

Smart Tips - How to Restore Supply with Faults at Customers' Main Switchboards

智惜小貼士 - 客戶總掣櫃發生故障時如何恢復供電

HK Electric is committed to providing a safe and reliable power supply to our customers and has been constantly reviewing and upgrading its power system. For customers to enjoy a reliable end-to-end power supply, the reliability of electrical installations at the customer side is equally essential, especially for the main switchboards, where any fault there would result in a prolonged supply interruption to the whole building. Here are some smart tips to minimise the lead time for restoring supply to the affected customers due to faults at main switchboards.

港燈一直致力為我們的客戶提供安全及可靠的電力服務，並不斷檢視和提升電力系統。要確保可靠的電力供應，可靠的客戶電力裝置也是不可或缺的，而當中的客戶總掣櫃更是尤其重要。倘若客戶總掣櫃發生故障的話，整幢大廈可能會因此經歷長時間的電力中斷。以下為大家提供一些在總掣櫃發生故障時能讓供電盡快恢復的小貼士。

1. How to identify the causes of supply interruption 如何確定電力中斷的成因？



- a. Before entering the main switchroom for investigation on the possible causes of supply interruptions, it is imperative to conduct risk assessment and take relevant safety precautions for the safety of working personnel.

在進入大廈總掣房調查有關電力中斷的可能原因前，必須進行風險評估並採取相關的安全預防措施，以確保工作人員的安全。

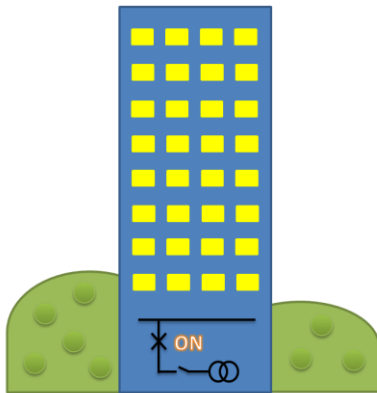
- b. Check signs of abnormal conditions such as high temperature, smell of hot substance or ozone, presence of smoke, distortion and evidence of sooting on enclosures, signs of water leakage or dampness. As most of the fault cases at main switchboards are caused by water leakage or water flooding, please take necessary precautions to prevent main switchrooms from ingress of water.
 檢查有否出現異常情況，例如高溫、熾熱或臭氧的氣味、煙霧、總掣櫃外殼燻黑或有變形的跡象、大廈總掣房有漏水或潮濕的跡象。由於大多數的總掣櫃故障是因漏水或水浸所引致，因此請做好適當的預防措施，以防止水份滲入總電掣房。
- c. Check status of main incomers and their protective relays to identify the possible causes of supply interruption. A table showing possible scenarios of supply interruption is appended below for reference.
 檢查總開關掣及其保護繼電器的狀態，以確認導致電力中斷的可能成因。下表列出電力中斷的可能情況以供參考。

Main Incomer 總開關掣	Protective Relay(s) 保護繼電器		Possible Causes 可能成因
	Status 狀態	Phases 相位	
ON/TRIP 閉合/跳閘	Normal/Operated 正常/已動作		
TRIP 跳閘	Only 1 out of 3 phases operated 3 相中只有 1 相已動作	Normal 正常	Overload or fault at one phase 其中一相超載或故障
TRIP 跳閘	2 or 3 phases operated 2 相或 3 相已動作	Normal 正常	Phase to Phase Fault 相與相故障
TRIP 跳閘	At least 1 phase operated 至少 1 相已動作	Operated 已動作	Earth Fault 接地故障
TRIP 跳閘	Normal 正常	Operated 已動作	1. Discrimination problems between earth fault relay and downstream protective devices 接地故障繼電器與下游保護裝置之間的區分問題 2. Earth Fault 接地故障
ON 閉合	1 or more phases operated 1 相或多相已動作	Operated 已動作	Circuit fault and breaker failure of Main Incomer coincidentally 線路發生故障，同時總開關掣未能正常跳閘
ON 閉合	Normal 正常	Normal 正常	Fault at HK Electric supply system (Call HK Electric to confirm the situation) 港燈電力系統發生故障（請致電港燈確認情況）

2. How to isolate the fault 如何隔離故障？

- a. Based on the findings in section 1, switch off and lock the relevant switches to isolate the suspected faulty installations.
根據第 1 節所得的結果，斷開並鎖上相關的開關以隔離懷疑故障的電力裝置。
- b. Switch off all sub-circuit switches.
斷開所有分支電路的開關。
- c. Reset the protective relays of the main incomer.
重設總開關掣的保護繼電器。
- d. Carry out relevant inspections and tests on the main switchboard to ascertain the condition of the main switchboard is safe for connection of supply.
為總掣櫃進行相關的檢查和測試，以確定總掣櫃的狀況可以安全接駁電力。

3. How to restore supply 如何恢復供電？



- a. If the main incomer is healthy and the condition of the main switchboard is satisfactory, switch on the main incomer to energise the main switchboard.
如總開關掣和總掣櫃的狀況均正常，重新閉合總開關掣以恢復總掣櫃的供電。
- b. Switch on individual sub-main switches one-by-one by at least one-minute interval so as to ensure the corresponding sub-circuits are re-energised successfully.
將分支電路的開關掣逐一閉合，而每組分支電路的閉合時間應相隔最少一分鐘，以確保相應的分支電路成功恢復供電。

- c. In case the main incomer or main switchboard is faulty or defective, install temporary cable from the available supply sources to the public services, such as public lighting, lift, water pump, etc., so as to minimise the impact to the customers of the building, if feasible. 當總開關掣或總掣櫃發生故障或損壞，在可行的情況下，可從其他可用的電源接駁臨時電纜至大廈的公共電力裝置（例如公共照明、電梯、水泵等），以減少對客戶的影響。

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