

2018

Electrical Fire Analysis : Electrical Wiring Faults Lead To Structure Ignitions

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Bahagian Penyiasatan Kebakaran

JBPM KUALA LUMPUR



Fire Investigation

Fire Investigation is the process of determining the origin, cause and development of fire (NFPA 921).

Fire Investigation is the process of determining the cause, origin and circumstance of fire (Fire Services Act 1988).

The Purpose of Fire Investigation

""Become an international level fire and rescue organization.""

To determine the cause, origin and circumstance of fire systematically and scientifically.

To prepare the investigation paper for Incendiary Fire.

To evaluate the effectiveness of operation tactic, fire prevention and enforcement of fire safety.

To determine the effectiveness of Fire Safety Installation at premises.

To propose any standard of fire safety installation to Malaysia Standard.

To propose effectiveness of fire safety campaign to public.

To advise the manufacture of electrical equipment or others manufacture about fire safety.

About Us

""Become an international level fire and rescue organization.""

- **Fire Investigation** in FRDM was form in 2003 with 144 officers includes 9 Chemists and 9 Assistants Chemist.
- Fire Investigator Officers – attended course in Japan, USA, UK & Australia.
- In 2008, the role of fire Investigation become important, it form one division called Fire Investigation Div. with 460 Officers.
- Member of IAAI.
- Member of MQA (Malaysia Quality Assurance) in Forensic Science.

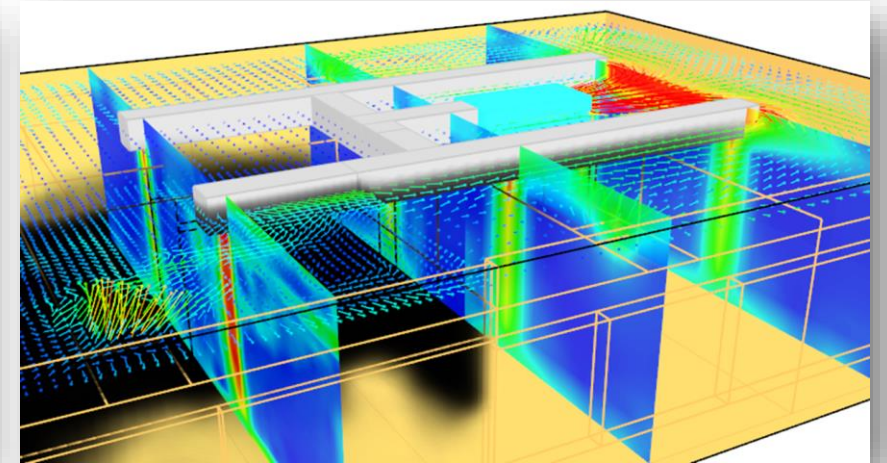
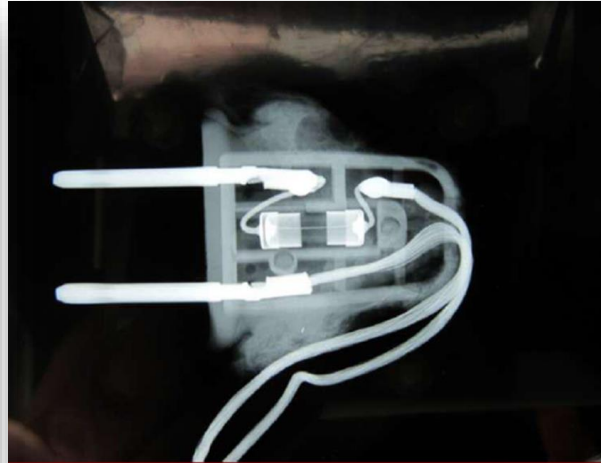


K-9 Unit

K-9 unit has been established which are 6 springer spaniel dogs have been placed to help detecting the chemical traces of accelerants during investigation.

Fire Investigation Equipment

""Become an international level fire and rescue organization.""



Fire Investigation Laboratories

9 Fire Investigation Laboratories with 8 type analysis equipments.

Polimer

- Thermal Gravimetry Analyzer (TGA),
- Thermomechanical Analyzer (TMA)
- Differential Scanning Caloimetry (DSC),

Organic Compound

- High Performance liquid chromatography (HPLC),
- Automatic Thermal Desorption – Gas chromatography and Mass Spectrometer (ATD-GC)

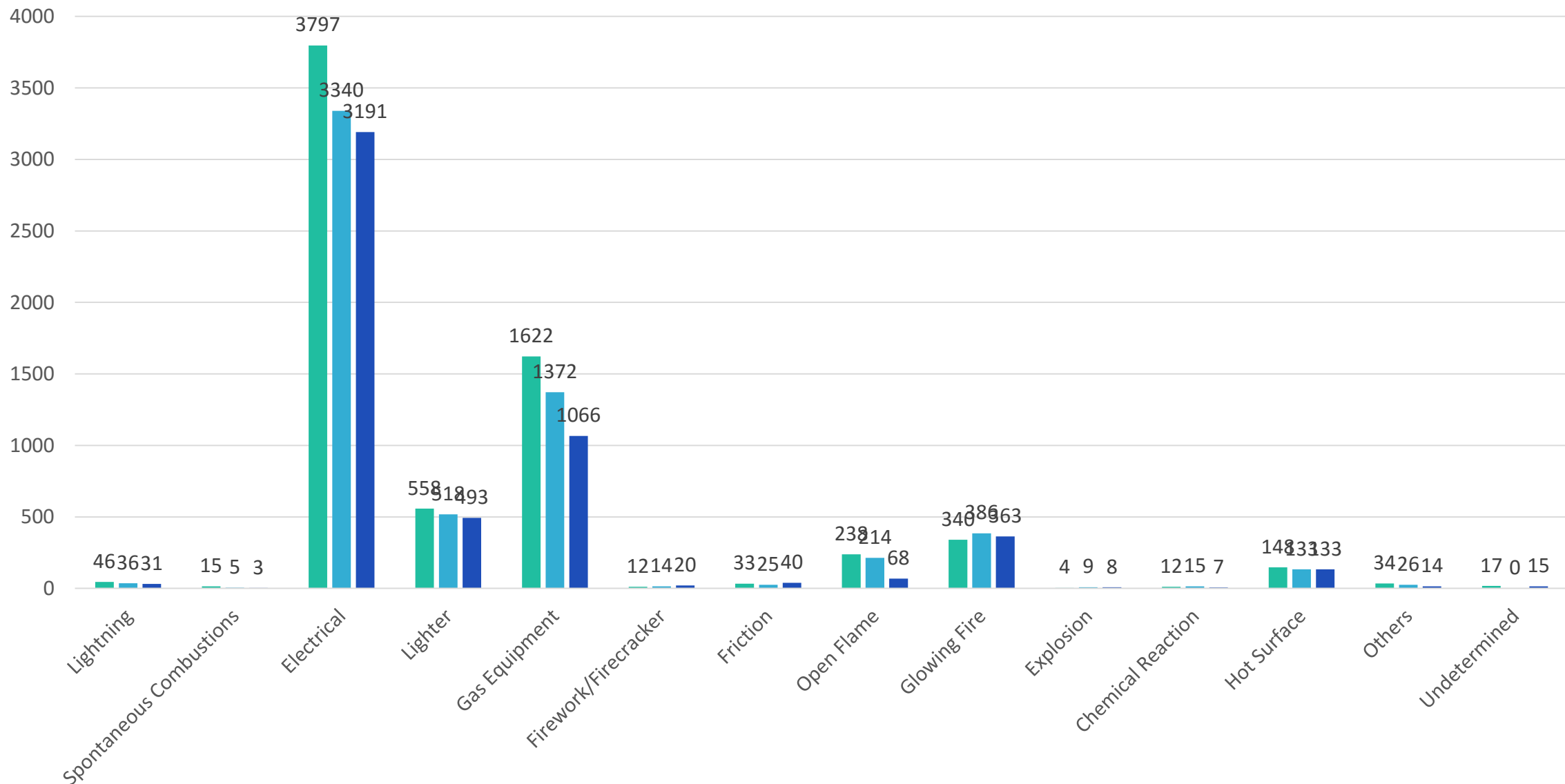
Inorganic Compound

- Fourier Transform Infra-Red Spectroscopy (FTIR),
- Inductively Coupled Plasma Optical Emission Spectrometry (ICP-OES),
- Ultra Violet Spectrophotometry (UV-VIS).



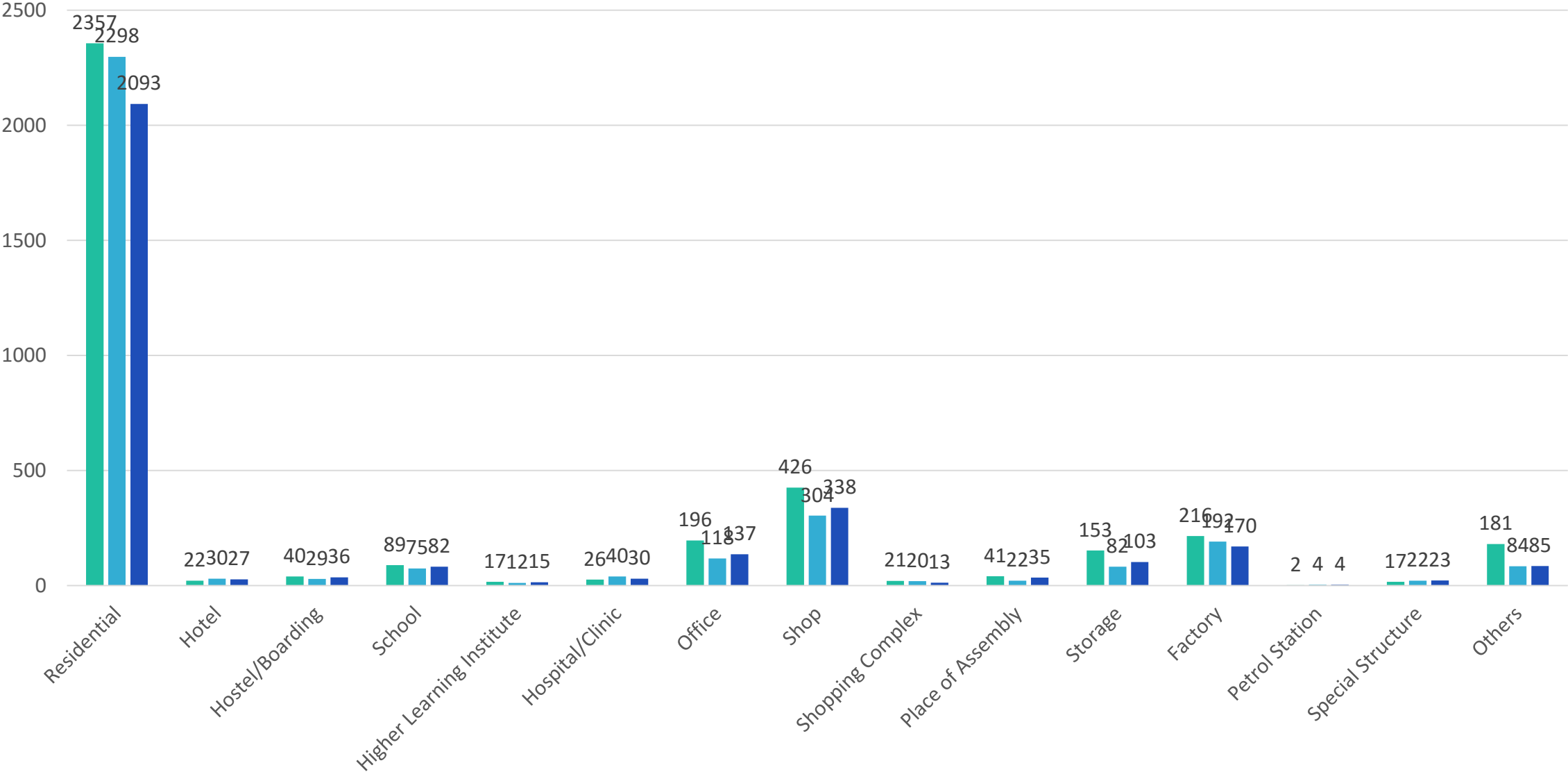
SOURCE OF IGNITION For Structure Fire

2015-2017



ELECTRICAL Source Of Ignition For Structure Fire

2015-2017



Case Study

*Electrical Wiring Faults Lead
To Structure Ignitions*

Fire Investigation Division, JBPM KL



Electrical Fire Analysis

Mode of Ignition

Fire Electrical Analysis



01

Identifying the act or omission leading to failure



02

Classifying failures by the functional nature of the device or part thereof that failed

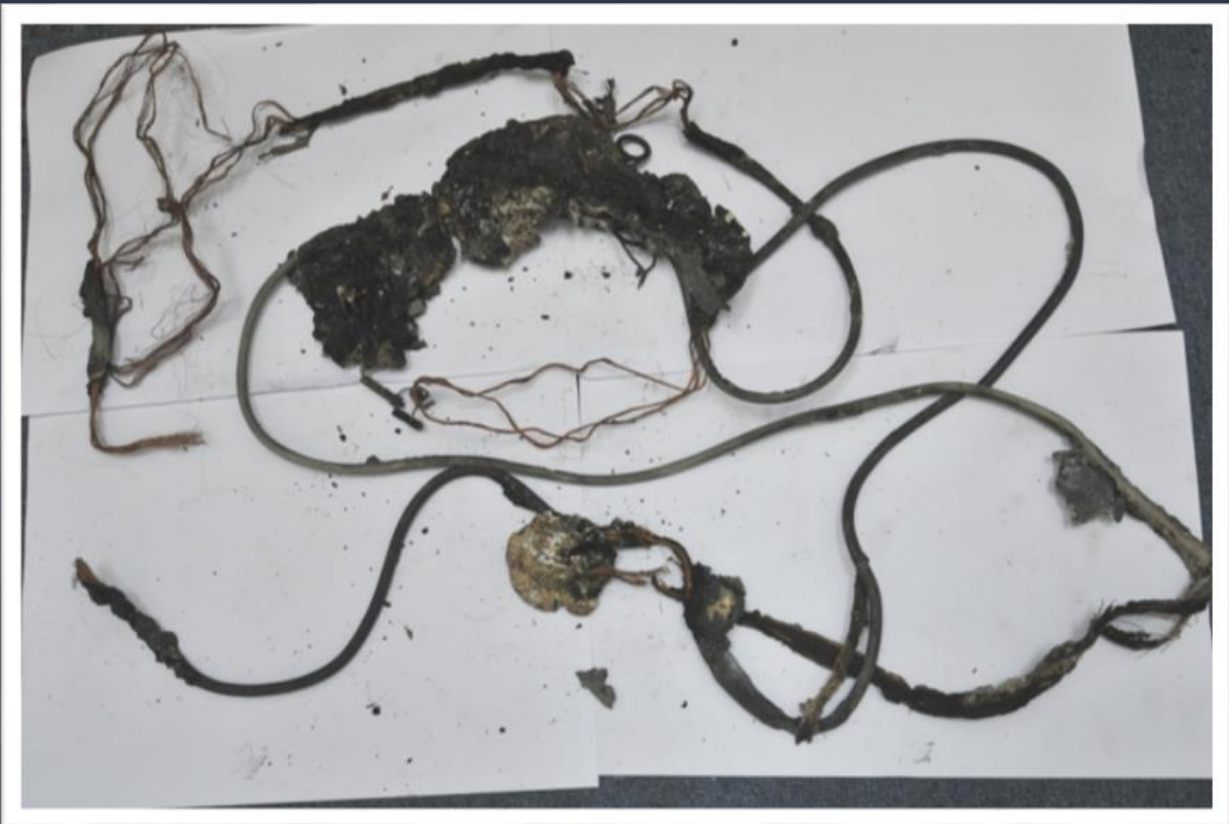


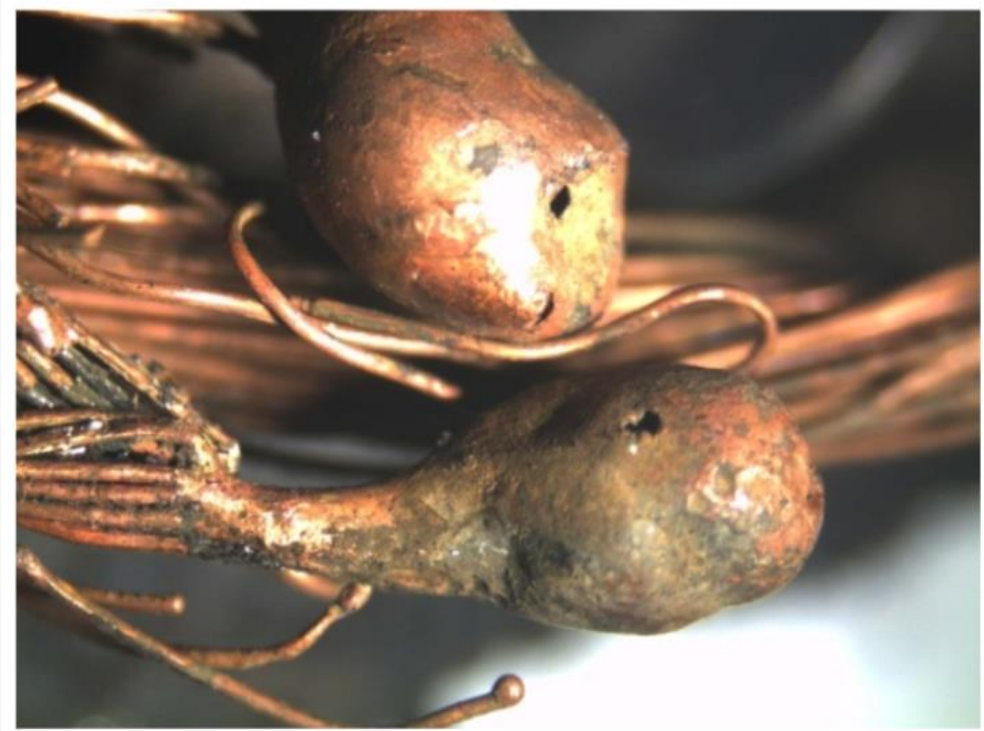
03

Studying the basic physics of failure

Residential

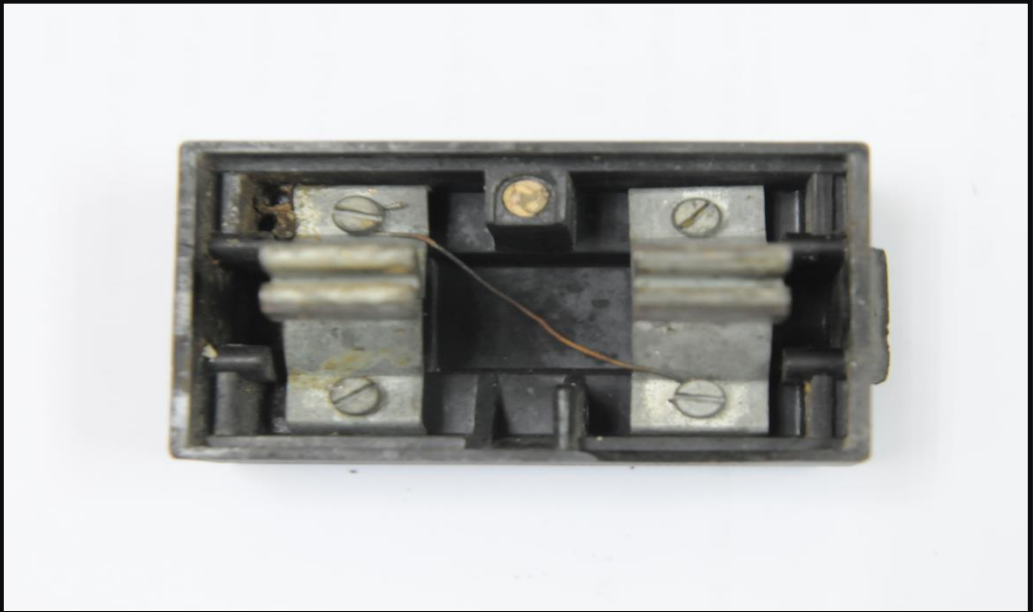


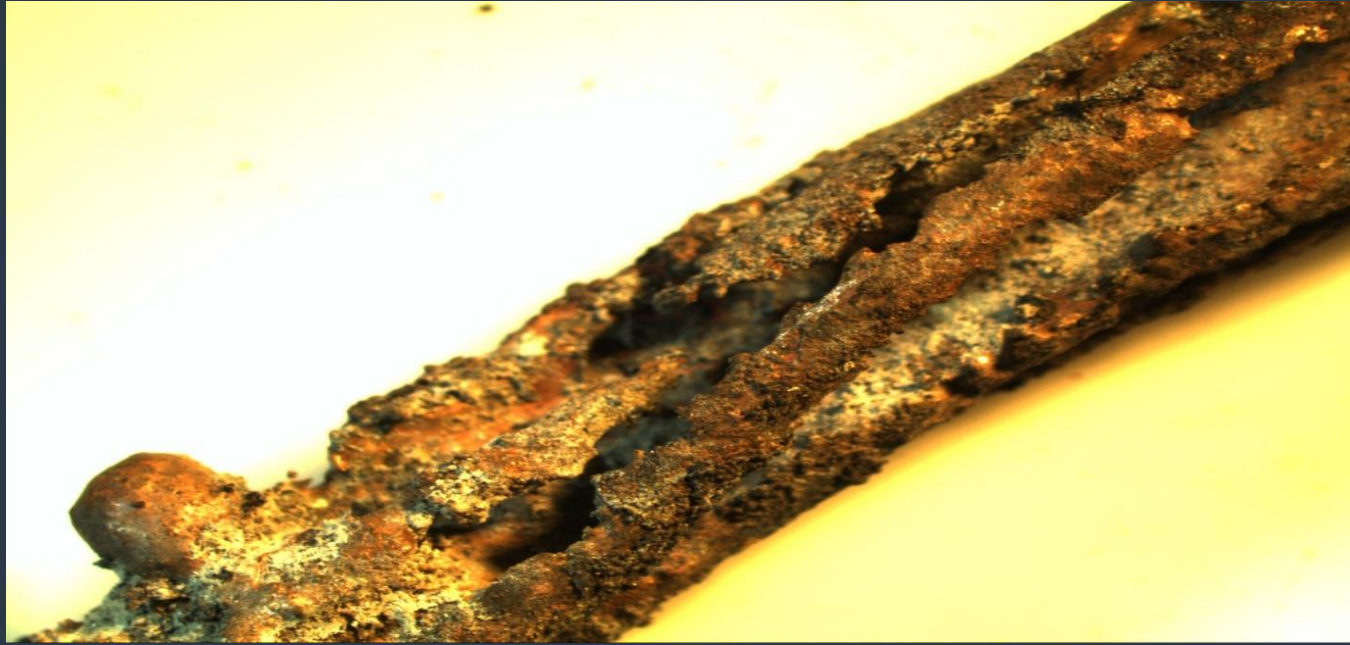














Thank You