



Association
of International
Certified Professional
Accountants®

CGMA全球特许管理会计师考试系列

CGMA

全球特许管理会计师考试 综合案例与解析 [运营级]

CGMA CASE STUDY
EXAMINATION AND ANALYSIS
(Operational Level)



国际注册专业会计师公会◎编著



携手国内11家名校名师匠心之作!

清华大学 | 香港中文大学 | 西安交通大学 | 厦门大学 | 中南财经政法大学 | 中央财经大学
江西财经大学 | 天津财经大学 | 西安外国语大学 | 上海立信会计金融学院 | 湖北经济学院

中信出版集团

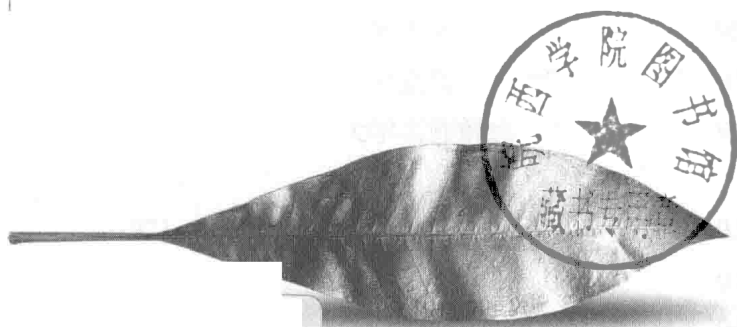
CGMA

全球特许管理会计师考试 综合案例与解析 [运营级]

CGMA CASE STUDY
EXAMINATION AND ANALYSIS
(Operational Level)



国际注册专业会计师公会◎编著



目 录 (下册)

Case 4 Marici Power	767	案例四 摩利兹能源公司	767
Background Materials	768	背景材料	786
Variant 1	802	试卷一	810
Variant 1 Suggested Answers	818	试卷一 参考答案	827
Variant 1 Marking Guidance	834	试卷一 评分指南	835
		江西财经大学名师解惑	836
Variant 2	840	试卷二	848
Variant 2 Suggested Answers	855	试卷二 参考答案	865
Variant 2 Marking Guidance	873	试卷二 评分指南	874
		江西财经大学名师解惑	875
Variant 3	880	试卷三	888
Variant 3 Suggested Answers	896	试卷三 参考答案	906
Variant 3 Marking Guidance	914	试卷三 评分指南	915
		江西财经大学名师解惑	916
Variant 4	921	试卷四	929
Variant 4 Suggested Answers	937	试卷四 参考答案	946
Variant 4 Marking Guidance	953	试卷四 评分指南	954
		天津财经大学名师解惑	955

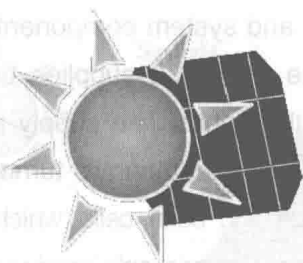
Variant 5	961	试卷五	970
Variant 5 Suggested Answers	978	试卷五 参考答案	987
Variant 5 Marking Guidance	994	试卷五 评分指南	995
		天津财经大学名师解惑	996
Case 5 Mavis Venderby	1003	案例五 梅维斯·文德柏公司	1003
Background Materials	1004	背景材料	1029
Variant 1	1053	试卷一	1061
Variant 1 Suggested Answers	1069	试卷一 参考答案	1080
Variant 1 Marking Guidance	1089	试卷一 评分指南	1090
		香港中文大学名师解惑	1091
Variant 2	1096	试卷二	1105
Variant 2 Suggested Answers	1113	试卷二 参考答案	1125
Variant 2 Marking Guidance	1134	试卷二 评分指南	1135
		香港中文大学名师解惑	1136
Variant 3	1142	试卷三	1151
Variant 3 Suggested Answers	1159	试卷三 参考答案	1170
Variant 3 Marking Guidance	1179	试卷三 评分指南	1180
		西安外国语大学名师解惑	1181
Variant 4	1184	试卷四	1193
Variant 4 Suggested Answers	1201	试卷四 参考答案	1212
Variant 4 Marking Guidance	1220	试卷四 评分指南	1221
		西安外国语大学名师解惑	1222
Variant 5	1224	试卷五	1233
Variant 5 Suggested Answers	1241	试卷五 参考答案	1252
Variant 5 Marking Guidance	1261	试卷五 评分指南	1262
		西安外国语大学名师解惑	1263
		附录 CGMA 管理会计能力框架	1267

案例四

CASE 4

摩利兹能源公司

MARICI POWER



Background Materials

Job Description

You are one of three assistant management accountants for Marici Power. Your main role is to assist with the production of the annual budget, produce the monthly management accounts and provide information to management as required.

Company Background

Marici Power is located in Freeland, a country in western Europe. Freeland's currency is the F\$.

The company offers solar power solutions to customers in Freeland and the rest of Europe. It provides a wide portfolio of products that enable private and commercial users to generate electricity cleanly, efficiently and profitably from the power of the sun. Its products include solar panels as well as complete solar power systems which incorporate Marici Power panels and system components such as inverters, frames and roof-mounted racks. In the home market, it supplies both commercial customers and installers who deal directly with the public. The supply to the rest of Europe is through distributors and represents 15% of the company's turnover.

All manufacturing of solar panels and solar cells, which are the key component for the solar panels, is undertaken at Marici Power's only production facility which is located in the capital city of Freeland. At the same location, there is a large warehouse for the storage of inventory and office accommodation where the directors and management are based.

Over the past 20 years Marici Power has invested heavily, and has designed and developed increasingly more sophisticated and efficient solar panels. It has developed a strong brand and has established a reputation for producing high quality panels with high conversion efficiency. As a result, it is now the largest manufacturer of solar panels

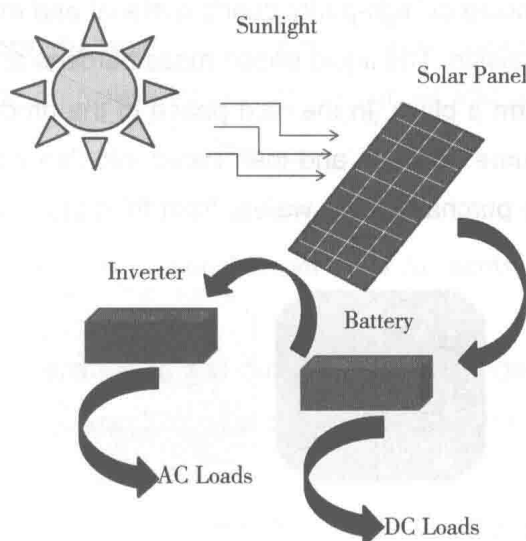
in Freeland.

Marici Power's origins is the research and development division of a large oil company, Saltenergy, also based in Freeland. Saltenergy recently decided to divest what they considered to be peripheral businesses and concentrate on their "core" business of energy from fossil fuels. As a result, in February 2016, Marici Power was sold to Wala Solar, a major global supplier of solar products with manufacturing plants throughout Europe and America. Marici Power now operates as a strategic business unit in the Wala Solar and benefits from the renewable energy market knowledge available within the group.

What Are Solar Panels

Solar panels are active solar devices that use PV (photovoltaic) technology to convert sunlight into electricity. They come in a variety of rectangular shapes and are usually installed in combination to produce electricity.

Solar panels are fully equipped for generating electricity (direct current) from sunlight. Direct current power can be used at the generation location itself, either immediately or stored in a battery for later use. Inverters convert this direct current to alternating current to allow the system to be connected to the public grid and give owners the flexibility to use both solar energy and electricity from the public grid. Any excess power generated from the solar system that is not required by the owners can be sold to the power company, as shown in the figure.



Web Page from [www. maricipower. com](http://www.maricipower.com)

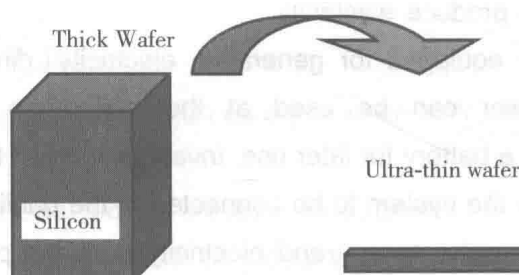
HOW ARE SOLAR PANELS MADE?

Silicon

Silicon is the starting point of our solar production cycle. It is extracted from quartzite rock or sand, which is primarily made up of silicon dioxide. As the second most common element in the earth's crust, there is a virtually endless supply of silicon. Polysilicon is a high purity form of silicon.

Solar Wafers

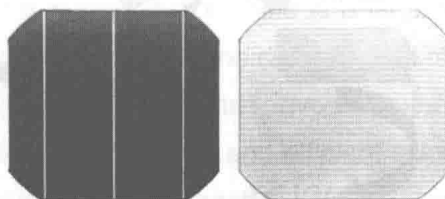
The next step is the production of solar wafers. These are the main component for solar cells.



To produce the polysilicon wafers used in most solar panels, the high-purity silicon is cast into a coated mould of high-purity quartz material and melted at temperatures over 1,400 degrees Celsius. The liquid silicon mass hardens and thousands of small crystals combine to form a block. In the next phase of the production process, these blocks are cut into square columns and then sliced into thin wafers.

At Marici Power, we purchase solar wafers from third party suppliers who use the highest purity silicon.

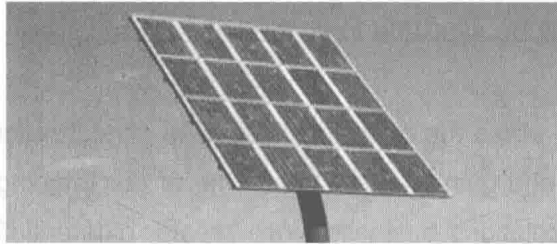
Solar Cells



The next part of the production process involves the production of solar cells from the wafers. These are the key components of the solar panels. These cells house all of the technical characteristics required to generate electricity from sunlight. Light radiation releases positive and negative charge carriers, resulting in flows of electrical current (direct current).

At Marici Power, we manufacture solar cells using one of the most advanced solar cell production facilities in the world. Through a series of chemical and heat treatments, we convert the wafers into productive cells i. e. cells that are capable of producing electricity.

Solar Panels



In the panel production process, solar cells are combined to form larger units—panels. Panels are enclosed in frames and weather-proofed. Solar panels are finished, which are fully equipped for generating electricity (direct current) from sunlight.

In the finishing phase, the solar panels are carefully cleaned and inspected. The panels are then loaded on pallets for delivery to homes and businesses.

Future Strategy

(Extract from Marici Power 2015 Annual Report and Accounts)

Branding

At Marici Power, we will continue to sell our solar panels under our established brand names: Solar Bright, Solar Glow, Solar Eclipse and Solar Halo.

Quality

We will continue to develop our brand and our reputation as a producer of high quality

panels with high conversion efficiency. We will strive to maintain our position as the largest solar panel manufacturer in Freeland.

Customer Focus

Customer needs drive the entire business and all processes within Marici Power. Product differentiation and comprehensive customer service will create added value for the customer.

Innovation

Solar power systems, in which panels are combined with other components to form a complete solution, will continue to be strategically important to us. We will continue working to improve the electricity generation capacity of our panels. In 2017, we will offer the customers an enhanced panel design with reduced weight and a better self-cleaning effect. These panels will be available in various sizes and types.

Sales Growth

We plan to continue to utilise the opportunities as the largest manufacturer in Freeland, to increase shipments and gain market share. One of our ongoing goals is to grow our complete solar power solutions business since greater differentiation from the competition is possible in this sector.

Cost Efficiency

We expect to achieve economies of scale in production in 2017, due to volume growth, enabling the reduction of manufacturing cost per unit. We also plan to make cost reductions in all organizational units and at all stages of the supply chain with the aim of optimising cash flow and profit.

Introduction to the Solar PV Energy Industry

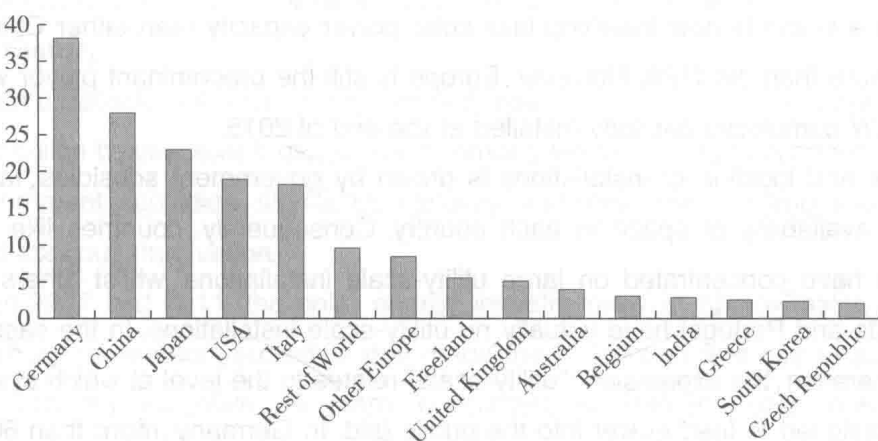
Renewable energy technologies are clean sources of energy that have a much lower environmental impact than conventional energy technologies. Renewable energy will not run out whilst other sources of energy are finite and will someday be depleted. Solar energy is one of the main forms of renewable energy. Solar energy provides more than 1% of the world's electricity demand or the equivalent of 33 large coal fired power plants.

The solar energy industry is divided, based on the technology involved, into two seg-

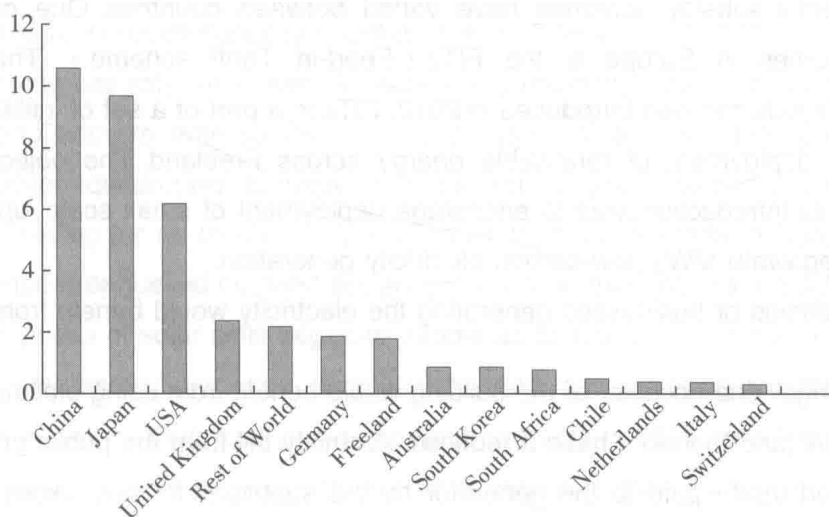
ments: CST (concentrated solar thermal) and photovoltaic.

PV technology is where absorbed light is directly converted into electricity (photo-effect). CST technology is where direct light is focused into one point in order to heat a liquid. The heat is subsequently used to drive a generator as in a conventional power station.

In absolute terms, electricity generation from photovoltaic is still a relatively small market. The worldwide installed capacity at the end of 2015 was 178 gigawatts (GW), of which 40 GW was installed in 2015, as shown in the figure.



Cumulative PV Installations 2015 (GW)



PV Installations 2015 (GW)

The global market for PV installations used to be dominated by Europe. In 2009, Germany held 50% of the market share, however by 2015 the market had shifted to Asia (with over 50% of new installations), America and Africa.

The solar panel market reached an annual capacity installed of 40 GW for the first time in 2015. This level of installations has been achieved due to both the growth of the Asian and American markets and, to some extent, the emergence of new markets.

After years of rapid development, the rate of market growth in Europe slowed down in 2014 and this trend continued in 2015. With around 7 GW of capacity installed in 2015, Europe as a whole is now installing less solar power capacity than either China or Japan, but more than the USA. However, Europe is still the predominant player with more than 88 GW cumulative capacity installed at the end of 2015.

The size and location of installations is driven by government subsidies, tariff structures and availability of space in each country. Consequently, countries like Romania and Spain have concentrated on large utility-scale installations, whilst others such as Netherlands and Portugal have virtually no utility-scale installations. In the case of solar power generation, the expression “utility-scale” relates to the level at which systems are typically designed to feed power into the public grid. In Germany, more than 60% of all solar capacity has been built on the roofs of private homes and commercial premises.

Government's subsidy schemes have varied between countries. One of the most popular schemes in Europe is the FITs (Feed-in Tariff scheme). The Freeland government's scheme was introduced in 2010. FITs is a part of a set of initiatives to encourage the deployment of renewable energy across Freeland. The objective of the scheme, on its introduction, was to encourage deployment of small scale, up to and including 5 megawatt (MW), low-carbon electricity generation.

The households or businesses generating the electricity would benefit from it.

- Bill savings—the occupier of the building would benefit from using electricity generated onsite, and therefore have a reduced electricity bill from the public grid supplier.
- An export tariff—paid to the generator by the suppliers, for any excess electricity exported to the public grid.
- A generation tariff—paid to the generator by the supplier, designed to incentivize the

deployment of the low-carbon technology as opposed to fossil fuel alternatives.

The subsidies paid through FITs are funded by additional charges, levied by the government, on the energy bills of all consumers. In order to limit the impact of the charges on consumer bills, the total amount of subsidies available is capped by the government.

Other government initiatives to encourage the further development of solar power include a range of tax incentives. The Freeland government has set a reduced value added tax (VAT) rate of 5% on solar panel and other solar components.

Industry History

In less than a decade, the solar energy industry has transformed from a cottage industry to a \$100 billion business with global reach. Among the factors contributing to its growth were government subsidies, significant capacity additions from existing and new entrants and continual innovation.

Between 2007 and 2011, the solar energy industry grew at approximately 70% per year driven by government subsidies that made the installation and use of solar power units economically attractive for many consumers. As demand rose, new entrants flocked to the industry, and the pace of innovation accelerated. This rapid growth meant that production was hard pressed to keep up with demand. As a result, those companies that were able to increase capacity could gain market share.

Manufacturing capacity increased dramatically, particularly after large-scale, low-cost Chinese manufacturers entered the market. Between 2009 and 2011, Chinese solar panel production quadrupled to more than the entire global demand. Chinese-made panels were selling for as much as 45% cheaper than those made in Europe and the USA. The price drop fuelled demand but put pressure on margins. As a result of this excess supply, prices of solar cells began to tumble as companies fought to reduce inventories and many smaller producers simply suspended manufacturing operations.

The main reason of solar cell prices dropped so much in 2011, was the price of the key raw material, polysilicon, which makes up a very significant part of the total cost, dropped significantly.

In 2007—2008, there was a worldwide shortage of capacity for the manufacture of polysili-

con, the raw material used to produce the solar wafers which are incorporated into solar cells. This shortage led to an increase in the price of polysilicon to around \$400 per kg. Suppliers, attracted by the high prices, added significant additional capacity. Consequently, there was a huge polysilicon manufacturing over capacity which eventually resulted in falling prices. At the beginning of 2011, prices for polysilicon had fallen to around \$80 per kg but by the end prices were around \$20 to \$25 per kg.

As a result of the falling prices of solar panels, due mainly to cheap imports from China and over-capacity in the market, almost all of the companies in the solar industry were unprofitable from 2011 to 2014.

In 2012, the USA government imposed tariffs on the import of Chinese solar cells and panels on the basis that the manufacturers benefited from unfair subsidies from their government.

In 2013, the European Commission decided to impose punitive import duties on solar panels from China in a move to guard against what was seen as “dumping” of cheap goods in Europe. After negotiations between the governments of the EU and China, a minimum price undertaking was agreed for imports of solar panel and components.

Major Market Trends

While 2015 undoubtedly remained a challenging time for the solar industry, it did mark a turning point in the industry's development. Sales volume grew significantly, mainly due to government policy in China. Solar power is now broadly recognized as a cost competitive, reliable and sustainable energy source.

The growth experienced in the industry improved the utilisation rates of manufacturing capacities and reduced the pressure on prices, leading to a continued recovery of the industry around the world. In 2015, manufacturers of solar cells and panels were able to significantly improve their financial results with many reporting profits for the first time in a number of years.

This return to profitability for manufacturers and their strengthening financial position has resulted in new investment in the industry. Several manufacturers have announced that they have placed orders for innovative equipment to upgrade their current production lines or to put new ones in place. At the same time, new solar panel factories are opening within, or close to, emerging markets although some continue to close in Europe.

In Europe, the minimum price undertaking, agreed with the Chinese government, maintained the prices of solar products from Chinese producers at higher than market levels. Other Asian manufacturers however continued to sell to the market at cheaper prices.

Future Outlook

A large part of solar power development until the end of 2015 has been driven by the regulatory framework adopted by national governments, including tax incentives, subsidies and other ad hoc support schemes. In the short term, market growth is strongly dependent on continued government support. However, its sustained development will ultimately depend on its ability to compete with conventional sources of electricity.

Demand will still be highly concentrated in a handful of countries, presenting significant risk to those companies who do not have a strong market presence in these countries. The rapid price declines seen by the industry has opened up solar to an enormous number of countries around the world but the global solar market will remain driven by those countries using supporting regulatory frameworks, e. g. in Asia and America.

The decision of some European countries to reduce or end FITs is concerning and could have a major impact on the extent of future installations. Companies will need to convince customers that the reduced costs of their electricity bills, without other additional incentives, is sufficient to justify the investment.

Historically, solar panel development has been driven by distributed installations where electricity is produced at, or near, the point where it is used. In 2014, utility-scale solar power grew to the extent of becoming the largest segment, in terms of GW, installed globally. In 2015, both types of installations were balanced, with around 20 GW each. The respective development of each segment will depend on the regulatory framework adopted by the national governments but looking at current trends the global development of utility-scale solar power seems to be favoured, driven by its increasing cost-competitiveness.

Web Page from [www. maricipower. com](http://www.maricipower.com)

Extract from the Glossary of Terms Used in the Solar PV Industry

G:	
Grid-connected	A grid-connected solar power system generates its own electricity and feeds its excess power into the public grid for later use. Grid-connected solar electric systems are eligible for many incentives and rebates
I:	
Inverter	The inverter electronically converts direct current (DC) power into alternating current (AC) power and is required for grid-connected solar power systems
P:	
PV technology	Photo = light; volt = electrical potential (literally: electricity from light). Einstein won a Nobel Prize for discovering that when light shines on certain materials (like silicon) , an electrical current is generated
Polysilicon	Polysilicon is a high-purity form of silicon. Due to its semiconductor-like properties, polysilicon is used in most solar energy applications
Public grid	The public grid is an interconnected network of generating stations that produce electrical power, high-voltage transmission lines that carry power from distant sources to demand centres, and distribution lines that connect individual customers
PV array	A PV array is the complete power-generating unit, consisting of any number of solar (or PV) panels
S:	
Semiconductor	A material that conducts current, but only partly. The conductivity is somewhere between that of an insulator, which has almost no conductivity, and a conductor, which has almost full conductivity
Silicon	The basic material used to make solar cells. It is the second most abundant element in the earth's crust, after oxygen

(续表)

Solar cell(or PV cell)	Semiconductor device that converts sunlight into direct current electricity
Solar panel(or PV panel)	Solar panels consist of solar cells sealed in an environmentally protective laminate and are the fundamental building block of solar(or PV)systems
Standalone system (or off-grid system)	Energy generated by these systems is stored in batteries and then subsequently used. Also known as “off-grid,” these systems are not connected to the public grid

Extract from Marici Power Organisation Chart

