole service life.
- The winding can be disassembled and recycled.
- No toxic gas releases under 750°C.
- Low noise.

The core consists of high permeability cold rolling grain-oriented silicon-steel sheet laminations. The laminations are arranged in such a way to reduce the noise level and loss factor to a min. by using step lap cutting and mounting and the 45°C cut at which the cores are placed Specifications.

Applicable Standards:

International Standards IEC 60076(1-11), BS 171, VDE 0532, ANSI C 57:12, Customer Specifications if any.

KVA	Core losses W	Winding losses W	% Efficiency	% Regulation	% Z	Insulation Class
25	120	500	97.58	2.06	4.0	
50	150	950	97.58	1.96	4.0	A or E
100	280	1650	98.11	1.72	4.0	
200	450	2850	98.38	1.49	4.0	
300	650	4200	98.41	1.47	4.0	
400	750	5200	98.53	1.37	4.0	DUPONT NOMEX FOR H CLASS INSULATION
500	925	6500	98.54	1.37	4.0	
630	1100	8000	98.58	1.34	4.0	

Cooling Mode:

AN, ANAF

Product Range:

10 KVA to 630 kVA, up to 20 KV system voltages, 1 phase or 3 phase Dy. Yy, Yd etc, 50 Hz or 60 Hz

Applications:

- Air Bases
- Tunnel Power System
- Power Houses
- Oil and Gas Plants
- Marine and Dock
- Building Lighting and Power System
- Railroad Cars
- Computer Data Center
- Industry

KIOSK Compact Substation

(MV / LV / Transformer)

KIOSK-type substations are comprise practically MV switchgear, Transformers, and LV panels and different variations as per the customer's demand.

M-Tech has ability to design and manufacture KIOSK substations in various configurations.

KIOSK

Consists of three main compartments:

- Medium Voltage Compartment
- Transformer Compartment
- Low Voltage Compartment

Each compartment is equipped with all necessary equipment according to the customer specifications. The M.V and L.V compartments are arranged at both ends of the transformer compartments and suitable for use in industrial and Commercial Projects.

- The KIOSK substation is fully assembled at our factory as one unit to be delivered at site.
- Main base manufacture from Mild Steel "C" channel according to the project specifications.
- Enamel / Epoxy paint.
- The kiosk is manufactured according to IEC 62271-202.

RMU (Ring Main Units)

The package substation contains the MV part which is known as the RMU (Ring Main Unit). We provide complete equipment including outdoor console as per IEC and WAPDA standards.

RMU are designed for the supply of sustainable energy and protecting electrical equipment in secondary distribution networks up to 36kV.

Application Area

Housing sector, Distribution Sub-station and Central load Stations,Steel Industry, Petro Chemical, Mining Industry, High rise buildings, Public Institutions.

Medium Voltage Switchgears

Metal-clad Air Insulated Medium Voltage Switchgear (11Kv to 20 Kv)

M-Tech has developed protection, monitoring and control solutions specifically dedicated to Medium Voltage networks for over 23 years.

Reliability

To obtain maximum and optimum reliability:

- All operational solutions are in compliance and conformity with following standards.
  IEC 62271-100 - IEC 62271-102 - IEC 62271-200 - IEC 60694
- Design is to the accurate and exacting 3-Dimensional computer graphic techniques. Manufacturing and testing has been carried out in accordance and compliance with ISO 9001-2008 quality standards.

Electrical Characteristics

Items	Unit	Value			
Rated Voltage	kV	12	17.5	24	40.5
Rated Short-Time Power Frequency Withstand Voltage (1 Min)	kV	28/38	38	50	95
Rated Lighting Impulse Withstand Volatge (Peak)	kV	75/95	95	125	185
Rated Current	A	630/1250/2500A	630/1250/2500A	630/1250/2500A	630/1250/2500A
Rated Short Circuit Breaking Current	kA	50	40	40	31.5
Rated Short-Time Withstand Current	kA/4s	50	40	40	31.5
Rated Short Circuit Current Breaking Time	Times	30	30	30	30
Mechanical Life	Times	30000	30000	20000	20000
Circuit Breaker Level		E2,M2,C2	E2,M2,C2	E2,M2,C2	E2,M2,C2
Frequency		50 Hz / 60 Hz			
Rated Bubar Current		630-A up to 2500-A			
Rated tee-off Current		630-A up to 2500-A			
Mechanical Charateristics					
Protection degree (IEC 60529)		IP3X (IP41 Upon request)			
Standard Color		RAL 7035 / RAL 7032			
Normal Service Conditions					
Ambient Temperature		Basic: -5◦C / +40 ◦C | Option: -10◦C / +55◦C			
Dimensiones mm					
Height		2200 / 2250			
Depth		1600 / 2400 /2570			
Width					
Tee-off Current up to 1250-A		750 /1000 /1200			
Tee-off Current up to 2500-A		900 / 1300			
Compliance Standard IEC62271-1, IEC62271-100					

Safety

- Insulation of each compartment is mandatory for insurance to avoid any electric, thermal and or mechanical faults.
- Voltage presence indicator system is located on the front panel.
- Position indicators are linked to the device's physical placement.
- Easy Installation with uniformity of engineering dimensions.
- Ease On Site information retrieval. All operations should be carried out from the “Front Door” with the Door closed.

Simplicity

We have endeavored to design and produce a system that puts emphasis on simplicity and easy to operate and maintain.

Ease On Site information retrieval
Compartmentalized MV parts (Earthed Metallic Partitions)

Low Voltage Switchgears

Equipment & System

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. The circuit protection devices are mounted in metal structures. A collection of one or more of these structures is called a switchgear line-up or assembly.

Switchgear is commonly found throughout electric utility transmission and distribution systems as well as in medium to large sized commercial or industrial facilities. Standards for electrical switchgear are defined by IEEE, ANSI and IEC in Europe, USA and other parts of the world.

Note: M-Tech design is suitable for all brands of circuit breakers.

Low Voltage Power Distribution Panels

LV closed type power panel can be used in AC 600V or lower system of 3-phase 3-wire, 3-phase 4-wire, 3-phase 5-wire for electricity-generating and also for the purpose of power, lighting, distribution. Low voltage power panel has flexible distribution scheme, convenient combination, good practical performance, new structure as IEC60439-1.

Ambient Condition

1. Ambient temperature:
-25°C up to +45°C.
2. Relative humidity: daily average
≤95%, monthly average ≤90%.
3. Indoor type, altitude ≤2000m.
4. Earthquake intensity ≤8 degree;
5. Occasions without flammable and explosive matter, without corrosive chemical and frequent severe vibration.

Low voltage switchgear is a critical component in many electrical distribution systems all over the world. They play a vital role in the safety, efficiency, and reliability of electric supply.

Low voltage switchgear is commonly used in industrial and commercial applications, both indoors and outdoors. It's rated up to 1000V with frequent voltage ratings, including 208V, 240V, 415V, 480V, and 600V. Low voltage switchgear uses various components to ensure safe maintenance, protect circuits, and deliver electricity.

Outdoor Underround Electric Power System

Feeder Pillars

Feeder pillars are the breaker panels which is the very first set of switching/protection device (Circuit Breakers) at the output/secondary side of the transformer and panel board is a set of switching/protection devices used for distribution of power supply.

LT Service Boxes

The function of the LT Service Box is distribution of electrical supply in 3 phase, 4 wire underground electric distribution system.

ATB Boxes (Electric KWH Meter BOX)

An electric meter, or energy meter, is a device that measures the amount of electric energy consumed by a consumer. Electric utilities use electric meters installed at customer's premises to measure electric energy delivered to their customers for billing purposes.

Low Voltage KIOSK Substation IP 56

KIOSK Type LV switchgear is suitable for AC 50~60Hz, 1000V and 400-A to 6300-A. It is applied into oil fields and mineral enterprise etc. The Switchgear receives and distributes power with the function of control, protection and monitoring system.

The LV Switchgear conforms to IEC60439 and new series of IEC61439 1 & 2 LV Switchgear and controlgear “standard. The solution packages are built in according to IEC standard. We design with a high level of flexibility to cover wide range of Applications.

KIOSK / Substation Package:

- Mounted distribution board for lighting and general supplies.
- Overhead fluorescent strip lights complete with light switch.
- Access door at switchboard end with push bolt release at front end of substation with mesh door access.
- Provision for cable access for LV and Control Cables.
- Provision for cable access out of container.
- Internal earth bar and mandatory warning signs.

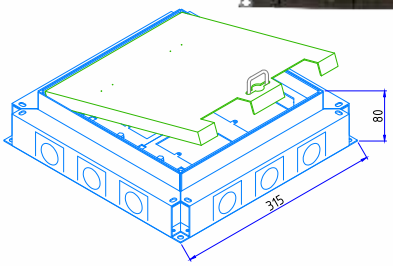
Additional Options

- Fire Alarm system.
- Thermostatic wall mounted heaters.
- Air conditioning.
- Internal battery back-up emergency lighting units.
- Extracting cooler fans at the front and rear of the container, complete with speed control, thermostat and gravity shutters.
- External flood light with 'walk up' sensor.
- Luminous internal break-out push handle for access doors.

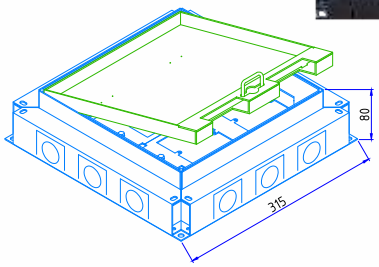
Electric and Communication Floor Boxes

The aesthetic and technical needs of today's buildings are as diverse as the equipment that fills them. Small wonder, then, that floor boxes can continue to solve the needs of today and the future. They are still a contemporary, capable and cost-effective wire management system. M-Tech is pioneer in the design and application of floor boxes.

Flat Surface Top



Deep Surface Top



Order Specification

Product No.	Color Available	Top Cover
MT-FB-GRY-01	GRAY COLOR	FLAT SURFACE TOP
MT-FB-GRY-011	GRAY COLOR	DEEP SURFACE TOP
MT-FB-BRN-02	BROWN COLOR	FLAT SURFACE TOP
MT-FB-BRN-022	BROWN COLOR	DEEP SURFACE TOP
MT-FB-BGE-03	BEIGE COLOR	FLAT SURFACE TOP
MT-FB-BG2-033	BEIGE COLOR	DEEP SURFACE TOP
MT-FB-BLK-04	BLACK COLOR	FLAT SURFACE TOP
MT-FB-BLK-044	BLACK COLOR	DEEP SURFACE TOP

Features & Benefits

- Designed for commercial applications with use of 15-A, 220AC Sockets, Data Networking and Telephone receptacles.
- Designed for use in wood floor construction and can be installed with multiple floor substrate materials (ceramic, hardwood, laminate, or carpet).
- Low Voltage (LV) openings provide easy access for industry standard keystone plugins to be installed.
- Available in multi colors with flat surface and deep surface top plate.
- Extra deep wiring space.
- CE Certified.
- Provisions for incoming cables entry through 4 sides of Box.

Cable Trays and Ladders

The Cable Trays are designed to meet most requirements of cables and electrical wires installations and comply with local and international standards of fabrication and finishing.

Materials used

Common cable trays are made of galvanized steel, Electrolytic powder coated paint and stainless steel. The material for a given application is chosen based on where it will be used. Galvanized tray may be made of pre-galvanized steel sheet fabricated into tray, or may be hot-dip galvanized after fabrication. When galvanized tray is cut to length in the field, usually the cut surface will be painted with a zinc-rich compound to protect the metal from corrosion.

Order Specifications

Sr No	Description	H (mm)	W (mm)	T (mm) Option-I	T (mm) Option-II	T (mm) Option-III
1	050 MT 100	50	100	1.2	1.5	2
	050 MT 150	50	150	1.2	1.5	2
	050 MT 200	50	200	1.2	1.5	2
	050 MT 250	50	250	1.2	1.5	2
	050 MT 300	50	300	1.2	1.5	2
	050 MT 400	50	400	1.2	1.5	2
	050 MT 500	50	500	1.2	1.5	2
	050 MT 600	50	600	1.2	1.5	2
2	075 MT 100	75	100	1.2	1.5	2
	075 MT 150	75	150	1.2	1.5	2
	075 MT 200	75	200	1.2	1.5	2
	075 MT 250	75	250	1.2	1.5	2
	075 MT 300	75	300	1.2	1.5	2
	075 MT 400	75	400	1.2	1.5	2
	075 MT 500	75	500	1.2	1.5	2
	075 MT 600	75	600	1.2	1.5	2
3	100 MT 100	100	100	1.2	1.5	2
	100 MT 150	100	150	1.2	1.5	2
	100 MT 200	100	200	1.2	1.5	2
	100 MT 250	100	250	1.2	1.5	2
	100 MT 300	100	300	1.2	1.5	2
	100 MT 400	100	400	1.2	1.5	2
	100 MT 500	100	500	1.2	1.5	2
	100 MT 600	100	600	1.2	1.5	2

* Please contact us for special dimensions.

Field Services

M-Tech is an engineering and electrical company that performs high quality and professional field service of electrical work, while maintaining excellent customer service and satisfaction.

M-Tech's target market consists of Commercial, Industrial, Power Plants and Institutional electrical projects, including electrical maintenance, repair and service in both low and medium voltage applications.

Our Services Include

- Turnkey project design and installation.
- MV and LV Cable Installation at 33kv and other mains cables down to 415V (Overhead and Underground).
- System protection & grading studies.
- LV & MV jointing up to 33Kv.
- Earth form installation and soil resistivity analysis.
- Site maintenance of customers' property using data collection, by contracted option.
- Cable trenching and civil work.
- Installation, Commissioning and Testing of LV and MV Switchgear.
- Installation, Commissioning and Testing of Transformers.
- Calibration, Installation and Testing of Industrial and Power Plants Instruments.

Product Backup Support

M-Tech has professional approach with the **Passion** to satisfy the customers. We have a dynamic professional application field staff team having vast experience of Installation, Testing, Commissioning and Trouble Shooting at site. In case of severe fault causing damage, M-Tech stands for contractual warranty and repair accordingly.

Products Certifications

- ISO 14001 :2004.
- ISO 9001 :2015.
- OHSAS 18001 :2007.
- ISO 9000 CE MV Switchgear.
- ISO 9000 CE LV Switchgear.
- ISO 9000 CE Transformers.
- PSQCA (Pakistan Standard & Quality Control Authority).
- WAPDA (NTDC) Pakistan.

Member of

- American National Standards Institute (ANSI, USA).
- American Welding Society (AWS, USA).
- American Society for Testing Materials (ASTM, USA).

M-TECH (Multi Technology) (Pvt.) Ltd.
Building #6, 1st Floor, A Block, Main Boulevard, Eden City, DHA Phase 8, Lahore-Pakistan.
0308-1717171 042-37135826-7

www.mtechintl.com info@mtechintl.com