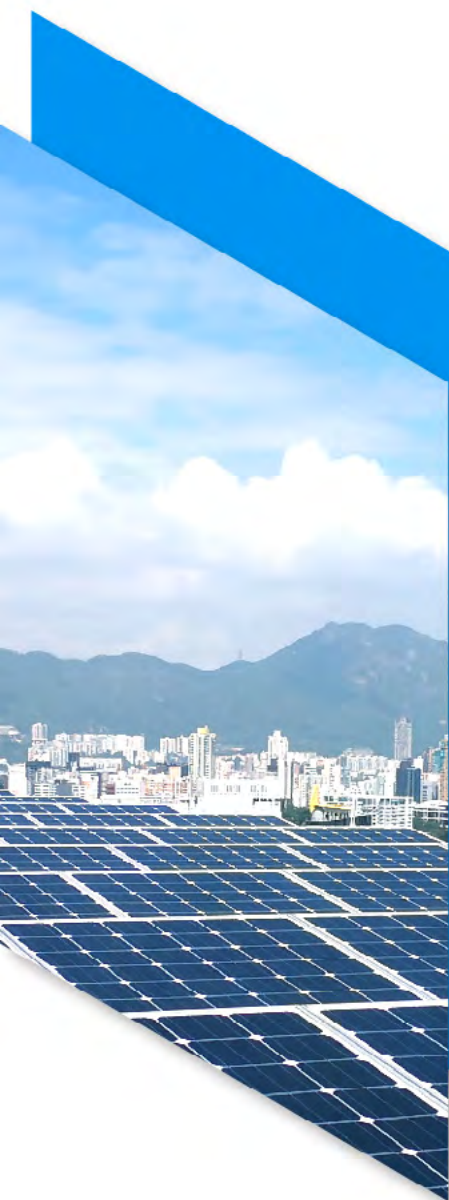




可再生能源發電系統與 電網接駁的技術指引

Technical Guidelines on Grid Connection
of Renewable Energy Power Systems

2021 年版
2021 Edition



內容

Contents

1. 前言
Foreword
2. 辭彙及縮略語
Glossary of Terms and Abbreviations
3. 簡介
Introduction
4. 可再生能源發電系統與電網接駁
Connection of the Renewable Energy
Power Systems (REPSs) to the Grid
5. 適用範圍
Scope
6. 電力安全，系統保護及可靠性
Electrical Safety, System Protection and Reliability
7. 主要組件及其功用
Major Devices and their Functions
8. 檢查，測試與維修
Inspection, Testing and Maintenance
9. 安裝後擁有人的責任
Post-installation Obligations of the Owners
10. 「上網電價」申請程序摘要
Outline of FiT Application Procedures
11. 本地守則 / 法規及國家 / 海外標準
Local Codes/Rules and National/
Overseas Standards
12. 電網接駁示例圖
Sample Diagram of Grid Connection



附錄

Appendices

附錄 I Appendix I

電力公司聯絡資料及「上網電價」申請程序

Contact Information of the Utility and
FiT Application Procedures

附錄 II Appendix II

本地守則 / 法規及國家 / 海外標準

Local Codes/Rules and National/
Overseas Standards

附錄 III Appendix III

電網接駁示例圖

Sample Diagram of Grid Connection

免責聲明

Disclaimer

對於因倚賴本刊物內任何資料或因本刊物資料不完整而引致的損失或損害，中華人民共和國香港特別行政區政府概不承擔任何法律責任及責任。

The Government of the Hong Kong Special Administrative Region of the People's Republic of China does not accept any liability and responsibility for loss or damage caused due to reliance on any information or omission in the publication.

版權公告

Copyright Notice

本刊物的內容，包括但不限於所有文本、平面圖像、圖畫、圖片、照片，以及數據或其他資料的匯編，均受版權保障。中華人民共和國香港特別行政區政府是本刊物內所有版權作品的擁有人。除非事先得到機電工程署的書面授權，否則嚴禁侵犯有關版權，包括但不限於複製、改編、分發、發布或向公眾提供該等版權作品。

The content of this publication, including but not limited to all text, graphics, drawings, diagrams, photographs and compilation of data or other materials are protected by copyright. The Government of the Hong Kong Special Administrative Region of the People's Republic of China is the owner of all copyright works contained in this publication. Any infringement of copyright, including but not limited to reproduction, adaptation, distribution, dissemination or making available of such copyright works to the public is strictly prohibited unless prior written authorisation is obtained from the Electrical and Mechanical Services Department.





前言 Foreword

1 前言

Foreword

為了讓公眾更了解有關小型可再生能源裝置與電網連接的技術事宜和申請程序，機電工程署（機電署）於 2005 年成立了一個工作小組（成員來自政府、電力公司、業界組織、地產發展商和專業學會），負責編製《小型可再生能源發電系統與電網接駁的技術指引》。

機電署於 2007 年 12 月為公眾出版修訂版本，把適用功率上限由 200 千瓦提高至 1000 千瓦（一兆瓦）。《小型可再生能源發電系統與電網接駁的技術指引》名稱亦修訂為《可再生能源發電系統與電網接駁的技術指引》（《技術指引》）。

其後，電力公司的接駁電網安排、本地守則和規則，以及有關電網接駁、可再生能源發電系統和供電質量的國家／國際標準均有所修訂。因此，《技術指引》在 2016 年作出修訂。

鑑於「上網電價」計劃於 2018 年 10 月推出，以及《電力（線路）規例工作守則》（《工作守則》）於 2020 年 12 月作出修訂，機電署發出《技術指引》（2021 年版），把更新的內容納入其中。

To assist the public to better understand the technical issues and the application procedures relating to grid connection of small-scale renewable energy installations, a Working Group with members from the Government, the Utility, trade associations, property developers and professional institutions was formed in 2005 to develop the Technical Guidelines on Grid Connection of Small-scale Renewable Energy Power Systems.

In December 2007, a revised edition extending the applicable capacity limit from 200kW to 1000kW (1MW) was made available to the public and the Technical Guidelines on Grid Connection of Small-scale Renewable Energy Power Systems was retitled as the Technical Guidelines on Grid Connection of Renewable Energy Power Systems (Technical Guidelines).

Since then, the grid connection arrangement of the Utility, local codes and rules and relevant national/international standards on grid connection, renewable energy power systems (REPSs) and power quality have been amended and thus the Technical Guidelines was revised in 2016.

In view of the implementation of the Feed-in Tariff Scheme in October 2018 and the revision of the Code of Practice for the Electricity (Wiring) Regulations (CoP) in December 2020, this edition of the Technical Guidelines (2021 Edition) is issued by the Electrical and Mechanical Services Department (EMSD) to incorporate the updates.



辭彙及縮略語

Glossary of Terms and
Abbreviations

2

2 辭彙及縮略語

Glossary of Terms and Abbreviations

總額定功率 Aggregated Power Rating	<p>安裝在每個地點或每幢建築物內的所有可再生能源發電系統的各個發電設備（不論其是由業主或租戶安裝）的額定功率的總和。</p> <p>The arithmetic sum of the power rating of each item of power generating equipment of all the REPSs installed in each location or in each building, irrespective of whether they are installed by the landlord or tenants.</p>
允許負載量 Approved Loading	<p>電力公司就任何固定電力裝置允許的最高電流需求量。</p> <p>The maximum current demand approved by the Utility in respect of a fixed electrical installation.</p>
工作守則 Code of Practice (CoP)	<p>機電署發出的《電力（線路）規例工作守則》最新修訂版。</p> <p>The latest revised edition of the Code of Practice for the Electricity (Wiring) Regulations issued by the EMSD.</p>
配電系統 Distribution System	<p>由場地擁有人或場地管理小組操作並安裝於現場的220/380 伏特低壓供電網絡。</p> <p>The on-site 220/380V low-voltage electricity supply network operated by the site owner or the site management team.</p>
電力工程／電力工作 Electrical Work	<p>與低壓或高壓固定電力裝置的安裝、校驗、檢查、測試、維修、改裝或修理有關的工程或工作，包括監督工程、簽發工程證明書及簽發電力裝置設計證明書。</p> <p>Work in relation to the installation, commissioning, inspection, testing, maintenance, modification or repair of a low voltage or high voltage fixed electrical installation and includes the supervision and certification of that work and the certification of the design of that installation.</p>

2 辭彙及縮略語

Glossary of Terms and Abbreviations

《電力條例》 Electricity Ordinance	香港法例第 406 章，由機電署負責執行，用以規管電力安全。 Chapter 406 of the Laws of Hong Kong, which is enforced by the EMSD for regulating electrical safety.
上網電價 Feed-in Tariff (FiT)	在「上網電價」計劃下，電力公司會用上網電價價格購買由客戶已接駁電網的可再生能源系統所產生的所有電力。現時，太陽能發電系統及風力發電系統均符合資格參加「上網電價」計劃。 Under the Feed-in Tariff Scheme (FiT Scheme), the Utility will purchase all the units of electricity generated by customers' grid-connected REPSs at FiT rates. At present, both solar energy generation systems and wind power systems are eligible to join the FiT Scheme.
電網 Grid	由電力公司營運的 220/380 伏特低壓供電網絡。 The 220/380V low-voltage electricity supply network operated by the Utility.
千瓦小時 (kWh) Kilowatt-hour (kWh)	供應一千瓦功率達一小時所需電力的量度單位。 A measure of electricity required to provide power at one kilowatt for one hour.
擁有人 (註：釋義只適用於電力裝置) Owner (Note: The interpretation is only applicable to electrical installations)	(a) 管有或控制電力裝置的人；及 (a) A person who is in possession or control of an electrical installation; and (b) 以租約、准用約或其他方式持有電力裝置所在處所的使用權的人，包括該人的代理人及處所的租客或佔用人。 (b) A person who holds premises in which an electrical installation is located, whether the premises are held under lease, licence or otherwise and includes an agent of that person and a tenant or occupier of premises.
註冊電業承辦商 Registered Electrical Contractor (REC)	根據《電力條例》第 33 條註冊的電業承辦商。 An electrical contractor registered under section 33 of the Electricity Ordinance.

2 辭彙及縮略語

Glossary of Terms and Abbreviations

註冊電業工程人員 Registered Electrical Worker (REW)	根據《電力條例》第 30 條註冊的電業工程人員。 An electrical worker registered under section 30 of the Electricity Ordinance.
可再生能源 Renewable Energy (RE)	指由取之不盡及用之不竭的來源所產生的能源，即沒有儲備耗盡問題的能源，例如太陽能、風能等。 Energy generated from sources that are secure and inexhaustible, in the sense that there is no problem of reserves being depleted. Examples of RE sources are solar power, wind power, etc.
可再生能源發電系統 Renewable Energy Power System (REPS)	利用可再生能源來源作為基礎生產原料的發電設施。 Electricity generating facilities with RE sources as the primary feedstock.
可再生能源電錶 RE Meter	由電力公司安裝用以量度可再生能源發電系統所產生電力的電錶。 Energy meter to be installed by the Utility to measure the electricity generated from an REPS.
《供電則例》 Supply Rules	電力公司供電予客戶所依據的一般和技術條款和條件。 The general and technical terms and conditions under which the Utility supplies electricity to its customers.
電力公司 Utility	供電予客戶的電力公司。本港目前的兩間電力公司為中華電力有限公司及香港電燈有限公司。 A power company that supplies electricity to its customers. Currently the two power companies in Hong Kong are CLP Power Hong Kong Limited and The Hongkong Electric Company, Limited.



簡介 Introduction

3

3 簡介

Introduction

概論

General

- 3.1** 一如其他已發展的經濟體系，香港的社會和經濟發展有賴可靠穩定的能源供應，而電力是我們日常生活中最常使用的能源。傳統上，電力是透過燃燒煤、石油及天然氣等化石燃料而產生。燃燒這些燃料會把溫室氣體及空氣污染物釋放入大氣層，導致全球暖化和造成空氣污染。

Like all other developed economies, Hong Kong requires reliable and secure supply of energy to support its social and economic development, and electricity is the most common form of energy in our daily lives. Electricity is conventionally generated by burning fossil fuels, such as coal, oil and natural gas. The burning of these fuels releases greenhouse gases and air pollutants into the atmosphere, causing global warming as well as air pollution.

- 3.2** 由可持續的天然資源產生的可再生能源（例如風能及太陽能），能有助解決與使用化石燃料相關的問題。

Renewable energy (RE) produced from sustainable natural sources, such as wind and solar energy, can make a contribution in resolving the problems associated with the use of fossil fuels.

- 3.3** 可再生能源發電系統是其中一種可再生能源應用技術，它利用可再生能源資源產生電力，以滿足場地的部分電力負載需求。典型的可再生能源發電系統包括太陽能發電系統及風力發電系統。

An REPS is one kind of RE applications that generates electricity with RE resources to meet part of the load demand on the site. Typical REPSs include solar energy generation systems and wind power systems.

技術指引的目的

Objective of the Technical Guidelines

3.4 《技術指引》的目的，是概述經由有關建築物的配電系統把可再生能源發電系統與電網連接的各項技術事宜。

The objective of the Technical Guidelines is to give an outline of various technical issues relating to the connection of REPSs to the Grid through the Distribution System of the building concerned.

3.5 《技術指引》並非旨在作為設計手冊。然而，當推展任何把可再生能源發電系統與電網連接的建議時，《技術指引》可為確立相關技術要求提供便捷參考。

The purpose of the Technical Guidelines is not a design manual. However, it serves as a quick reference to establish the technical requirements for developing any grid-connected REPS proposals.

3.6 擁有人應確保其可再生能源發電系統符合所有現行法例規定，以及有關電力裝置安全、可靠性及供電質量的最佳作業方式，例如《電力條例》及其附屬規例、《工作守則》、電力公司的《供電則例》及就個別個案所釐定的詳細技術要求等。凡本地規例或最佳作業方式沒有涵蓋的可再生能源發電系統安裝細則，可參考附錄 II 所載的相關海外標準。有關最終設計細則，應由擁有人及電力公司雙方議定。

An Owner should ensure that his REPS complies with all prevailing statutory requirements and best practices on safety, reliability and power quality of electrical installations, such as the Electricity Ordinance and its subsidiary regulations, the CoP and the Supply Rules and details of case-specific technical requirements of the Utility. For installation details of the REPSs not covered in any of the local regulations or best practices, reference may be made to relevant overseas standards as given in Appendix II. The final design details should be agreed by both the Owner and the Utility.

技術指引的目的

Objective of the Technical Guidelines

- 3.7** 為確保可再生能源發電系統的正常運作，擁有人應注意使用符合相關國家／海外標準的高質量設備的重要性，並應聘請註冊電業承辦商為可再生能源發電系統進行有關電力工作。註冊電業承辦商所僱用的註冊電業工程人員應遵循《工作守則》設計、建造和安裝可再生能源發電系統。根據《電力（線路）規例》第 19 條，固定電力裝置完成後（包括修理、改裝或增設工作完成後），在通電以供使用前，必須由註冊電業工程人員檢查、測試及發出證明書，以確認該裝置符合《電力條例》的規定。註冊電業承辦商須根據《電力條例》第 34（11）條在完工證明書（表格 WR1）上加簽，並提醒擁有人在有需要註冊時按規定申請發電設施註冊。發電設施註冊申請須在可再生能源發電系統連接電網前提交機電署。

To ensure the proper operation of the REPS, the Owner should note the importance of using high quality equipment that complies with relevant national/ overseas standards and should employ a registered electrical contractor (REC) to carry out the electrical work for the REPS. The registered electrical worker (REW) employed by the REC shall follow the CoP to design, construct and install the REPS. In accordance with regulation 19 of the Electricity (Wiring) Regulations, a fixed electrical installation shall, after completion (including any work completed after repair, alteration or addition) and before it is energised for use, be inspected, tested and certified by an REW to confirm that the requirements of the Electricity Ordinance have been met. The REC shall endorse the certificate of completion (Form WR1) in accordance with section 34(11) of the Electricity Ordinance and remind the Owner to apply for generating facility registration as and when required for registration. The application for generating facility registration shall be submitted to the EMSD before grid connection.

- 3.8** 可再生能源發電系統屬於發電設施。擁有人應注意《電力條例》及其附屬規例下有關發電設施的維修保養和註冊的法例規定。

REPSs are classified as generating facilities. The Owner should note the statutory requirements on the maintenance and registration of the generating facility under the Electricity Ordinance and its subsidiary regulations.



可再生能源發電系統與電 網接駁

Connection of the REPS
to the Grid

4 可再生能源發電系統與電網接駁

Connection of the REPS to the Grid

- 4.1** 可再生能源的供應大多並不穩定。為了確保可再生能源發電系統的指定電力負載能有可靠的電力供應，發電系統需配置電池系統以儲存可再生能源發電系統所產生的電力，或利用另一個電源作為可再生能源發電系統的備用電力。不過，由於棄置電池或會引致其他環境問題，因此使用電池系統通常並非首選方案。

RE sources are mostly intermittent in nature. To ensure a reliable electricity supply to the designated loads of an REPS, it is necessary to provide either a battery system to store electricity generated from the REPS or a backup power to the REPS from another power source. However, the use of battery system is normally not considered as a first priority option since the disposal of batteries may also cause other environmental problems.

- 4.2** 把可再生能源發電系統與電網接駁是十分普遍。在一些海外國家，電網的作用是補足及支援可再生能源發電系統所供應的電力需求。常見的做法是在配電系統的某一點把可再生能源發電系統與電網連接，而該接駁點通常是可再生能源發電系統的安裝位置。

Connection of an REPS to the Grid is very common. In some overseas countries, the Grid serves to complement and back up the electricity demand supplied by an REPS. The common practice is to connect the REPS to the Grid at a certain point of the Distribution System, usually at the location where the REPS was installed.

- 4.3** 電力公司會安裝可再生能源電錶以監測可再生能源發電系統的電力輸出，亦可能會更換供電點的現有電力公司電錶。擁有人不得把任何可能會影響可再生能源電錶讀數的能源或儲能設施連接到可再生能源電錶。

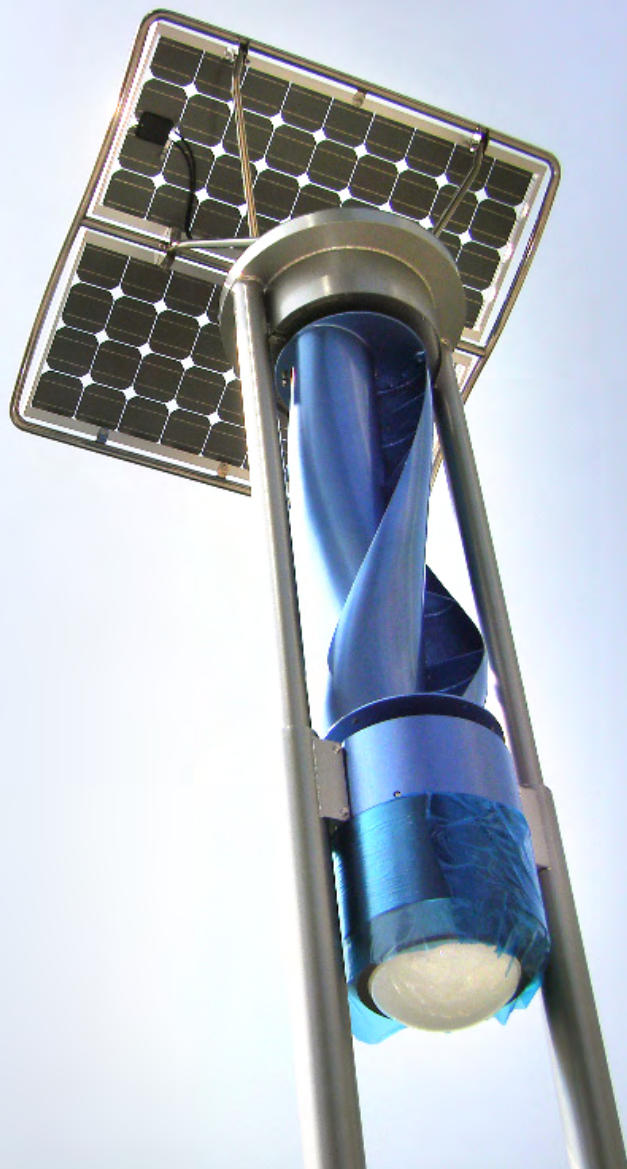
The Utility will install an RE meter to monitor the electricity output of the REPS and may replace existing Utility meter(s) at the point of supply. The Owner must not connect any energy sources or energy storage facilities to the RE meter that may affect the reading of the RE meter.

4.4 可再生能源發電系統旨在滿足處所的部分負載需求。一般而言，可再生能源發電系統的總額定功率應少於或等於允許負載。

The REPS is designed to meet part of the load demand of the premises. In general, the aggregated power rating of the REPS should be less than or equal to the approved loading.

4.5 與電網接駁後，可再生能源發電系統便成為配電系統的一部分。因此，確保可再生能源發電系統能安全可靠地運作，是擁有人、電力公司和政府的共同責任。

Upon connection to the Grid, the REPS becomes part of the Distribution System and it is the common responsibility of the Owner, the Utility and the Government to ensure that the REPS will operate in a safe and reliable manner.



適用範圍
Scope

5

5 適用範圍

Scope

5.1 《技術指引》一般適用於總額定功率最高達 1000 千瓦並與電網接駁的可再生能源發電系統，而下文隨後各章闡述把可再生能源發電系統與電網接駁的各項技術要求。下文第 5.3 段所述的附加要求，適用於總額定功率為 200 千瓦以上至最高達 1000 千瓦的可再生能源發電系統。就具備轉換器的可再生能源發電系統而言，其設計應按個別情況而向電力公司查詢。最終設計細節應由擁有人和電力公司雙方議定。

The Technical Guidelines is generally applicable to grid-connected REPSs of aggregated power rating up to 1000 kW, and the following chapters address the technical requirements for grid connection of the REPS. For REPS of aggregated power rating greater than 200 kW and up to 1000 kW, additional requirements as described in section 5.3 below will apply. For REPS with changeover device, its design should be referred to the Utility on a case-by-case basis. The final design details should be agreed by both the Owner and the Utility.

5.2 《技術指引》只涵蓋把可再生能源發電系統與電網接駁的技術要求。然而，在設置與電網接駁的可再生能源發電系統時，電力公司或須作出特別配合，以及提供額外電力設備及／或服務，以確保可再生能源發電系統的指定電力負載在任何時間（即使可再生能源發電系統無法供電時）均有安全、充足和可靠的電力供應。因此，擁有人除了支付可再生能源發電系統的安裝費用外，或需承擔額外費用。雙方因此應商討和議定本文件未有涵蓋而有關可再生能源發電系統與電網連接的其他相關非技術事宜，這點實為重要。

The Technical Guidelines covers only the technical requirements for connection of the REPS to the Grid. However, the addition of a grid-connected REPS may require the Utility to pay special efforts and provide additional electrical equipment and/or services for ensuring a safe, adequate and reliable power supply to the designated loads of the REPS at any moment even when the REPS is out of service. The Owner may therefore be required to bear extra costs in addition to the installation cost of the REPS. It is therefore important that both parties should discuss and agree on other related non-technical issues which are not covered in this document for connecting the REPS to the Grid.

5.3 由於電力公司可能須作出更多技術方面的考慮（例如因可再生能源發電系統而把配電網絡的故障水平提高，因此總額定功率超過 200 千瓦的可再生能源發電系統應按個別情況轉介電力公司處理。一般而言，如某一場地或建築物由超過一台 1500 千伏安配電變壓器供電，則連接至每台配電變壓器的可再生能源發電系統的總額定功率便以 200 千瓦為電力負載上限。此外，在某些情況下，如可再生能源發電系統的設備有故障電流限定功能，則連接至每台變壓器的可再生能源發電系統的總額定功率或可容許超出上限，但須按個別情況處理。

REPS with aggregated power rating greater than 200 kW should be referred to the Utility for processing on a case-by-case basis as more technical considerations on the Utility's side such as the increase in fault level of distribution network due to the REPS may possibly be required. As a general rule, for a location or building supplied from more than one 1500 kVA distribution transformers, an aggregated power rating loading limit of 200kW of installed REPS per distribution transformer can be applied. Furthermore, under certain circumstances it may be permissible to exceed the per-transformer REPS aggregated power rating limit when there is fault-current limiting function on the REPS equipment, and this shall be handled on a case-by-case basis.



電力安全、
系統保護及可靠性

Electrical Safety, System
Protection and Reliability

6

6 電力安全、系統保護及可靠性

Electrical Safety, System Protection and Reliability

6.1 一般安全要求和防護應符合《工作守則》的相關規定
General safety requirements and protection shall comply with relevant provisions of the CoP.

6.2 有關可再生能源發電系統的選擇、安裝及安全保護，擁有人應特別注意《工作守則》第 26P(2) 和 26P(3) 條。此外，《技術指引》建議提供以下裝置、功能和措施：

The Owner should pay special attention to Codes 26P(2) & 26P(3) of the CoP regarding the selection and erection of installation as well as protection for safety applicable to the REPS. In addition, the Technical Guidelines recommends providing the following facilities, functions and measures:

- (a) 在可再生能源發電系統的設計中加入「防孤島」功能，當電網因任何原因而停止供電時，此功能可自動使任何與電網接駁的可再生能源發電系統與配電系統脫離。「防孤島」功能旨在確保電力中斷時，可再生能源發電系統不會繼續向配電系統供電，以保障在電網或配電系統施工的電業工程人員的安全，以及配合電網內斷路器的重合運作。

Incorporate “anti-islanding” function in the design of the REPS. This function can automatically disconnect any grid-connected REPS from the Distribution System in the event that the Grid is de-energised for whatever reasons. The purpose of an “anti-islanding” function is to ensure that the REPS will not continue to supply power to the Distribution System so as to allow electrical workers to work safely on the Grid or the Distribution System during power interruption, and to cater for circuit breaker reclosing operation in the Grid.

- (b) 為指定與配電系統作電力性連接的斷路器或接觸器安裝具備同步檢查功能的裝置。只有在可再生能源發電系統和配電系統同步運作時（即這兩個電源的電壓強度、相位角及頻率的差異，均控制在可接受限值以內），可再生能源發電系統才會連接至配電系統。

Install facilities with synchronisation check function to circuit breakers or contactors designated for making electrical connection to the Distribution System. The connection of the REPS to the Distribution System will only take place when they are operating in synchronisation, i.e. the differences in voltage magnitude, phase angle, and frequency of these two power sources are controlled within acceptable limits.

- (c) 為可再生能源發電系統配置保護功能，以避免出現非同步接駁。為了確保發生電力故障後能迅速恢復電力供應，電力公司或會在電網中設置發生電力故障後會即時運作的自動開關及／或自動重合裝置。如配電系統仍得到可再生能源發電系統供電，非同步接駁可能會損壞雙方的設備。
Incorporate protection function in the REPS to avoid unsynchronised connection. To enable fast restoration of supply after power failure, the Utility may be equipped with auto-switching and/or auto-reclosing facilities that will operate soon after power failures. If the Distribution System is still energised by the REPS, unsynchronised connection may damage the equipment of both parties.
- (d) 為可再生能源發電系統配置適當的保護裝置，以避免可再生能源發電系統因配電系統及電網出現瞬態異常情況（例如供電中斷、電壓及頻率出現波動、電壓驟降等）而損壞。
Incorporate appropriate protection facilities in the REPS to avoid damage to the REPS caused by transient abnormalities that will occur in the Distribution System and the Grid, such as supply interruption, voltage and frequency fluctuation, voltage dip, etc.
- (e) 配置穩定和反應迅速的電壓及頻率調節器，以確保可再生能源發電系統能應付配電系統的正常電壓以及頻率波動情況。
Incorporate a stable and fast responding voltage and frequency regulator to ensure that the REPS can handle the normal voltage and frequency fluctuations in the Distribution System.
- (f) 為可再生能源發電系統配置有關裝置，當探測到配電系統的電壓及頻率持續出現波動時，或配電系統的電壓及頻率在擁有人及電力公司雙方同意的預定時限內持續偏離可容許限值時，能自動令可再生能源發電系統與配電系統脫離。自動脫離的延遲時間應由擁有人及電力公司雙方議定。
Incorporate in the REPS facilities which can automatically disconnect the REPS from the Distribution System when sustained voltage and frequency fluctuations are detected in the Distribution System or when the voltage and frequency of the Distribution System deviate outside the allowable limits persistently for a pre-determined period agreed by both the Owner and the Utility. The time delay for automatic disconnection should be agreed by both the Owner and the Utility.

- (g) 為可再生能源發電系統配置有關裝置，當配電系統內的電壓及頻率波動已消失後，能自動把可再生能源發電系統重新接駁至配電系統。重新接上的延遲時間應由擁有人及電力公司雙方議定。時間延遲功能是為了避免因過早作電力性接駁而導致斷路器重複斷路。

Incorporate in the REPS facilities which can automatically reconnect the REPS back to the Distribution System after fluctuations in voltage and frequency in the Distribution System have been cleared. The time delay for reconnection should be agreed by both the Owner and the Utility. The time delay is to avoid repeated operation of the circuit breakers due to premature electrical connection.

- (h) 評估可再生能源發電系統與電網接駁後新的故障水平，從而確保配電系統及電網內的所有設備均能在新的故障水平下安全操作。

Carry out assessments on the new fault level due to the connection of the REPS to the Grid such that all equipment in the Distribution System and the Grid can operate safely under the new fault level.

- (i) 為配電系統內所有保護裝置設定操作水平，以配合新的故障水平。有關安排是為了避免在發生故障時，保護裝置出現不妥當操作情況。

Set the operating levels for all the protective devices in the Distribution System to suit the new fault level. The arrangement seeks to avoid improper operation of protective devices during fault conditions.

- (j) 配置最大功率點追蹤裝置以不斷調校直流電的電壓，以確保光伏陣列在太陽輻射照度不斷變化的情況下，能產生最大功率。

Incorporate maximum power point tracking (MPPT) device to continuously adjust the direct current (DC) voltage to ensure that maximum power will be generated by the photovoltaic arrays under the varying solar irradiance conditions.

- (k) 選用高可靠性（例如「平均故障間隔」指數較高）的逆變器是十分重要的，因為逆變器是可再生能源發電系統內把可再生能源發電系統與配電系統直接連接的主要組件。

Select an inverter with high reliability, such as having a high "mean-time-between-failure" index. This is essential since the inverter is the principal component in the REPS that directly connects the REPS to the Distribution System.

- (l) 安裝具備功率調節功能的逆變器，用作把可再生能源發電系統的諧波電流及輸出功率因數保持在可接受的範圍內，令可再生能源發電系統能有效率地運作，並且不會影響其他設備。

Install an inverter with a power conditioning function to control the harmonic currents and the output power factor of the REPS within an acceptable range such that the REPS can operate efficiently without affecting others.

- (m) 可再生能源發電系統的設計應使用三相逆變器或三個相同的單相逆變器，使輸出的電流能平均分配於電網的三相內。此做法有助盡量減少三相供電系統內出現電壓和電流不平均的情況，並確保能充分使用配電系統的發電容量。然而，如電力公司正供應或將會供應單相電予有關場地，此做法並不適用。

Design an REPS with a three-phase inverter or three identical single-phase inverters to supply current which is balanced over three phases to the Grid. This will minimise voltage and current unbalance in the three-phase supply system and will ensure that the capacity of the Distribution System can be fully utilised. However, this provision is not applicable if the site is being supplied or will be supplied with single-phase power from the Utility.

- (n) 根據《工作守則》第 26P(2)(g) 條，應為太陽能發電系統安裝隔離變壓器，以把有關系統的直流電注入配電系統的可能性消除。注入配電系統的直流電如過多，會影響配電系統的電壓，並會對其他已接駁的設備帶來問題。

Install isolation transformer for the solar energy generation system to eliminate the possibility of injecting DC from the system to the Distribution System according to Code 26P(2)(g) of the CoP. Excess DC injected into the Distribution system will distort its voltage and cause problems to other connected equipment.

- (o) 根據《工作守則》第 26P(3)(c) 條，安裝適當的隔離及開關器件。

Install appropriate devices for isolation and switching according to Code 26P(3)(c) of the CoP.

- (p) 根據《工作守則》第 26P(3)(d) 條，為裝置提供適當的故障防護。

Provide appropriate fault protection for the installation according to Code 26P(3)(d) of the CoP.

- (q) 配置額外的控制及監測裝置，用以量度及監測可再生能源發電系統的效能。

Provide additional control and monitoring facilities to measure and monitor the performance of the REPS.

- (r) 配置數據收集及匯報系統，以提供實時數據、數據摘要及故障報告。

Provide a data collection and reporting system to provide real time data, data summaries and failure reports.

- (s) 在相關的電力設備上展示符合《工作守則》第 17G 條的告示。有關「雙供電警告標誌」、「直流電警告標誌」及「發電設施保養承辦商告示」的樣本分別載於圖 1、2 及 3。

Display notice at relevant equipment to comply with Code 17G of the CoP. Samples of “Dual Power Supply Warning Label”, “DC Warning Label” and “Notice of Maintenance Contractor for Generating Facility” are shown in Figures 1, 2 and 3 respectively.

警告性標誌（除須符合《工作守則》第 17G 條所訂明規格，亦須以清晰及每個不小於 5 毫米高的字體說明警告內容）

Warning Label (in addition to compliance with the specification stated in Code 17G of the CoP, the warning contents shall be presented in legible letters and characters each not less than 5 mm high)

圖 1 雙重供電警告牌

Figure 1 Dual Power Supply Warning Label



圖 2 直流電警告牌

Figure 2 DC Warning Label



圖 3 發電設施保養承辦商告示

Figure 3 Notice of Maintenance Contractor for Generating Facility





主要組件及其功能

Major Devices and
their Functions

7 主要組件及其功能

Major Devices and their Functions

7.1 逆變器

Inverter

逆變器將光伏陣列輸出的直流電轉換為交流電。逆變器具備功率調節功能，以控制可再生能源發電系統的諧波電流及輸出功率因數。安裝在逆變器內或外的隔離變壓器有助防止直流電注入配電系統。

The inverter converts the output DC of photovoltaic array into Alternating Current (AC). It has a power conditioning function to control the harmonic currents and the output power factor of the REPS. The isolation transformer installed inside or outside the inverter helps to prevent the injection of DC into the Distribution System.

逆變器應具備以下功能：

The following functions should be incorporated into the inverters:

- (a) 最大功率輸出點追蹤功能－持續調校直流電的電壓，以確保在太陽輻射照度不斷變化的情況下，光伏陣列都能輸出最大功率。

Maximum Power Point Tracking function - to continuously adjust the DC voltage to ensure that maximum power will be generated by the photovoltaic array under the varying solar irradiance conditions.

- (b) 防孤島功能－斷路時間須符合電力公司的要求，以便在電網因任何原因停止供電時，自動把逆變器與配電系統脫離。

Anti-islanding function - with tripping time as required by the Utility, to disconnect the inverter automatically from the Distribution System in the event that the Grid is de-energised for whatever reasons.

- (c) 頻率／電壓過低／過高保護功能－當電網的頻率及／或電壓超出正常範圍時，把逆變器與配電系統脫離。

Under/Over-frequency/voltage protection function - to disconnect the inverter from the Distribution System when the frequency and/or voltage of the Grid falls out of normal range.

- (d) 自動重接功能－在電網的頻率及／或電壓在既定時限內（該時限須與電力公司議定）回復至正常操作範圍時，把逆變器與配電系統重新連接。

Auto-reconnection function - to reconnect the inverter back to the Distribution System when the frequency and/or voltage of the Grid resumes to normal operational range for a pre-defined period of time (with such time period to be agreed with the Utility).

- (e) 同步檢測功能－確保只有當逆變器輸出和配電系統同步操作時，逆變器才會與配電系統連接。

Synchronisation check function - to ensure that connection of the inverter to the Distribution System will only take place when the inverter output and the Distribution System are operating in synchronism.

- (f) 如有多個逆變器而其輸出為並排連接，逆變器的保護設定值會略有不同，以便在異常狀況下可按序斷路，以及在之後按序自動重新連接。

In the case of multiple inverters with their outputs connected in parallel, the protection settings of the inverters will differ slightly to allow for sequential tripping under abnormal conditions and sequential auto-reconnection afterwards.

7.2 光伏陣列

Photovoltaic Array

光伏陣列由光伏組件串接成光伏串，再並排連接而成。

The photovoltaic array is made up of photovoltaic modules connected in series to form strings. These strings are then connected in parallel.

7.3 陣列組合箱／分陣列組合箱／直流電接線箱

Array Combiner Box/Sub-array Combiner Box/DC Junction Box

光伏串在這些箱子裏並排連接，以連接逆變器。所需的阻流二極管、電湧放電器及直流電熔斷器都要安裝在該等箱子裏。

The photovoltaic strings are connected in parallel in these boxes for connection to the inverters. The necessary blocking diodes, surge arrestors, and DC fuses are incorporated into these boxes.

7.4 交流電配電箱

AC Distribution Board

如為多個逆變器系統而安裝交流電配電箱，逆變器的交流電輸出（經隔離變壓器後）會在這交流電配電箱互相連接，再經主隔離開關與配電系統連接。

If an AC distribution board is installed for a multi-inverter system, the AC outputs of the inverters (after isolation transformers) are connected together in the AC distribution board, for further connection to the Distribution System through the main isolating switch.

7.5 電力公司的可再生能源電錶

The Utility's RE Meter

如電力公司滿意實地測試結果，便會安裝可再生能源電錶，以記錄可再生能源發電系統產生和輸出的電量。

The Utility will install a RE meter to record the power generated and transmitted from the REPS if they are satisfied with the site test results.

7.6 主隔離開關（雙極／四極、可上鎖）

Main Isolating Switch (double-pole / four-pole, lockable)

這是以人手操作的可上鎖隔離開關（或斷路器），以供獲授權的電業工程人員在有需要時以手動方式把可再生能源發電系統與配電系統隔離。

This is a manually operated lockable isolating switch (or circuit breaker) which allows authorised electrical workers to manually isolate the REPS from the Distribution System whenever necessary.



檢查，測試與校驗

Inspection, Testing and
Maintenance

8

8 檢查，測試與校驗

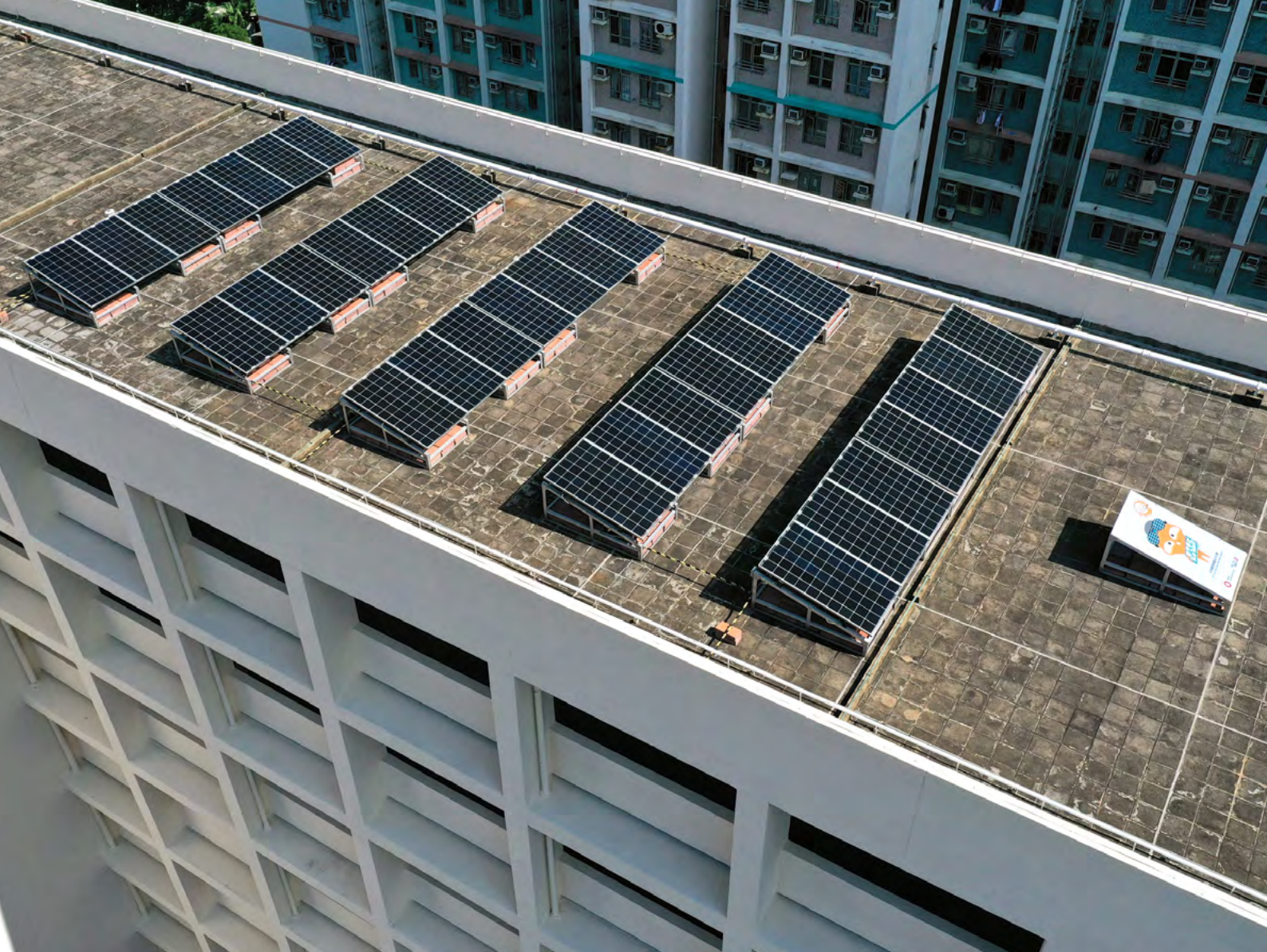
Inspection, Testing and Maintenance

- 8.1** 在可再生能源發電系統通電前，擁有人僱用的註冊電業承辦商須先徹底檢查有關系統，以及根據《工作守則》第 26(P)(4) 條進行功能及安全測試，以確保系統妥為設計及安裝，符合本技術指引的技術及安全要求，以及其他個別情況的技術要求。電力公司及機電署可能會要求為可再生能源發電系統進行指定測試，並派員實地察看測試，或至少要求有關人士報告測試結果。如當擁有人及電力公司均接納測試程序及結果，電網接駁才會通電。

Before the REPS is energised, it is important that the REC employed by the Owner has conducted a thorough inspection to the concerned system and carried out functional and safety tests in accordance with Code 26(P)(4) of the CoP to ensure that the REPS has been properly designed and installed to comply with the technical and safety requirements of this Technical Guidelines, CoP and other case-specific technical requirements. The Utility and the EMSD may specify and witness at site certain tests of the REPS, or shall at least request to be informed of the test results. The grid-connection arrangement will only be energised where the test procedures and test results are both accepted by the Owner and the Utility.

- 8.2** 擁有人須遵守《工作守則》第 22 條所載可再生能源發電系統檢查及測試核對表內的要求。

The requirements stated in the checklist for inspection and testing of REPS of Code 22 of the CoP shall be followed by the Owner.



安裝後擁有人的責任

Post-installation Obligations
of the Owners

9 安裝後擁有人的責任

Post-installation Obligations of the Owners

- 9.1** 可再生能源發電系統屬發電設施。根據《電力條例》第 22 條，擁有人須使該發電設施經常保持運作安全，以及在該發電設施所在處展示告示，列明為使該發電設施經常保持運作安全而僱用的註冊電業承辦商的名稱和註冊號碼。

REPS is classified as a generating facility. Under section 22 of the Electricity Ordinance, the Owner shall maintain the generating facility in continuous safe working order, and display at the facility a notice showing the name and registration number of the REC employed for maintaining the facility in continuous safe working order.

- 9.2** 如可再生能源發電系統屬需要定期測試證明書（即 WR2 表格）（例如一般住宅或商業處所內允許負載量超逾 100 安培的固定電力裝置）的固定電力裝置的一部分，根據《電力條例》及其附屬規例，該固定電力裝置的定期測試應包括有關可再生能源發電系統。

If the REPS forms part of a fixed electrical installation that requires a periodic test certificate (i.e. Form WR2) (e.g. with the approved loading exceeding 100A for residential or commercial premises), the periodic test for the fixed electrical installation shall include the REPS in accordance with the Electricity Ordinance and its subsidiary regulations.

- 9.3** 電力公司可能會派員實地抄錶、保養儀錶和巡查，以及要求擁有人就其可再生能源發電系統的操作進行核證測試。就此，電力公司可能會要求擁有人為其工作人員提供無障礙的場地通道，以及提供測試結果。

The Utility may conduct meter reading, meter maintenance and on-site inspections and request the Owner to perform verification tests on the operation of the REPS. In this regard, the Utility may request the Owner to provide free access for its staff and test results.

- 9.4** 擁有人須編製操作及維修保養手冊，以記錄操作及維修保養可再生能源發電系統所需的一切程序，包括所有保護設定值及測試結果。該手冊內有關與電網接駁的操作程序細節，應獲得擁有人及電力公司雙方同意。該手冊應定期予以檢討，以及在有需要時作出修訂。

The Owner shall compile an operation and maintenance manual to record all procedures needed to operate and maintain the REPS including all protection settings and test results. Regarding grid connection operational procedures which form part of the manual, details should be agreed by the Owner and the Utility. The manual should be reviewed regularly and modified where necessary.

9.5 如可再生能源發電系統的額定功率有所更改或系統進行改裝，擁有人須通知電力公司。此外，在可再生能源發電系統解除運作時，擁有人亦須通知電力公司。

The Owner shall inform the Utility on any change in power rating or modification of the REPS. In addition, the Utility shall also need to be informed when the REPS is decommissioned.

9.6 擁有人須定期更新電路圖，以及於適當地點展示電路圖，以便維修人員在正常及緊急操作的情況下，均能正確地截斷可再生能源發電系統與電網的接駁。

The Owner shall update the circuit diagrams regularly and display them at appropriate locations to facilitate maintenance personnel to properly shut down the grid connection arrangement under normal and emergency operations.

9.7 擁有人須與電力公司建立直接溝通渠道，以確保可再生能源發電系統和電網操作安全。擁有人應指派一名合適的合資格人士，負責在正常及緊急操作的情況下，與電力公司直接聯絡。

The Owner shall establish a direct communication channel with the Utility to ensure the safe operation of the REPS and the Grid. The Owner should designate a suitably qualified person to communicate directly with the Utility under normal and emergency operations.



「上網電價」申請程序摘要

Outline of Feed-in Tariff (FiT) Application Procedures

10

10 「上網電價」申請程序摘要

Outline of Feed-in Tariff (FiT) Application Procedures

- 10.1** 電力公司的聯絡資料及「上網電價」的申請程序載列於附錄 I。
The contact information of the Utilities and FiT application procedures are given in Appendix I.
- 10.2** 建議有意裝設可再生能源發電系統的擁有人，在系統構思階段便與有關電力公司接觸，以確保電力公司能在發電系統的設計敲定前，就接駁電網事宜提供意見。
It is advisable for the prospective Owner to contact the Utility concerned from inception, so as to ensure that the Utility can provide advice on grid connection before the design of the REPS is finalised.
- 10.3** 擁有人及電力公司應議定擬建可再生能源發電系統與電網接駁的最恰當安排。此外，雙方亦應商議及訂定接駁電網的條款和條件。
The Owner and the Utility should come to an agreement on the most suitable connection arrangements for the proposed REPS. Both parties should also discuss and reach an agreement on the terms and conditions of grid connection.
- 10.4** 擁有人及電力公司亦應議定可再生能源發電系統的校驗日期，以及電力公司派員實地見證的測試項目。
The Owner and the Utility should also agree on the commissioning date of the REPS and the tests to be witnessed at site by the Utility.
- 10.5** 如果可再生能源發電系統並非須要定期測試證明書（即 WR2 表格）的固定電氣裝置的一部分，擁有人須根據《電力條例》及其附屬規例，將可再生能源發電系統註冊為發電設施。申請表格及相關詳情載於機電署網站。
If the REPS does not form part of a fixed electrical installation that requires a periodic test certificate (i.e. Form WR2), the Owner shall register the REPS as generating facility with the EMSD in accordance with the Electricity Ordinance and its subsidiary regulations. The application form and relevant details can be found on the EMSD's website.



本地守則 / 法規及國家 /
海外標準

Local Codes/
Rules and National/
Overseas Standards

1 1

11 本地守則 / 法規及國家 / 海外標準

Local Codes/Rules and National/Overseas Standards

附錄 II 載列與電網接駁的可再生能源裝置相關的本地守則／法規及國家／海外標準（並非盡列無遺），在設計與電網接駁的可再生能源發電系統時，可參考有關文件。

A non-exhaustive list of local codes/rules and national/Overseas standards relating to grid-connected REPS and associated equipment is given in Appendix II. These documents can be used as reference materials in the design of a grid-connected REPS.



電網接駁示例圖

Sample Diagram of
Grid Connection

12

12 電網接駁示例圖

Sample Diagram of Grid Connection

附錄 III 載有電網接駁示例圖。該示例圖僅顯示一般的電網接駁安排。接駁電網安排並無統一標準，因此應按個別裝置設計。

A sample diagram of grid connection is given in Appendix III. This sample diagram only illustrates a general grid connection arrangement. There is no standard grid connection arrangements and each installation should be designed on a case-by-case basis.



附錄 I

Appendix I

附錄 I

Appendix I

電力公司的聯絡資料及「上網電價」的申請程序 Contact Information of the Utility and FiT Application Procedures

中華電力有限公司

CLP Power Hong Kong Limited

電話號碼：

Telephone number：

2678 0322

電郵地址：

Email address：

csd@clp.com.hk

香港電燈有限公司

The Hongkong Electric Company, Limited

電話號碼：

Telephone number：

2510 2701

電郵地址：

Email address：

RE@hkelectric.com

「上網電價」申請程序網址：

Websites of FiT application procedures:

中華電力有限公司

<https://www.clp.com.hk/zh/environment/funds-services/feed-in-tariff-residential.html>

<https://www.clp.com.hk/zh/environment/funds-services/feed-in-tariff-business.html>

CLP Power Hong Kong Limited

<https://www.clp.com.hk/en/environment/funds-services/feed-in-tariff-residential.html>

<https://www.clp.com.hk/en/environment/funds-services/feed-in-tariff-business.html>

香港電燈有限公司

<https://www.hkelectric.com/FiT>

The Hongkong Electric Company, Limited

<https://www.hkelectric.com/FiT-en>



附錄 II

Appendix II

附錄 II

Appendix II

本地守則／法規及國家／海外標準（海外標準一般只有英文版）
Local Codes/Rules and National/Overseas Standards (only English version is available for Overseas Standards in general)

一般 General

本地守則 / 法規 Local Codes / Rules	標題 Title
工作守則 CoP	機電署出版的《電力（線路）規例工作守則》 Code of Practice for the Electricity (Wiring) Regulations issued by the EMSD
本地電力公司的 《供電則例》 Local Utility's Supply Rules	中華電力有限公司的《供電則例》 香港電燈有限公司的《供電則例》 Supply Rules of CLP Power Hong Kong Limited Supply Rules of The Hongkong Electric Company, Limited

可再生能源發電系統 REPS

海外標準 Overseas Standards	標題 Title
國際電工技術委員會 標準 60364-7-712 IEC 60364-7-712	低壓電氣裝置－第 7-712 部：特殊安裝或位置的要求－太陽能光伏供電系統 Low Voltage Electrical Installations - Part 7-712: Requirements for Special Installations or Locations - Solar Photovoltaic (PV) Power Supply Systems
國際電工技術委員會 標準 61400-2 IEC 61400-2	小型風力發電機 Small Wind Turbines
英國標準 7671 BS 7671 of the United Kingdom	英國工程技術學會線路規例 The United Kingdom's IET Wiring Regulations

太陽能光伏組件及太陽能板 Solar Photovoltaic Modules and Panels

海外標準 Overseas Standards	標題 Title
國際電工技術委員會 標準 61215 IEC 61215	地面用光伏組件 - 設計鑒定和定型 Terrestrial Photovoltaic (PV) Modules - Design Qualification and Type Approval
國際電工技術委員會 標準 61730 IEC 61730	光伏組件安全驗證 Photovoltaic (PV) Module Safety Qualification
美國保險商試驗所 標準 1703 UL 1703 of the United States	平面光伏組件和光伏板標準 Standard for Flat-Plate Photovoltaic Modules and Panels

電線 Cables

海外標準 Overseas Standards	標題 Title
英國歐盟標準 50618 BS EN 50618	光伏系統的電線 Electric Cables for Photovoltaic Systems

逆變器 Inverters

海外標準 Overseas Standards	標題 Title
國際電工技術委員會 標準 62109 IEC 62109	應用於光伏系統的功率轉換器的安全 Safety of Power Converters for Use in Photovoltaic Power Systems
美國保險商試驗所 標準 1741 UL 1741 of the United States	與分布式電源一併使用的逆變器、電力轉換器、控 制器和互連系統設備的標準 Standard for Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources

隔離變壓器 Isolation Transformers

海外標準 Overseas Standards	標題 Title
英國歐盟國際電工技術 委員會標準 61558 BS EN IEC 61558 of the United Kingdom, Europe and IEC	變壓器、電抗器、電源供應單位和組合的安全 Safety of Transformers, Reactors, Power Supply Units and Combinations Thereof

觸電及過載保護 Protection against Electric Shock and Overload

海外標準 Overseas Standards	標題 Title
英國歐盟標準 61140 BS EN 61140 of the United Kingdom and Europe	觸電保護 Protection Against Electric Shock
英國歐盟國際電工技術 委員會標準 60904-3 BS EN IEC 60904-3 of the United Kingdom, Europe and IEC	地面太陽能光伏裝置的測量原則 Measurement Principles for Terrestrial Photovoltaic (PV) Solar Devices

與電網接駁的一般技術標準／指南／建議 General Technical Standards/Guides/Recommendations on Grid Connection

海外標準 Overseas Standards	標題 Title
美國電機暨電子工程師 學會標準系列 1547 The series of IEEE Std 1547 of the United States	分布式電源與相關電力系統介面的聯網及互通標準 Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces
英國能源網絡協會工程 建議 G98 Energy Networks Association of the United Kingdom, Engineering Recommendation G98	在 2019 年 4 月 27 日或之後全經典型試驗的微發電 機（每相等同 16 安培或以下）與公共低壓配電網並 排接駁的要求 Requirements for the Connection of Fully Type Tested Micro-generators (up to and including 16A per phase) in Parallel with Public Low Voltage Distribution Networks on or after 27 April 2019
英國能源網絡協會工程 建議 G99 Energy Networks Association of the United Kingdom, Engineering Recommendation G99	在 2019 年 4 月 27 日或之後發電機設備與公共配電 網並排接駁的要求 Requirements for the Connection of Generation Equipment in Parallel with Public Distribution Networks on or after 27 April 2019

光伏系統與電網接駁的技術標準／指南／建議

Technical Standards/Guides/Recommendations on Grid Connection of Photovoltaic Systems

海外標準 Overseas Standards	標題 Title
國際電工技術委員會 標準 60364-7-712 IEC 60364-7-712	低壓電力裝置－第 7-712 部：特殊安裝或位置要求－ 太陽能光伏供電系統 Low Voltage Electrical Installations - Part 7-712: Requirements for Special Installations or Locations - Solar Photovoltaic Power Supply Systems
國際電工技術委員會 標準 61724 IEC 61724	光伏系統性能 Photovoltaic System Performance
國際電工技術委員會 標準 61727 IEC 61727	光伏系統－電網介面的特性 Photovoltaic (PV) Systems - Characteristics of the Utility Interface
國際電工技術委員會 標準 62116 IEC 62116	接駁電網式光伏逆變器－防孤島功能試驗步驟 Utility-interconnected Photovoltaic Inverters – Test Procedure of Islanding Prevention Measures
國際電工技術委員會 標準 62446 IEC 62446	光伏系統－測試、文件及維修要求 Photovoltaic (PV) Systems - Requirements for Testing, Documentation and Maintenance

與供電質量有關的技術標準／指南／建議

Technical Standards/Guides/Recommendations on Power Quality

海外標準 Overseas Standards	標題 Title
國際電工技術委員會技術標準 61000-3-4 電磁兼容性－第 3-4 部分 IEC TS 61000-3-4 Electromagnetic Compatibility - Part 3-4	額定電流大於 16 安培的設備的低壓供電系統的諧波電流限值 Limitation of Emission of Harmonic Currents in Low-Voltage Power Supply Systems for Equipment with Rated Current Greater than 16A

海外標準 Overseas Standards	標題 Title
國際電工技術委員會技術標準 61000-3-5 電磁兼容性－第 3-5 部分 IEC TS 61000-3-5 Electromagnetic Compatibility - Part 3-5	額定電流大於 75 安培的設備的低壓供電系統的電壓波動和閃變限值 Limitation of Voltage Fluctuations and Flicker in Low-Voltage Power Supply Systems for Equipment with Rated Current Greater than 75A
國際電工技術委員會技術標準 61000-3-12 電磁兼容性－第 3-12 部分 IEC 61000-3-12 Electromagnetic Compatibility - Part 3-12	接駁公共低壓系統而每相輸入電流大於 16 安培及等於或少於 75 安培的設備的諧波電流限值 Limits for Harmonic Currents Produced by Equipment Connected to Public Low-Voltage Systems with Input Current >16A and ≤75A Per Phase
國際電工技術委員會標準 61000-4-7 電磁兼容性－第 4-7 部分 IEC 61000-4-7 Electromagnetic Compatibility - Part 4-7	測試與測量技巧－供電系統及接駁設備的諧波和間諧波測量及量度儀器一般指引 Testing and Measurement Techniques - General Guide on Harmonics and Interharmonics Measurements and Instrumentation, for Power Supply Systems and Equipment Connected Thereto
美國電機暨電子工程師學會標準 519 IEEE Std 519 of the United States	電力系統的諧波控制建議規程和要求 Recommended Practice and Requirements for Harmonic Control in Electric Power Systems

備註

Note

- (a) 《工作守則》和電力公司的《供電則例》可於以下網站下載：
The CoP and Utilities' Supply Rules can be downloaded from the following website：

《工作守則》

https://www.emsd.gov.hk/tc/electricity_safety/publications/codes_of_practice/index.html

CoP

https://www.emsd.gov.hk/en/electricity_safety/publications/codes_of_practice/index.html

中電的《供電則例》

<https://www.clp.com.hk/zh/customer-service/open-and-close-account/supply-rules>

Supply Rules of CLP Power Hong Kong Limited

<https://www.clp.com.hk/en/customer-service/open-and-close-account/supply-rules>

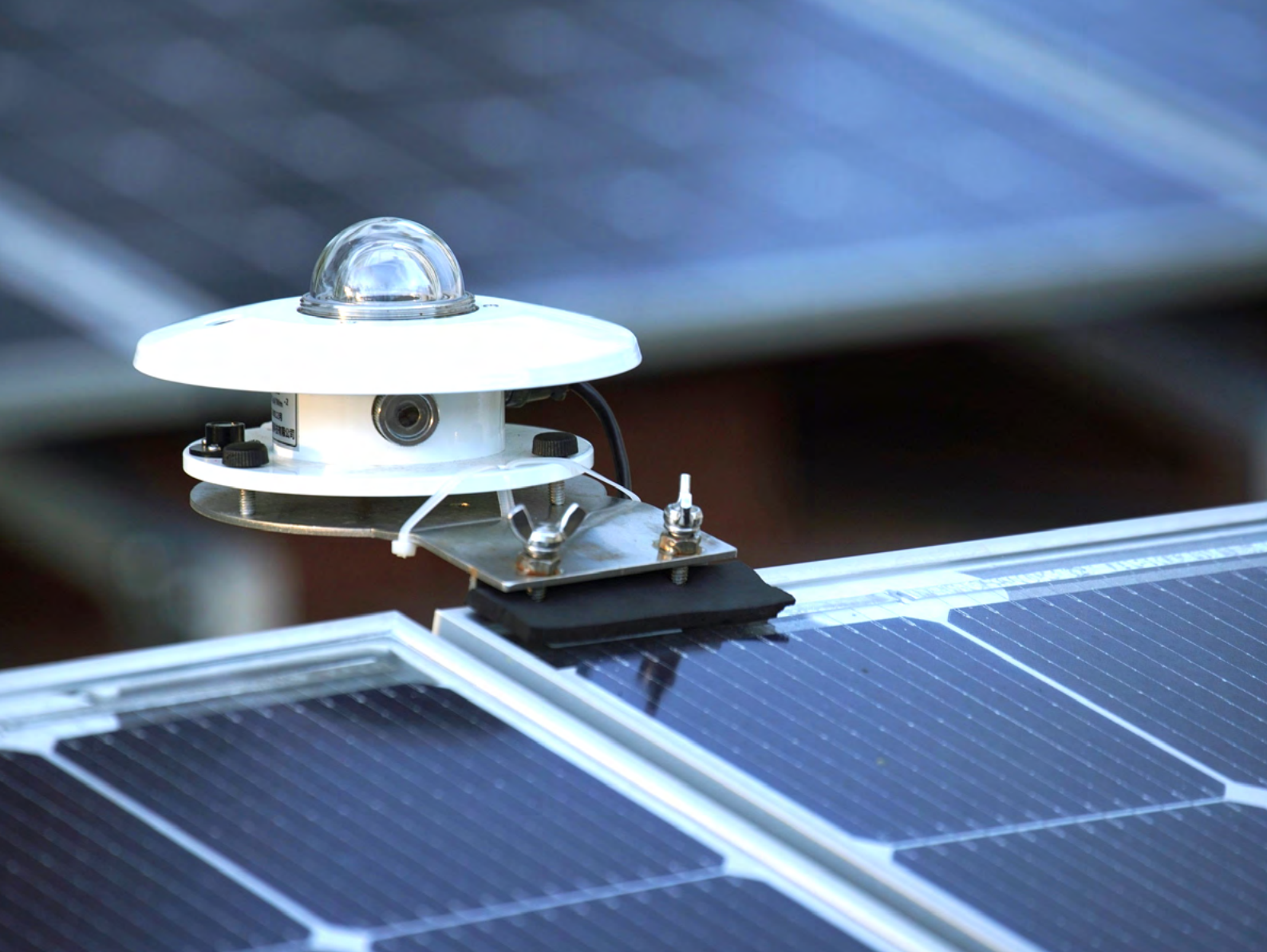
港燈的《供電則例》

<https://www.hkelectric.com/zh/customer-services/rules-standards-policies>

Supply Rules of The Hong Kong Electric Company, Limited

<https://www.hkelectric.com/en/customer-services/rules-standards-policies>

- (b) 國際電工委員會的刊物於該會網站商店發售：
The IEC publications can be purchased from the IEC webstore:
<https://webstore.iec.ch/>



附錄 III

Appendix III

附錄 III

Appendix III

電網接駁示例圖

Sample Diagram of Grid Connection

備註：

Remarks:

- (1) 本附錄所載的電網接駁示例圖旨在顯示一般的電網接駁安排，故不應視作電網接駁的標準安排。

The sample diagram given here is for the purpose of illustrating the general grid connection arrangement and therefore should not be taken as standard arrangements for a grid-connected system.

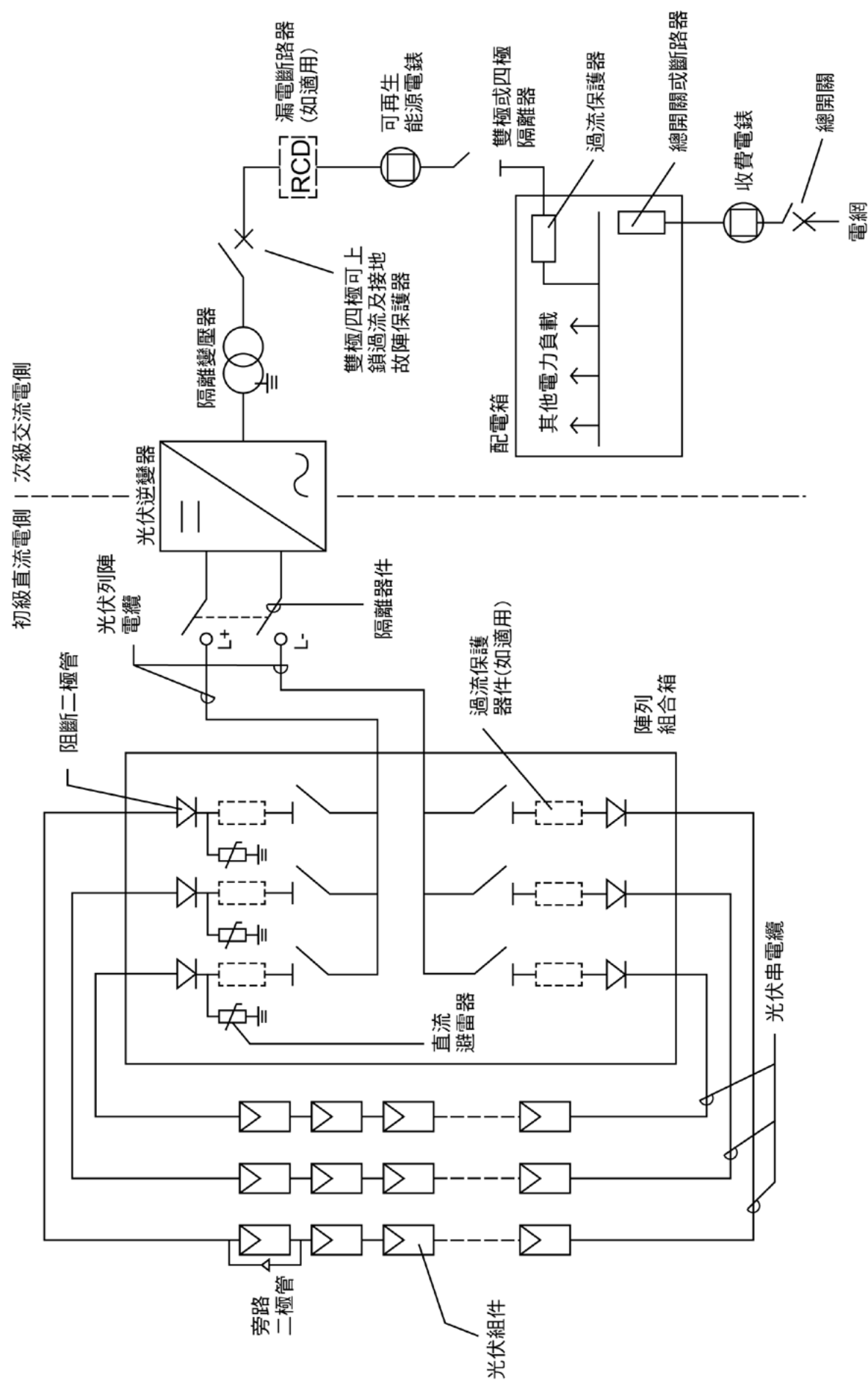
- (2) 可再生能源發電系統的線路安裝及電力安全要求須符合《電力條例》及《電力（線路）規例工作守則》的相關條文。

The wiring installation and electrical safety requirements of the REPS shall comply with the relevant provisions of the Electricity Ordinance and the CoP therein.

- (3) 有關本附錄的電網接駁示例圖所示主要組件的功能及技術要求，請參閱本《技術指引》第 6 及 7 項。

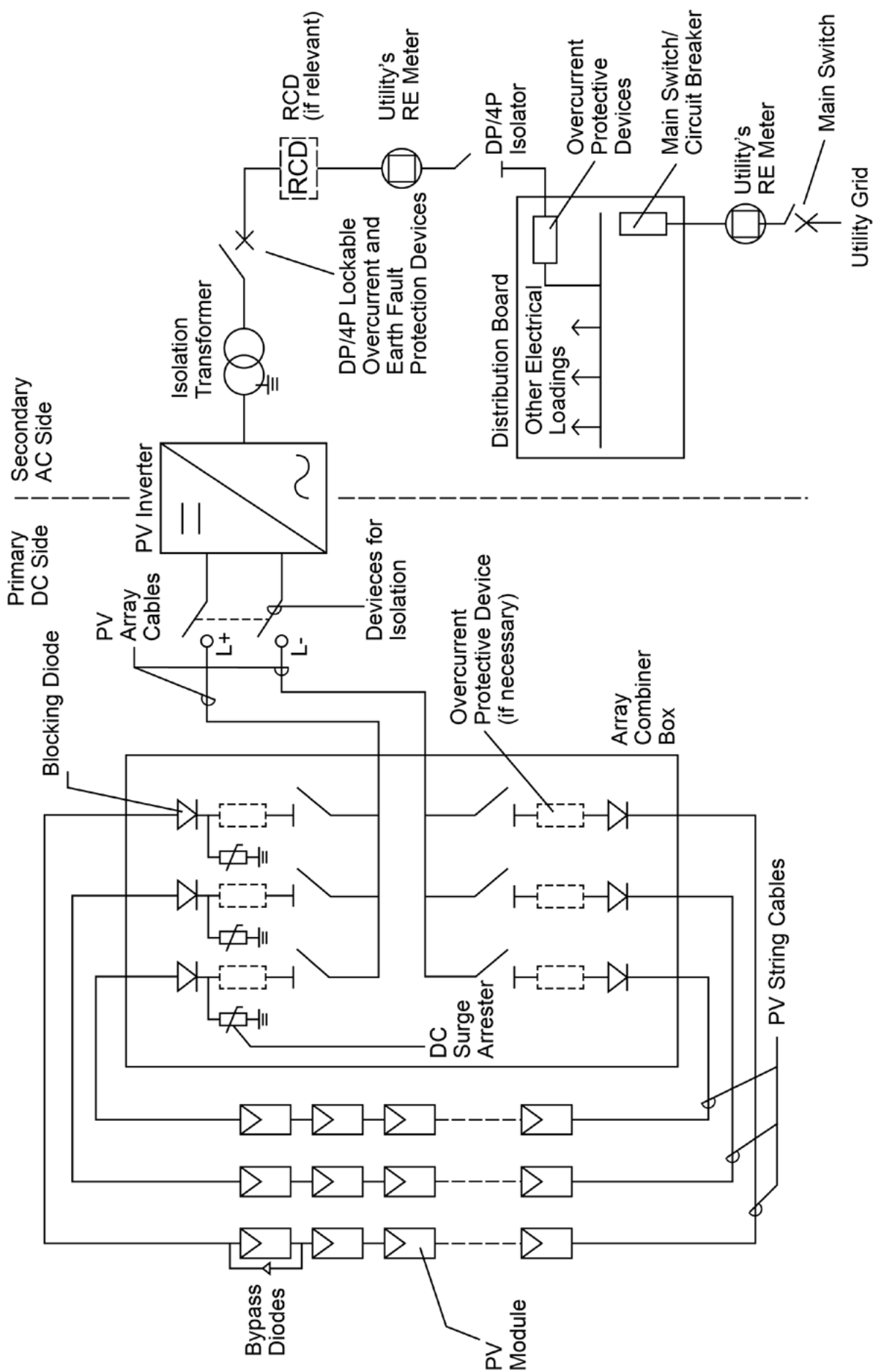
For the functions and technical requirements of the principal devices for grid connection shown in the sample diagram, please refer to sections 6 and 7 of this Technical Guidelines.

太陽能光伏系統的一般設備



(此示例圖摘自《電力(線路)規例工作守則》(2020年版))

Typical Equipment for PV Power Supply System



(This sample diagram is extracted from the CoP for the Electricity (Wiring) Regulations (2020 edition))



機電工程署 **EMSD**

機電工程署

Electrical and Mechanical Services Department

香港九龍啟成街 3 號

3 Kai Shing Street, Kowloon, Hong Kong

電話 Tel : (852) 2890 3465

傳真 Fax : (852) 2890 6081

網頁 Homepage : <http://www.emsd.gov.hk>

電郵 Email : eepublic@emsd.gov.hk