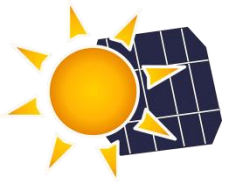
Chartered Institute of Management Accountants

CIMA

Marici Power



Contents:

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 dollar (F$).

The company offers solar power solutions to customers in Freeland and throughout 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.

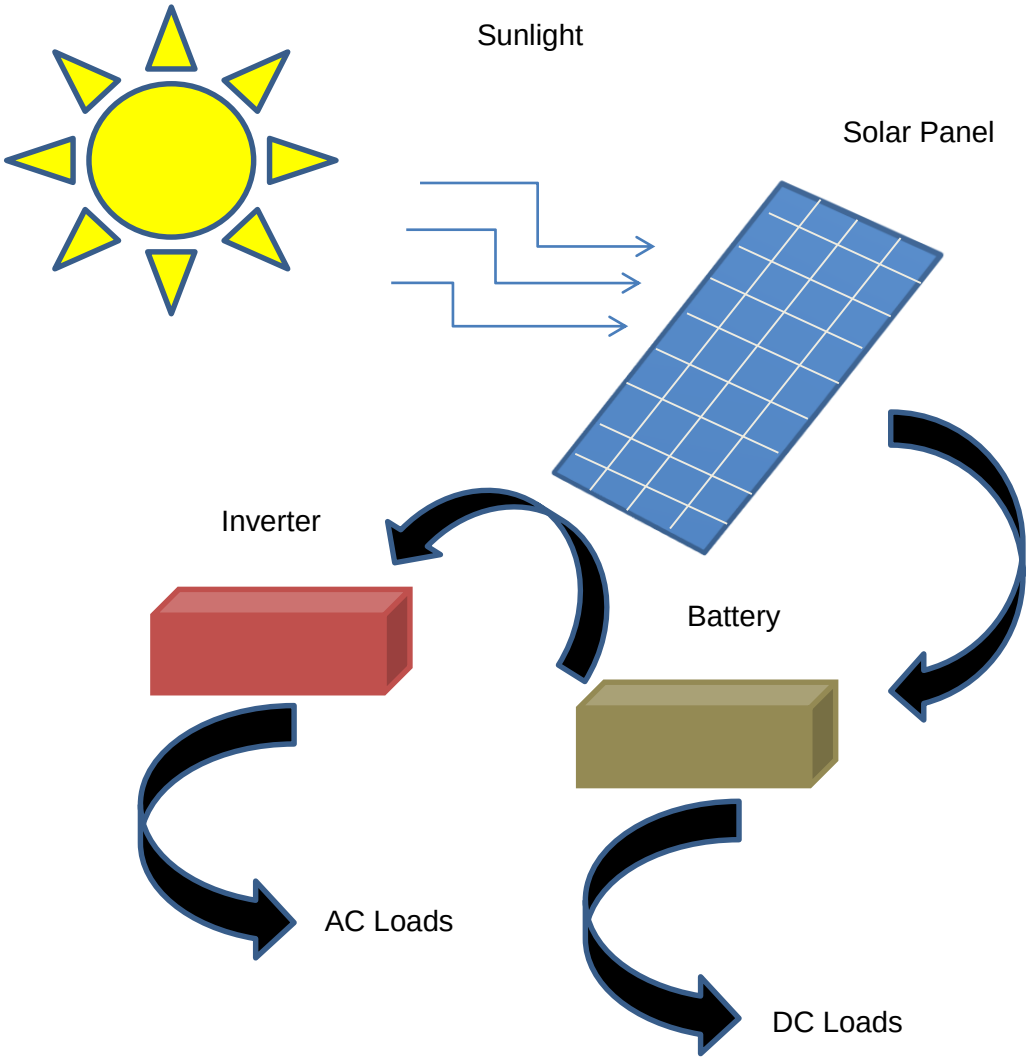
Over the past 20 years Marici Power has invested heavily, and has designed and developed increasingly more sophisticated and efficient solar panels. It has developed a strong brand and has established a reputation for producing high quality panels with high conversion efficiency. As a result, it is now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

Marici Power's origins stem from 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 group and benefits from the renewable energy market knowledge available within the group.

What are solar panels?

Solar panels are active solar devices that use photovoltaic (PV) 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.



Web page from www.maricipower.com

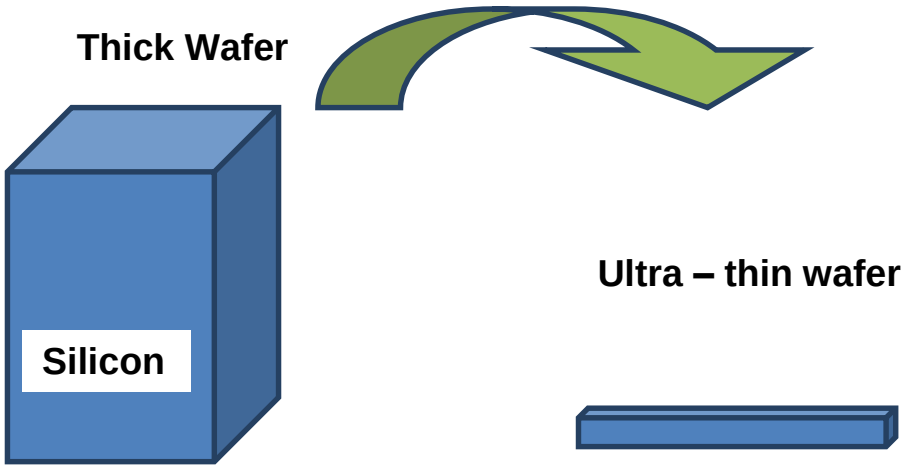
HOW ARE SOLAR PANELS MADE?

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

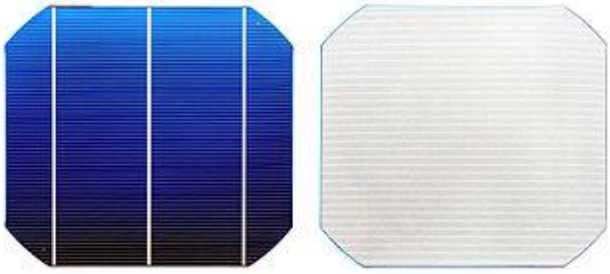
The next step is the production of solar wafers. These are the main component for solar cells.



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 solar products that 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 brands 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 customer 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 organisational units and at all stages of the supply chain with the aim of optimising cash flow and profit.

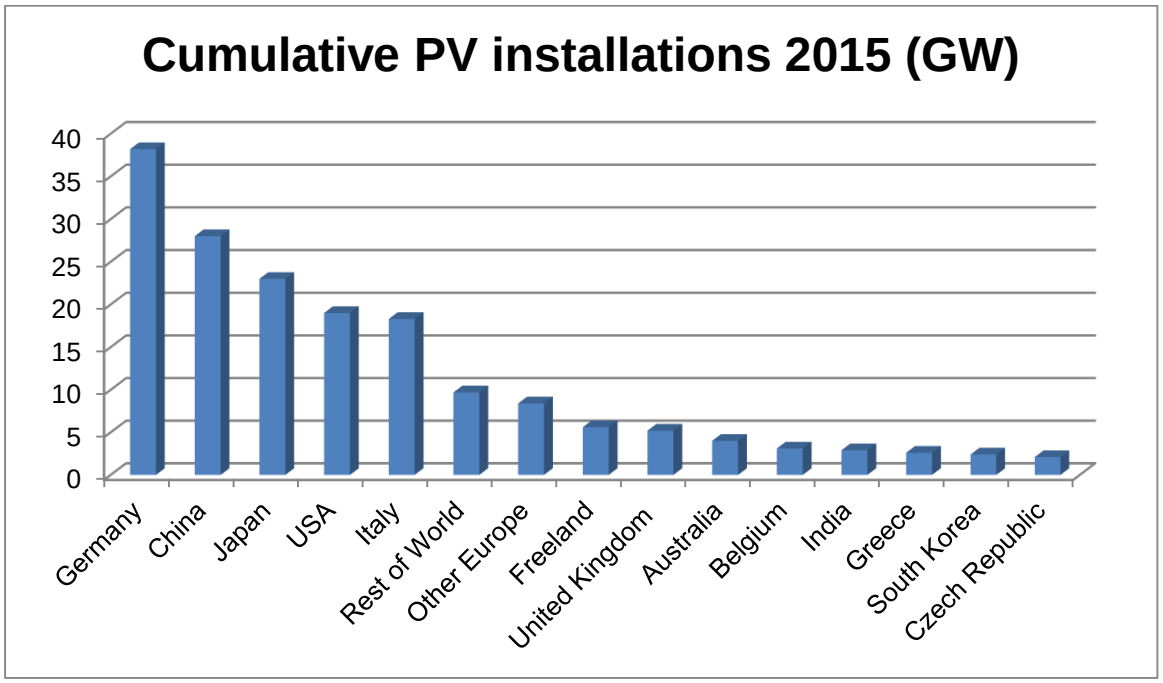
Introduction to the solar PV energy industry

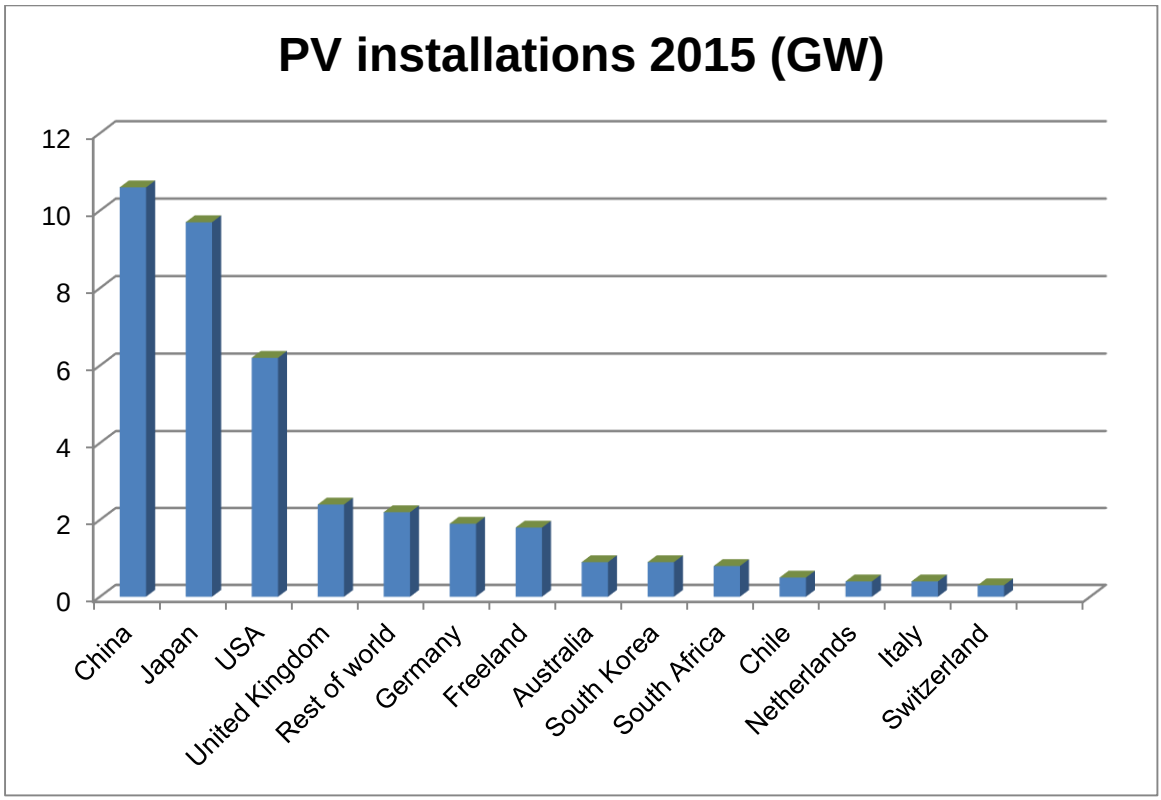
Renewable energy technologies are clean sources of energy that have a much lower environmental impact than conventional energy technologies. Renewable energy will not run out whilst other sources of energy are finite and will someday be depleted. Solar energy is one of the main forms of renewable energy. 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 segments, concentrated solar thermal (CST) and photovoltaics (PV)

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 photovoltaics 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.





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 both to the growth of the Asian and American markets and, to some extent, to 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 subsidy schemes have varied between countries. One of the most popular schemes in Europe is the Feed-in Tariff scheme (FITs). The Freeland government scheme was introduced in 2010. FITs is 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:

- 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 supplier, for any excess electricity exported to the public grid; and
- a generation tariff – paid to the generator by the supplier, designed to incentivise 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 US$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 solar cell prices dropped so much, in 2011, was because 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 polysilicon, 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 US 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 2014 the tariffs were extended to Taiwanese manufacturers.

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 recognised 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.

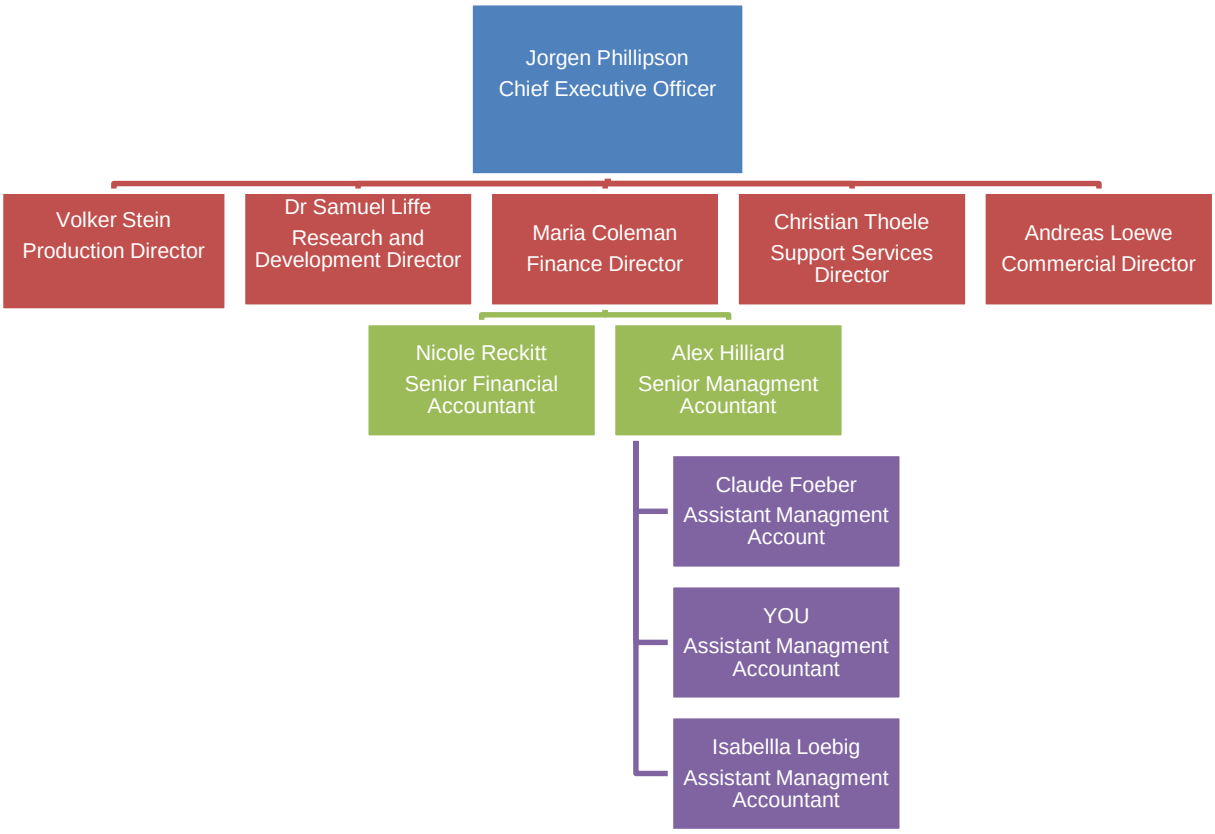
Historically, solar panel development has been driven by distributed installations where electricity is produced at, or near, the point where it is used. In 2014, utility-scale solar power grew to the extent of becoming the largest segment, in terms of GW, installed globally. In 2015, both types of installations 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

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:	
Photovoltaic (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.
Solar Cell (or PV cell)	Semiconductor device that converts sunlight into direct current (DC) 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



Extracts from Marici Power 2015 Financial Statements

Marici Power
Statement of Profit or Loss
for the year ended 31 December

	2015 F$000	2014 F$000
Revenue	**69,993**	**60,895**
Cost of materials	**(37,705)**	**(33,258)**
Personnel expenses	**(14,111)**	**(12,692)**
Amortisation and depreciation	**(2,412)**	**(2,263)**
Other operating expenses	**(13,530)**	**(12,872)**
Operating profit	**2,235**	**(190)**
Finance costs	**(1,978)**	**(2,156)**
Profit before tax	**257**	**(2,346)**
Taxation	**(106)**	**(65)**
Profit / (loss) for the year	**151**	**(2,411)**

Marici Power
Statement of Financial Position
as at 31 December

	2015 F$000	2014 F$000
Non-current assets		
Intangible assets	**18,430**	**17,800**
Property, plant and equipment	**17,409**	**17,474**
	35,839	**35,274**
Current assets		
Inventories	**21,299**	**20,767**
Trade receivables	**10,604**	**10,788**
Cash and cash equivalents	**206**	**75**
	32,109	**31,630**
Total Assets	**67,948**	**66,904**
Equity and Liabilities		
Share capital	**1,490**	**1,490**
Retained earnings	**34,946**	**34,795**
Total equity	**36,436**	**36,285**
Non-current liabilities		
Borrowings	**21,322**	**22,664**
Current liabilities		
Trade payables	**8,396**	**6,729**
Borrowings	**1,688**	**1,161**
Current tax liabilities	**106**	**65**
	10,190	**7,955**
Total Equity and Liabilities	**67,948**	**66,904**

Marici Power
Statement of Cash Flows
for the year ended 31 December 2015

	2015 F$000	2014 F$000
Cash flows from operating activities		
Profit/(loss) before tax	**257**	**(2,346)**
Depreciation and amortisation	**2,412**	**2,263**
Net finance costs	**1,978**	**2,156**
(Increase)/decrease in inventory	**(532)**	**(425)**
(Increase)/decrease in trade and other receivables	**184**	**224**
Increase/(decrease) in trade and other payables	**1,667**	**567**
Cash generated from operations	**5,966**	**2,439**
Interest paid	**(1,978)**	**(2,156)**
Tax paid	**(65)**	**(125)**
Net cash generated from operating activities	**3,923**	**158**
Cash flows from investing activities		
Purchase of property, plant and equipment	**(2,347)**	**(1,594)**
Increase in intangibles	**(630)**	**(245)**
Net cash used in investing activities	**(2,977)**	**(1,839)**
Cash flows from financing activities		
Increase in short-term borrowings	**527**	**1,200**
Repayment of long-term borrowings	**(1,342)**	**(605)**
Net cash from/(used in) financing activities	**(815)**	**595**
Net increase/(decrease) in cash and cash equivalents	**131**	**(1,086)**
Cash and cash equivalents at beginning of the year	**75**	**1,161**
Cash and cash equivalents at the end of the year	**206**	**75**

TAX REGIME IN FREELAND

Corporate profits:

- The corporate tax rate applicable to taxable profits is 20%.
- Unless otherwise stated below, accounting rules on recognition and measurement are followed for tax purposes.
- The following expenses are not allowable for tax purposes:
    - accounting depreciation;
    - amortisation;
    - entertaining expenditure;
    - donations to political parties; and
    - taxes paid to other public bodies.
- Tax depreciation allowances are available on items of plant and machinery (including vehicles used for business purposes) at a rate of 25% per year on a reducing balance basis.
- Tax losses can be carried forward to offset against future taxable profits from the same business.

Marici Power

Management accounting information

- The company produces an annual budget with all managers participating in its production.
- The company operates a standard absorption costing system and produces a monthly variance analysis report reconciling actual profit to budgeted profit.
- KPIs are reported on a monthly basis.
- A detailed daily sales report is available to managers to enable close monitoring of sales units and selling prices.

BUDGET INFORMATION 2017

Solar Panel Sales Budget 2017					
	Solar Bright	**Solar Glow**	**Solar Halo**	**Solar Eclipse**	**Total**
Selling price per unit	F$275	F$300	F$350	F$450	
Number of units	55,000	58,000	62,000	60,000	235,000
Sales mix (units)	23.4%	24.7%	26.4%	25.5%	
Total sales (F$000)	15,125	17,400	21,700	27,000	81,225
Sales mix (sales value)	18.6%	21.4%	26.7%	33.3%	

Budgeted standard gross profit per unit				
	Solar Bright	**Solar Glow**	**Solar Halo**	**Solar Eclipse**
	F$	F$	F$	F$
Selling price	275	300	350	450
Material cost	140	150	190	245
Labour cost	40	45	50	65
Variable production overheads	2.2	2.5	2.8	3
Fixed production overheads	22	25	28	30
Standard gross profit	70.8	77.5	79.2	107

Solar Power News

16 September 2016 No. 78 $4.70

Government cuts to solar panel subsidies – a 'hammer blow' to the industry

Damien Valence, Business Correspondent

The Freeland government has decided to cut subsidies to householders installing rooftop solar panels by 60%, despite admitting that the move could result in the loss of up to 18,000 jobs.

A second subsidy scheme for large commercial projects has also been cut. The solar industry and environmentalist groups have described the moves as "reckless and short-sighted".

The government argues it needs to protect wider energy bills from the rising impact of renewable energy subsidies.

The new figures from James Claville, the energy secretary, are less than the original government proposal to slash subsidies by a whopping 87%, which was met by a storm of criticism.

"My priority is to keep energy bills for householders and businesses as low as possible whilst ensuring there is a sensible level of support for low carbon technologies. We have to get the balance right and I believe that subsidies should be temporary, not part of a permanent business model. The reduced cost of solar technologies should be followed by a reduction in consumer-funded support."

The shadow energy secretary, Lisanne Furwell, said the cuts were misguided.

"These short-sighted cuts will place great pressure on our solar industry and lead to thousands of job losses. At a time when energy bills are a concern for everyone, it makes no sense to limit one of the cheapest forms of clean energy."

Solar Technology

15 September 2016 No. 23 $5.25

Keeping the sun shining – the future is bright

Johan Steiff, Business Correspondent

Energy from renewable sources is a really 'hot' topic but whilst capacity is increasing and prices are going down, there remains one major constraint to solar power developing into a major, cost-competitive alternative to fossil fuels – storage.

For renewable sources of electricity to be viable they must be able to provide a continuous supply of energy and meet peaks and troughs in demand. Unfortunately, we cannot guarantee that the sun will always be shining. Then there is the matter of night-time.

In order for there to be electricity during the night, solar energy must be captured and stored during the day while the sun is out. But as people are using electricity during the day, solar panels need to capture as much sun as possible, enough to fulfil daytime electricity demands *and* enough to fill up batteries for the night.

The problem is that cheap battery packs have longevity or reliability issues. While quality battery packs are prohibitively expensive to produce.

The renewable energy industry is working on this problem but has so far been unable to bring the expensive technology down to a realistic cost. However, developments in the electric vehicle industry have meant that lithium ion storage – the most promising technology for solar – is becoming a more viable proposition.