

FIDAEEL LIGHTNING PROTECTION SYSTEM

COMPLYING IEC 62305



Fidael Power Solutions



Fidael Power Solutions offers a one stop solution for Lightning Protection system and associated Earthing system by complying all Global and Domestic standards and codes.

We share our expertise to our valued customers by providing design, Supply, Installation and Testing supports.

We align ourselves to the digital Era by giving an optimized and cost effective solutions through our online E tools.

We also provide the Standard operating procedures in our E tool which helps our client to do the complete installation with the support of our back-end team. Certification of the installation will also be provided online through the E Tool.

We provide tailor made solution for Lightning protection system which is adapted to site and customer's requirements and also completely comply with all the Standards.

Contents

Sr. No.	Description	Page No.
1	Fidael Power Solutions Introduction	2
2	Information on Lightning	4
3	Lightning Impact Consequences	5
4	Standards and codes	6
5	Lightning Sources and damages	7
6	RA and parameters	8 & 9
7	LPS methods	10
8	USP and Services	11
9	LPS Components	
	Conductors and connectors	12
	Straight Splicers and Expansion piece	13
	AT and conductor holder	14
	Test link and Concrete blocks	15
	Bridging cable and seam clamps	16
	Mast and Structural components	17
	Exothermic weld, counters and studs for Earthing	18
	Strips and conductors for Earthing and structure	19
10	Certifications	20

Information On Lightning

Lightning is event that happens due to positive & negative charge becoming too high, which results in the Ionization of the Air and there is a rapid Discharge of electricity from positive to negative charge and vice versa.

There are 3 types of Lightning – Inter Cloud, Intra-cloud and Cloud to ground (& upward Lightning) – Cloud-Cloud phenomena is 10 times more than Cloud to ground.

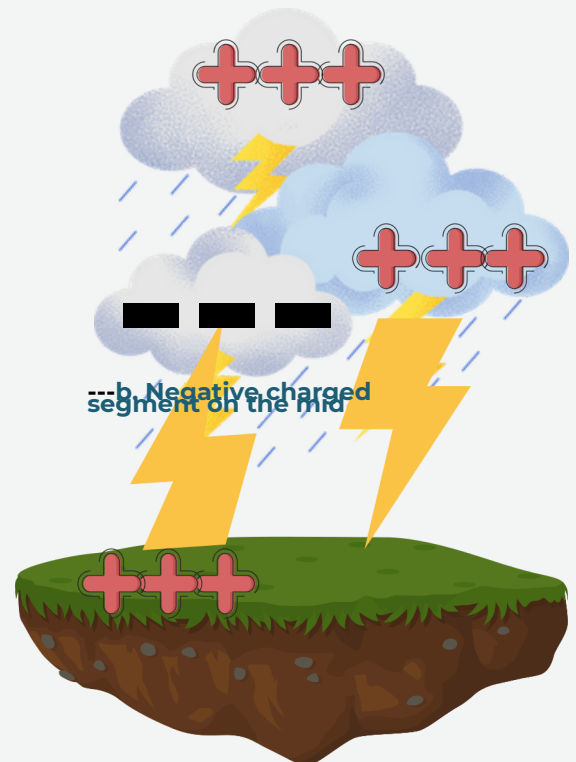
The clouds are divided into 3 segments -
a. Positively Charged segment on the Top

c. Weakly positively charged segment on the bottom

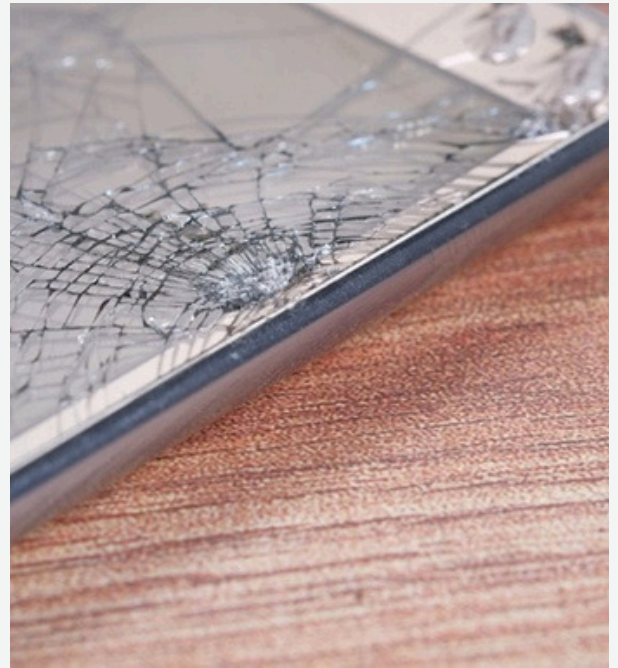
Most of the lighting happens from cloud to cloud.

The effect of lightning create an immense surge that increase the Ground voltage and it has a tendency to travel 1000- 2000 meters from the point of impact on the Ground.

•Heat of Lightning is 53500 Deg Fahrenheit which is much higher than the surface temperature of sun



Lightning Impact Consequences



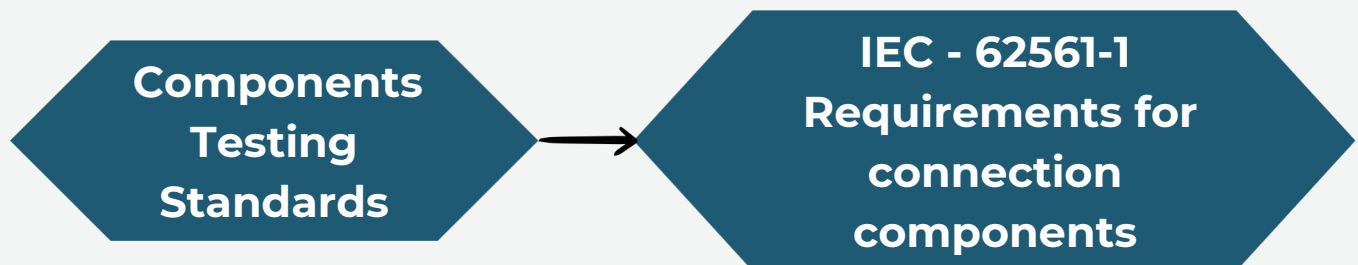
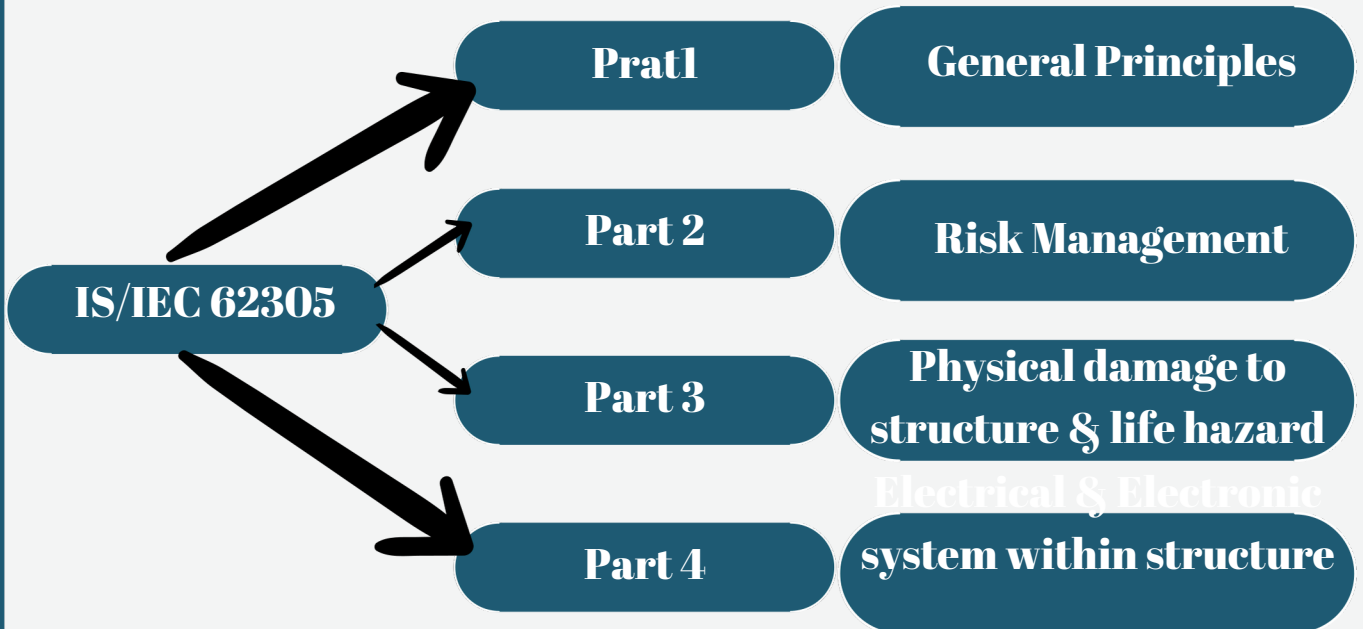
Now a days most of the Industrial, Commercial and Residential structures use a wide range of electrical and electronic equipment that have a limited capacity to withstand the surges. These equipment are expensive and have lower withstand capacity against high EMI (Electromagnetic Interference) generated due to Lightning impacts.

This causes the damages to the equipment, data losses and even more the direct surges on the structure can damage the structures and can cause fires causing human injuries and loss.

Industrial Structures with Combustive elements in it are in more risk and proper measures to be taken to mitigate the risk of lightning impacts.

Standards & Codes for LPS

Standards



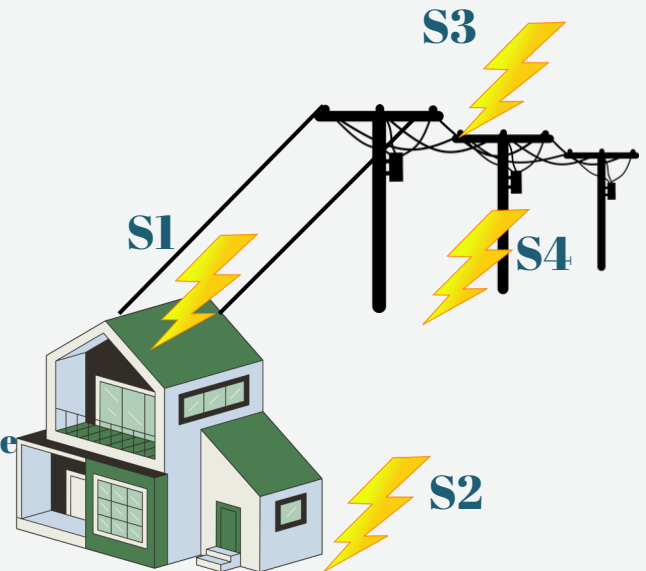
Codes



Lightning Sources of Damages

There are Four Lightning sources of Damage:-

- 1.S1 - Flash to the Structure
- 2.S2 - Flash near the structure
- 3.S3 - Flash to the lines connected to the structure
- 4.S4 - Flash near the lines connected to the structure

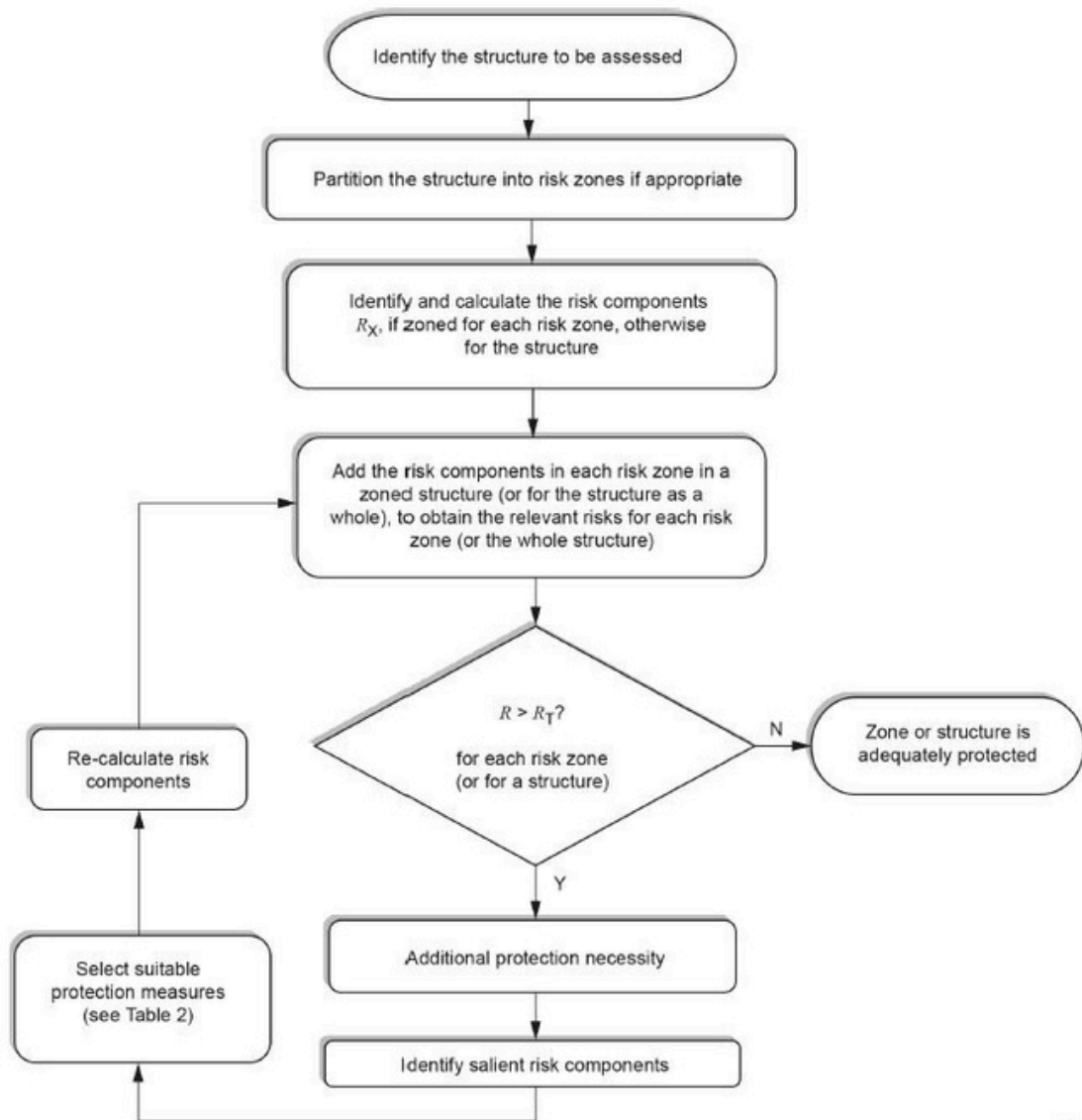


Did you know???

Risk assessment and Analysis plays the major role to know the Level of Risk of the Structure. Assumption if done, may cost the risk level to be assumed higher which may increase the overall cost of the project. Calculation of the Risk Assessment to be done as per IS/IEC 62305-2 and based on the level of Risk, the design needs to be done complying with IS/IEC 62305-3.

Risk Assessment & its Importance

Risk Assessment Flow Chart



Importance:-

1) IEC 62305-2 and NBCS Apr 2026 are key standards and codes respectively to do Risk Assessment and Analysis

2) IEC 62305-2

A) Provides Tolerable Risk Limits

B) Gives ways to calculate the Risk

C) Give methods and levels to lower the risk than the tolerable limits

3) NBCS provides the details of thunderstorm at different location which will help to do the risk calculations

Risks and affecting parameters

Types of losses as a consequence of lightning flashes:-

L1: loss due to injury to human beings.

L2: loss due to physical damage of the structure and its contents.

L3: loss due to failure of internal systems.

Composition of Risk components:-

The risk R is sum of risk components according to the source of damage or type of loss.

$$R = R_{S1} + R_{S2} + R_{S3} + R_{S4}$$

Composition of Risk R according to type of losses

$$R = R_{L1} + R_{L2}$$

Procedure to evaluate the need of protection for risk R

Protection against lightning is necessary if the risk R is higher than the tolerable level R_T .

$$R > R_T$$

In this case, protection measures shall be adopted in order to reduce the risk R to no more than the tolerable level R_T .

$$R \leq R_T$$

$$R_T = 10^{-5} [\text{year}]^{-1}$$

Parameters Affecting the risk



Location of Structure



Equipment in structure



Dimensions of the structure



Type of structure



Operating/Functional Hours



Fire Protection measures

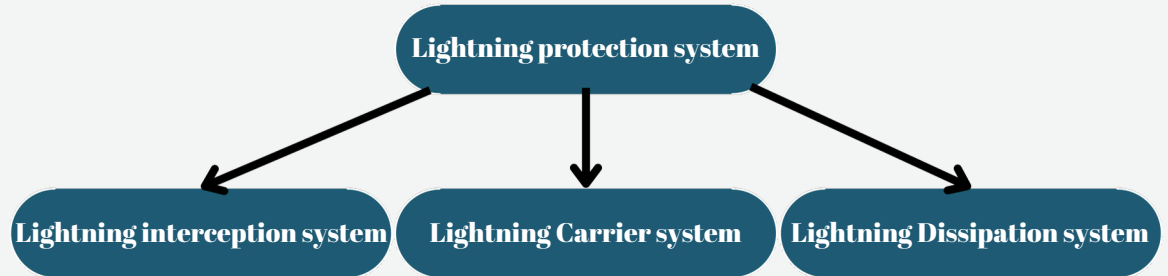


Risk of Fire



People inside structure

Lightning Protection System & Methods



Lightning Interception system:-

It consists of Air Terminals - Vertical and Horizontal Air Terminals.

Determination of Air Terminals are done by 3 methods:-

1. Protection Angle
2. Mesh Method
3. Rolling Sphere method

Lightning Carrier System:-

It can be categorized as Down conductors in external Lightning protection system and Risers in structural Lightning protection system. Distance between the carriers is determined by the lightning protection level

Lightning Dissipation system:-

This is also called as earthing system. It can be done in 2 ways

1. Type A Earthing - Each Down conductor will have one earthing
2. Type B Earthing - All Down conductors are connected to a common ring

Also foundation mesh can be done to do the dissipation of Lightning current.

USPs and Services

USPs:-

A. All Our LPS products are manufactured in such a way that it does not have any sharp corners which has multiple advantages:-

- 1. Handling of products are safe and easy**
- 2. Installation hazard is mitigated**
- 3. Packing is safe and secure**

Transportation of the products becomes safe

B. All our product are Laser engraved with our Logo which ensures the quality and Brand of our products

C. Products are manufactured with High grade materials to ensure the long life of all our range

D. We have advanced E tools for LPS, Earthing and SOP for installation which helps our customers to have least dependency of any vendors

E. We provide a one stop solution for our clients as we do complete process of Design, Supply, Installation, Testing and commissioning along with site survey and study for LPS and earthing system



Services:-

Fidael offer a wide range of service to our clients by extending following support:-

- A. Complete range of Risk assessment and analysis complying IEC 62305-2**
- B. Detailed Design support for LPS with coverage Details as per IEC 62305-3**
- C. Installation support by dedicated team, supervisory support, back end software supports with appropriate certifications.**
- D. Extended support to client by the way of Annual maintenance contracts with client to check how intact the existing installation is. This complies IEC 62305-3**

LPS Components

ALUMINIUM CONDUCTOR

Sr.No.	Article No.	Description	8mm dia	10mm Dia
1	FLPS8ALU	Aluminium Conductor	✓	
2	FLPS10ALU	Aluminium Conductor		✓



SS, Copper and GI conductor options are also available

CONNECTORS



Sr. No	Article No.	Description	Material
1	FLPSUXS1	Universal Cross Connector for 8 & 10mm dia conductor	SS 304
2	FLPSVARC	Vario Connector for 8 & 10mm dia conductor	SS 304

GI connectors are also available as option

LPS Components

STRAIGHT SPLICERS

Sr. No	Article No.	Description	Material
1	FLPSSPLS1	Universal Straight splicer for 8mm and 10mm conductor	SS 304



EXPANSION PIECE

Sr. No	Article No.	Description	Material
1	FLPSEPS1	Expansion piece without Connector	Aluminium



LPS Components

AIR TERMINAL

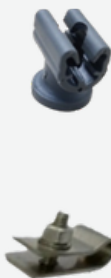
Sr. No.	Article No.	Description	AT Length			Material	
			500 mm	1000 mm	2000 mm	SS 304	Al Alloy
1	FLPSAT 105B	Air terminal with Base	✓				✓
2	FLPSAT 110B	Air terminal with Base		✓			✓
3	FLPSAT 1610B	Air terminal with Base		✓			✓
4	FLPSAT 20S1	Air Terminal without Base			✓	✓	



Options for SS, Copper, GI and Copper bonded AT is also available as per customer's requirement

CONDUCTOR HOLDER

Sr. No	Article No.	Description	Material
1	FLPSPHPA	Conductor Holder	Polyamide
2	FLPSPHS1	Conductor Holder	SS 304



Aluminium is also available on special request

LPS Components

TEST LINK

Sr. No	Article No.	Description	Material
1	FLPSTLRR S1	Test link Round To round	SS 304
2	FLPSTLRF S1	Test link Round to flat	SS 304
3	FSEFPA	Accessories to connect Earth stud to round conductor	SS 304



TERRACE HOLDER BLOCK

Sr. No	Article No.	Description	Material
1	FLPSBLK	Concrete block for Terrace	Concrete



LPS Components

BRIDGING CABLE

Sr.No	Article No.	Description	Length
1	FLPSBRC02	Bridging cable	200mm
2	FLPSBRC05	Bridging cable	500mm
3	FLPSBRC10	Bridging cable	1000mm



All are Copper cable with PVC insulation and are with lugs on both the ends

STANDING SEAM CLAMP

Sr. No	Article No.	Description	Material
1	FLPSSSCLEFS1	Standing Seam clamp - Flat type	SS 304
2	FLPSSSCLRS1	Standing seam Clamp - Round type	SS 304



LPS Components

MAST

Sr.No	Article No.	Description	Length
1	FLPSMGI2	GI Mast with base plate	2000 mm
2	FLPSMGI3	GI Mast with base plate	3000 mm
3	FLPSMGI3W	GI Mast without base plate	3000 mm



We offer a wide range of mast upto 20mtrs with different mounting arrangements

CLAMP AND EARTH FIXING POINT



Sr.No	Article No.	Description	Material
1	FSEFP	Earth Fixing Point	SS 304
2	FSURCL	Universal Rebar Clamp	SS 304
3	FSSP	Strike Pad	SS 304
4	FLPSX103 2SS	Universal Cross connector for 16-32mm rods	SS304

LPS Components

EXOTHERMIC COMPONENTS

Sr.No	Article No.	Description	Type
1	FSEWM	Exothermic mold	Any Joint
2	FSEWP	Exothermic powder	Powder

ELECTROMECHANICAL COUNTER



Sr.No	Article No.	Description	Material
1	FLPSCNTR	Electro mechanical counter - IP65	PVC

EARTH STUD FOR EQUIPMENT EARTHING

Sr.No	Article No.	Description	Material
1	FSEFP10	Earth fixing point 100x50 for 10kA fault current	SS304
2	FSEFP40	Earth fixing point 150x80 for 50kA fault current	SS304



LPS Components

EARTHING STRIPS/RODS AND CONDUCTORS

Article no.	Description	Dimension in mm
FEGIS256	GI Strip	25x6
FEMS256	MS Strip	25x6
FEMS506	MS Strip	50x6
FEMS756	MS Strip	75x6
FEMS7510	MS Strip	75x10
FEMC10	MS smooth round conductor	10mm dia
FEMC16	MS smooth round conductor	16mm dia
FEMC25	MS smooth round conductor	25mm dia
FEMC32	MS smooth round conductor	32mm dia
FECBC10	Copper bonded conductor	10mm dia
FECBC17	Copper bonded conductor	17mm dia
FECBC20	Copper bonded conductor	20mm dia
FECBC25	Copper bonded conductor	25mm dia



Available in standard length and cut lengths of 3,3.5 & 4 meters

We offer a complete range of vertical Earthing rod of different sizes along with Ground Enhancement compound, Clamp and Earth Inspection Chamber of HDPE type

Certifications



Fidael Power Solutions is ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018 Certified Company



Lightning protection system components are tested for

- 1.Ageing Test (Salt Mist and Humid Sulphurous test)**
- 2.100kA Lightning Impulse current Test for 10/350 Microseconds current waveform**
- 3.Mechanical impact test**

The Tests are done from NABL and Government approved Laboratories and are type tested as per IEC 62561-1



Fidael earthing compounds are type tested as per IEC 62561-7 and are ROHS tested and complied and rods are tested for short circuit test from Government accredited Laboratory.



All our products are CE complied and certified products

FIDAEEL POWER SOLUTIONS

POWERING PROGRESS THROUGH RELIABLE SOLUTIONS

**Factory Address: -
Fidael Power Solutions,
Building/Shed No. 1, Survey
Number :79/2, Near Guru
Basav Engg,
Shivane Pune 411023**

**Email Id: - info@fidael.com
Website: - www.fidael.com**