

KURN

Lightning Protection

System

Made in Indonesia

by



PT. KURN INDONESIA



KURN

PT. KURN INDONESIA



KURN
R : 120 - 150 M

KURN
R : 60 - 80 M

KURN
R : 30 - 40 M

Lightning Protection System



CV. WIJAYA LIGHTNING PROTECTION
SUPPLIER & INSTALLATION

Lightning Protection - Grounding System
Exothermic Welding - Electrical & Technical
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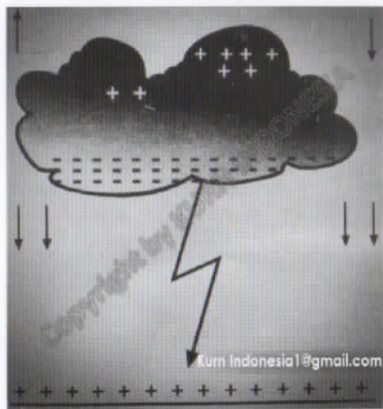
Sales : 0857 1171 1497
0877 2002 0312

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MEKANISME SAMBARAN PETIR

Petir adalah suatu fenomena alam yang merupakan hasil suatu proses elektro statis yang terjadi di awan akibat adanya medan positif dan pada muatan negatif. Dalam keadaan normal, udara mengandung ion-ion positif dan negatif yang terdistribusi secara random. Pada saat akan terjadi petir, ion-ion di udara yang tadinya terdistribusi secara random. Dan membentuk muatan yang netral akan terpisah muatan negatif pada lapisan bawah, maka di permukaan bumi terinduksi muatan positif berada pada lapisan atas. Degan adanya muatan negatif pada lapisan bawah, maka dipermukaan bumi terinduksi muatan positif dan membentuk medan listrik antara awan dan permukaan bumi.



Bila medan-listrik tersebut melebihi kekuatan medan tembus udara, maka akan terjadi pelepasan muatan (Discharge) dan terjadilah kilat (petir). Medan listrik atmosphere besar nya 100V/M dalam keadaan cuaca normal. Jika terjadi sambaran petir, besar medan listrik bisa mencapai 15 s/d 20KV/M.

Dari hasil pengamatan sambaran, petir terdiri dari beberapa sambaran degan tahapan sebagai berikut.

1. PILOT STREAMER, yaitu sambaran yang menentukan arah perambatan muatan dari awan keudara yang ionisasinya rendah. Kecepatan dari sambarañ kurang lebih 50.00 km/ dtk. Pilot Streamer akan bertemu degan muatan positif dari bumi, dimana titik pertemuan ini di sebut sebagai: POINT OF STRIKE.
2. Sambaran kedua terjadi pada titik yang sama degan mengikuti arah sambaran pertama (Pilot Streamer). proses dari sambaran petir ini berlangsung terus menerus hingga mencapai belasan meter bahkan beberapa meter dari atas tanah.
3. Pertemuan sambaran yang lebih besar dapat terjadi karena adanya aliran muatan positif dari bumi ke awan. Sambaran ini di sebut sambaran kembali (Return Stroke) Biasanya terdiri dari beberapa sambaran.

Arus kilat pada setiap sambaran bisa mencapai maksimum 200.000 Amphere. Arus kilat ini merupakan arus impuls, di mana arus puncaknya dicapai dalam beberapa mikro detik.

EPEK SAMBARAN PETIR

Sebuah sambaran petir menghasilkan energi yang sangat besar, bisa mencapai 300 juta KW degan besar tegangan listrik 125 juta KV dari rata rata arus petir di atas 20 000 A.

Pengaruh ⚡ yang di timbulkan oleh petir

- Efek induksi, menyebabkan tidak ber-pungsinya peralatan maupun terjadinya kesalahan data.
- Efek panas, meyebabkan terjadinya koboran.
- Efek akustrik, menimbulkan gangguan pada gelombang radio.
- Efek pada manusia atau hewan akan meyebabkan kerusakan bahkan kematian yang di sebabkan besar nya arus petir.

SPECIFICATION

KURN LIGHTNING TERMINAL

- KURN Terminal merupakan alat penangkal petir yang di design untuk menciptakan medan ionisasi pada sekeliling area/Lonezer Dissipation system
- Setiap pelepasan medan ionisasi ke awan akan mampu menimbulkan perbedaan pontensial antara awan dan permukaan tanah (bumi), sehingga arus muatan pada tingkat yang paling rendah akan dapat mengalir secara terus menerus ketanah melalui penghatar.
- Pada aliran arus muatan yang tercipta secara terus menerus memungkinkan terjadinya sambaran petir berkurang.
- KURN Terminal mampu bekerja untuk menciptakan medan statik terhadap perbedaan muatan melalui Corona Efek yang keluar pada Head Terminal.
- Melalui pelepasan ion positive pada KURN Terminal, mampu membentuk sudut perlindungan proteksi area yang cukup luas (Data Spesifikasi terlampir).
- Perbedaan potensial pada awan dan bumi dapat menghasilkan arus muatan yang cukup besar terdapat pada KURN Terminal, sehingga pada saat tertentu akan terjadi daya tarik muatan terhadap muatan awan yang kemudian dikonsentrasikan pada titik sambaran Head Copper Terminal dan di salurkan melalui penghatar ke ground/ bumi.
- KURN Lightning Protection di ciptakan atas dasar pengembangan franklin Rod melalui riset yang panjang dan akurat.
- Dari keseluruhan data data yang di dapat dan di pelajari ulang, maka hasil tersebut akan di sempurnakan degan sebaik - baiknya.

Untuk mendapatkan hasil cipta benar benar-dapat diandalkan.

Kesempurnaan hasil cipta itu sendiri di bagi dalam 2 (dua) bagian yaitu:

- 1). Kesempurnaan Design
 - a. Mencakup kekuatan bahan.
 - b. pengaturan & penempatan sparepart.
 - c. Secara Visual memiliki daya tarik di nilai dari segi estetika.
- 2). Kesempurnaan Ilmiah
 - a. Mencakup keandalan system electrostatik.
 - b. Memiliki Objectivity protect yang luas
 - c. Menguasai detail spesifikasi baik secara teori maupun praktek.

OBJEKTIFITAS

Instalasi dapat di lakukan pada object- Object sebagai berikut:

- a). Gedung-gedung perkantoran
- b). Kawasan Industri/pabrik-pabrik
- c). Rumah tinggal.
- d). Gudang-gudang dynamit (jajaran Hankam)
- e). Peralatan elektronik besar seperti pemancar dan siaran televisi.

SPECIAL PROJECT

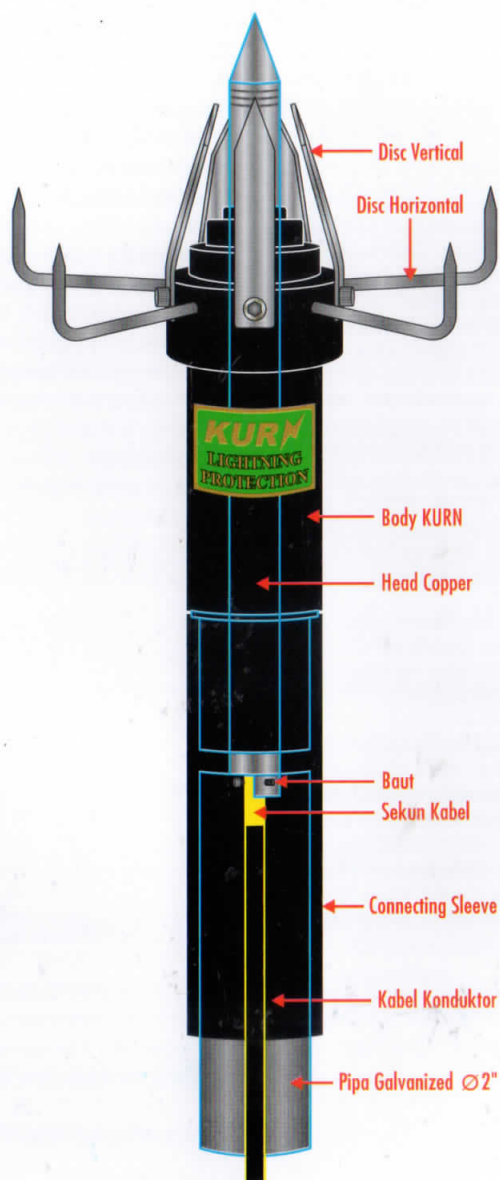
Pada era sekarang ini telah direferensikan pula paket instalasi di Indonesia (Referansi Terlampir).

RECOMENDATION

- 1). Certificate of Kurn Lightning Protection
- 2). Surat Garansi untuk masa jaminan 1 tahun
- 3). Surat Rekomendasi yang di keluarkan oleh Departemen Tenaga kerja.
- 4). Hasil Test PLN-LMK Indonesia.

Produced by: **KURN INDONESIA** ⚡

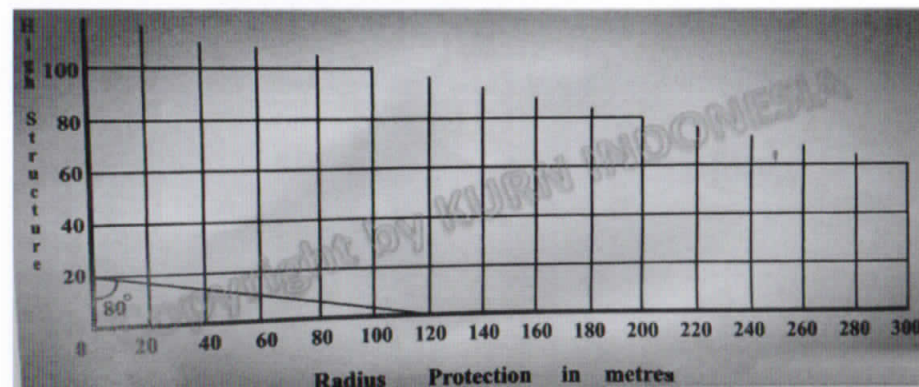
KURN TERMINAL



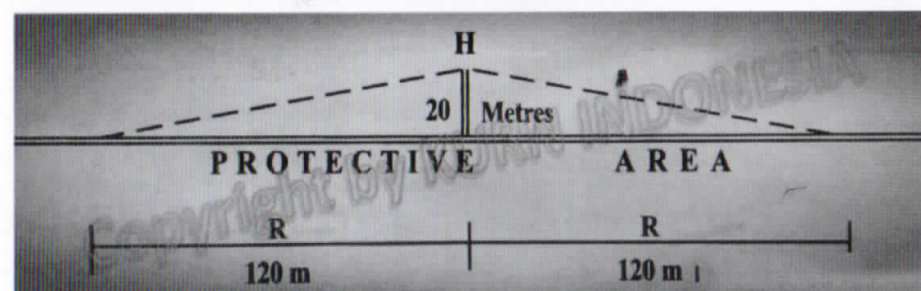
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HALAMAN 3

STRIKING DISTANCE



THE BEST PROTECTION



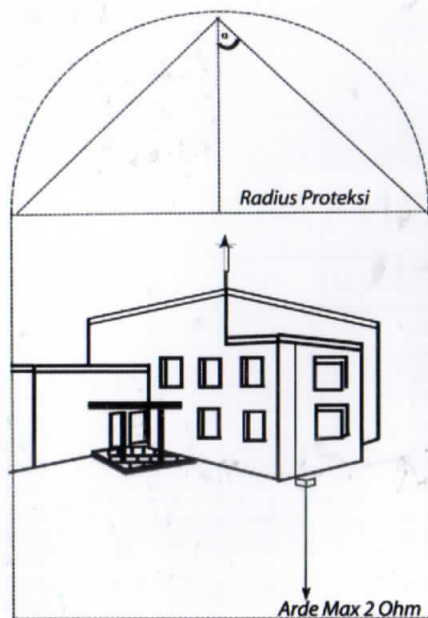
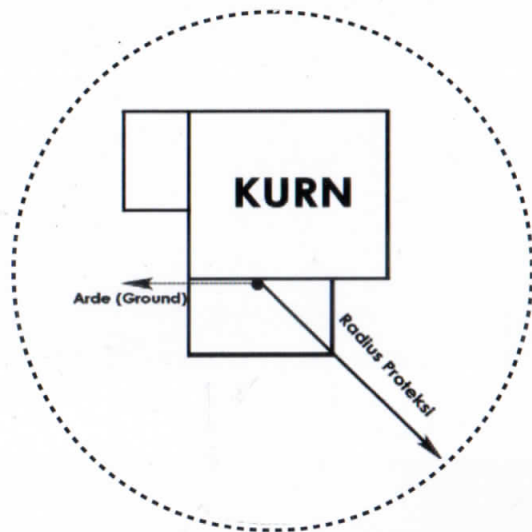
PROTECTION TABLE

Structure Height (M)	Protection Radius (M)
20 m	120 m
30 m	130 m
40 m	140 m
50 m	150 m
60 m	160 m
70 m	170 m
80 m	180 m
90 m	190 m
100 m	200 m
110 m	210 m
120 m	220 m
130 m	230 m
140 m	240 m
150 m	250 m

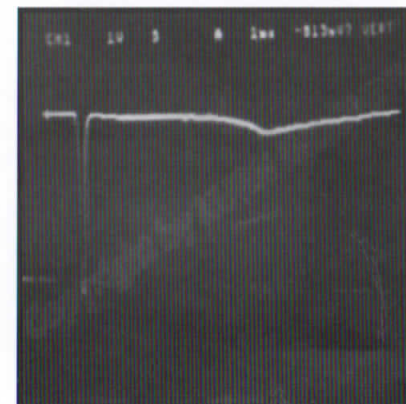
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HALAMAN 4

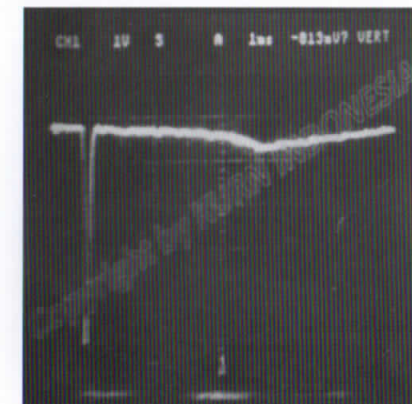
RADIUS PROTEKSI KURN



BENTUK GELOMBANG SWITCHING IMPLUSE YANG DIREKAM SAAT PERCOBAAN

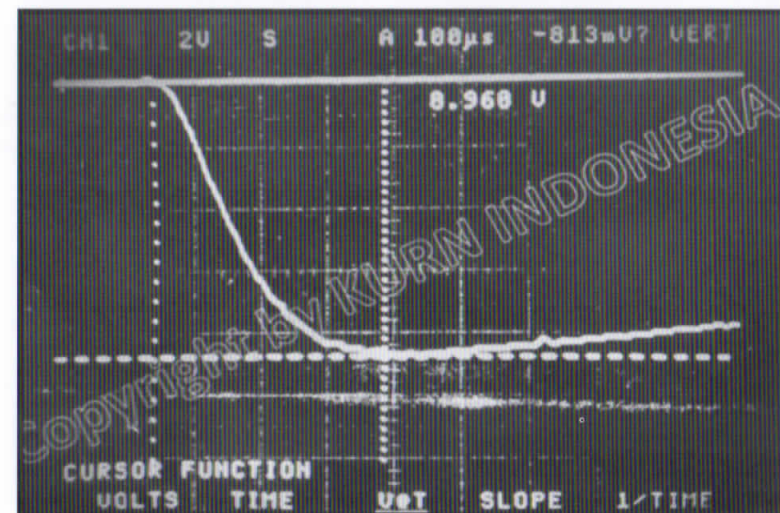


I



II

BENTUK GELOMBANG SWITCHING IMPLUSE YANG DIREKAM SAAT SPARK - OVER



III

LIGHTNING STRIKE MECHANISM

Lightning is a natural phenomenon which create from electrostatic process in cloud due to massive electric field on positive and negative charges area.

In normal condition, air contains randomly distributed positive and negative ions. When lightning is about to strike, randomly distributed ions in the air which create neutral charges will be separated, negative charges in under layer and positive charges in upper layer. With the negative charges in under layer, then in earth's surface induced positive charges and create electric field between cloud and earth's surface.



If the electric field exceeds the field strength of air penetrating into the ground, there will be an electric discharge and this event called lightning.

In normal weather condition, atmospheric electric field magnitude is 100V/M

In the event of lightning strike, electric field magnitude could reach 15 to 20 KV/M

From lightning strike observation, lightning consists of several strikes with following stages :

1. PILOT STREAMER is the strike which determines the direction of the charge's propagation from to cloud to low air ionization. The speed of a strike approximately 50.000 Km/s. Pilot streamer will meet with positive charge from earth, which called "POINT OF STRIKE".

2. second strike happen in the same point by following the first strike direction (pilot streamer). The lightning strike process happens over and over again until dozen of metres even and only several metres from the ground

3. Larger strike can occur due to the flow of positive charge from the earth to the cloud. This strike called Return Strike. Usually contains of several strikes.

Lightning currents on each bolt can reach 200.000 Amphere. Lightning currents is an impulse flow, which reached a peak flows within a few micro seconds.

LIGHTNING STRIKE EFFECT

A lightning strike generate massive energy, it could reach 300 million KW with 125 millions of electrical voltage from average lightning current above 20.000 A.

Effect caused by lightning:
Induction effect, cause malfunction of

- equipments or data errors.
- Thermal effect, cause a fire.
- Acoustic effect, cause interference with radio waves
- Effects on human or animals, cause damage or even death due to the magnitude of lightning current.

SPECIFICATION

KURN LIGHTNING TERMINAL

- KURN Terminal is a lightning rod tool designed to create a ionization field in the surrounding area, this called Ionizer Dissipation System.

- Each ionization field release to cloud lead to a potential difference between the could and the earth, allowing the lowest level of charge to flow continuously into the ground through a conductor.

- If the charge flow continuously, allowing to reduced the lightning strikes.

- KURN Terminal is able to create a static field to the charge difference through the corona effect a on the Head Terminal.

- Through the release of positive ions, the KURN terminal is able to form a protection angle or widely protection areas.

- The potential difference between cloud and the earth can produce enough charge flow which found in KURN Terminal, so that at any given moment there will be a charge traction against cloud charge which is concentrated at the point re of strike in Head Copper Terminal and In channeled through conductor to the earth.

- KURN Lightning Protection created on the bases of Franklin Rod development through a long and accurate research.

- From the obtained and studied research data, it is enhanced to get a reliable result.

- The result perfection itself contains of two parts:

1. Design Perfection
 - a. Material strength
 - b. Arrangement and placement of ned spareparts
 - c. Visually appeals, assessed in aesthetics terms
2. Scientific Perfection
 - a. Electrostatic system reliability
 - b. Broad objectivity protect
 - c. Mastered specification detail, both in theory and practice

OBJECTIVITY

Installation can be done on the following objects :

- a. Office building
- b. Industrial areas Factories
- c. Residential houses
- d. Dynamite warehouse (Defense ranks)
- e. Electronic equipment such as satellite dish CB antenna, radio and television broadcast transmitters

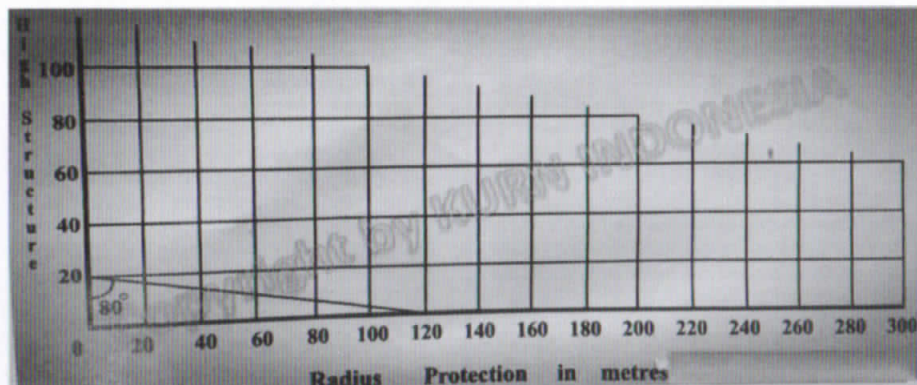
SPECIAL PROJECT

In this era installation package has been referenced for golf courses throughout Indonesia

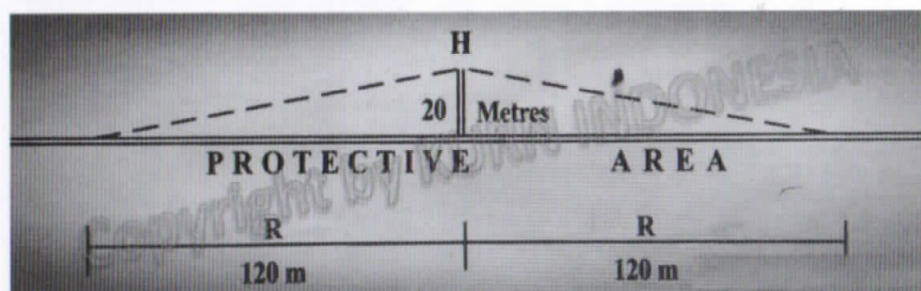
RECOMMENDATION

1. Certificate of KURN Lightning Protection
2. Guarantee Letters for 1 years
3. Recommendation letter from Department of Labor
4. Test result from PLN-LMK Indonesia with STPIK number 321.LLI.006.

STRIKING DISTANCE



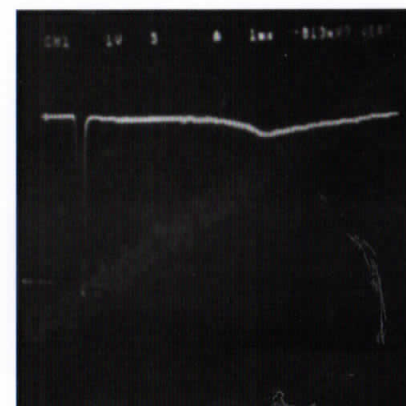
THE BEST PROTECTION



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The Switching Impulse Waveform recorded during the experiment

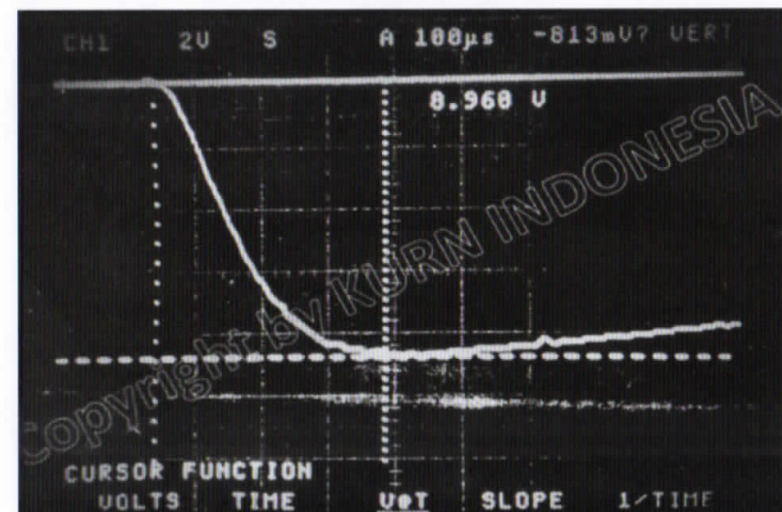


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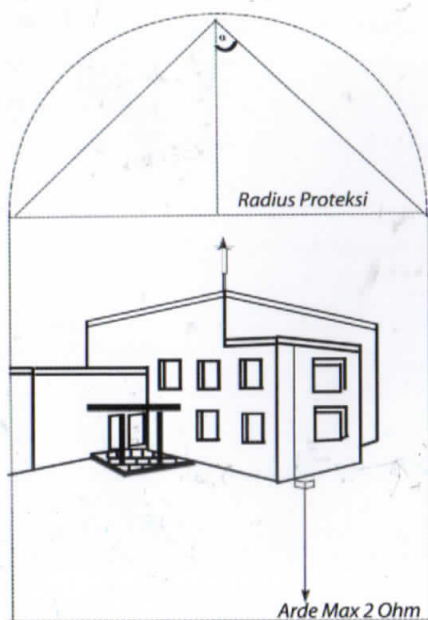
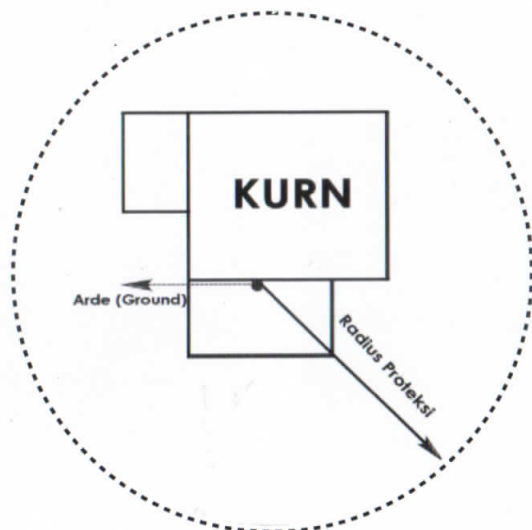
II

The Switching Impulse Waveform Recorded during spark - over

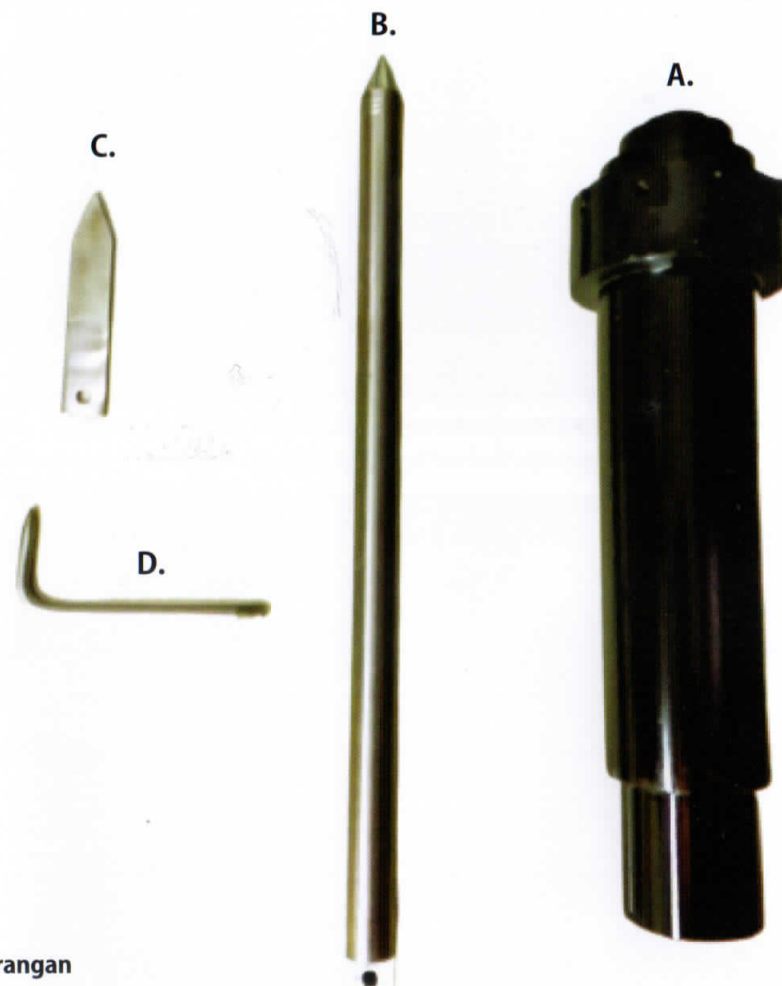


III

KURN PROTECTION RADIUS

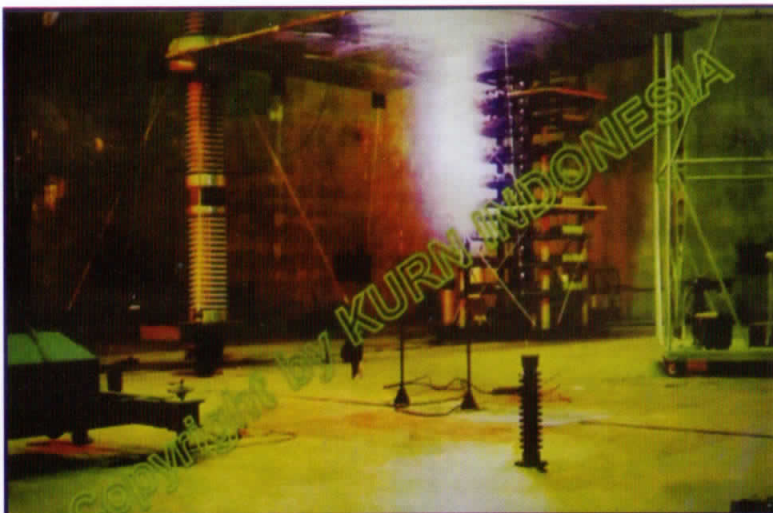


BASIC COMPONENTS



Keterangan

- a. Body Terminal No. 105 KLP
- b. Head Copper No. 104 KLP
- c. Disch Vertical No. 103 KLP
- d. Disch Horizontal No. 102 KLP



Test comparison between "KURN TERMINAL" with conventional system-LMK Lab.



Test with STRIKE CAMERA to see more clearly when break down happens LMK LAB

KURN LIGHTNING PROTECTION INSTALLATION GUIDE

1. Insert 70mm² NYA Cable which outer isolation had been peeled into the hole in Head Copper (B-104 KLP), peeled isolation cable length should be adjusted to the size of the hole in Head Copper.
2. Use Crimping Tool 70mm² Tang Press (Hexagonal/six sides) to clamp outer part of cable connection which coming into the hole in Head Copper (Pressed up-down).
3. Isolated or wrapped with the connection between the cable with Head Copper using 3 M (or likely) as much as possible
4. Insert Head Copper which attached to cable inside of Terminal Body (A-105 KLP), press until Head Copper head out to the upper Terminal Body and make sure Head Copper Ring locked on the section position inside Terminal Body.
5. Head Copper that had been mounted on Terminal Body with Bolt Head Copper (F-106 KLP), with position of the hole in the Terminal Body.
6. Install vertical ICS (C-103 KLP) into each position and lock with Bolt Disch (E-101 KLP), arrange the space between tip of vertical Disch with Head Copper, each within 3mm.
7. Install Horizontal Disch (D-102 KLP) into each hole in Terminal Body and arrange each pointed tip facing up.
8. Connect conductor cable with Ground /Arde.
9. Make a control box for each Ground Arde point.
10. Grounding result for lightning rod maximum 2 ohm.



KURN
R: 120 - 150 M



KURN
R: 60 - 80 M



KURN
R:30-40 M