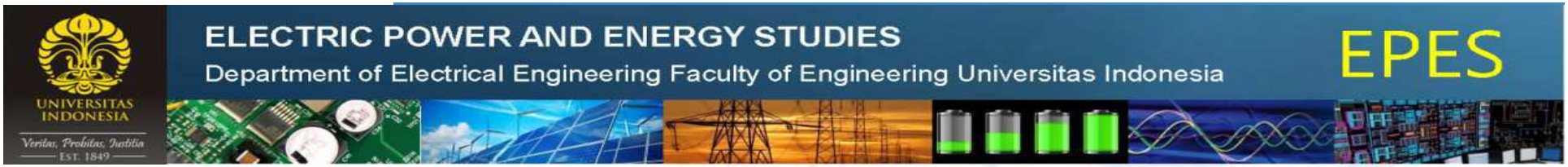
Fédération Internationale pour la Sécurité des Usagers de l'Electricité
International Federation for the Safety of Electricity Users
Federacion Internacional para la Seguridad de los Usuarios de la Electricidad



SITUATION AND CONDITION ELECTRICAL SAFETY IN INDONESIA

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University of Indonesia

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Electrical Department, Udayana University

Symposium Fisuel – Indonésie – 10 & 11 Mai 2017

Fisuel Symposium – Indonesia – 10th & 11th of May, 2017

Outline

- Background and Scope of Electrical Safety
- Situation of Fire in IndonesiaWhy fire happened
- Cause and Prevention fire and injury related to eletrical
- Regulation

Background

- More and more people are using electricity for various activities
- Not all understand the dangers of electricity
- Many of the market equipment are not up to standard
- Electrical installation that does not meet the standards
- The decline in electrical insulation capacity over time

- Many Accidents Happen to Humans
- There are many fires due to electricity

- Work safety is an aspect related to the safety of workers in institutions that aim to minimize the occurrence of work accidents.
- One occupation that has a high risk to the work is related to electricity.
- In Indonesia, every year many electrical workers (electrical) injured and died from disobeying safety rules.
- Taking shortcuts to complete work without complying with safety procedures that can be fatal, such as loss of life, injury,

Electrical Safety

The purpose of Electricity safety to realize the conditions :

1. Reliable and safe for installation;
2. Safe from harm to humans and other living creatures;
3. and Environmentally friendly

Scope :

1. Compliance with standardization of electric power equipment and users;
2. Electric power installation;
3. and Security of electric power users.

SITUATION OF FIRE IN INDONESIA

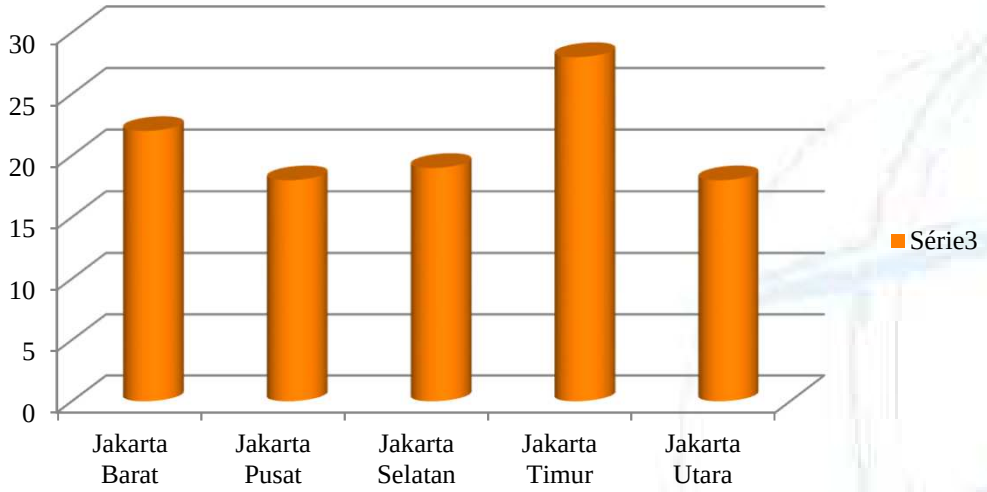
Symposium Fisuel – Indonésie – 10 & 11 Mai 2017

Fisuel Symposium – Indonesia – 10th & 11th of May, 2017

Situation of Fire in Indonesia

- In 2011 there are 47,000 cases of electrical fire, 418 died and 1.570 injured, Losses about $1,4 milyar.
- Important think that nearly half (48%) from lighting and electrical instalation. Due 63% wiring system, 20% lamp and fiiting, 11% from terminal, and 6% from transformer and power supply.
- Others : Fan (6%), Dryer (6%), heater (4%), AC (4%), water heater (3%), dan etc (29%).
- In the year 2012 there were 186 cases of fire in North Jakarta area. As a result, 2,197 families of 6,917 were displaced.
- Fire also caused four people died and 12 people were injured. And caused losses of up to Rp 36.4 billion.
- This incident occurred in the period of July 21 to August 20, 2012. Especially in West Jakarta, more than 33 times the fire events in that period.
- in 2013 the total disaster in Indonesia recorded 15 percent is due to fire.
- Of the 15 percent of fires, 70 percent is caused by short-circuit.
- In three month, in North Jakarta, At least 18 fire incidents occurred since early January 2013. The fire resulted in 38 families lost their homes and losses of up to Rp 24 billion.

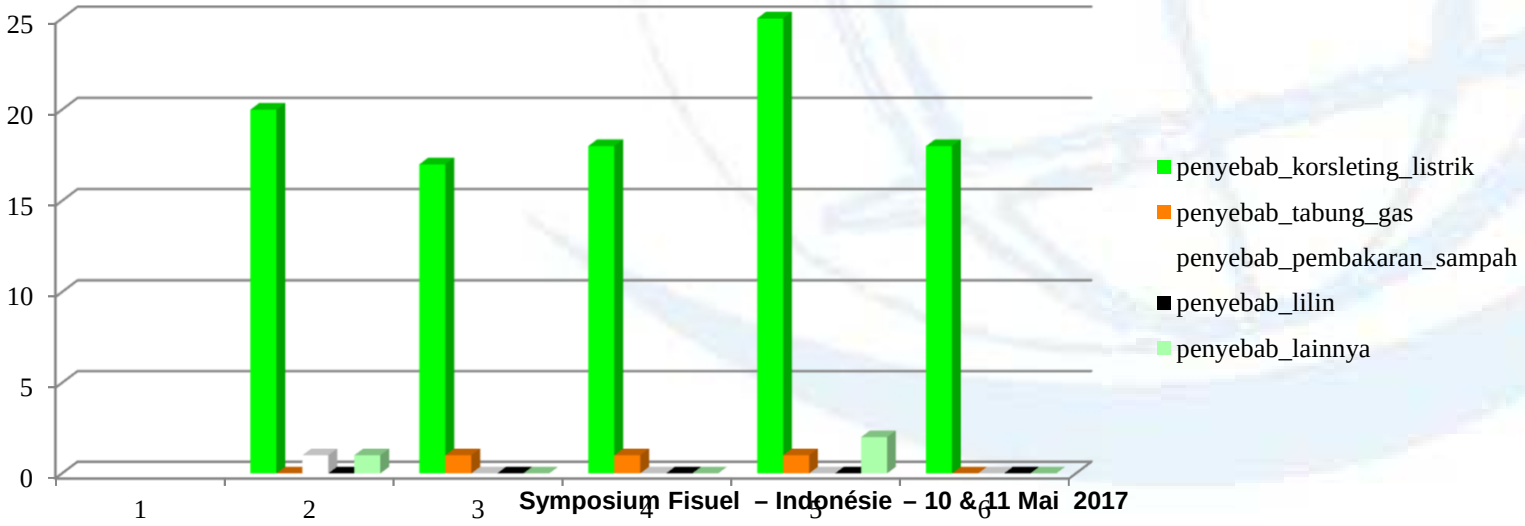
- In 2015 there were 1,582 fire incidents, resulting from short circuits of 870 cases, then 2 deaths, from 4,200 households or 16,139 people, and with a material loss of Rp 377 billion, with a total of 3,275 buildings burned
- From 1 January to 21 December 2016 the number of fire incidents reached 1,139 cases, fewer compared to throughout 2015 which reached 1,582 cases.
- The most is due to the short circuit of 836 cases. The fire incident has killed 20 people, and losses for 3,618 families or 11,719 people, material losses reached Rp212 billion, most of which burned down 343 housing buildings.
- .



In 2016

Compared to the previous year there was a decrease in fires.

The fire is declining is because awareness of the community is increasing



Statistik

Data Kebakaran Tahun 2015

Nama Daerah	Freq	Benda Terbakar					Sebab Terbakar						Korban		Taksiran Kerugian
		LN	BP	BI	BU	KD	BD	LT	KP	LS	RK	LN	LKLK	MNGL	(dalam Ribuan Rupiah)
Jakarta Utara	147	78	50	0	13	6	1	0	8	65	3	70	12	4	24,098,700.00
Jakarta Pusat	96	43	30	0	16	7	1	0	7	50	2	36	9	2	35,481,100.00
Jakarta Timur	153	75	50	5	17	6	2	0	6	83	0	62	5	1	24,444,600.00
Jakarta Selatan	142	69	35	2	20	16	0	0	5	93	1	43	11	5	28,336,900.00
Jakarta Barat	147	66	51	1	18	11	3	0	11	85	7	41	10	3	22,849,450.00

Legend :

BP : Bangunan Perumahan
BU : Bangunan Umum
BI : Bangunan Industri
KD : Kendaraan
LN : Lain-Lain
LKLK : Luka Luka
Kp : Kompor
Lp : Lampu
Ls : Listrik
Rk: Rokok
MNGL : Meninggal Dunia

Kebakaran di
Tomang
300 Rumah Ludes
di Jati Pulo,
Kerugian Rp 2,5 M

Kawasan padat penduduk Jatinegara

Kebakaran Kelurahan
Mentengatas,
Kecamatan Setiabudi,
Jakarta Selatan. sekitar
pukul 12.00 WIB itu
diduga disebabkan
adanya hubungan arus
pendek atau korsleting
listrik

Kebakaran di Manggarai Jakarta Selatan, di permukiman padat penduduk pd pukul 14.00 WIB. Diduga kebakaran tersebut terjadi akibat lilin

– Indo

ndones

Areas prone to fire

There are 56 area prone to fire in Jakarta

- **Jakarta Pusat:** Tanah Tinggi, Galur, Kebon Kosong, Karang Anyar, Kebon Melati, Kebon Kacang, Jati Bunder, dan Kramat.
- **Jakarta Utara:** Penjaringan, Kamal Muara, Kapuk Muara, Pademangan Barat, Cilincing, Kali Baru, Sukapura, Warakas, Kebon Bawang, dan Koja.
- **Jakarta Barat:** Krendang, Kali Anyar, Jembatan Besi, Tambora, Duri Utara, Tangki, Jelambar Raya, Kota Bambu Selatan, Kota Bambu Utara, Palmerah Barat, Kapuk, Cengkareng, Semanan, dan Kalideres.
- **Jakarta Selatan:** Manggarai Selatan, Manggarai, Bukit Duri Selatan, Pejaten Timur, Mampang Prapatan, Cipete Utara, Gandaria Utara, Kebayoran Lama Utara, Petukangan Utara, Petukangan Selatan, Grogol Utara, Karet Belakang, dan Pancoran.
- **Jakarta Timur:** Jatinegara Kaum, Kayu Manis, Lubang Buaya, Halim, Kampung Makasar, Kebon Pala, Kramat Jati, Kampung Tengah, Susukan, Ciracas, dan Gedong.

CAUSE PREVENTION FIRE AND INJURY RELATED TO ELETRICAL

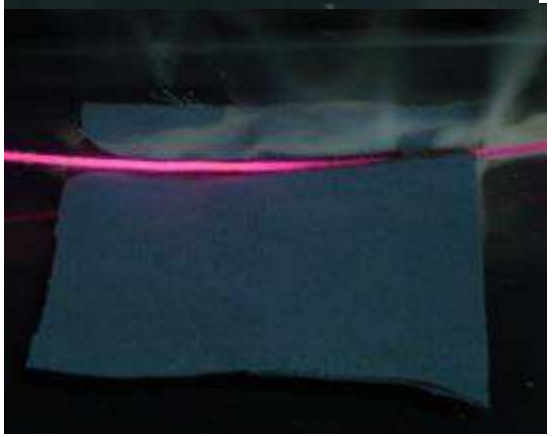
Symposium Fisuel – Indonésie – 10 & 11 Mai 2017

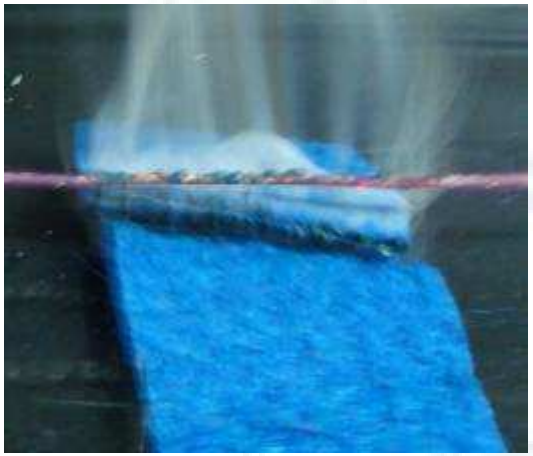
Fisuel Symposium – Indonesia – 10th & 11th of May, 2017

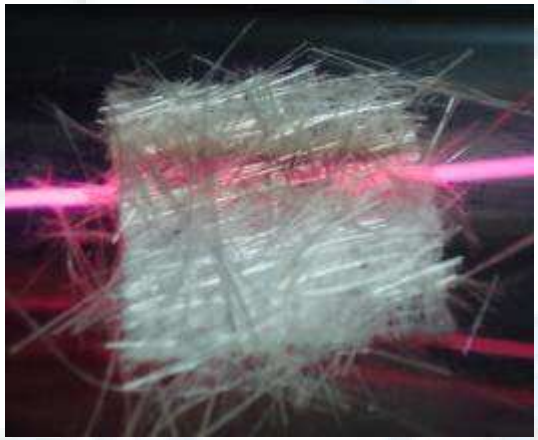
Cause Fire related to Electrical

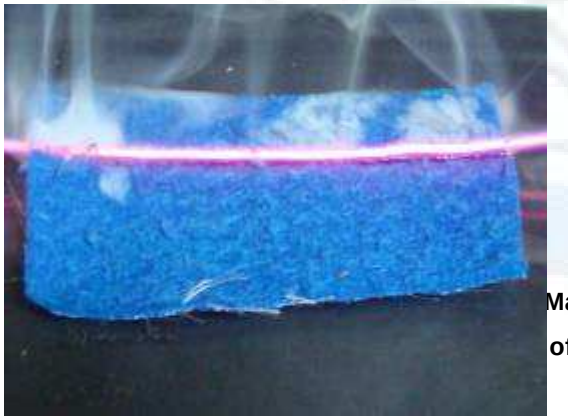
- Dense population especially in city
- Unsuitable electrical installation system
- Using non standard equipment
- Excessive electrical outlets
- Use damaged power cord Incorrect use of additional cables
- Bad cable insulation
- There is overload (overload) on the electrical installation system
- Damage to electrical installation equipment (eg protection systems, loose plugs,)
- Bad environmental conditions

Eksperiment over load on material





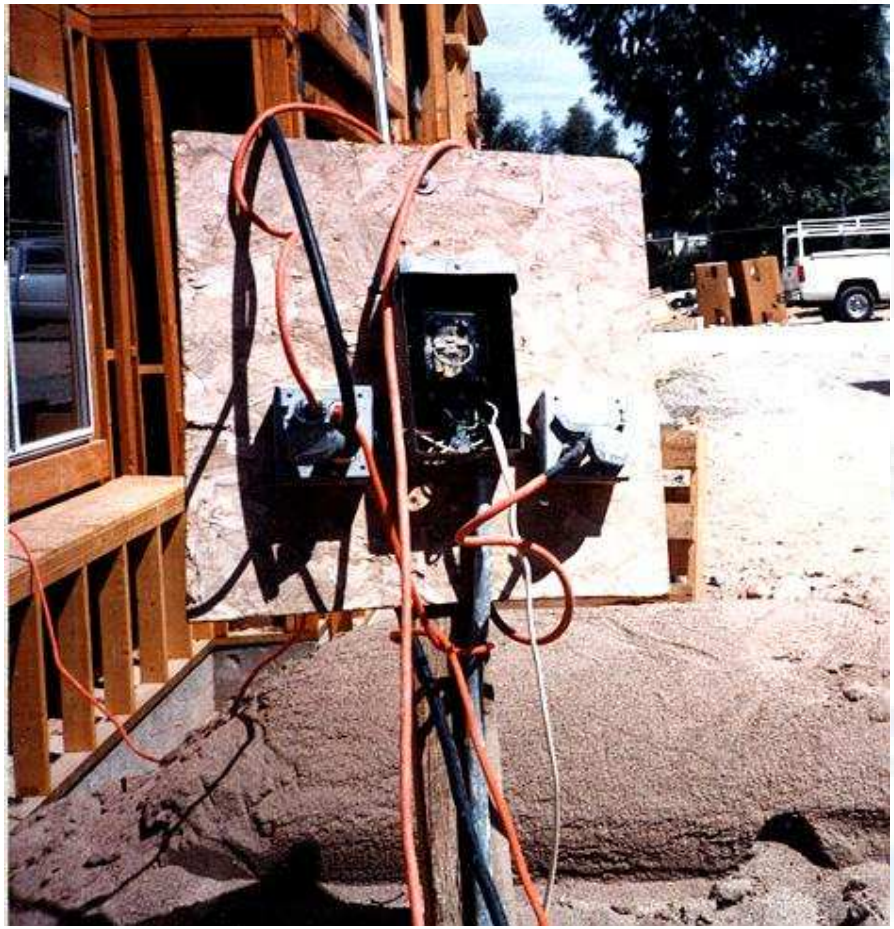


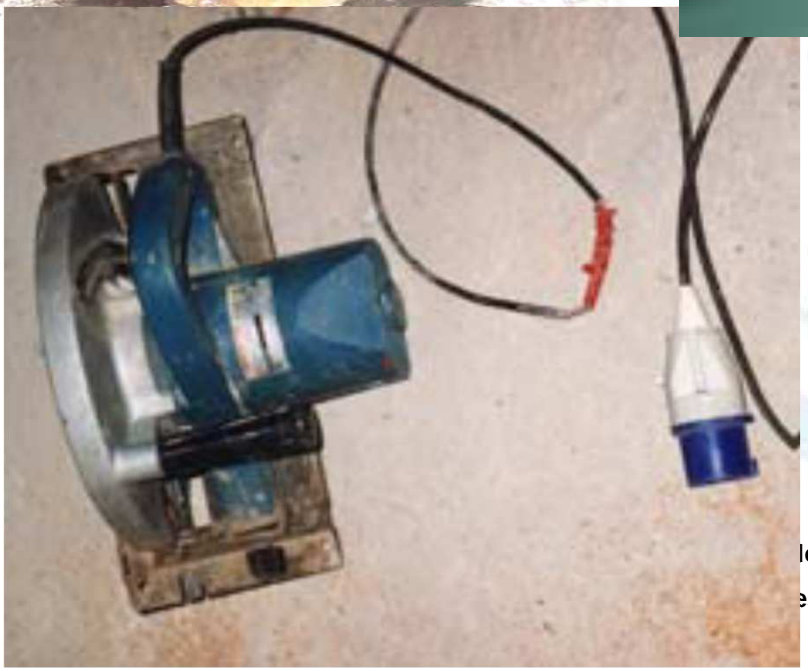


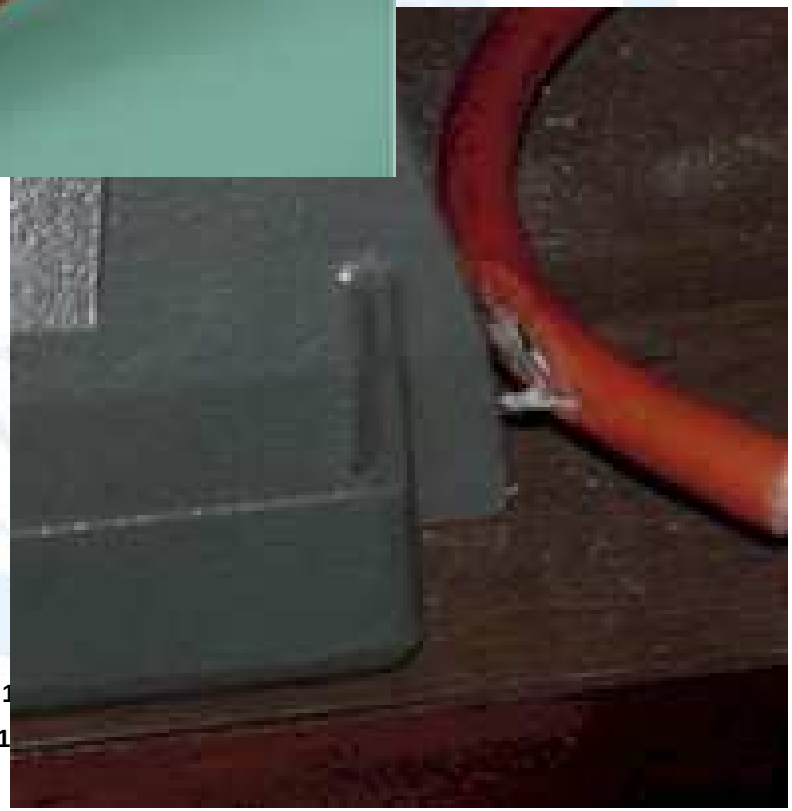
Mai 2017

of May, 2017

Bad cabling







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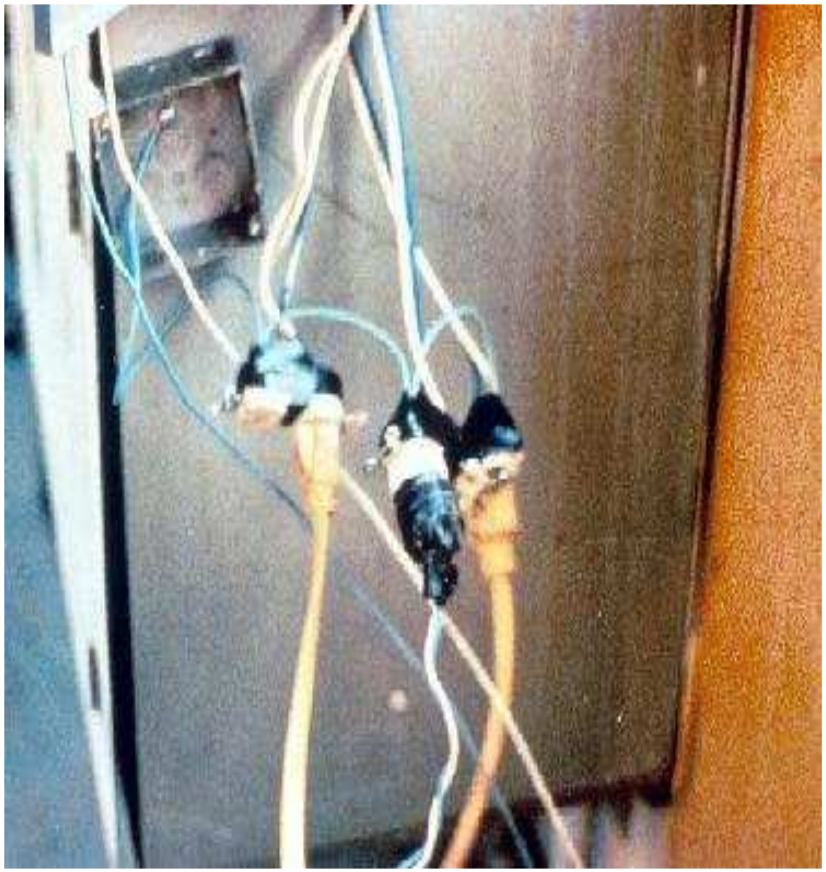
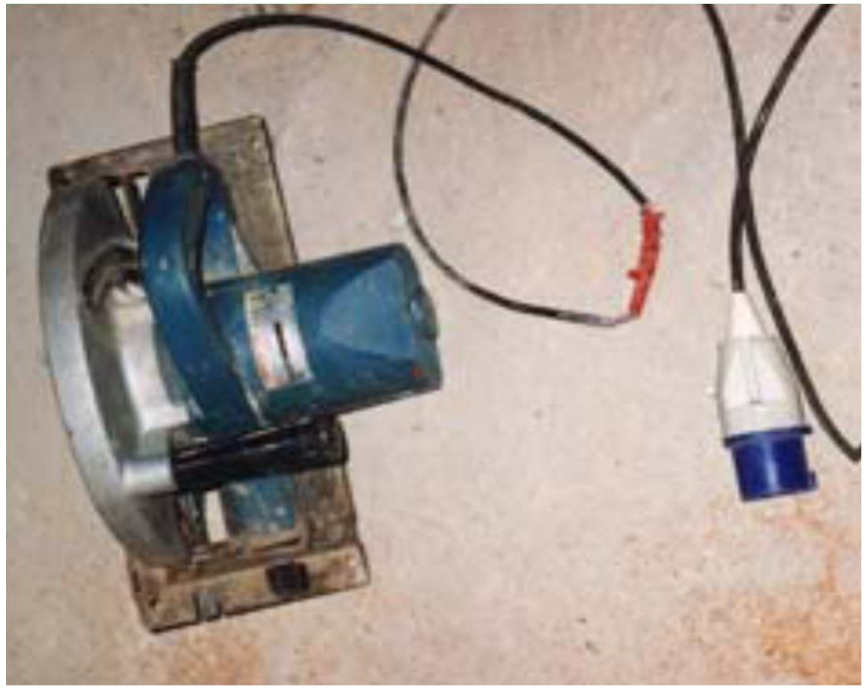
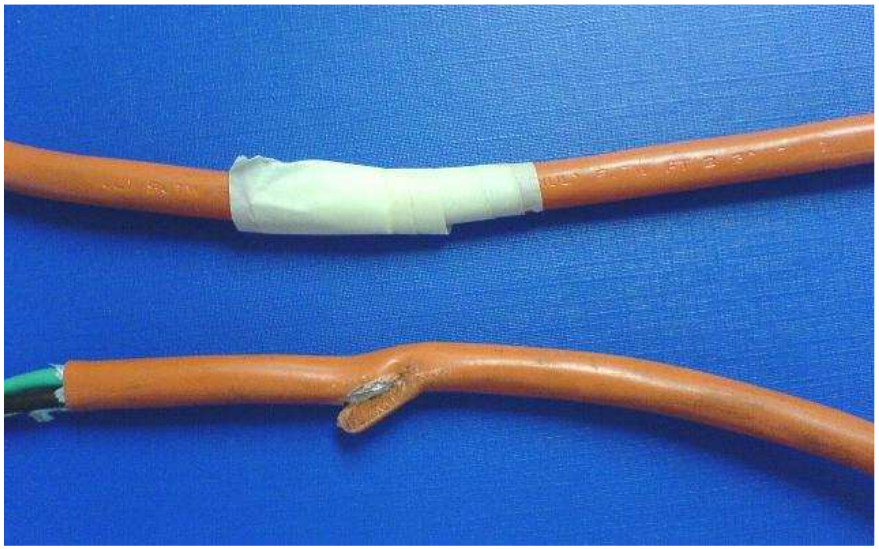
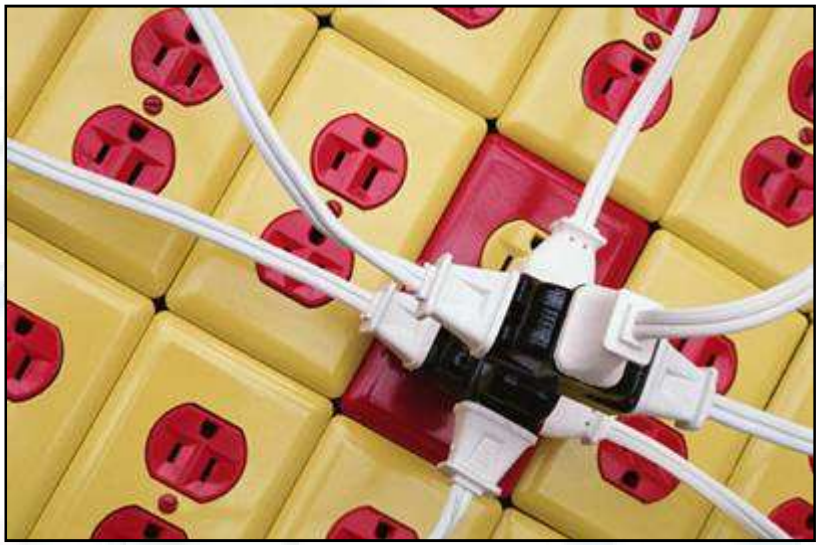
Bad insulation







Overload



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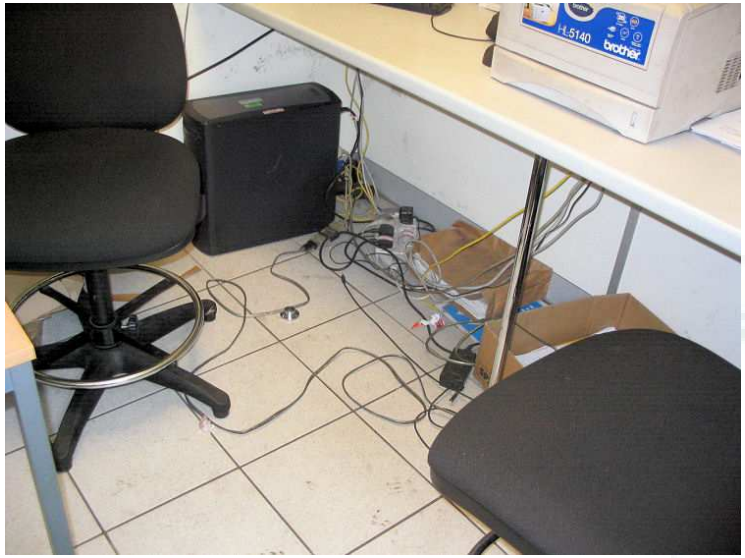
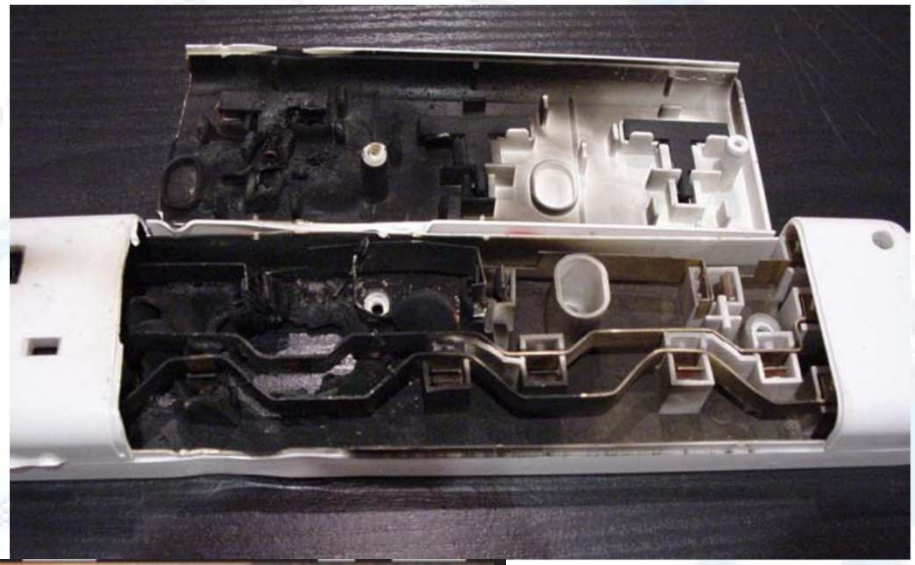

H.5140
brother

The heat generated resulted in the burning of insulation



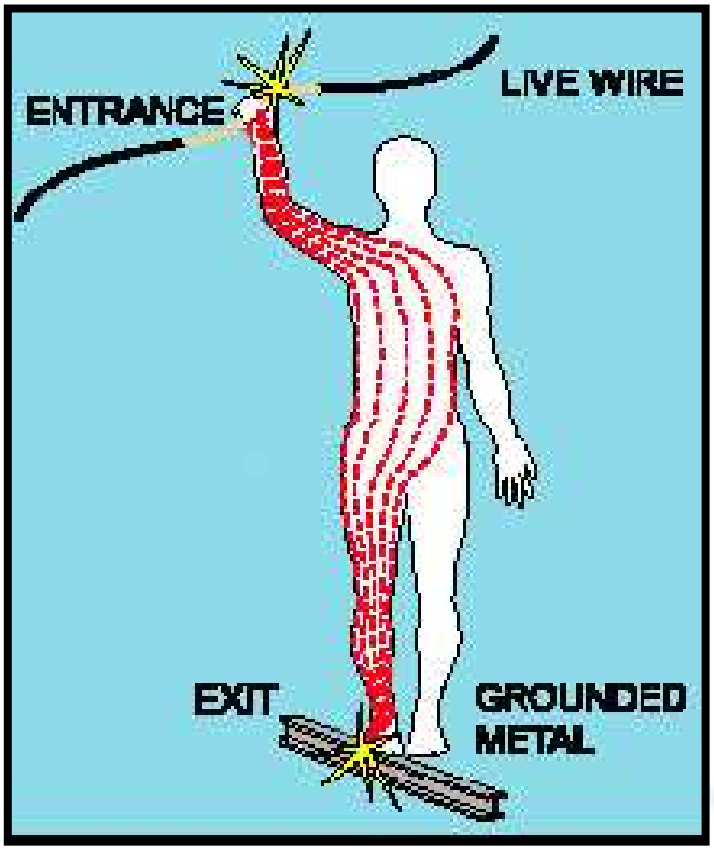
The main causes of death or serious injury related to electrical work

- Use equipment without good maintenance
- Working too close to high-voltage power cables
- Digging underground cables when they are on
- Unsafe practices when using the primary supply
- Open cable (bare cable)
- Damaged equipment or cables
- The outlet is broken and the cover is missing
- Work on wet conditions

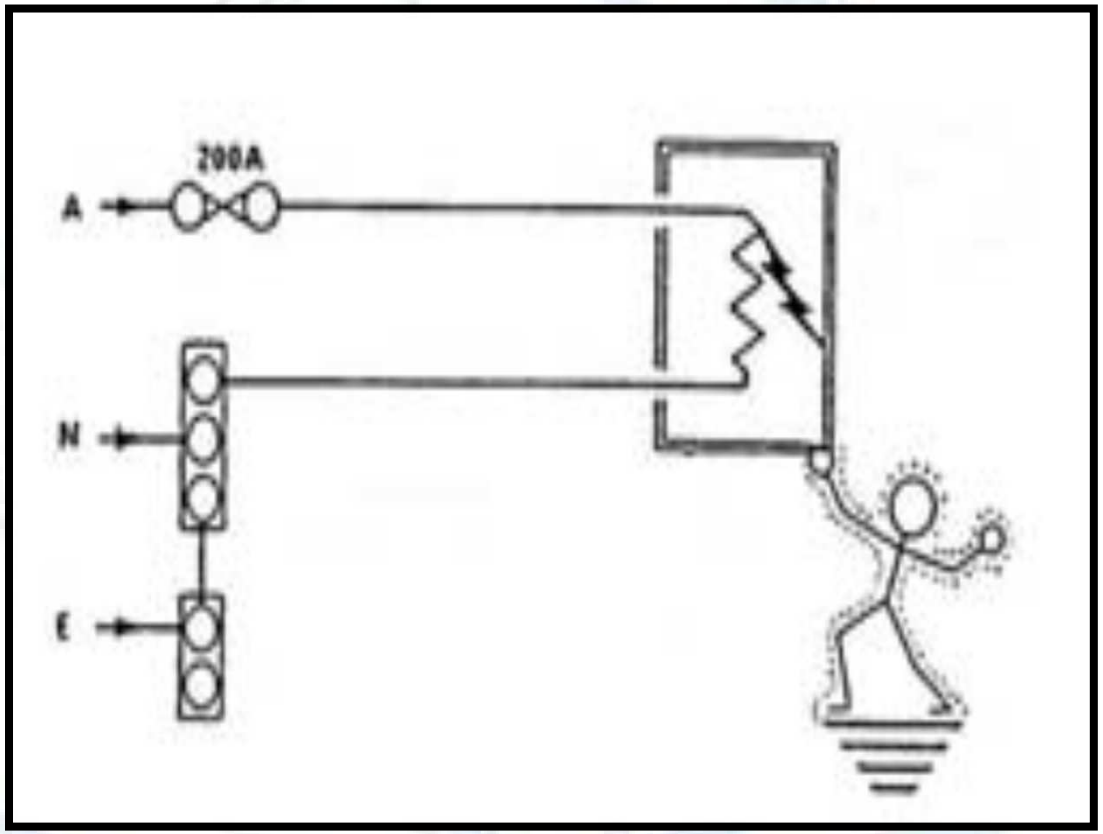
DANGER HAZARDS ELECTRICITY

- Direct touch hazard Is a direct touch on the active part of electrical equipment or installation

- The danger of indirect touch Represents an Open Conductive Section (BKT) fixtures or installations that become suspended due to isolation failure

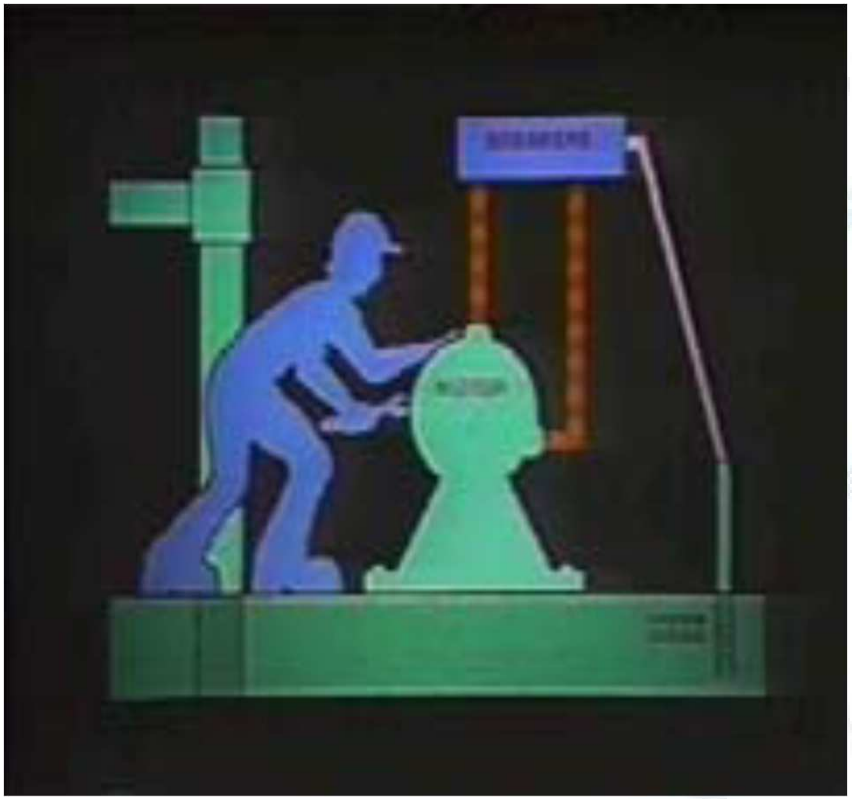


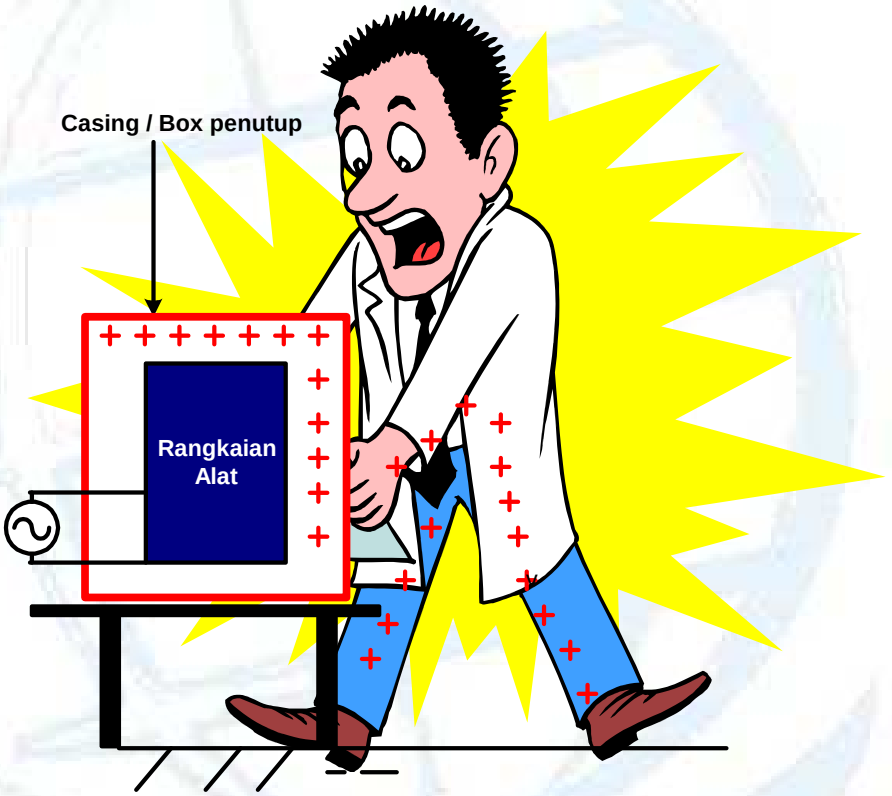
Direct



Indirect

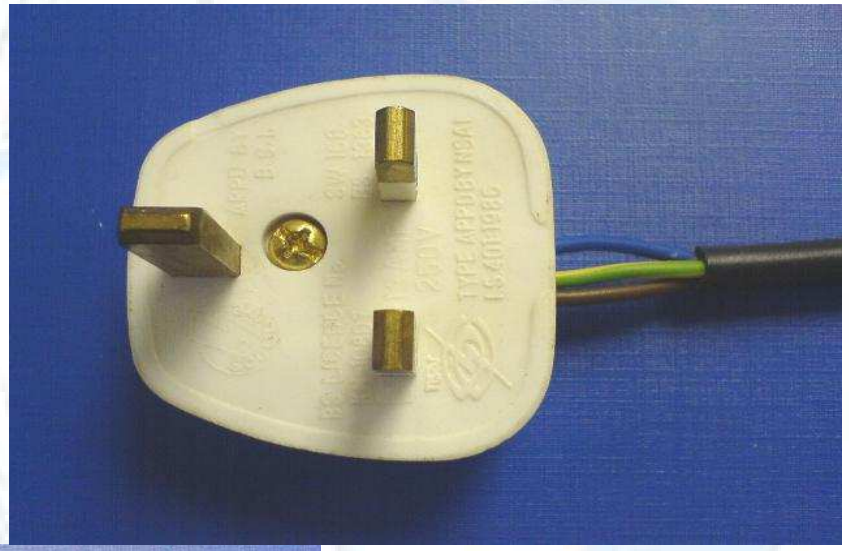
Ungrounding Electrical equipment





Grounding: Protecting Humans from the Dangers of Electric shock caused by the collection of loads on exposed metal

The potential is touched directly on the wire that is in ongoing voltage due to improper cabling



PREVENTION OF HAZARDS OF ELECTRIC HAZARDS

- Good grounding system
- Use the appropriate protection system (fuse / CB)
- Use safety equipment if there is any electrical repair (gloves / boots etc)
- Use good panels (closed / locked etc.)
- Use of electrical components and installations that meet the standards
- There should be a transfer of knowledge about electrical hazards
- There needs to be regular checks and tests

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REGULATION

Symposium Fisuel – Indonésie – 10 & 11 Mai 2017

Fisuel Symposium – Indonesia – 10th & 11th of May, 2017

There is a potential fire and accident !!! On the building and others

Symposium Fisuel – Indonésie – 10 & 11 Mai 2017

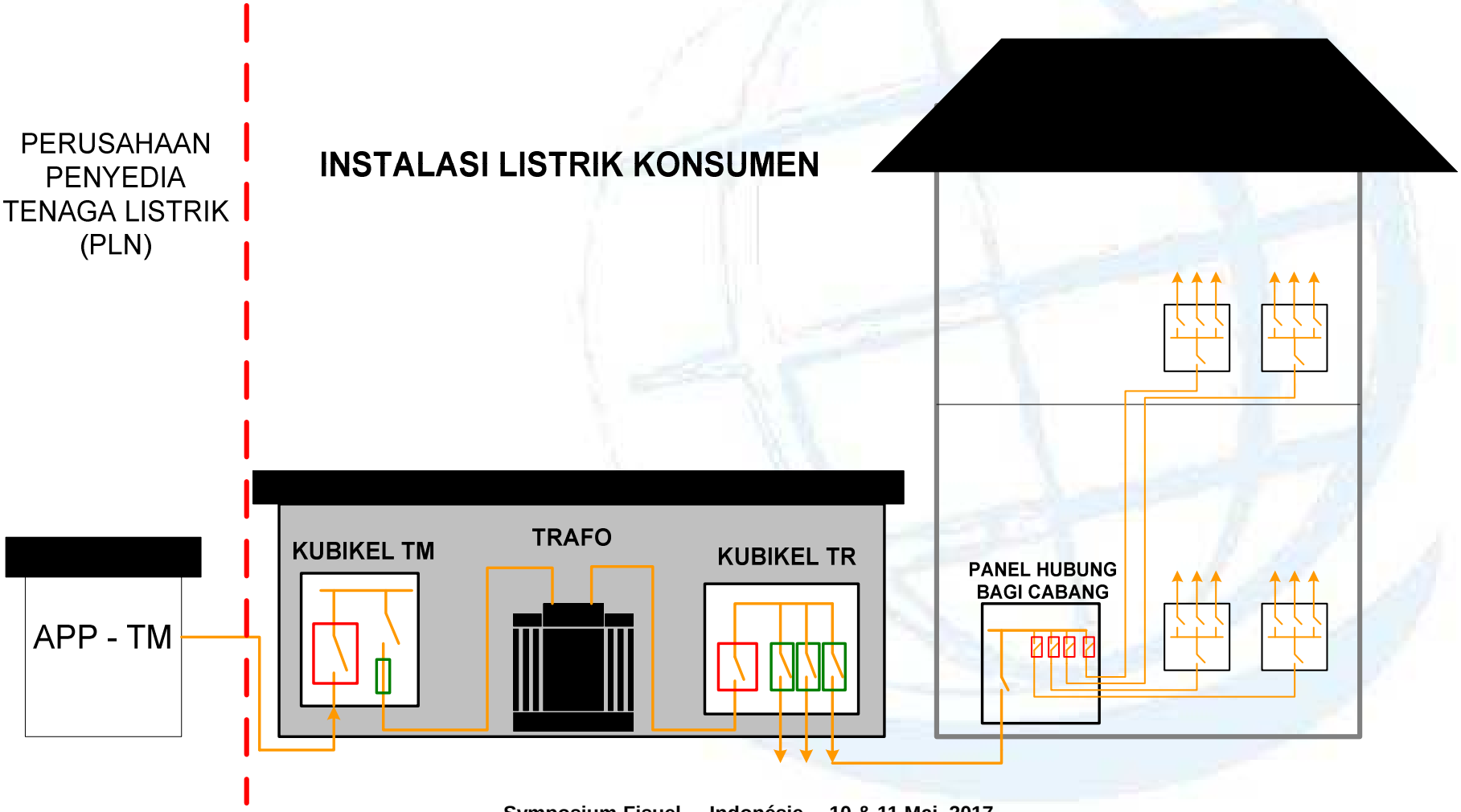
Fisuel Symposium – Indonesia – 10th & 11th of May, 2017

Who is responsible?

- USER SOCIETY, must be willing to maintain the existing installation environment
- PLN, provides technical assistance and maintains and monitors installation conditions
- GOVERNMENT, provide counseling and make regulations about electrical hazards

ALL PARTIES RESPONSIBLE FOR ELECTRICAL SAFETY

Electrical Installation



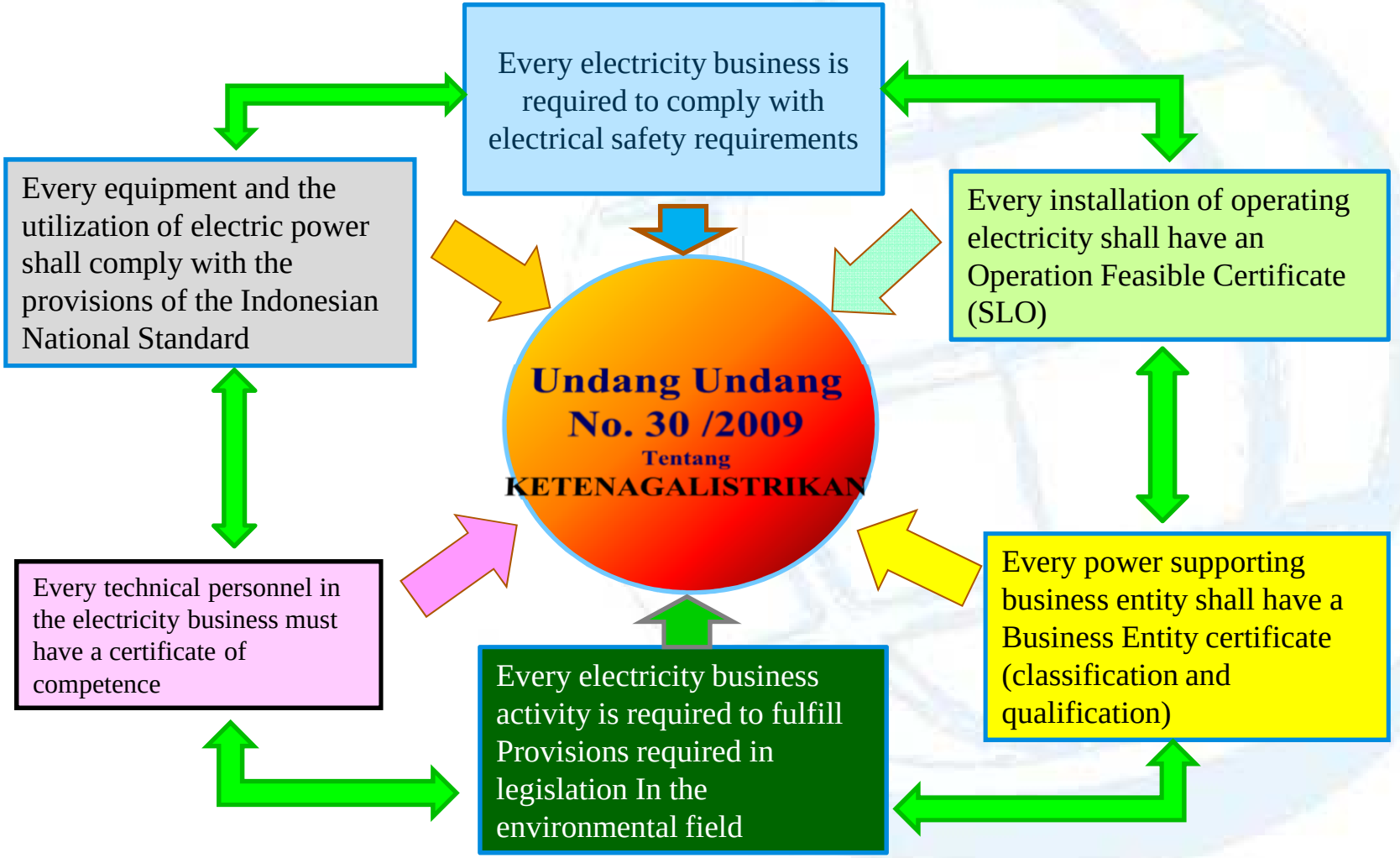
REGULATION

UU No. 30 Tahun 2009 tentang Ketenagalistrikan

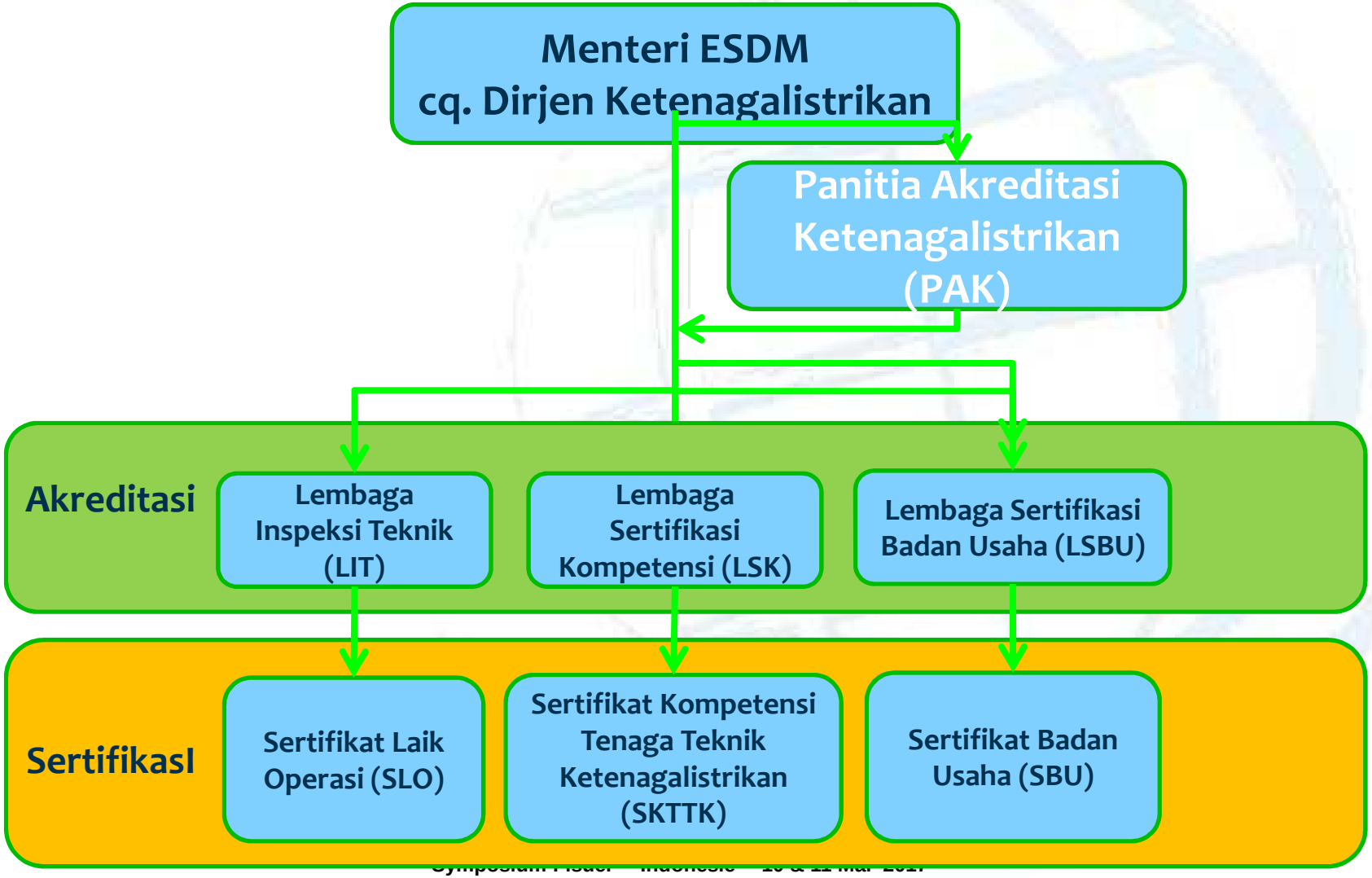
1. **PP No. 14 Tahun 2012 tentang Kegiatan Usaha Penyediaan Tenaga Listrik**
2. **PP No. 62 Tahun 2012 tentang Usaha Penunjang Tenaga Listrik**

1. **Permen ESDM No. 35 Tahun 2013 tentang Tata Cara Perizinan Usaha Ketenagalistrikan**
2. **Permen ESDM No. 05 Tahun 2014 tentang Tata Cara Akreditasi dan Sertifikasi Ketenagalistrikan**
3. **Perdirjen Ketenagalistrikan No. 556K/20/DJL.1/2014 tentang Tata Cara Penomoran dan Registrasi Sertifikat di Bidang Ketenagalistrikan**

IMPLEMENTATION OF REGULATION FOR SAFETY



ACCREDITATION AND CERTIFICATION OF ELECTRICITY



THANK YOU

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