



## 頭條報道 *Headline*

### Arc Fault Detection Device (AFDD) from Schneider Electric

#### Fire statistics reminder:

- In Europe, every 3 minutes, an electrical fire starts in housing.
- In France, 24 000 fires in dwelling occurs each year according to fire brigades statistics.
- 70% of fires causing death start during night.
- Several million in property losses and repairs are recorded every year

#### What are the causes of electrical fires?

Fires initiated by short-circuits, leakage currents, or lightning can be prevented, thanks to circuit-breakers, earth leakage protection devices and surge protection devices. But there are still some localized electrical very dangerous phenomena. Things like pulled-out sockets, cables squashed under furniture, and loose junction boxes may generate dangerous electric arcs fault causing fires.

#### What is an electrical arc fault?

Electric arcs result from a localized damaged cable or a poor connection in an electrical circuit. For example, an unscrewed connection in a socket will generate local heating, carbonizing the socket and cable's insulation. This transforms the insulating material into carbon, which acts as a conductor and carries some of the current creating electric arcs. These arcs cause more burning, which produces more carbon, which conducts more current, which causes more arcs, creating a vicious circle. Eventually the cable insulation and socket catch fire. The fire can then easily propagate throughout the room, spreading to a nearby curtain, the wall covering, the furniture, and so on.

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3 types of arc faults exist:

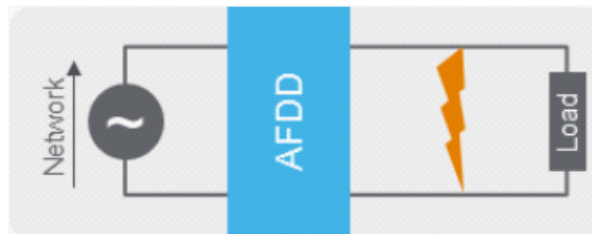
#### 1. Series Arc faults:

Arc faults are happening between 2 parts of the same conductor. According to the standard, 2.5A is enough to lead to a fire in this case.



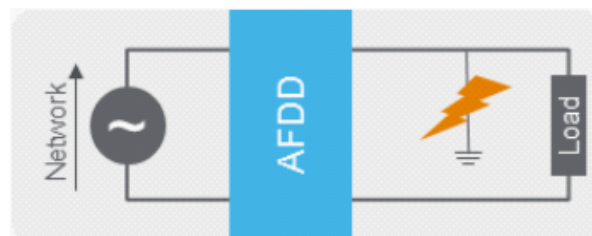
#### 2. Parallel Arc Fault:

Arc faults are happening between 2 different conductors (Phase and neutral).



#### 3. Arc to earth:

Arc faults are happening between one phase and earth.



### Existing protections cannot protect against arc faults

In case of series arc fault, arc fault current value remains below the rated current value, since it is limited by the resistance of the carbon generated by the arc fault. In this case, any existing protection cannot detect such kind of fault.

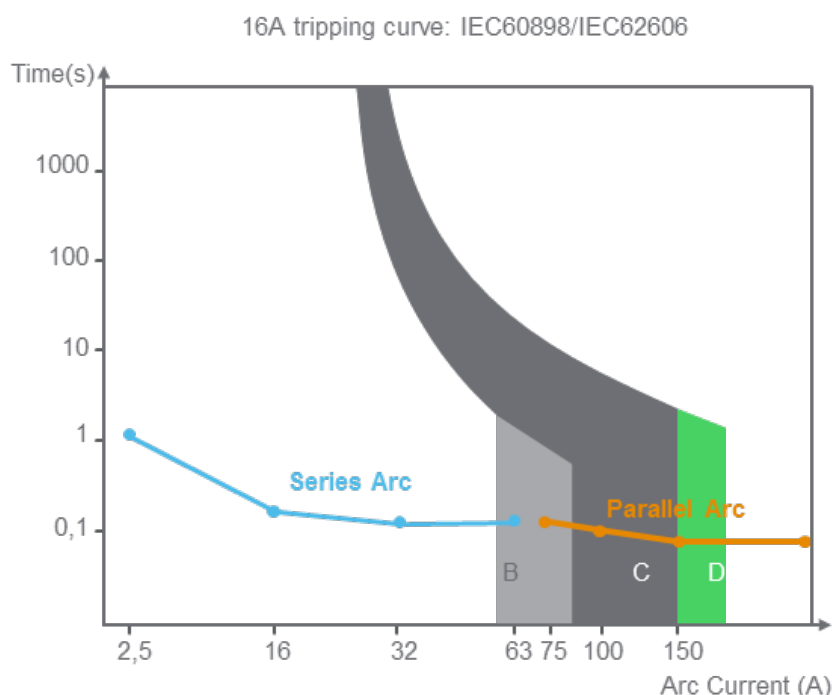
In case of parallel arc fault, arc fault current reaches high value close to short circuit current value but it remains below of the magnetic triggering threshold.

## Arc Fault Detection Device (AFDD)

MCB would trip but because of thermal triggering threshold which will be late.

AFDD can detect and trip starting from 75A parallel

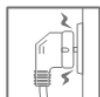
arc fault. For example, MCB 16A C curve threshold tripping is between 5 to 10 times the rated current (80A to 160A) which is higher than 75A, the minimum parallel arc fault current that leads to a fire.



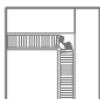
### Why do arc faults occur?

Arc fault could be generated because of several reasons:

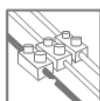
#### Ageing/lack of maintenance



- Loose wall socket



- Older Cable connections or poor installations



- Poor connections in junction boxes or insulating screw joints

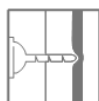
#### Misuse



- Trapped cables (furniture, door, etc.)



- Mishandling of socket and cord connections



- "Do-it-yourself" installation

#### Aggressiveness of the environment



- temperature variation, ultraviolet rays, vibrations, humidity, and rodents

### When is the installation of an arc detector recommended?

Arc fault detection devices (AFDDs) complying to IEC 62606 or equivalent are recommended as a means of providing additional protection against fire caused by arc faults in final circuits. The AFDD shall be placed at the origin of the circuit, if used.

Examples where AFDDs can be used:

- premises with sleeping accommodation (e.g. dwellings, hotels and guest house);
- premises for manufacturing or storing of readily combustibles substances, or substance liable to spontaneous combustion;

- premises where combustible materials are used as the main construction materials (e.g. wooden buildings); and
- premises with endangering or irreplaceable goods.

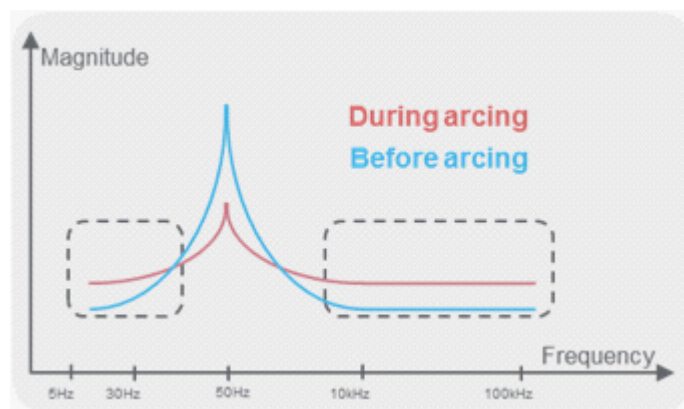
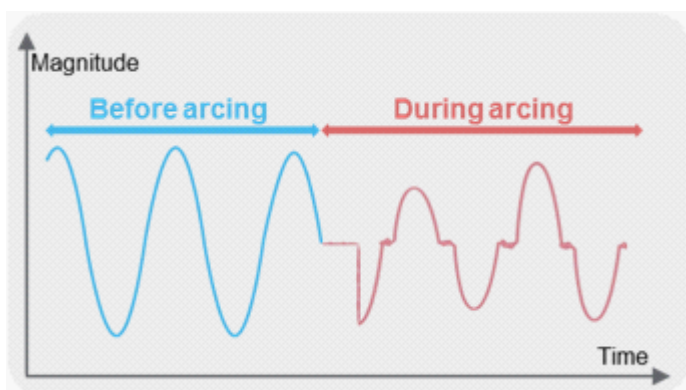
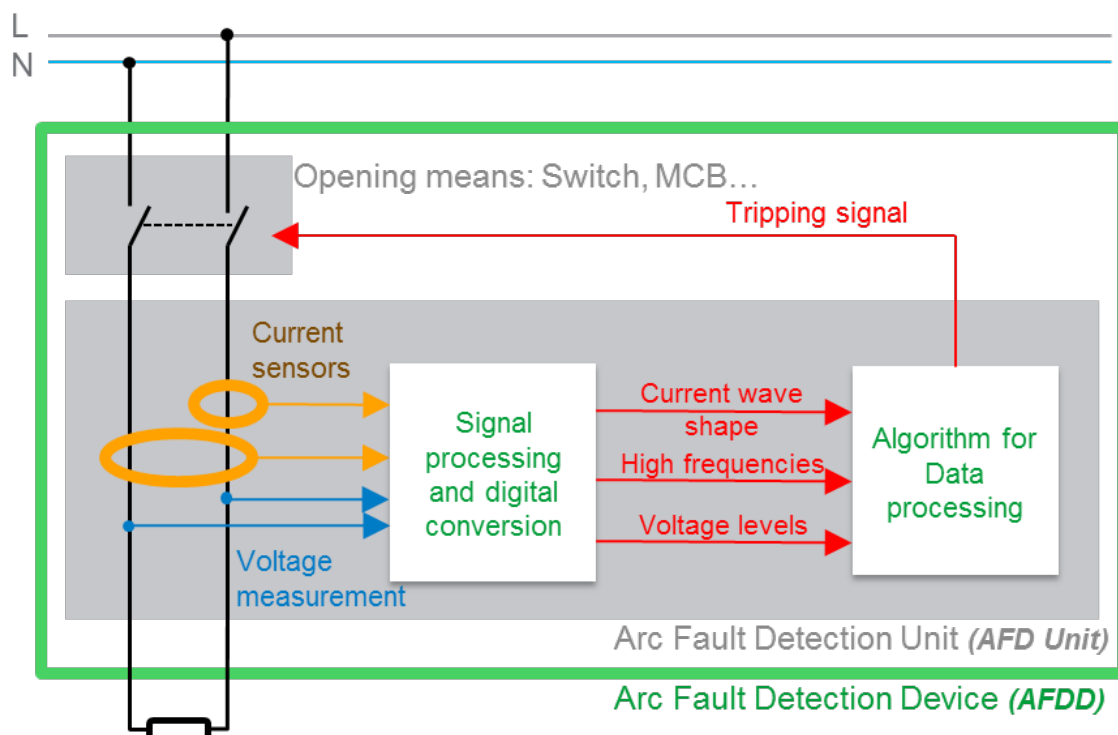
### How does an arc fault detector work?

Arc detectors monitor branch circuits to lower electrical fire risk. Unlike anti-fire systems (smoke detectors, extinguishers, etc...) acting after fire beginning, **arc detectors are tripping to before cables or sockets ignition.**

## **Arc Fault Detection Device (AFDD)**

An arc fault detector **monitors in real time** a number of different electrical parameters of the circuit it protects. It is designed to pick up information that indicates the occurrence of a dangerous electric arc.

Basically, the arcing current detection is based on a microprocessor based chip for assessing the current frequency characteristics as shown in the following diagram indicating the drop of 50Hz components



with increases in nearly frequency components.

The physical AFDD is as shown in the left diagram. With the embedded microprocessor chip, the AFDD has more or less the same size as a typical MCB.

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## **搵食資料 Notes To Trade**

### **香港房屋委員會 招標公告**

香港房屋委員會招標公告可在以下網頁查看：  
<http://www.housingauthority.gov.hk/en/business-partnerships/tenders/>

## 恭賀金碧電器

### Congratulations to Grandeur Electrical Company Limited

本會恭賀金碧電器中標於東涌第100區公營房屋發展計劃建築工程的電力裝置工程，並祝順利如期完成。

On Behalf of Hong Kong Electrical Contractors' Association, we would like to convey our congratulations to **Grandeur Electrical Company Limited** for the Electrical Installation for Construction of Public Housing Development at Tung Chung Area 100 (Sub-contract to Contract No. 20200462).



## 恭賀順昌電器工程有限公司

### Congratulations to Shun Cheong Electrical Engineering Co Ltd

本會恭賀順昌電器工程有限公司中標於屯門第16區恆富街公營房屋發展計劃建築工程的電力裝置工程，並祝順利如期完成。

On Behalf of Hong Kong Electrical Contractors' Association, we would like to convey our congratulations to **Shun Cheong Electrical Engineering Co Ltd** for the Electrical Installation for the Electrical Installation for Construction of Public Housing Development at Hang Fu Street Tuen Mun Area 16 (Sub-contract to Contract No. 20210049).

## 商會活動 Organised Activities

### 「學校起動」計劃 Project WeCan

九龍倉集團有限公司「學校起動」計劃和本會協辦職業行業講座：

已於2022年3月9日(星期三)在大埔佛教大光慈航中學舉行講座，由機電工程署安排，進行網上技術員訓練計劃講座。



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## 即將舉辦之活動 Upcoming Activities

### 廣州國際照明展覽會

#### Guangzhou International Lighting Exhibition

廣州國際照明展覽會將於2022年6月9日至12日(星期四至星期日)在廣州中國進出口商品交易會展館舉行。展會一直與業界同行，致力提供一個連接行業、鼓勵互動及發創新的平台。展會將繼續採用跨平台形式，結合實體與線上平台，照明企業也一直有多維度的創新，深入數字化與智慧化，用光改善生活及改變環境。展商及觀眾透過一連串同期舉行的高端論壇會議及同業交流活動，探討最新照明技術及設計新思維，拓展合作機會。

Guangzhou International Lighting Exhibition will be held on 9 to 12 June 2022 (Thur to Sun) at China Import and Export Fair Complex, Guangzhou, China. The fair will continue to ensure lighting industry peers from throughout the world can gather to project future developments and business opportunities, and industry players can take advantage of the new opportunities afforded by the new era of lighting. Through a series of concurrent seminar & networking events presenting cutting-edge lighting technology, inspired lighting design ideas and market intelligence.

### 亞洲創新建築、電氣、保安科技展覽會2022

#### Build4Asia 2022

亞洲創新建築、電氣、保安科技展覽會2022將於2022年11月16日至18日(星期三至星期五)在香港會議展覽中心舉行。提供一站式採購貿易平台，建造業嶄新先進產品、科技及服務，包括建築材料、樓宇自動化系統、智能家居、安全檢測系統等一應俱全。展覽會不僅能助您尋找和擴闊商業網絡，更促進行業交

流與知識互通，是兩年一度不能錯過的行業盛會。

Build4Asia 2022 will be held in Hong Kong on 16 to 18 November 2022 (Wed to Fri) at the Hong Kong Convention and Exhibition Centre. Build4Asia is the No.1 Tradeshow for the Building, Electrical Engineering and Security Industries in Hong Kong which covers every facet of the construction industry from building materials and automation, smart city technologies to total surveillance system. Build4Asia is the ultimate B2B sourcing platform for companies to seek and widen their business opportunities.

### 2022年度週年會慶

#### HKECA 2022 Anniversary Dinner

2022年度週年會慶，將於2022年11月25日(星期五)在香港銅鑼灣波斯富街99號利舞臺廣場5樓譽宴星海薈設宴舉行。HKECA 2022 Anniversary Dinner will be held on 25 November 2022 (Fri) at The Starview, 5/F, Lee Theatre Plaza, 99 Percival Street, Causeway Bay, Hong Kong.

### 第25屆理事選舉

#### The 25th Term Executive Committee Election

2023年至2025年 - 第25屆理事選舉將於2022年12月份舉行。

2023 to 2025 - The 25th Term Executive Committee Election will be held on December 2022.



**gec**  
engineering

金 碧 電 器  
Grandeur Electrical Co. Limited

# CELEBRATE THE POWER OF AWARDS

Grandeur Electrical Co. Limited (金碧電器) has been awarded for the Electrical Installation for Construction of Public Housing Development at Tung Chung Area 100 (Sub-contract to Contract No. 20200462).

Over the years, Grandeur Electrical Co. Limited has honored the top performer in the industry. We master the art of engineering with an engineering philosophy that lies in our core values.



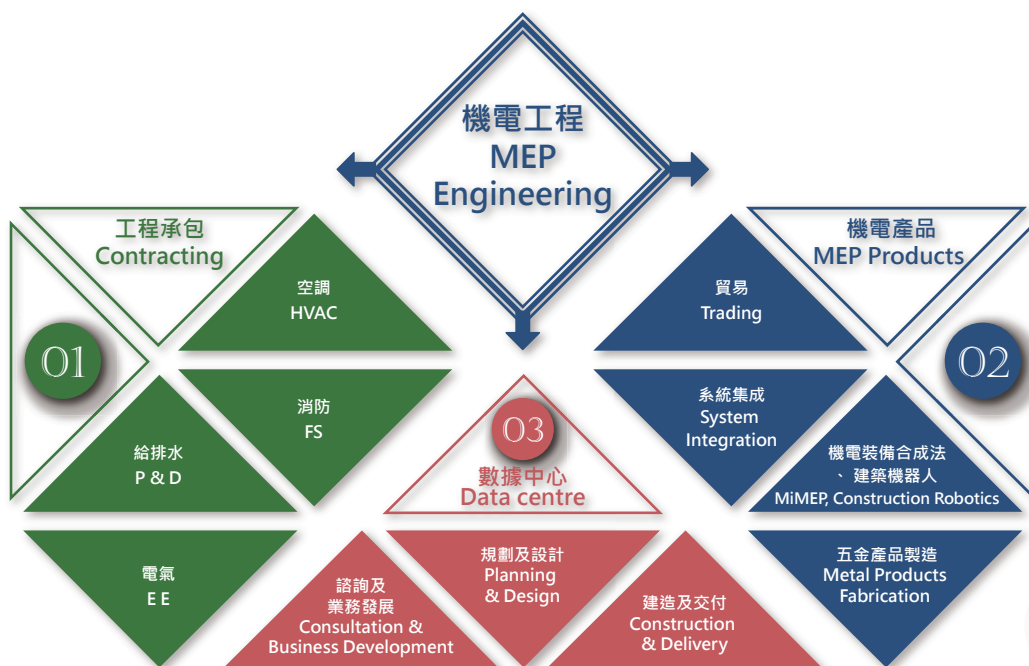


順昌機電集團

Shun Cheong Engineering Group

# CELEBRATE THE AWARD OF TENDER

Shun Cheong Electrical Engineering Company Limited (順昌電器工程有限公司) has been awarded for the Electrical Installation for Construction of Public Housing Department at Hang Fu Street, Tuen Mun Area 16, Tuen Mun (Sub-contract to Contract No. 20210049) .



順昌機電集團扎根於香港超過60年，致力為香港、澳門及內地的公營及私營機構服務，近年已成為香港主要的機電集團之一。

Shun Cheong Engineering Group is one of the leading MEP Engineering group in Hong Kong with over 60 years of continuous operation serving both the public and private sector in Hong Kong, Macau and the Mainland.



香港 九龍 青山道481-483號  
香港紗廠工業大廈 第6期 9樓C座



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(852) 2481 3463



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- 可靠的配電技術：符合標準 IEC 62606 及機電工程署最新的工作守則
- 快捷的故障診斷：備有 LED 故障指示燈，快速診斷及提示故障
- 有效的能耗監測：內建 PowerTag 無線電能感測器



Acti9 電弧故障保護裝置

