

电力行业英语学习伴侣



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Reference Book

Unit 1 Future of Electric Power

Part I More information about this unit

Nowadays we all use computers, coffee machines and DVD recorders, and take them completely for granted. But we are not always aware that none of them would function without electrical power. If the power supply fails for any length of time, we are all amazed when our oil or gas central heating system also goes cold.

Although we constantly make use of electrical power, we don't often think about where it comes from. At present most energy is generated from burning fossil fuels. On the one hand, the current rate of fossil fuel usage will lead to an energy crisis this century. On the other hand, it has resulted in serious air pollution and global warming.

In order to solve these problems, many companies in the energy industry are inventing new ways to extract energy from renewable sources. Nowadays energy generated from the sun, wind and other renewable sources is being used and further researched. We believe that green energy generated from these new sources in the future will satisfy all energy needs of human beings.

Part II Explanation of difficult sentences in reading passages

Passage 1

1. In the long run, investing in green technology equipment may be cost-effective since not only is it eco-friendly but the expense you will have to invest will definitely be less compared to the amount you can save once you "go green." (Para. 3)

Explanation: 本句的结构比较复杂，主句的主语是动名词短语investing in green technology equipment; 从句是由since引导的原因状语从句，同时又是一套由but引导的并列结构。is it eco-friendly是由not only引导的倒装结构；but之后的从句主语the expense 后有一个定语从句you will have to invest，其谓语是will definitely be less，而compared to the amount是其状语，you can save once you "go green"是amount的定语从句。本句的中文意思是：从长远

角度来看，投资购买绿色技术设备可能会是划算的，因为，这不仅生态环保，其费用与“采用绿色能源”后可节省的费用比起来肯定要便宜。

2. If you would like to switch from a person who doesn't care a bit about our current environmental situation to a person exactly the opposite of that, or you simply want to save money from your high electric bills, then digging in on some research work about green technology will help you decide. (Para. 4)

Explanation: 这是一个主从复合句，其框架结构为If ..., or (if) ..., then ...。在if引导的条件状语从句中，or又引导一对并列条件句。第一个条件从句中switch from sb. to sb. 意思是“从某人转型成某人”；a person who doesn't care a bit about our current environmental situation作前一个person的定语，exactly the opposite of that作后一个person的定语，其意思是“与那个人截然不同的人”。主句的主语是digging in on some research work about green technology。本句的中文意思是：如果你想从一个对我们目前的环境一点也不关心的人转变为一个完全与之相反的人，或者只是想从高额的电费中节省开销，那么，深入地研究一下绿色技术会有助于你做出决定。

3. The US Department of Energy provides a checklist and information to help consumers on how to buy appliances wisely, spending money on appliances with the Energy Star label only. (Para. 8)

Explanation: 本句是一个简单句。其中，provides a checklist and information on后面的介词宾语是一个由how引导的动词不定式短语，其后的分词短语spending money on appliances with the Energy Star label only作伴随状语，修饰动词buy。本句的中文意思是：美国能源部提供了核对清单和信息，来指导消费者如何明智地购买家用电器，建议只花钱购买带有能源之星（Energy Star）标记的家用电器。

4. Renewable energy coming from wind power, or from affordable wind power technology or from other available renewable sources can be an interesting research study worth knowing about. (Para. 10)

Explanation: 本句是一个简单句。主语renewable energy之后有from引导的三个介词短语作其定语：coming from wind power, or from affordable wind power technology or from other available renewable sources。本句的中文意思是：对于风力、经济实用的风力技术或其他可利用的再生资源所产生的再生能量的研究是既有趣又值得深入了解的。

Passage 2

1. A common example of a heat engine is a car engine in which heat energy is released from oil burning converting into mechanical energy or motion. (Para. 3)

Explanation: 本句是一个复合句。在由in which引导的定语从句中，converting into mechanical energy or motion是伴随状语，其逻辑主语是heat energy。本句的中文意思是：汽车发动机就是一种常用的热能发动机，燃油释放出的热能被发动机转换成机械能或动能。

2. Although the water used for cooling purposes in plant condensers is recycled before returning to the source, its temperature remains significantly high and may have severe impacts. (Para. 5)

Explanation: 本句是一个复合句。Although引导的是让步状语从句；used for cooling purposes in plant condensers是过去分词短语，作water的定语，字面意思是“核电站冷凝器中用以冷却目的的水”，在翻译时可简单译为“冷却水”。本句的中文意思是：虽然核电站的冷却水要通过冷凝器冷却后再循环利用，但其温度仍然很高，对环境会产生严重的影响。

3. The cooling towers used in power plants release heat directly into the atmosphere, which raises the air temperature drastically, thus contributing to global warming. (Para. 6)

Explanation: 本句是一个复合句。which引导的是一个非限制性定语从句，修饰前面整个句子。contributing to global warming是分词短语作状语，其逻辑主语是which（这里指代的是前面整个句子）。本句的中文意思是：电厂冷却塔把热量直接释放到大气中，使空气温度大幅升高，加剧全球变暖。

Part III Examples with some of the key words and expressions

Passage 1

- trend** *n.* a general direction in the way a situation is changing or developing 趋势；时尚，时髦
 e.g. The stock market had a good day, but the underlying trend of the market is downward.
 当天股票市场的行情很好，但市场的基本趋势是看跌。
 He is the leader of setting a new trend in the world.
 他是世界上创造最新流行款式的领军人物。
- switch (from ...) to:** change (...) into (从...) 转向...
 e.g. My father's interest had switched to my health.
 我父亲的兴趣已转移到我的健康上。
 The wind has switched round from north to east.
 风向从北转向东。
- in the long run:** in the end; after a long period 从长远来看
 e.g. Sometimes expensive drugs or other treatments can be economical in the long run.
 有时昂贵的药物或其他疗法从长远来看是省钱的。
 It will be cheaper in the long run to use real leather.
 从长远来看使用真皮还是便宜的。
- invest** *v.* put money (or time) to a particular use 投资；花时间和精力
 e.g. I'm tired of watching you invest our money in insane projects.
 我看够了你把我们的钱投到一些荒唐的项目上。
 I would rather invest time in the garden than in the kitchen.
 我宁愿把时间用在种植花园上，也不愿花在厨房里。

5. **option** *n.* the freedom to choose 选择; 选择权; 选修课
e.g. Several options are offered for the students' senior year.
给毕业班的学生开设了几门选修课。
You will have to pay them; you have no option.
你必须付给他们钱, 别无选择。
I'm keeping my options open; I can decide in a few months.
我保留选择的权利, 我可以几个月后再做出决定。
6. **aside from**: apart from 除...以外
e.g. Aside from this consideration, there is no reason why we should not do so.
除非考虑这一点, 否则我们就没有理由不这样做。
I didn't accept this job because it was badly paid and aside from that, it wasn't interesting.
我没接受这项工作, 因为它既工资低, 又非常乏味。
7. **standardize** *v.* cause to fit single standard 使...合乎标准
e.g. Most of the production lines in this factory have been internationally standardized.
这个工厂的大多数生产线采用的都是国际标准。
All their cars are produced using standardized parts.
他们的汽车都是使用标准部件制造的。
8. **construction** *n.* the work of building 建造; 结构
e.g. This company has a long experience in the construction of those types of equipment.
这家公司在制造那些类型的设备方面有悠久的历史。
There are two new hotels under construction in this area.
在这个地区有两家新宾馆正在兴建中。
He believes that furniture should be plain, simple, useful, practical, and of sound construction.
他认为家具应当朴素、简单、有用、实际, 且制造坚固。
9. **affordable** *a.* able to buy or pay for 负担得起的, 经济实用的
e.g. The rents for these houses are affordable to the students living on student loans.
这些房子的租金对于那些靠助学金生活的学生来说是负担得起的。
They are trying to build affordable, Energy Star-rated homes for the local people.
他们正努力为当地人建造“能源之星”级的经济实惠的住房。

Passage 2

1. **major** *a.* greater when compared with others in size, number or importance 主要的; 重大的
n. a chief subject of a university 主修科目
e.g. The major factor in the decision to stay or to leave was usually professional.
决定去留的主要因素通常与职业相关。

The problems the company is facing are fairly major.

这家公司面临的问题相当严重。

His major is history.

他的主修科目是历史。

2. **impact** *n.* influence 影响

v. have an influence on 对…产生影响

e.g. They say they expect the meeting to have a marked impact on the future of the company.

他们说期望这次会议对公司的未来会产生显著的影响。

The computer has made a great impact on modern life.

计算机对现代生活产生了重大影响。

These costs will impact on our profitability.

这些费用会影响我们的利润。

3. **associate** (with) *v.* connect ... (with) 与…相关联

e.g. The scientist didn't want to be associated with the project, so he left.

这个科学家不愿意与这个项目有任何瓜葛，所以他离开了。

The fast development of the company is closely associated with scientific research.

公司的快速发展与科研紧密相关。

4. **process** *n.* a connected set of events that produce gradual change 过程，进程

e.g. They decided to spread the building process over three years.

他们决定把建造过程分三年完成。

They are trying to extend the range of goods they sell, and, in the process, to appeal to a new type of customers.

他们正在试图扩大售货种类，并在此过程中吸引新的顾客。

5. **refer** (to) *v.* mention of, speak about; look for information 说到，提及；查阅；参考

e.g. The scientist referred to the discovery as the most exciting new development in this field.

这位科学家把这一发现说成是这个领域中最令人兴奋的新发展。

Let me refer to my notes to find the exact figures.

请让我查阅一下我的笔记，找出准确数字。

6. **involve** *v.* cause ... to be connected 使…介入；包含；涉及

e.g. I seem to have involved myself in something I don't understand.

我似乎已经卷入了我不了解的事情中。

I didn't realize that putting on a play involved so much work.

我不了解演一场戏竟会涉及那么多的工作。

The accident involved a bus and a truck.

那次车祸涉及一辆公共汽车和一辆卡车。

7. **convert** *v.* cause to change into another form, substance or state 使…转换, 使…转变
e.g. Save money by converting your car to run on used vegetable oil.
通过改装你的汽车使用二手植物油来省钱。
The signal will be converted into digital code.
信号将被转换成数字编码。
8. **release** *v.* set free; let go; make ... to be known 释放; 公布
e.g. Becoming your own person releases your creativity.
保持你自己的本色可以释放你的创造力。
The new trade figure has just been released.
新的贸易数字刚刚公布。
9. **pose** *v.* sit or stand in a particular position; to be the cause of; present 摆好姿势; 构成
e.g. After the wedding we all posed for a photograph.
婚礼之后, 我们全体排好姿势拍了一张照片。
This could pose a threat to jobs in the coal industry.
这可能对煤炭行业的就业构成威胁。
10. **contribute** (to) *v.* help in causing a situation, event, or condition 起促成作用; 是(造成某情况)的一个原因
e.g. This advertising campaign has contributed significantly to the success of the new car.
发起这场广告攻势为这种新汽车打开销路起到了相当大的作用。
The report says design faults in both the vessels contributed to the tragedy.
报道称两艘船在设计上的缺陷是造成悲剧的原因之一。
11. **beneficial** *a.* producing useful results 有益的, 有用的
e.g. The fall in prices will be beneficial to small businesses.
价格的下跌将有利于小企业。
His holidays had a beneficial effect.
假期对他大有益处。

Part IV Key to exercises and scripts for listening

Key to Task 5:

1. Thorough preparation.
2. I should start my research about the company.
3. They can help me to behave more confidently.
4. I should get to know about the number of company's employees, major products, services, locations, and so on.
5. I should pay attention to the quality of the questions I'm going to ask.

Script for Task 5:

The key to a successful interview is thorough preparation. If you have prepared yourself well, the interview will mostly run smoothly and you will present yourself confidently.

As soon as you are invited to attend an interview, start your research about the company, such as the number of employees the company has, its major products and services, locations of its branch offices, etc. Such knowledge is extremely useful during the interview.

You need to prepare to answer some difficult questions the interviewer may ask. During the interview you should also be ready to ask questions about the company. Remember, the quality of your questions will show how carefully you have given thought to the interview.

Key to Task 6:

1. Are you sure you want to apply
2. who can do a really excellent job
3. in charge of training salesmen
4. my job
5. suitable

Script for Task 6:

Interviewer: Come in. Welcome to the interview. Have a seat, please.

Mr. Silver: Thank you.

Interviewer: Are you sure you want to apply for this job? The job is to train salesmen.

Mr. Silver: Sure! I'm the person most suitable for the job!

Interviewer: Ah ... well, we're looking for someone who can do a really excellent job.

Mr. Silver: Please give me a chance! I have this sort of experience at ABC Company for two years.

Interviewer: What did you do there?

Mr. Silver: I was in charge of training salesmen in metal materials. And I have good presentation skills.

Interviewer: Good. Why did you leave your last job?

Mr. Silver: I lost my job because the company closed.

Interviewer: What salary do you expect?

Mr. Silver: A wage suitable to the position.

Interviewer: OK. I'll let you know our final decision in two weeks.

Mr. Silver: OK. I'll keep my fingers crossed.

Interviewer: So, thank you for coming today. See you.

Mr. Silver: See you.

Key to Task 7:

1. a greener energy method
2. Solar powered electric appliances
3. natural resources
4. green technology equipment or resources
5. solar power technology equipment
6. easy to install

Key to Task 8:

1. eco-friendly home
2. renewable sources of energy or electric power
3. green technology resources
4. no wires
5. green technology equipment
6. natural resources

Key to Task 9:

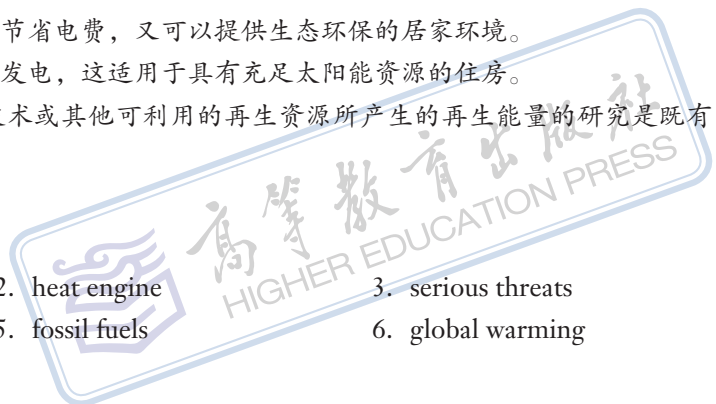
1. They are switching to a green energy method.
2. It comes from the sun, earth's internal heat, wind, water or even plants.
3. It helps them to save money and enjoy an eco-friendly home.
4. By providing a shopping checklist and information on how to buy appliances wisely.
5. It can get a LEED 2.0 Gold certificate by making use of sustainable design and green architecture, reducing waste production, pollution, and environmental degradation.

Key to Task 10:

1. 随着今天科学技术的发展，在家里舒舒服服地使用可再生能源已不再是无法做到的事情。
2. 绿色能源正在为你的家庭获取太阳、地热、风力、水力甚至植物产生的电力。
3. 这种绿色能源既可以为消费者节省电费，又可以提供生态环保的居家环境。
4. 房主可以用太阳能电池为自己发电，这适用于具有充足太阳能资源的住房。
5. 对于风力、经济实用的风力技术或其他可利用的再生资源所产生的再生能量的研究是既有趣又值得深入了解的。

Key to Task 11:

- | | | |
|------------------|-----------------|--------------------|
| 1. air pollution | 2. heat engine | 3. serious threats |
| 4. less oxygen | 5. fossil fuels | 6. global warming |



Key to Task 12:

1. 动力生成过程 / real world process
2. 空气污染 / thermal pollution
3. 热力发动机 / motor engine
4. 热量损失 / power loses
5. 能源 / natural resources
6. 热能 / mechanical energy
7. 冷却水 / cooling tower

Key to Task 13:

1. Junior Electrical Technician
2. majoring in Electricity Generation
3. specialized knowledge
4. education background and experience
5. give me a chance
6. regarding my experience
7. your early reply

Key to Task 14:

(Open.)

Part V Chinese translation of passages**Passage 1****绿色能源**

随着今天科学技术的发展，在家里舒舒服服地使用可再生能源已不再是无法做到的事情。美国、加拿大和澳大利亚的多数家庭正在转而采用更加绿色的能源方式。

绿色能源正在为你的家庭获取太阳、地热、风力、水力甚至植物产生的电力。绿色能源既可以为消费者节省电费，又可以提供生态环保的居家环境。

通过利用绿色技术设备或能源就可以在家中享用再生能源或电源。从长远角度来看，投资购买绿色技术设备可能会是划算的，因为这不仅生态环保，其费用与“采用绿色能源”后可以节省的费用比起来肯定要便宜。

更加绿色的选择

如果你想从一个对我们目前的环境一点也不关心的人转变为一个完全与之相反的人，或者只是想从高额的电费中节省开销，那么，深入地研究一下绿色技术会有助于你做出决定。

你需要获取最新绿色能源信息，或者多读一些有关绿色技术的资料。以下是一些你不可忽

略的信息和资料。

太阳能家用电器

太阳能家用电器，如太阳能窗户、太阳能屋顶和照明、太阳能取暖和降温设备也正在成为家庭选用电器的趋势。大多数人在房子和花园各处安装太阳能技术设施。太阳能家用电器不仅可以节省电费，而且由于不需电线，安装起来也很容易。

太阳能电池

房主可以使用太阳能电池发电，这适用于太阳能能源充足的住房。

其他绿色能源选择

消费者不仅要投资购买绿色能源技术设备，还应该熟悉《主要家电导购手册》。美国能源部提供了核对清单和信息来指导消费者明智地购买家用电器，建议只花钱购买带有能源之星（Energy Star）标记的家用电器。

另一种生态环保的选择是实施LEED绿色建筑标准。LEED是检验绿色建筑和结构的标准，强调通过提高资源的使用效率来优化建筑物的结构。如果某建筑的设计和结构更好，利用了可持久存在的自然环保资源和绿色建筑结构，从而能降低废弃物的产生，减少污染及环境恶化，就可以获得LEED2.0金色证书。

建议你从自然资源，如阳光、风力、降雨和地热中获取能源。对于风力、经济实用的风力技术或其他可利用的再生资源所产生的再生能量的研究是既有趣又值得深入了解的。

Passage 2

热污染的起因及影响

发电和车辆运行所使用的燃料是热污染的主要来源，它们危害水中生物，并引起全球变暖。

众所周知，电厂、工业熔炉和车辆发动机燃烧矿物燃料引发空气污染。然而，人们对这些动力生成过程有关联的热污染的影响却知之甚少。热污染是指将大量的废热添加到环境中。其起因与空气污染基本相同。

热污染的起因

从机动车辆到电厂生产的大部分电能，其主要能量形式是热能。把热能转化为其他有用能量形式的设备叫热能发动机。汽车发动机就是一种常见的热能发动机，燃油所释放出的热能被发动机转换成机械能或动能。

与现实世界的任何过程一样，燃料的燃烧和随后进行的将热能转化成其他能量形式的过程都是不充分的。能量转化过程中发动机内部固有的无效功率使热能流失到周围环境中。释放到环境中的这些热能对人类、动物和植物会造成严重危害。

尽管核电站不造成空气污染，但很显然，它是热污染的来源。由于需要冷却水，核电站通常建在大型水源附近，如湖泊、河流或海洋。虽然核电站的冷却水要通过冷凝器冷却后再循环利用，但其温度仍然很高，会对环境产生严重的影响。

热污染的影响

电厂释放出的残留热量进入环境，会对当地栖居物种产生严重影响。因为热水中含氧量相

对较少，在这些地区栖息的物种面临着生存的困难。电厂冷却塔把热量直接释放到大气中，使空气温度大幅升高，引起全球变暖。

如何控制热污染

热污染问题不可避免，但是可以减少。工程师们可以通过努力提高热能发动机的效率将热量流失降到最低限度。然而，解决问题的最佳方案是减少矿物燃料的消耗，限制日常能源的使用。开发替代能源，如太阳能、风能和水力发电也是十分有益的。

Part VI Data Bank

Types of Electric Power Stations (Plants)

| | |
|-----------------------------|-------------|
| hydro power station | 水力发电站 / 厂 |
| fossil-fired power station | 火力发电站 / 厂 |
| nuclear power station | 核能发电站 / 厂 |
| diesel engine power station | 柴油机发电站 / 厂 |
| solar power station | 太阳能发电站 / 厂 |
| wind power station | 风能发电站 / 厂 |
| biomass power plant | 生物质能发电站 / 厂 |
| geothermal power plant | 地热发电站 / 厂 |
| tidal power plant | 潮汐能发电站 / 厂 |
| wave power plant | 波浪能发电站 / 厂 |
| marine thermo power plant | 海洋温差发电站 / 厂 |

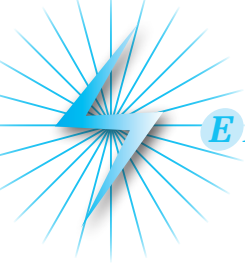
Unit 2 New Energy Sources

Part I More information about this unit

It appears that the crusade (运动) to determine the best alternative energy sources is seriously being looked into by lots of countries including most American cities. These renewable energy sources have proved to be of great aid in cutting down the amount of toxins, which are by-products of the consumption of energy. These sources also preserve most of the natural resources that people use as resources of energy.

What are the most popular sources of renewable energy? Here's a list to give you some basic information:

1. solar energy,
2. wind energy,



3. geothermal energy,
4. hydroelectricity,
5. bio-fuels.

Just by reading through the available alternative energy sources, you will be amazed at how nature works wonders. It is our responsibility to care for the environment around us and keep it clean for generations ahead.

Whatever your beliefs, nowadays we are attentive to the results of global warming. In the US, only 7% of inexperienced energy sources are used nationally. Fortunately, it isn't too late and we can still change the result, which is why many are pushing for renewable energy sources to become more prevalent in today's society. Find out how you'll be able to create your own solar panels or wind generators and begin using renewable energy.

Part II Explanation of difficult sentences in reading passages

Passage 1

1. For many years, solar energy has been the power supply of choice for industrial applications, where power is required at remote locations. (Para. 1)

Explanation: 本句是一个复合句。where引导的非限制性定语从句修饰industrial applications, where相当于in which (these industrial applications), 在从句中作状语。本句的中文意思是: 多年来, 偏远地区一直把太阳能作为工业用电的首选能源。

2. This means that in these applications solar power is economic, without subsidy. (Para. 1)

Explanation: 这是一个复合句。主语this指代的是前面的一句话。that引导的是宾语从句, without subsidy是介词短语作状语。在美国, 各州政府对使用太阳能的个人或企业给予相应的政府补贴。因此, 本句的中文意思是: 这意味着在没有政府补贴的情况下, 使用太阳能也是经济划算的。

3. Solar power's great benefit here is that it is highly reliable and requires little maintenance so it's ideal in places that are hard to get to. (Para. 3)

Explanation: 本句是一个多级复合句。主句是solar power's great benefit here is ...。第一个that从句是表语从句, 第二个that引导的定语从句修饰places。连词so将前后两个从句连接起来。本句中文意思是: 在这里, 太阳能的最大好处是可靠性高, 几乎不需要维修。因此, 在偏远地方使用太阳能是十分理想的。

4. Rather than base solar power generation on individual dwellings, it is also possible to configure central village power plants that can either power homes via a local wired network, or act as a battery charging station where members of the community can bring batteries to be recharged. (Para. 4)

Explanation: 这是一个结构复杂的多级复合句。rather than引导的不定式短语rather than

base solar power generation on individual dwellings作状语，放在句首作为对比强调。主句的结构是it is also possible to ...，其中it是形式主语，to configure是实际主语。that从句和where从句都是定语从句，分别说明plants和station。that从句中，that是主语，(can either) power 和act 是该从句中的并列谓语。本句的中文意思是：太阳能发电不仅可以单独的住宅为基础，而且还可以配置小型社区中心电站，既可以通过局部有线电力网络为家庭送电，还可以用作电池充电站，社区的所有成员都可以把电池拿到这里来充电。

5. The diesel generator can then provide the back-up power, but its use is minimized during the rest of the year by the PV system, so fuel and maintenance costs are kept low. (Para. 6)

Explanation: 本句是一个由but和so将三个简单句连在一起的并列复合句。back-up原意是“备用的，候补的”，在此可译为“不足的”；its use指的是“用柴油机发电”；rest of the year是指“一年中除阳光不足阶段之外的时间”。本句的中文意思是：用柴油机发电可以弥补太阳能电力的不足。但是在一年的其他时间里，太阳能系统的发电量足以将柴油机的使用量降到最低，所以，燃油费和维修费会维持在低位。

Passage 2

1. Wind energy is one of the fastest growing forms of new electricity generation throughout the world, with capacity growing on an annual basis at around 30%. (Para. 1)

Explanation: 本句是一个简单句。with capacity growing on an annual basis at around 30% 是with引导的分词独立结构，在句中作状语。本句的中文意思是：风能是世界上增长最快的新型电能生产形式之一，每年的增长量约为30%。

2. Much of this increased demand will be met with wind energy as it is a cost-effective and proven solution that is available today. (Para. 2)

Explanation: 本句是一个复合句，包含两个从句。as引导的原因状语从句修饰主句，that引导的定语从句修饰solution。本句的中文意思是：这一增长需求的大部分将由风能来满足，因为风能是当前可以实现的一种低费高效的能源出路。

3. Wind energy was the largest source of new electricity generation in Europe, and was about equal with natural gas in the US. (Para. 3)

Explanation: 本句是一个简单句。两个系动词was的主语都是wind energy，and后面的句子是一个省略句，在natural gas后省略了in new electricity generation。about在这里用作副词，修饰equal。equal with的含义是“与...相当”。本句的中文意思是：风能是欧洲新生电能生产的最大来源，与美国的天然气发电量大体相当。

Part III Examples with some of the key words and expressions

Passage 1

1. remote *a.* distance in place or time 遥远的，偏远的



- e.g. Landslides have cut off many villages in remote areas.
塌方已经切断了边远地区许多村庄与外界的联系。
Slabs of rock slipped sideways in the remote past and formed this hole.
在遥远的过去, 大块的岩石板向旁边滑落, 形成了这个岩洞。
2. **economic** *a.* not resulting in a loss of money 经济的, 合算的
e.g. She was able to let her house at an economic rent, which paid for repairs and made a small profit.
她的房子租金是合算的, 除了修理费外, 还有一点盈余。
They think the new system may be more economic.
他们认为新系统可能会更经济一些。
3. **benefit from:** to gain by 从...获益
e.g. Who would be most likely to benefit from the project?
谁最有可能从这个项目中获益?
Both sides have benefited from the agreement.
双方都从这个协议中获益了。
4. **a range of:** a set of 一系列; 一套
e.g. A wide range of colors and patterns are available.
各种各样的颜色和图案都有。
5. **an array of:** a large number of 大量; 各种
e.g. He has collected an array of information to support my ideas.
他搜集了大量的资料来支持我的观点。
6. **configure** *v.* to set sth. up to be ready for use 配置
e.g. How easy was it to configure the software?
配置计算机软件有多容易?
7. **cope with:** to deal with sth. successfully 应对; 处理
e.g. Mary was unable to cope with heavy traffic after her accident.
出车祸之后, 玛莉在交通繁忙的时候无法开车了。
Never before has the industry had to cope with war and recession at the same time.
实业界以前从来没有同时应对过战争和经济衰退。
8. **back-up** *n.* a thing or person ready to be used in place or another 候补; 备用物
e.g. There is no emergency back-up immediately available.
没有立即可用的应急备品。
Each part of the system has a back-up.
这套系统的每个部件都有备件。
9. **minimize** *v.* to lessen to the smallest possible amount or degree 减到最少; 降至最低程度
e.g. You can minimize the dangers of driving by taking care of the rules of the road.
只要留心遵守交通规则, 就可以把开车的危险降到最低。

Click the square icon again to minimize the window.

再次点击正方形图标使窗口最小化。

10. **security** *n.* state of being protected against danger 安全

e.g. For security reasons, all the passengers have to be searched.

为了安全起见, 所有旅客都得被搜身。

Strict security measures are in force at all the airports in this country.

这个国家的所有机场都实行了严格的安检措施。

11. **breach** *v.* to break or violate 破坏; 违背

e.g. The newspaper breached the code of conduct on privacy.

这家报纸违反了隐私保护行为准则。

Passage 2

1. **effective** *a.* having a noticeable effect 有效的

e.g. His efforts to improve the school has been very effective.

他改善学校的努力卓有成效。

The project looks at how we could be more effective in encouraging students to enter education reform.

该项目研究的是我们如何更加有效地鼓励学生参与教育改革。

2. **proven** *a.* that has been tested and shown to be true 被证明了的

e.g. He is a man of proven ability.

他是一个能力得到认可的人。

3. **significant** *a.* of noticeable importance or effect 重大的; 有意义的

e.g. This is one of the most significant studies on the subject.

这是对个项目进行的最重要的研究之一。

I think it is significant to know your customers well.

我认为深入了解自己的客户很重要。

4. **overtake** *v.* to get ahead of from behind, become more successful 追上; 超过

e.g. A car overtook me although I was driving very fast.

虽然我开得很快, 还是有一辆车超过了我。

5. **fuel** *v.* to add fuel to, to make worse or more intense

e.g. The car is being fuelled to get ready to beat the speed record.

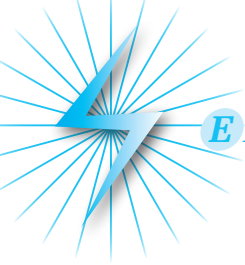
那辆车正在加油, 准备打破速度记录。

6. **account for:** to give an explanation or reason to 解释, 说明

to form a particular amount or part of something 占据

e.g. He could not account for his foolish mistakes.

他无法解释他所犯的愚蠢错误。



Afro-Americans account for 12% of the US population.

非裔美国人占美国人口的12%。

7. **in line with:** in agreement with 与...一致

e.g. That isn't in line with my ideas at all.

那与我的想法根本不同。

Pensions will be increased in line with inflation.

退休金的增长将与通胀同步。

Part IV Key to exercises and scripts for listening

Key to Task 5:

1. It is held to welcome Mr. Jackson.
2. In both business trade and technical exchanges.
3. It will be a successful and fruitful visit.
4. It is to the friendship between the two companies.
5. It is to everyone present for good health.

Script for Task 5:

Distinguished guests, ladies and gentlemen,

It gives me great pleasure to welcome you to this dinner party. I would like to take this opportunity to express our special welcome to Mr. Jackson from Canadian Electricity.

As we all know, we have been in very good cooperation with Canadian Electricity in both business trade and technical exchanges. I believe Mr. Jackson's visit this time will be a successful and fruitful one.

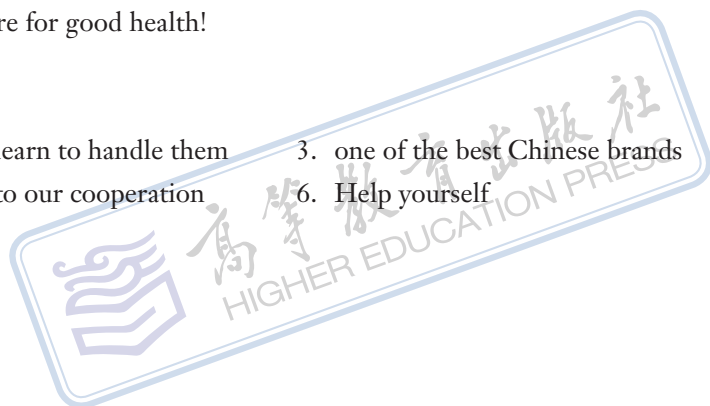
This evening will be exceptional for us all present here. Let's create happy memories and let's surround ourselves with laughter and friendship as we celebrate this special occasion.

Let me propose a toast to the friendship between our two companies!

Another toast to everyone here for good health!

Key to Task 6:

1. Chinese food
2. learn to handle them
3. one of the best Chinese brands
4. taste delicious
5. to our cooperation
6. Help yourself
7. wonderful dinner



Script for Task 6:

- Li Hong:** Mr. Jackson, Take this, please.
- Mr. Jackson:** Thank you.
- Li Hong:** I hope you will enjoy the Chinese food we've prepared for you today.
- Mr. Jackson:** So do I.
- Li Hong:** Would you like to try the Chinese chopsticks?
- Mr. Jackson:** Yes, of course. Although I can't manage them well, I'd like to learn to handle them.
- Li Hong:** OK. What would you like to drink, beer, wine or Maotai?
- Mr. Jackson:** What's Maotai?
- Li Hong:** It's a kind of strong alcoholic spirits, one of the best Chinese brands.
- Mr. Jackson:** Well, then I'll try some Maotai.
- Li Hong:** OK. These dishes are of typical Chinese cuisine.
- Mr. Jackson:** They look colorful, smell spicy, and must taste delicious.
- Li Hong:** Now let's first drink to your health and then to our cooperation.
- Mr. Jackson:** To your health, too. The Chinese cuisine is really marvelous.
- Li Hong:** I'm glad you like it. Help yourself to more dishes.
- Mr. Jackson:** Thanks, I will. This is the first time I've had such delicious Chinese dishes. Thank you for the wonderful dinner.
- Li Hong:** My pleasure.

Key to Task 7:

- | | | |
|--|---------------------------------|------------------|
| 1. power supply | 2. road traffic warning signals | 3. maintenance |
| 4. get / bring batteries to be charged | 5. diesel generator | 6. solar modules |

Key to Task 8:

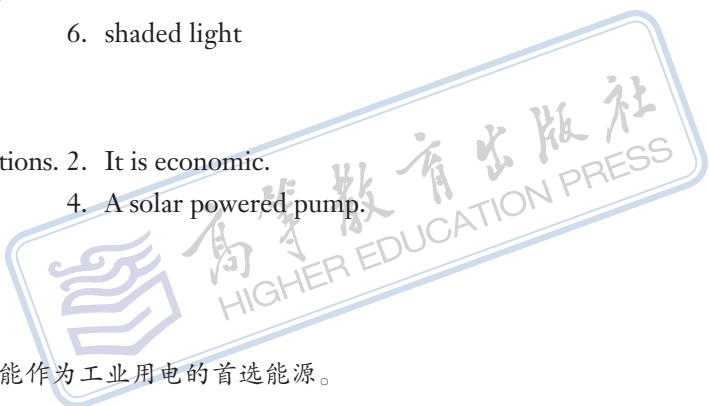
- | | |
|--------------------------------------|-------------------------|
| 1. a few kilowatts of power | 2. corrosion protection |
| 3. electrification with solar energy | 4. submersible |
| 5. advertising boards | 6. shaded light |

Key to Task 9:

- Those which are at remote locations.
- It is economic.
- Off-grid homes.
- A solar powered pump.
- They can provide shaded light.

Key to Task 10:

- 多年来, 偏远地区一直把太阳能作为工业用电的首选能源。



2. 在这里，太阳能的最大好处是可靠性高，几乎不需要维修。因此，在偏远地方使用太阳能是十分理想的。
3. 除了脱网的家庭以外，其他偏远地区的建筑物，如学校、社区礼堂和诊所等都可以从使用太阳能供电中获益。
4. 可以通过利用一系列的太阳能电池组件并提高电池的蓄电能力来建造较大型的脱网系统，为更大和更复杂的电力负荷供电。
5. 这就是说，再也不用为迁就一年中日照不强的时间而对光伏系统扩容了。

Key to Task 11:

1. electricity generation
2. cost-effective
3. natural gas
4. installed capacity
5. offshore wind farms

Key to Task 12:

1. 风能容量 / installed capacity
2. 全球电力需求 / global food demand
3. 显著的增长 / significant study
4. 近海风力发电场 / offshore navigation buoys
5. 国际趋势 / international trade

Key to Task 13:

1. 13:30 (on May 5)
2. Department heads concerned
3. hotel
4. research center, labs
5. the airport

Key to Task 14:

(Open.)

Part V Chinese translation of passages

Passage 1

太阳能

多年来，偏远地区一直把太阳能作为工业用电的首选能源。这意味着在没有政府补贴的情况下，使用太阳能也是经济划算的。多数单个的用电系统只需要几千瓦的电力。例如，为微波转播站、电视和无线电广播、遥控技术和雷达电话等供电就是如此。

太阳能还经常被用于交通信号中，如离岸航海浮标、灯塔、机场标塔或建筑物上的警示灯，道路交通信号灯也越来越多地开始使用太阳能。太阳能还被用于为环境和境况监测设备供电，以及为水管、井口、桥梁和其他结构物的防腐系统供电（需要外加电流的）。

在这里，太阳能的最大好处是可靠性高，几乎不需要维修。因此，在偏远地方使用太阳能是十分理想的。

除了脱网的家庭以外，其他偏远地区的建筑物，如学校、社区礼堂和诊所等都可以从使用太阳能供电中获益。太阳能可以为电视、录像、电话和各种制冷设备供电，例如，现在已有符合世界卫生组织标准的疫苗冷藏设备。太阳能发电不仅可以单独的住宅为基础，而且还可配置小型社区中心电站，既可通过局部有线电力网络为家庭送电，还可用作电池充电站，社区的所有成员都可以把电池拿到这里来充电。

在偏远地区，太阳能电池系统可以用来抽水，例如作为手提式供水系统的一部分。特殊设计的太阳能水泵可用作钻井中的潜水泵或漂浮在开阔水面上的漂浮泵。太阳能电池系统还可以为大型海水淡化厂提供电力。可以通过利用一系列的太阳能电池组件并提高电池的蓄电能力来建造较大型的脱网系统，为更大和更复杂的电力负荷供电。

为了最大限度地满足某一脱网地点的用电需求，有时最好为太阳能电池系统配置一台小型柴油发电机。这就是说，再也不用为迁就一年中日照不强的时间而对光伏系统扩容了。用柴油机发电可以弥补太阳能电力的不足。但是在一年的其他时间里，太阳能系统的发电量足以将柴油机的使用量降到最低，所以，燃油费和维修费会维持在低位。

太阳能还可以为区域照明提供电力，使更多的户外活动在天黑后也可以进行，或提高公共安全，还可以用于招牌和广告牌的灯光装饰。办公楼的前侧可以用玻璃太阳能组件覆盖，这是一种半透明的能发出暗光的玻璃材料。厂房的大屋顶是安装太阳能组件的最好场所，如果屋顶是平的，安装组件时需要使用不会破坏屋顶防水膜的技术。当然，天窗也可以局部装上太阳能电池板。

Passage 2

风能——全球性的可再生能源

当前，全球风能的装机总量欧洲占48%，北美洲占24%，亚洲占25%。风能是世界上增长最快的新型电能生产形式之一，每年的增长量约为30%。

国际能源署预测，全球每年的电力需求增长量为1.5%至2.5%。这一增长需求大部分将由风能来满足，因为风能是现今已经验证过的一种低费高效的能源出路。

在2009年，全球风能生产总量增长了31%，从120 800兆瓦增加到158 505兆瓦，是新西兰电能生产总量的17倍。风能是欧洲新生电能生产的最大来源，与美国的天然气发电量大体相当。

全球风能委员会预计，到2014年全球风能生产总量将达到409 000兆瓦。

全球风能总装机量：

| 地域 | 2009年装机量 (MW) | 2009年底总装机量 (MW) |
|-----|---------------|-----------------|
| 亚洲 | 15 442 | 39 610 |
| 欧洲 | 10 526 | 76 152 |
| 北美洲 | 10 946 | 38 383 |

| | | |
|---------|--------|---------|
| 拉丁美洲 | 622 | 1 274 |
| 太平洋地区 | 577 | 2 221 |
| 非洲和中东地区 | 230 | 865 |
| 总量 | 38 343 | 158 505 |

在未来的几年里，风能的大量增长是在亚洲。到2014年，亚洲将会超过欧洲成为风能装机总量最大的地区。中国的活力为亚洲的行业增长增添了动力。在2009年，中国新增加的风能装机容量达到惊人的13.8千兆瓦。

在欧洲，建立的近海风力发电场是新增容量的提供者。

在新西兰这里，风能装机容量也会追随世界总趋势而继续增长。到2011年年中，其风能装机总量将达到610兆瓦，而2009年年底时为497兆瓦。

Part VI Data Bank

Equipment Used in Steam Turbine System

| | |
|----------------------|-------|
| generator | 发电机 |
| boiler | 锅炉 |
| steam turbine | 汽轮机 |
| rotor | 转子 |
| steam condenser | 凝汽器 |
| feed water pump | 给水泵 |
| condensation pump | 凝结水泵 |
| fluid coupling | 液力耦合器 |
| steam valve | 汽阀 |
| heat exchanger | 换热器 |
| de-aerator | 除氧器 |
| low-pressure heater | 低压加热器 |
| high-pressure heater | 高压加热器 |
| air ejector | 抽气器 |

Unit 3 Survey of Power System

Part I More information about this unit

Depending upon the form of energy converted into electrical energy, the generating power

plants are mainly classified as follows:

Steam power plants: Steam power plants use fuels such as petroleum, coal or biomass, which are burned to heat water to create steam, the pressure of the steam spins a turbine turning the copper wire inside the generator.

Geothermal power plants: Geothermal power plants are steam power plants that tap into steam released from the earth. Once used the water is returned to the ground.

Nuclear power plants: Nuclear generators use nuclear fission to turn water into steam. This drives the steam turbine, which spins a generator to produce power. A pound of highly enriched uranium can power a nuclear submarine or nuclear aircraft carrier, which is equal to something on the order of a million gallons.

Wind power plants: Wind power plants use the wind to push against the turbine blades, spinning the copper wires inside the generator to create an electric current.

Hydroelectric dams: Hydroelectric dams use falling (or flowing) water to spin the turbine blades.

Part II Explanation of difficult sentences in reading passages

Passage 1

1. Not only should it be easy to generate, but it can also be generated through a number of different ways by different types of power plants, which can be divided as follows ... (Para. 1)

Explanation: 本句是一个并列复合句。由于not only位于句首，前半句用的是倒装结构。it是本句的主语，指代上一句的energy。which引导的是一个非限定性定语从句，修饰先行词power plants。本句的中文意思是：能源不仅应该容易生产，而且应该由各种电厂通过不同的方式生产。电厂的分类如下……

2. Since heat is generated by burning fossil fuels like coal, petroleum or natural gas, these power plants are also collectively referred to as the fossil fueled power plants. (Para. 2)

Explanation: 本句是一个复合句。since引导的是原因状语从句，介词短语like coal, petroleum or natural gas作fossil fuels的定语，举例说明都是哪些矿物燃料。主句中refer to的意思是“称为”，collectively的意思是“统一地”。本句的中文意思是：由于热量是通过燃烧煤炭、石油或天然气等矿物燃料产生的，所以这些电厂也被统称为矿物燃料电厂。

3. The heat generated by burning the fossil fuels is used to turn a kind of rotating machinery, most commonly a steam turbine or a gas turbine that changes the thermal energy into mechanical power. (Para. 2)

Explanation: 本句是一个复合句。generated by burning the fossil fuels是一个过去分词短语，作为后置定语修饰主语the heat。most commonly a steam turbine or a gas turbine是rotating machinery的同位语，后面的that引导的是定语从句，修饰a steam turbine or a gas



turbine。本句的中文意思是：通过燃烧矿物燃料产生的热量用来推动一种旋转机械，最常见的旋转机械有蒸汽涡轮机和燃气涡轮机，它们将热能转化为机械能。

4. As the turbine turns, so do the magnets inside the generator which is connected to the turbine. (Para. 3)

Explanation: 本句是一个复合句。as引导的是一个时间状语从句，意为“当…时候”；so do the magnets inside the generator是一个倒装句型，do是代动词，指代动词turn；which is connected to the turbine 是定语从句，修饰generator。本句的中文意思是：当水轮机旋转时，与水轮机相连接的电机里面的磁铁也旋转。

5. Fission is a type of nuclear reaction in which, when the atoms of certain elements called nuclear fuels absorb free neutrons, they split into two or more smaller nuclei and some free neutrons. (Para. 4)

Explanation: 本句是一个结构复杂的复合句。in which引导的是非限定性定语从句，该定语从句中还有一个由when引导的时间状语从句。called nuclear fuels是过去分词短语，作为后置定语修饰certain elements。时间状语从句中的谓语动词是absorb。本句的中文意思是：裂变是一种核反应。在核反应中，当被称之为核燃料的某些元素里面的原子吸收自由的中子时，原子就裂变成为两个或多个更小的核子和自由中子。

6. The free neutrons further strike the atoms of other fissile materials, thus setting off a chain reaction. (Para. 4)

Explanation: 本句是一个简单句。thus setting off a chain reaction是现在分词，作结果状语。本句的中文意思是：自由中子进一步撞击其他裂变物质的原子，就引起了连锁反应。

7. Although fission is the only way of producing energy in nuclear power plants, efforts are on to use nuclear fusion and radioactive decay for energy production. (Para. 6)

Explanation: 本句是一个复合句。although引导一个让步状语从句；本句中的efforts are on 中的on是副词，意思是“在进行中”。to use nuclear fusion and radioactive decay for energy production是不定式短语，作目的状语。本句的中文意思是：虽然裂变是核电厂唯一的发电方式，但是人们还在努力尝试通过聚变和放射衰变来发电。

Passage 2

1. An “informationised, automatic and interactive” grid with ultra high voltage (UHV) power lines as its backbone to facilitate a smart grid covering the cycle of delivery would be developed. (Para. 3)

Explanation: 本句是一个简单句。句中的主语是grid，其前面的informationised, automatic and interactive与后面的with ultra high voltage (UHV) power lines as its backbone to facilitate a smart grid covering the cycle of delivery都是grid的定语；would be developed是句子的谓语。本句的中文意思是：将要开发建设一个“信息化、自动化和互动化”的智能电网，以超高压线为基础，使电力传输全过程得到智能电网全覆盖。

2. China has yet to draw up a national plan on smart grids even though the State Council Premier has called for “pushing forward with building a smart grid” in the annual report to the National People’s Congress in March. (Para. 5)

Explanation: 本句是一个复合句。even though引导让步状语从句；pushing forward with的意思是“推进，推行”；the annual report的意思是“年度工作报告”。本句的中文意思是：三月份，国务院总理在人民代表大会的年度报告中已经要求推进智能电网的建设。中国还需要制定一个全国性的智能电网规划。

3. On the power transmission front, the company hopes to complete a pilot converter station for flexible direct current electricity flow this year, an essential component in building the first phase of its smart grid. (Para. 7)

Explanation: 本句是一个简单句。on the power transmission front是介词短语，作状语，表示范围；for flexible direct current electricity flow是介词短语，作目的状语；an essential component in building the first phase of its smart grid是a pilot converter station的同位语，对其进行解释说明。本句的中文意思是：在电力输送的前端，公司希望今年完成试运行变流站的建设，保证今年就可以传输直流电，这是智能电网建设第一阶段的重要部分。

4. At the power consumption end, the State Grid has spread research and development from smart meters and plugs to smart home appliances and electric vehicle charging and discharging systems, all expected to be ready for use by 2012. (Para. 9)

Explanation: 这是一个冗长的简单句。all expected to be ready for use by 2012是一个独立主格结构，作附加说明状语。本句的中文意思是：在用电终端，国家电网已经拓展了研究和开发工作，涉及智能电表、插座到智能家用电器、电动车辆充电和放电系统等各个领域。这一切预计到2012年投入使用。

Part III Examples with some of the key words and expressions

Passage 1

1. **attach ... to:** fix or connect 贴上，系上，附加到；赋予

e.g. Please attach the labels to the luggage.

请把标签系在行李上。

The company attaches great importance to the quality of the products.

公司非常注重产品质量。

2. **connect to:** join to another 使与…连接

e.g. Connect the hose to the tap and turn on the tap.

把水管接在龙头上，打开水龙头。

The island is connected by a steamer service to the mainland.

轮船航运把该岛与大陆联系起来。

3. **set off:** make ... start working 点燃, 爆炸; 开始; 引起
e.g. Be careful that you don't set the fireworks off by mistake.
当心点, 别弄错了引起爆竹爆炸。
If uncontrolled, the shortage would set off a new rise in meat prices.
如果不加控制, 这种短缺会引起肉价再次上涨。
4. **provide** *v.* arrange for someone to use; supply 提供; 配备
e.g. Their company provides recommendation to product design optimization.
他们公司提供推荐方案来优化产品设计。
The hotel provides very good room service.
酒店提供很好的客房服务。
5. **concentrate on:** direct one's thought or efforts towards a particular activity 专心于, 集中, 聚集
e.g. Clock watchers can never concentrate on their work.
老是看时间等下班的人决不会专心致志地工作。
Our decision to concentrate on economic development was correct.
我们一心一意搞经济发展的决定是正确的。
6. **other than:** except; apart from 除了; 而非
e.g. There are also famous universities other than Harvard.
著名大学不止哈佛这一所。
It was none other than Mr. Wang.
不是别人正是王先生。
7. **on the lookout for:** seek for 物色, 寻求
e.g. We're always on the lookout for good computer programmers.
我们一直在物色优秀的计算机程序员。
Police are now on the lookout for these boat thieves.
警方现正搜寻这些偷船者。

Passage 2

1. **grid** *n.* a network of electricity supply wires connecting power stations 输电网
e.g. Power can be fed from wind generators into the electricity grid system.
电力可以从风力发电机流入输电网系统。
The electricity grid in Britain is the network of wires and cables by which electricity is distributed throughout the country.
在英国, 电网是指电线和电缆网, 通过这一网络电得以输送到全国。
2. **unveil** *v.* remove a covering from 揭露, 展示
e.g. He has promised to unveil a new plan for the development of the national grid.
他答应要公布国家电网发展的新计划。

This reflects concern that some of these institutions will soon unveil further credit write-offs.

这反映了人们的担心，即一些机构近期将宣布更多的信贷冲销。

3. **facilitate** *v.* make easier; help 使便利；促进

e.g. Modern devices facilitate domestic work.

现代器具为家务劳动提供了便利。

The new airport will facilitate tourism in this city.

新机场将推动这个城市的旅游业。

4. **pilot** *v.* drive; help and guide; show the way; test 驾驶；带领，引导；试验，试用

e.g. Tom didn't like to pilot the boat.

汤姆不愿为这只船领航。

Schools are piloting the new maths course.

学校正在试用新的数学教程。

5. **upgrade** *v.* give a position of more importance 提升，使升级

e.g. I want to upgrade my computer.

我想升级我的电脑。

6. **draw up**: prepare and put into written form 草拟，订规划

e.g. The next step will be to draw up a meeting agenda.

下一步将起草一项会议议程。

We should draw up a realistic contingency plan for meeting another energy crisis.

为应对另一场能源危机，我们应制订一个切实可行的应急计划。

7. **call for**: demand, need 要求，需要

e.g. Public call for green Olympics.

公众呼吁绿色奥运。

Different circumstances call for different tactics.

不同的情势需要不同的策略。

8. **push forward with**: continue with a plan or activity, esp. in a steady determined 推进，促进

e.g. To push forward modernization in such a populous country with such a vast landmass, it is imperative to have strong core of leadership.

在如此幅员辽阔的国家推行现代化必须要有坚强有力的领导。

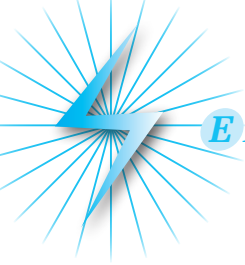
Ministers agreed to push forward with trade reforms to be completed in five to ten years.

部长们一致同意要在5到10年内推进贸易改革。

9. **flexible** *a.* that can be changed into be suitable for new needs, changed conditions, etc. 灵活的

e.g. The new products are more flexible in application.

新产品在应用上灵活性更强。



To unite, compromise. To work with others, be flexible.

要团结就要妥协。灵活多变，才能与人合作。

10. **accommodate** *v.* provide with a place in which to live; change to fit new conditions 提供住宿；适应

e.g. The hotel can accommodate 600 guests.

这家旅馆可供600位来宾住宿。

We must accommodate ourselves to circumstances.

我们必须适应环境。

Part IV Key to exercises and scripts for listening

Key to Task 5:

1. It provides specifics on how a project will be performed.
2. Team leaders.
3. Within a few days after a review.
4. All the people who will take part in the project.
5. A few days before it is finally made.

Script for Task 5:

A work plan is also called a project plan, which provides specifics on how a project will be performed. This includes who will work on each task, how the tasks will be performed and when the project will start and end. A work plan is useful as a planning tool and also a management tool for a team leader.

The best time for preparing a work plan is within a few days following a review. For an annual work plan, this means a few days after the Annual Review. Most importantly, the plan should be printed and read by all the people who will take part in the project a few days before it is finally made.

Key to Task 6:

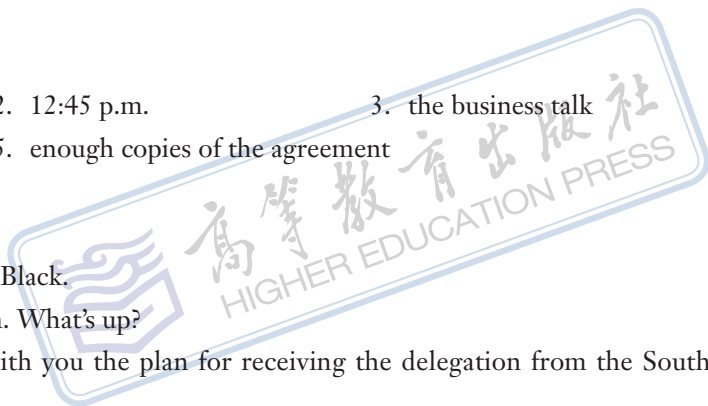
1. discuss with you the plan
2. 12:45 p.m.
3. the business talk
4. the chief engineer
5. enough copies of the agreement

Script for Task 6:

Joan: Good morning, Mr. Black.

Mr. Black: Good morning, Joan. What's up?

Joan: I'd like to discuss with you the plan for receiving the delegation from the South



Power Plant. They will come next week.

Mr. Black: When will they be here at the airport?

Joan: At 12:45 p.m. next Monday.

Mr. Black: So we'll meet them at the airport then.

Joan: Yes. And we'll give a dinner to welcome them first.

Mr. Black: Yes, of course. You should also show them around our company and see our products.

Joan: All right. Shall I arrange the business talk on Tuesday morning?

Mr. Black: Let me have a look at my schedule. Yes, you may make it at 9:30 a.m. I'll be free then.

Joan: Who will participate in the talk?

Mr. Black: The heads from the Production Department and Sales Department, including the chief engineer.

Joan: I'll tell them. What else do you think we should include in the work plan?

Mr. Black: No, nothing more for now, but remember to prepare enough copies of the agreement in two languages.

Joan: I'll do that.

Key to Task 7:

1. different types of power plants
2. mechanical energy
3. a chain reaction
4. Solar energy
5. generating power

Key to Task 8:

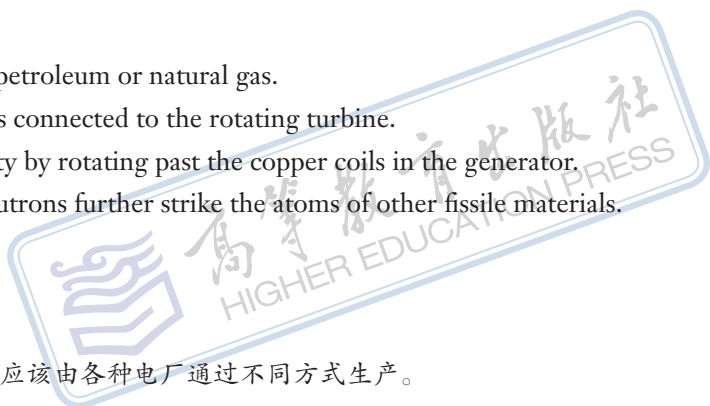
1. meet people's needs
2. fossil fuels
3. mechanical energy (of the rotating turbine)
4. kinetic energy
5. a working fluid
6. generating power

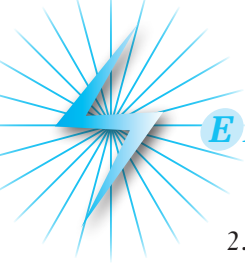
Key to Task 9:

1. They use fossil fuels like coal, petroleum or natural gas.
2. Through an alternator which is connected to the rotating turbine.
3. They help to produce electricity by rotating past the copper coils in the generator.
4. It takes place when the free neutrons further strike the atoms of other fissile materials.
5. By using radioactive decay.

Key to Task 10:

1. 电能不仅应该容易生产，而且应该由各种电厂通过不同方式生产。





2. 通过燃烧矿物燃料产生的热量带动旋转的机械旋转，将热能转化为机械能。
3. 核电厂利用连锁反应释放出来的能量发电。
4. 在多兆瓦的光电厂，太阳射线聚集在光电表面上，通过光电作用把太阳能转换成电能。
5. 除了这些电厂以外，地热发电厂、风力发电厂和再生能源发电厂等都可以发电来满足人类的需求。

Key to Task 11:

1. leading power grid operator
2. automatic and interactive
3. three stages
4. an essential component
5. controlling system
6. ready for use

Key to Task 12:

1. 中国国家电网公司 / Southern Power Grid Corp
2. 智能电网 / smart meter
3. 三阶段计划 / three-stage construction
4. 调试阶段 / upgrading stage
5. 电力协调系统 / power controlling system
6. 电动车辆充电 / electric vehicle discharging
7. 电力输送 / power consumption

Key to Task 13:

1. calling me
2. confirm our telephone talk
3. attached is the information I gave you
4. all the turbines
5. slightly higher
6. upon receipt of your order

Key to Task 14:

(Open.)

Part V Chinese translation of passages

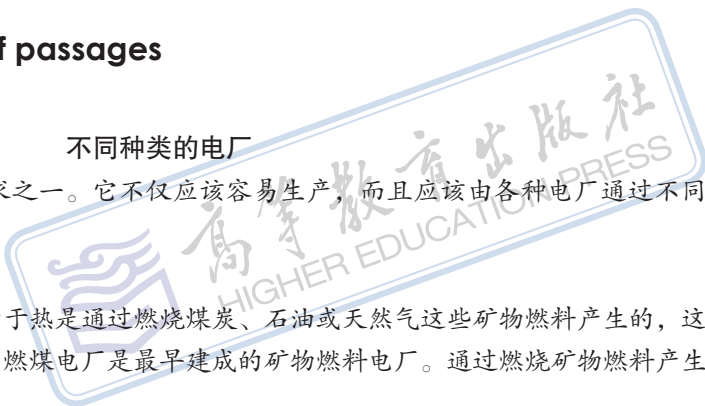
Passage 1

不同种类的电厂

电能是我们必须要满足的需求之一。它不仅应该容易生产，而且应该由各种电厂通过不同的方式生产。电厂的分类如下：

热电厂

热电厂是通过热能发电的。由于热是通过燃烧煤炭、石油或天然气这些矿物燃料产生的，这些电厂也被统称为矿物燃料电厂。燃煤电厂是最早建成的矿物燃料电厂。通过燃烧矿物燃料产生



的热量用来推动一种旋转机械，最常见的旋转机械有蒸汽涡轮机和燃气涡轮机，它们将热能转化为机械能。把旋转的涡轮机连接到交流电机上，就能把旋转涡轮机产生的机械能变成电能。

水电厂

水电厂用流动的水所产生的动能发电。水电厂利用大水库蓄水。水库里的水由大坝往下流动使水轮机旋转。当水轮机旋转时，与水轮机相连接的电机里面的磁铁也旋转。磁铁围绕铜线圈转动而发电。

核电厂

核电厂是靠裂变的化学反应来发电的。裂变是一种核反应。在核反应中，当被称之为核燃料的某些元素里面的原子吸收自由的中子时，原子就裂变成为两个或多个更小的原子核子和一些自由中子。在这一过程中，释放出大量的能量。自由中子进一步撞击其他裂变物质的原子，就引起了连锁反应。核电厂利用连锁反应释放出来的能量发电。

太阳能电厂

太阳能是最丰富的自然资源之一，它能够提供超过目前需求的能源。大多数太阳能电厂都是聚焦性太阳能电厂。在这些电厂里，使用聚光镜片或反光镜片将太阳射线集聚成单一的光束，然后用光束来加热一种工作流体，再用受热流体进行发电。除了聚焦性太阳能电厂外，近年来也建设了多兆瓦的光电厂。在光电厂里，将太阳射线集中在光电表面，通过光电作用把太阳能转换成电能。

除了以上列举的电厂以外，地热发电厂、风力发电厂和再生能源发电厂等都可以发电来满足人类的需求。尽管有各种各样的发电厂，人类仍然在留心寻求更多的发电途径。虽然裂变是核电厂唯一的发电方式，但是人们还在努力尝试通过聚变和放射衰变来发电。

人类现在还在努力寻求其他什么样新的发电方式呢？

Passage 2

中国国家电网智能电网规划

作为国家主要的电网运营企业，中国国家电网公司于周二发布了宏伟计划：要在其经营覆盖地区创建技术标准，并研发“强大智能电网”所需的关键设备。

公司智能电网部负责人王先生没有透露未来五年公司将投入多少资金来开发智能电网。

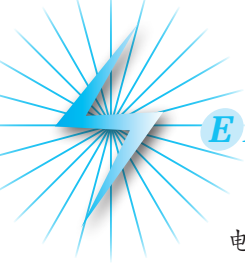
公司称，将开发建设一个“信息化、自动化和互动化”的智能电网，以超高压线为基础，使电力传输全过程实现智能电网全覆盖。

智能电网的建设规划分为三个阶段：2009年到2010年为规划和调试阶段，2011年至2015年为全面建设阶段，2016年至2020年为更新升级阶段。

三月份，国务院总理在人民代表大会的年度报告中已经要求推进智能电网的建设。中国还需要制定一个全国性的智能电网规划。

国家电网经营中国31个省份中的26个省份的主要电网。规模较小的中国南方电网公司经营南方和西南五省的电网。

今年，公司希望在电力输送的前端完成试运行变流站的建设，保证今年就可以传输直流



电，这是智能电网建设第一阶段的重要部分。

智能电网建设的另一个目标就是开发一个电力协调和控制系统，使之能够兼容风能和太阳能等规模大而来源不稳定的能源输入。

在用电终端，国家电网已经拓展了研究和开发工作，涉及智能电表、插座到智能家用电器、电动车辆充电和放电系统等各个领域。这一切预计将在2012年投入使用。

公司称今年计划建设75个电动车辆充电站，目前有7个已经建成并可以投入使用。

Part VI Data Bank

Equipment Used in Combustion System

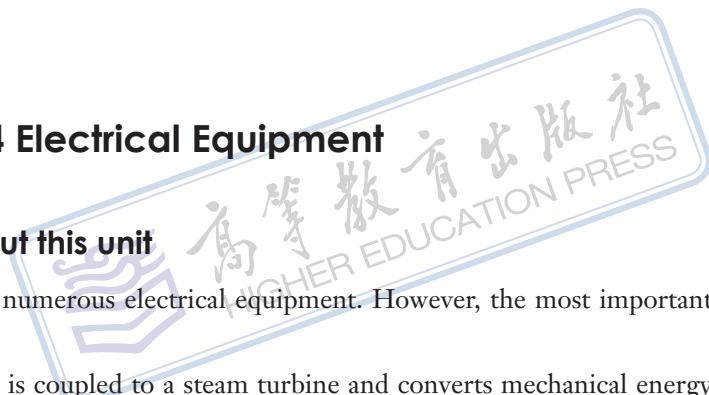
| | |
|--------------------------|-------|
| steel structure | 钢结构 |
| air pre-heater | 空气预热器 |
| economizer | 省煤器 |
| soot blower | 吹灰器 |
| boiler induced draft fan | 锅炉引风机 |
| ventilator | 送风机 |
| primary air fan | 一次风机 |
| pulverized coal burner | 煤粉燃烧器 |
| radiator | 散热器 |
| steam trap | 疏水器 |
| coal feeder | 给煤机 |
| pulverizer | 磨煤机 |
| air-proof blower | 气密鼓风机 |
| conveyor | 输送机 |
| mill exhausting blower | 排粉风机 |
| flue gas | 烟气 |
| ash eliminator system | 除灰渣系统 |

Unit 4 Electrical Equipment

Part I More information about this unit

A modern power station has numerous electrical equipment. However, the most important items are:

Alternators. Each alternator is coupled to a steam turbine and converts mechanical energy



of turbine into electrical energy. The alternator may be hydrogen or air-cooled. The necessary excitation is provided by means of main and pilot exciters directly coupled to the alternator shaft.

Transformers. A generation station has different types of transformers, viz.

1. Main step-up transformers which step up the generation voltage for transmission of power.
2. Station transformers which are used for general service (e.g., lighting) in the power station.
3. Auxiliary transformers which supply power to individual unit-auxiliaries.

Switchgear. It houses such equipment which locates the fault in the system and isolates the faulty part from the healthy section. It contains circuit breakers, relays, switches and other control devices.

Part II Explanation of difficult sentences in reading passages

Passage 1

1. Most electric motors operate through interacting magnetic fields and current-carrying conductors to generate force, although a few use electrostatic forces. (Para. 2)

Explanation: 本句是一个复合句。主句中的through interacting magnetic fields and current-carrying conductors to generate force是介词短语，作为状语修饰谓语动词operate。其中，interacting是动名词，fields和conductors是其宾语。although引导了一个让步状语从句，修饰主句。本句的中文意思是：大多数电动机是通过磁场和带电导体的相互作用产生动力而运转的，不过也有少部分电动机利用静电力运转。

2. The reverse process, producing electrical energy from mechanical energy, is accomplished by some type of generator such as an alternator or a dynamo. (Para. 2)

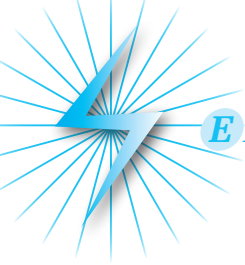
Explanation: 本句是一个简单句。producing electrical energy from mechanical energy 是现在分词短语，作为后置定语修饰前面的reverse process。句中的some是不定代词，表示“某一种”。some type of generator的意思是“某种类型的发电机”；such as an alternator or a dynamo是generator的同位语，对generator加以举例说明。本句的中文意思是：从机械能产生电能的逆过程则是通过某种交流发电机或直流发电机完成的。

3. The very largest electric motors are used for propulsion of large ships, and for such purposes as pipeline compressors, with ratings in the millions of watts. (Para. 3)

Explanation: 本句是一个简单句。and连接的两个并列的for介词短语作目的状语。with ratings in the millions of watts是一个独立主格结构，也作状语，表示电动机的额定功率。本句的中文意思是：特大型的电动机用来驱动大型轮船以及管线压缩机等用途，额定功率高达数百万瓦。

4. The simplest turbines have one moving part, a rotor assembly, which is a shaft or drum with blades attached. (Para. 4)

Explanation: 本句是一个复合句。a rotor assembly是同位语，解释说明one moving part；



which引导了一个非限定性定语从句，修饰moving part。with blades attached作a shaft or drum的定语。本句的中文意思是：最简单的水轮机有一个运动部件，即一个转子总成。转子总成就是一个加装了叶片的大轴或鼓筒。

5. Modern steam turbines frequently employ both reaction and impulse in the same unit, typically varying the degree of reaction and impulse from the blade root to its periphery. (Para. 5)

Explanation: 本句是一个简单句。句中varying the degree of reaction and impulse from the blade root to its periphery是分词短语，作为伴随状语修饰句中的谓语employ。其中，from ... to ...是介词短语，修饰reaction and impulse。本句的中文意思是：现代的蒸汽轮机常常是在同一个机体内使用反作用力和冲击力，通常是变化从叶片根部到边缘的反作用力与冲击力的程度。

6. In a nuclear reactor called a boiling water reactor (BWR), water is boiled to generate steam directly in the reactor itself and there are no units called steam generators. (Para. 7)

Explanation: 本句是一个由and连接的并列句。句中called a boiling water reactor和called steam generators是两个过去分词短语，作为后置定语分别修饰nuclear reactor和units。本句的中文意思是：在称为沸水堆的核反应堆中，水就在反应堆内沸腾直接产生蒸汽，根本没有蒸汽发生器。

Passage 2

1. It will deliver the voltage and frequency needed by different systems in the building the same way that a computer power supply delivers several different configurations of power to a computer motherboard. (Para. 2)

Explanation: 本句是一个复合句。句中，that引导的是定语从句，修饰way。the same way之前省略了介词in。needed by different systems in the building是过去分词短语，作为定语修饰the voltage and frequency。本句的中文意思是：这种变压器将为建筑物中的不同系统输送所需要的电压和频率，就像电脑电源把几种不同配置的电力送到计算机的主板上一样。

2. A typical transformer is an induction device whereby electricity is transferred from one winding to another and increased or decreased based on the relationship of the windings. (Para. 3)

Explanation: 本句是一个复合句。句中whereby是关系副词，引导一个定语从句，修饰an induction device。whereby的意思是by which / by means of which。based on the relationship of the windings是过去分词短语，作状语。本句的中文意思是：常规的变压器是一个感应装置，通过它电力从一个线圈被转换到另一个线圈，并根据线圈之间的关系增加或减少电量。

3. An Intelligent Universal Transformer (IUT) is a solid state device, a power supply that can be used to intelligently provide optimal power to loads. (Para. 3)

Explanation: 本句是一个复合句。句中，a power supply是a solid state device的同位语。that引导的是定语从句，修饰a power supply。本句的中文意思是：万用智能变压器是一个

固态装置，可以智能化地给用电负荷提供最佳电力。

4. Equipment in one building may inject a signal into the power lines which pass through a transformer and could affect equipment in another building. (Para. 5)

Explanation: 本句是一个复合句。which引导的定语从句中有两个并列的谓语pass和could affect。本句的中文意思是：一座楼内的设备会向输电线路射入信号，信号通过变压器可能会影响到另一楼内的设备。

5. The Intelligent Universal Transformer will be able to reliably deliver diverse power such as 400 Hz service, DC service (for hybrid electrical systems) and three phase power from a single phase line. (Para. 12)

Explanation: 本句是一个简单句。such as 的意思是“诸如，像…”，用来引导同位语，它后面所列举的名词通常是对前面名词的进一步说明。因此，本句中such as后面三个并列的名词短语是对diverse power的解释说明。本句的中文意思是：万用智能变压器将能够可靠地输送不同赫兹的电力，如400赫兹电力，输送直流电（为混合电力系统）以及从单相线路输送三相电力等。

Part III Examples with some of the key words and expressions

Passage 1

- reverse** *a.* opposite to the usual or former, esp. in position or direction 相反的，颠倒的
v. change around; turn over (使)反转
e.g. The purpose of this experiment is to test check valve No. 2 for tightness against reverse flow.
试验的目的是检测2号止回阀对于回流的密闭性。
Relaxation activities help to reverse the physical reactions to stress.
放松活动能帮你改变压力所造成的生理反应。
- external** *a.* on, of or for the outside 外面的，外部的
e.g. This medicine is for external use, not to drink.
本药物供外用，勿口服。
Our external trade has expanded greatly during recent years.
近年来，我国的对外贸易有了很大的发展。
- accomplish** *v.* succeed in doing; achieve 完成，实现
e.g. The more we give, the more we accomplish.
多一分付出，就能多一分成就。
The pollutant discharging units should accomplish treatment of the pollution as scheduled.
排污单位应当如期完成对污染的治理。

4. **characteristic** *n.* a special and easily recognized quality of someone or something 特性, 特征, 特色
e.g. He is undertaking Volt-Ampere Characteristic Calculation of Core Type Shunt Reactor now.
他正在从事铁心分流电抗器的伏安特性计算。
He lived in a town that had all the characteristics of a typical seaside resort.
他住在一座具有典型海滨度假地所有特点的小城。
5. **assembly** *n.* an arrangement of machines 装配; 总成
e.g. Ford invented the modern assembly line.
福特发明了现代装配线。
The assembly of the new machine has been done by robots.
这台新机器的装配是由机器人完成的。

Passage 2

1. **act as:** work as 担当; 起…的作用
e.g. His father acts as the general manager in the big company.
他父亲在那家大公司担任总经理。
In other words, the tropics do, indeed, act as cradles of biodiversity.
换句话说, 热带地区确实起着生物多样性源头的的作用。
2. **whereby** *ad.* by which; by means of 借以; 依据
e.g. Whereby does a power plant expect to profit?
电厂靠什么获利?
He devised a plan whereby he might escape.
他想出了一个可以逃脱的计划。
3. **intelligent** *a.* clever, good at learning, understanding and thinking 聪明的; 智能的; 知识的
e.g. Mr. Li is undertaking study on Intelligent Electric Actuator and Realization in Britain now.
李先生正在英国从事智能电力致动机构及其实施的研究。
Helen comes from an intelligent family.
海伦出身于一个知识分子家庭。
4. **universal** *a.* widespread; general 普遍的; 通用的; 万能的
e.g. Newly developed universal nozzle permits almost every washing job with ease.
新开发的万能喷枪几乎能够轻易地完成每一项清洗工作。
The government introduced universal secondary education years ago.
几年前, 政府就开始实施中等普及教育。

5. **provide ... to / for:** supply ... with 为...提供
 e.g. The bank provides assistance on banking matters to / for college students by telephone.
 银行为学生提供银行事务电话咨询支持。
 The electrical equipment manufacturer provides the power plants in this area with varieties of modern equipment.
 这家电子设备厂商为这个地区的电厂提供各种各样的现代化设备。
6. **inventory** *n.* a complete list of items 详细目录; 库存 (清单)
 e.g. An assistant sales manager's job is to manage stock, inventory, promotion, etc.
 销售经理助理的工作是进行入库、盘点、促销等。
 They often make an inventory of all fuel and lubricating oil to ensure their sufficient supply.
 他们经常对各类燃油和润滑油库存量进行查点, 以保证各类油料的充足供应。
7. **conventional** *a.* based on what is usually done 依照惯例的; 传统的; 常见的
 e.g. Conventional wisdom states that humans only use 10% of their brains.
 传统观点认为人类只运用了大脑能力的10%。
 Domestically too we have to open wider, invigorate the economy and not be restricted by conventional thinking.
 对内我们也要更加开放, 搞活经济, 而不要固守一成不变的思维。

Part IV Key to exercises and scripts for listening

Key to Task 5:

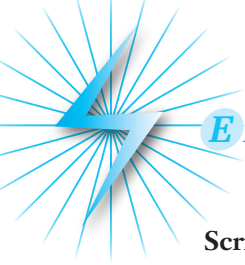
1. B 2. A 3. D 4. A 5. C

Script for Task 5:

Hello, everybody. Welcome to our power plant. I am the Director of the Personnel Department. My name is David Smith. Today I'll show you around to see our power plant. First of all, let me give you a brief introduction to the plant. Ours is a hydro power plant. There are 180 employees in all. Most of them are college graduates. About 20 of them are engaged in production management. We work in 3 shifts, each lasting 8 hours. All the operators here keep a close watch on the distribution board and see to it that everything is running smoothly. Now please come with me to see our turbines downstairs.

Key to Task 6:

1. 18.42
 2. the turbines and generators
 3. Water cooling is used for the generator
 4. What kind of control mode do you use
 5. in this control room



Script for Task 6:

Technician: This is our central control room where 4x300 MW Turbo-generator units are monitored.

Guest: What are the boilers' parameters?

Technician: The outlet steam pressure is 18.42 Mpa, the temperature 540°C, and the maximum continuous evaporation quantity is 1025T / H.

Guest: What are the parameters of the turbine and generator?

Technician: The steam pressure is sub-critical. The maximum power is 324 MW. Water cooling is used for the generator. The outlet voltage is 20 KV, and the maximum power is 339 MW.

Guest: What kind of control mode do you use?

Technician: We use a WDPF Control System by Westinghouse, US, to control the whole unit. The start-up and shut-down are undertaken in this control room. During the normal operation supervision is done through CRT, and the modulation of the unit is all done through the sub-control systems.

Guest: I see. Thank you.

Technician: You are welcome.

Key to Task 7:

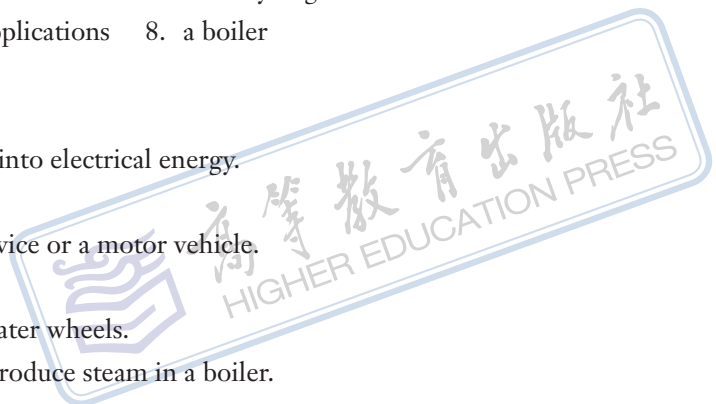
- | | |
|---|------------------------------------|
| 1. the external electrical circuit | 2. an alternator or a dynamo |
| 3. a central electrical distribution grid | 4. Medium-size motors |
| 5. rotor assembly | 6. to boil water to generate steam |

Key to Task 8:

- | | |
|--|---------------------------|
| 1. electrical energy | 2. create water in itself |
| 3. interacting magnetic fields | 4. Electric motors |
| 5. by alternating current | 6. a rotary engine |
| 7. various processes or heating applications | 8. a boiler |

Key to Task 9:

1. It converts mechanical energy into electrical energy.
2. Generators.
3. A battery powered portable device or a motor vehicle.
4. Four ways.
5. Yes. They are windmills and water wheels.
6. By burning the fossil fuels to produce steam in a boiler.



Key to Task 10:

1. 将电能转换为机械能是由电动机完成的。
2. 从机械能产生电能的逆过程则是通过某种交流发电机或直流发电机完成的。
3. 尺寸和规格高度标准化的中型电动机为工业提供方便的机械动力。
4. 涡轮机是旋转式发动机，它从水流中提取能量并将其变成有用功。
5. 在地热蒸汽腐蚀性很强或者含有过多悬浮固体的地方可以使用热能转换器。

Key to Task 11:

- | | |
|-----------------------|-----------------------------|
| 1. power distribution | 2. voltage and frequency |
| 3. solid state device | 4. underground transformers |
| 5. direct current | 6. liquid dielectrics |

Key to Task 12:

1. 固态变压器 / conventional transformer
2. 电力配送 / power supply
3. 高压电 / 120 voltage electricity (power)
4. 改变电频 / change the voltage
5. 三相电 / single phase power
6. 运行成本 / maintenance cost
7. 输电系统 / power supply system

Key to Task 13:

- | | |
|--------------------------------------|-------------------------------|
| 1. our new products | 2. are pleased to give you |
| 3. the price and further information | 4. two models |
| 5. after receipt of order | 6. Irrevocable L / C at sight |

Key to Task 14:

(Open.)

Part V Chinese translation of passages**Passage 1**

电气设备

发电机

发电机是一种将机械能转化为电能的装置。而将电能转化为机械能则是由电动机完成的。发电机迫使线圈中的电子流过外部电路——这有点类似于水泵——只能引起水流动，自身却不

能产生水。

电动机

电动机将电能转化为机械能。大多数电动机是通过磁场和带电导体的相互作用产生动力而运转的，不过也有少部分电动机利用静电力运转。与之相反，从机械能产生电能的逆过程则是通过某种交流发电机或直流发电机完成的。很多类型的电动机可以像发电机一样运行，反之亦然。例如燃气轮机的启动电机或车辆上的牵引电机通常都能完成这两项任务。

电动机有许多不同的用途，它可以用于工业用电风扇、鼓风机和水泵、机床、家用电器、电力工具和磁盘驱动器，等等。这些电动机可以使用直流电（例如使用电池的便携式装置或者电动车辆），或者可以使用来自中央电力输送网的交流电。电动手表中使用的可能是最小的电动机。尺寸和规格高度标准化的中型电动机为工业提供方便的机械动力。特大型的电动机用来驱动大型轮船以及管线压缩机等用途，额定功率高达数百万瓦。电动机可以按照电源、电动机的内部构造、用途或者它们所产生的运动类型进行分类。

涡轮机

涡轮机是旋转式发动机，它从水流中提取能量并将其变成有用功。最简单的涡轮机有一个运动部件，即一个转子总成。转子总成就是一个加装了叶片的大轴或鼓筒。流动的液体作用在叶片上，或者叶片反作用于水流，这样涡轮机就运动，赋予转子旋转动能。风车和水轮就是早期的涡轮机实例。

燃气轮机、蒸汽轮机和水轮机在叶片周围都有一个外罩，这个罩用于储存和控制工作流体。现代的蒸汽轮机常常是在同一个机体内使用反作用力和冲击力，通常从叶片根部到边缘的反作用力与冲击力的程度是变化的。

锅炉

锅炉是一个封闭的容器，将里面的水或者其他流体加热。受热或者汽化的流体从锅炉流出，用于不同的工艺过程或者用于供热。

在燃烧矿物燃料的发电厂，蒸汽发生器指的是燃烧矿物燃料使水沸腾产生蒸汽的锅炉。在称为沸水堆的核反应堆中，水就在反应堆内沸腾直接产生蒸汽，根本没有蒸汽发生器。地热电厂也不需要锅炉，因为它使用天然产生的蒸汽源。在地热蒸汽腐蚀性很强或者含有过多悬浮固体的地方可以使用热能转换器。

Passage 2

固态万用智能变压器

用于配电的固态变压器可能是能源时代最重要的成就之一。

这一设备将被用作建筑物电力供应源。这种变压器将为建筑物中的不同系统输送所需要的电压和频率，就像电脑电源把几种不同配置的电力送到计算机的主板上一样。

常规的变压器是一个感应装置，电能通过它从一个线圈被转换到另一个线圈，并根据线圈之间的关系增加或减少电量。万用智能变压器是一个固态装置，它可以智能化地给用电负荷提供最佳电力。

变压器是电网的基本组成部分。变压器可以将供电线路发送的高电压转换成用户需要的120伏电压。一台变压器通常可以为几个家庭供电。变压器有三种：安装在电杆上的罐式金属变压器、地面的金属箱式变压器和少数地下变压器。

这三种变压器存在的问题：

供电质量：一座楼内的设备会向输电线路射入信号，信号通过变压器可能会影响到另一座楼内的设备。

效率：变压器本身耗电，对电网的整体影响很大。

局限性：变压器不能改变通过变压器的电流频率，因此，不能使用直流电。

不可自动转换：一旦安装了变压器，就需要人工开关或改变线路。

生态：电力变压器含有矿物油，因此，是一种污染源。

固态电力变压器能缓解所有电力质量问题，将所有电力负荷转变成正弦曲线合力因数，因而，提高了整个配电网的效率。

固态万用智能变压器的优点：

能源效率：现有的输电系统可能会得到更好的优化。通过同一电缆可以输送更多电量。

灵活性：万用智能变压器将能够可靠地输送不同赫兹的电力，如400赫兹电力，输送直流电（为混合电力系统）以及从单相线路输送三相电力等。

供电质量：凹陷修形和谐波过滤功能都可以安装在万用智能变压器中。

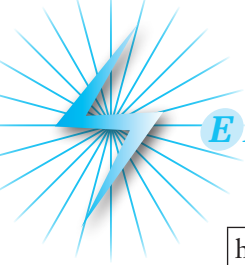
可配置：由于一个变压器可用于很多配置中，可以减少库存和备件，保养成本由此降低。

环保因素：与常规使用的变压器不同，万用智能变压器不含有害的液态绝缘物质。泄漏的风险和清理的成本都可以避免。

Part VI Data Bank

Equipment Used in Control, Relay Protection and Automation Systems

| | |
|--|---------------|
| data acquisition system | 数据采集系统 |
| computer-boiler coordination control system | (计算)机炉协调控制系统 |
| steam turbine digital electro hydraulic control system | 汽轮机数字电力液压控制系统 |
| steam turbine by-pass control system | 汽轮机旁路控制系统 |
| steam-driven pump control system | 汽驱动泵控制系统 |
| automatic sequencing control system | 自动排序控制系统 |
| protecting interlock control system | 保护连锁控制系统 |
| generator protection | 发电机保护 |
| transformer protection | 变压器保护 |
| bus-bar protection | 母线保护 |
| reactor protection | 电抗器保护 |
| capacitor protection | 电容器保护 |



| | |
|---|-----------|
| high-voltage electric motor protection | 高压电动机保护 |
| line protective device | 线路保护装置 |
| automatic dispatching system | 自动化调度系统 |
| automatic system of substation | 变电站自动化系统 |
| automatic system of hydropower station | 水电站自动化系统 |
| fault recorder | 故障记录装置 |
| detection device of small earth current | 小接地电流检测装置 |
| under-frequency load-shedding device | 低频减载装置 |
| excitation device | 励磁装置 |
| direct-current power supply | 直流电源 |
| control signal analog panel | 控制信号模拟屏 |

Unit 5 Operation of Power System

Part I More information about this unit

Very often there is confusion about the various methods used to harness solar energy. Energy from the sun can be categorized in two ways: in the form of heat energy (or thermal energy) and in the form of light energy. Solar thermal technologies use the solar heat energy to heat substances (such as water or air) for applications such as space heating, pool heating and water heating for homes and businesses. There are a variety of products on the market that use solar thermal energy. Often the products used for this application are called solar thermal collectors and can be mounted on the roof of a building or in some other sunny locations. The solar heat can also be used to produce electricity on a large utility-scale by converting the solar energy into mechanical energy.

So, fossil fuels are actually solar energy stored millions and millions of years ago. Indirectly, the sun or other stars are responsible for all our energy. Even nuclear energy comes from a star because the uranium atoms used in nuclear energy were created in the fury of a nova — a star exploding.

Part II Explanation of difficult sentences in reading passages

Passage 1

1. What with booming solar powered products like lighting fixtures and cars coming from

every corner of the world, it's only a question of when this method will overtake the world's conventional techniques. (Para. 2)

Explanation: 本句是一个复合句。句中的 what with 表示“因为；由于；考虑到”，用于列举某种状况或问题的各种原因。句子的前半句是介词短语，作为原因状语修饰全句，后半句是一个复合句。coming from every corner of the world 是分词短语作 lighting fixtures 和 cars 的定语。本句的中文意思是：由于靠太阳能驱动的照明设备和汽车等产品在世界各个角落的大量涌现，太阳能发电超过世界上的传统发电技术只是时间问题。

2. Before going to the nitty-gritty details of how solar power is created and used, here are a few terms that you need to be familiar with so that the discussion later on won't be confusing. (Para. 4)

Explanation: 本句是一个多级复合句。主句是由 here 开头的倒装句，that 引导的定语从句修饰主语 terms, so that 引导的是目的状语从句。在 before 引导的介词短语中，how 引导的从句作介词 of 的宾语。本句的中文意思是：在讨论太阳能是如何转换成电能并得到运用的基本原理之前，这里有几个专业术语需要先熟悉一下，以免下面的讨论使人感到一头雾水。

3. Devices like the solar car or solar powered light bulbs are just a few of the examples invented to accommodate the energy humans can obtain from the sun. (Para. 9)

Explanation: 本句是一个带有定语从句的复合句。句子的主语是 devices, like the solar car or solar powered light bulbs 作 devices 的同位语；invented to accommodate the energy 是过去分词短语，作 examples 的定语，而 humans can obtain from the sun 是定语从句，修饰 energy, 这里省略了关系代词 which。本句的中文意思是：太阳能汽车、太阳能灯泡等只是人类利用太阳能的几个例子。

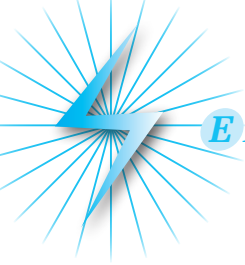
4. Solar power may be recommended for everyone's usage, but not everybody is knowledgeable enough on this wonderful undertaking science has once again opened for us. (Para. 10)

Explanation: 本句是一个并列复合句。solar power may ... usage 和 but not everybody is knowledgeable ... opened for us 是两个并列的句子，但在后一句中有一个省略了 that 的定语从句 science has once again opened for us。本句的中文意思是：太阳能也可以推荐给个人使用，不过对于科学再次展现给我们的这项奇妙的事业不是每个人都有足够的认识。

Passage 2

1. As you can see, it's an easy process, which is a reason why so many people have had no difficulty in building their own wind generators with a basic understanding of how wind turbines work. (Para. 4)

Explanation: 本句是一个多级复合句，其主句是 it's an easy process。在 as 引导的从句中，as 在含义上指代后面全句的内容。which 引导非限制性定语从句，指代整个主句的内容。在 which 引导的从句中，why 引导的从句作 reason 的定语，how wind turbines work 是介词 of 的宾语。本句的中文意思是：正如你看到的，这个过程很简单，这就是为什么有那么多人



在了解风力涡轮机的基本工作原理后，就能够轻松建立自己的风力发电装置。

2. Making some research on the subject might enable you to build your wind turbines at a fraction of the cost and is well worth the effort of looking for information on the subject. (Para. 8)

Explanation: 本句是一个简单句。句子的主语是动名词短语making some research on the subject，后面的might enable to build your wind turbines at a fraction of the cost是一个动宾结构，而is well worth the effort of looking for information是与上面的动宾结构并列的系表结构，两套结构共享一个主语making。本句的中文意思是：做些这方面的研究兴许会让你花少量的钱就能建立自己的风力发电装置，你会觉得花在收集这方面资料上的努力是值得的。

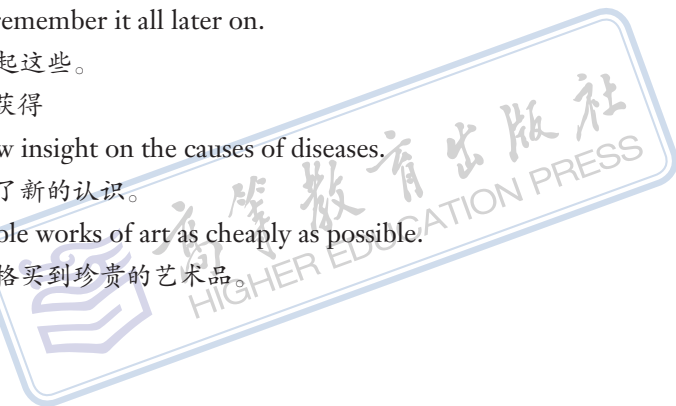
3. And the good news is that many DIY kits are available, explaining to you in detail how to proceed to build your own wind turbine, making the project easier to do than ever. (Para. 9)

Explanation: 本句是一个复合句。that引导的是表语从句，由explaining 和making引导的两个较长的分词短语都修饰kits。本句的中文意思是：幸运的是市场上可以买到所需的自己组装的全套组件，并有详细说明如何去建立自己的风力发电装置，使得如今做这件事比以往任何时候都更容易。

Part III Examples with some of the key words and expressions

Passage 1

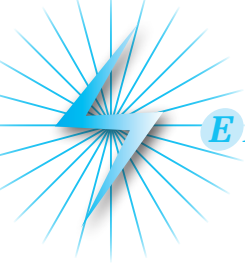
1. **be familiar with:** be well known to someone 对...熟悉
e.g. Are you familiar with this type of machine?
你熟悉这种机器吗?
The author assumes that his readers are familiar with certain basic concepts.
作者设定读者熟悉一些基本的概念。
2. **later on:** in the future or after the time already mentioned 以后，后来
e.g. Later on in the hearings, Darnell told an entirely different story.
后来在听证会上，达内尔讲述了全然不同的情况。
She took notes so she could remember it all later on.
她做了笔记以便过后能回忆起这些。
3. **acquire v.** get something 取得，获得
e.g. Research helps us acquire new insight on the causes of diseases.
研究使我们对疾病的原因有了新的认识。
Peter hoped to acquire valuable works of art as cheaply as possible.
彼得希望能以尽可能低的价格买到珍贵的艺术品。



4. **term** *n.* a word or phrase used for referring to something 术语
 e.g. a technical term 技术术语
 Many legal terms have more than one meaning.
 许多法律术语包含不止一项含义。
5. **allow for**: to consider something when making a plan or calculation 为…留出余地; 把考虑…在内
 e.g. The survey does not allow for the fact that some students are attending part-time.
 调查没有考虑到有一些非全日制学生的情况。
 Allowing for inflation, the cost of the project will be \$2 million.
 把通货膨胀的因素考虑在内, 这个项目的花费是200万美元。
6. **exposure** *n.* the state of being put into a situation in which something harmful or dangerous might affect you 暴露
 e.g. radiation exposure 暴露在辐射下
 Here is the information on how prolonged exposure to the sun affects your skin.
 这些告诉你长时间晒太阳会对皮肤有何影响。
7. **crucial** *a.* something extremely important 关键的, 至关重要的
 e.g. The money is crucial for the research.
 这笔钱对于这项研究至关重要。
 The success of this negotiation is crucial to the future of their company.
 这次谈判成功与否对于他们公司的前途至关重要。

Passage 2

1. **go** *v.* happen in a particular way 进行
 e.g. I feel very encouraged by the way things are going.
 事情的进展对我是个极大的鼓舞。
 Many industries have been forced to cut jobs and it looks like the electronics industry is going the same way.
 许多行业被迫裁员, 看上去电子工业也在走同样的路。
2. **have difficulty in doing sth.:** unable to do something easily 做…有困难
 e.g. They had great difficulty in finding a replacement.
 他们在寻找替代物时遇到了很大的困难。
 Six months after the accident, he still has difficulty walking.
 事故发生6个月后, 他仍然行走不便。
3. **check** *v.* to examine something in order to find out whether it is how it should be 检查; 核对
 e.g. Let me just check whether the potatoes are cooked.
 让我来看看土豆煮上了没有。



They paused to check how the other climbers were getting on.
他们停下来查看其他登山者是否跟上来了。

4. **fit** *v.* to be the same as what someone asks for 符合要求

e.g. None of the candidates fits our criteria.

这些候选人没有一个符合我们的标准。

Scientists often select facts to fit their theories.

科学家常常要选取一些数据来验证他们的理论。

5. **a fraction of:** a small part or amount of something 小部分; 少量

e.g. Employees' salaries are just a fraction of the total cost of the project.

员工的工资只占项目总成本很小的一部分。

6. **be well worth:** there is a good enough reason for doing something 值得...

e.g. The Museum of Fine Arts is well worth a visit.

美术博物馆很值得参观。

It's a long way, and probably not worth the effort.

路太远了, 也许不值得花那样的工夫。

7. **review** *n.* an article in which someone gives their opinion of a play, book, art exhibition, etc.
评论 (文章)

e.g. The paper published a review of her book.

报纸发表了一篇对她这本书的评论文章。

The band's new album also has had very good reviews in America.

乐队的新专辑在美国同样好评如潮。

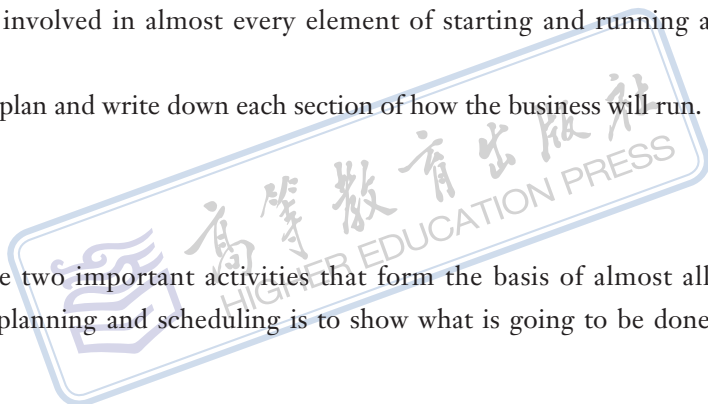
Part IV Key to exercises and scripts for listening

Key to Task 5:

1. They are the basis of almost all business operations.
2. To show what is going to be done at all times.
3. They are closely related and involved in almost every element of starting and running a business.
4. When you make up a business plan and write down each section of how the business will run.
5. A complete work schedule.

Script for Task 5:

Planning and scheduling are two important activities that form the basis of almost all business operations. The aim of planning and scheduling is to show what is going to be done



at all times. They are closely related and both involved in almost every element of starting and running a business. For example, when you make up a business plan and write down each section of how the business will run, you are taking part in the planning process.

You should also write a complete schedule to go along with that plan. Then, you'll know what to do on each day as you work toward the opening day of the business.

Key to Task 6:

- | | | |
|---------------------|-------------------|-----------------|
| 1. about 6 months | 2. specifications | 3. for shipping |
| 4. at the same time | 5. deliver | |

Script for Task 6:

Mr. Zhang: Hi, good morning.

Mr. Smith: Good morning.

Mr. Zhang: Shall we get started now?

Mr. Smith: Yeah. Let's start.

Mr. Zhang: I know, as usual, a project like ours takes about 6 months.

Mr. Smith: Absolutely right.

Mr. Zhang: I wonder if there are any exceptions.

Mr. Smith: Well, as a matter of fact, one project varies from another due to their specifications.

Mr. Zhang: As for your part, how long do you need to get it done?

Mr. Smith: As the supplier we usually need 3 months to have our equipment assembled for shipping.

Mr. Zhang: Will the factory test be done during this period?

Mr. Smith: Yes, it is within these 3 months.

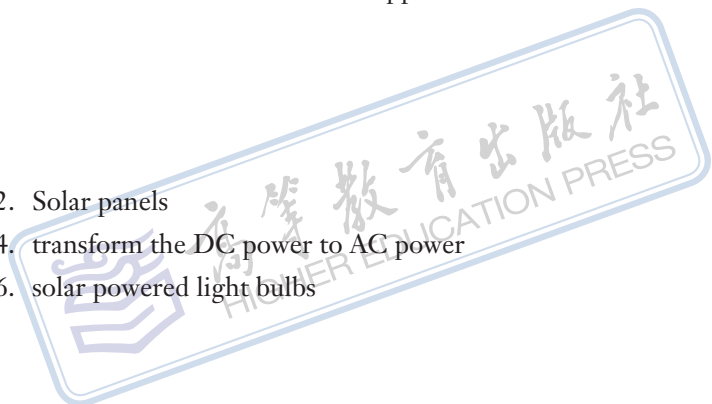
Mr. Zhang: Good. Will you supply all the equipment for both Unit 1 and Unit 2 at the same time?

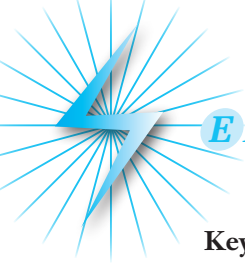
Mr. Smith: Oh, no. We'll deliver Unit 1 first. Unit 2 will be shipped 3 months later. Is that OK?

Mr. Zhang: Yes, that's OK.

Key to Task 7:

- | | |
|----------------------------|---------------------------------------|
| 1. conventional techniques | 2. Solar panels |
| 3. actual usable energy | 4. transform the DC power to AC power |
| 5. solar electrical power | 6. solar powered light bulbs |





Key to Task 8:

1. solar electricity
2. a few terms
3. The AC power
4. exposure to the sun
5. solar panels

Key to Task 9:

1. Solar and photovoltaic cells.
2. It is converted by an inverter.
3. Solar panels should be greatly exposed to the sun.
4. Solar cars and solar powered light bulbs.
5. It's a small cost to a bigger reward. (It's rewarding.)

Key to Task 10:

1. 如今太阳能的利用正日益广泛。
2. 安装在太阳能板上的光伏电池，其用途是获得阳光并将其转换成实际可用的能源。
3. 利用太阳能发电的优势要取决于几个因素。
4. 外部因素，诸如云彩和阴影会影响太阳能电量的生产。
5. 太阳能的利用虽容易，但需要设备资金的投入，例如对于太阳能板的投入。

Key to Task 11:

1. alternative sources
2. different locations
3. strength of the wind
4. how wind turbines work
5. some reviews

Key to Task 12:

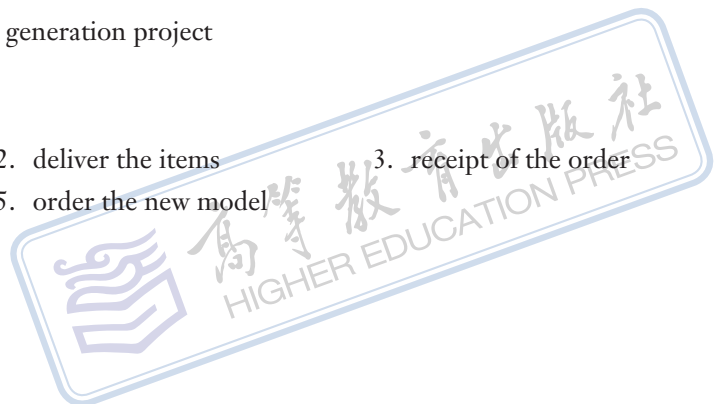
1. 过程简单 / easy servicing
2. 基本理解 / basic operating system
3. 替代能源 / traditional (conventional) sources of energy
4. 风力涡轮机 / gas turbine
5. 风力发电项目 / nuclear power generation project

Key to Task 13:

1. order 20 valves
2. deliver the items
3. receipt of the order
4. make this model
5. order the new model

Key to Task 14:

(Open.)



Part V Chinese translation of passages

Passage 1

太阳能发电的工作原理

如今，太阳能的利用正日益广泛。

由于靠太阳能驱动的照明设备和汽车等产品在世界各个角落的大量涌现，太阳能发电超过世界上的传统发电技术只是个时间问题。

那么太阳能是怎样发电的呢？

在讨论太阳能是如何转换成电能并得到运用的基本原理之前，这里有几个专业术语需要先熟悉一下，以免下面的讨论使人感到一头雾水。

太阳能是指从太阳光获得的能量，用于家用电器和公司设备等。安装在太阳能板上的光伏电池，也被称为太阳能电池，其用途是获得阳光并将其转换成实际可用的能源。

现在你对太阳能发电的两个重要术语已经有所了解，下面我们就来讨论太阳能是如何发电的。

太阳能是通过安装在建筑物、住房及其他设施顶部的太阳能板获得的。这些太阳能板上装有光伏电池，可以将阳光变成直流电，然后由逆变器将直流电转换成各种设备及家用电器可以工作的交流电。由于太阳能可以不断地生成，我们就可以把交流电储存起来。这就会使你电费账单上该交的钱少了，而口袋里的钱多了。

利用太阳能发电的优势要取决于几个因素。太阳能来自日光。只要太阳发光，即使是下雪，照样能产生太阳能。正如我们前面讨论过的，太阳能板必须大面积地接受阳光，这是至关重要的。太阳能板面受到太阳光照射的面积越大，产生的电能就越多。外部因素，诸如云彩和阴影会影响太阳能电量的生产。需要再次强调的是，太阳能板接受太阳照射对生产这种电能起着非常重要的作用。

太阳能发电装置与用太阳能驱动的设备密不可分。这些设备需要太阳能发电装置里的太阳能光伏电池。太阳能汽车、太阳能灯泡等只是人类利用太阳能的几个例子。

像其他能源一样，太阳能只应该用于改善人们的生活和维护环境的稳定。随着大量环境灾难的发生，太阳能的确为面临日益严重的金融危机的世界带来一线光明。太阳能也可以推荐给个人使用，不过对于科学再次展现给我们的这项奇妙的事业不是每个人都有足够的认识。

太阳能的利用虽容易，但需要设备资金的投入，例如购置太阳能板等。但从长远来看，这是一项投入虽小收益却更大的事业。

Passage 2

风力涡轮机的工作原理——过程很简单

随着电费的增加及对环境的关注，许多人开始寻找替代能源。其中，最受欢迎而且简单易行的就是安装风力发电机。

那么，风力涡轮机是如何工作的？

这个过程其实相当简单。它的工作原理很像过去的粮食风磨。当然，这些年有许多新技术

运用到了其中。风力涡轮机的工作原理是这样的：

- * 风吹动桨叶，
- * 桨叶的转动带动旋转轴，
- * 所产生的能量传到发电机上使其发电，
- * 而后直流电储存在电池里，
- * 电缆将直流电传送给直流 / 交流逆变器，使其变成你可以使用的交流电器设备用电。

正如你看到的，这个过程很简单，这就是为什么有那么多的人在了解风力涡轮机的基本工作原理后，就能够轻松建立自己的风力发电装置。

然而，在开始你的风力发电项目前，下面几点信息可能对你有帮助。

首先，要记得在确定风力涡轮机的安装地点时应查看不同的地点。确定风力和风向能让你找到最佳及高效的位置。

其次，还要在不同的高处查看风力和风向，因为地势高的地方通常风力更大。调整支撑风轮机杆子的尺寸使其满足你的要求，这件事也不难。

记住，根据居住区域的不同，政府会向建造替代能源的居民提供拨款或某种税收优惠政策。做些这方面的研究或许会让你花少量的钱就能建立自己的风力发电装置，你会觉得花在收集这方面资料上的努力是值得的。

最后，你要明白，只要对风轮机的工作原理有了基本了解就可以动手干起来了。幸运的是市场上可以买到所需的自己组装的全套组件，详细说明了如何建立自己的风力发电装置，使得如今做这件事比以往任何时候都更容易。

还需要提醒你一句：并非所有说明都写得那么清楚。为了节省时间和金钱，你最好查看一些由专业人士和用户写的评论。今天就动手吧，你会发现收到账单时脸上露出得意的笑容。

Part VI Data Bank

Equipment Used in Nuclear Power Generation

| | |
|---------------------------|--------|
| nuclear island | 核岛 |
| conventional island | 常规岛 |
| reactor building | 反应堆厂房 |
| reactor containment | 反应堆安全壳 |
| pressurized water reactor | 压水反应堆 |
| primary cooling system | 一次冷却系统 |
| nuclear power plant | 核电站 |
| reactor coolant | 反应堆冷却剂 |
| reactor core | 反应堆堆芯 |
| steam generator | 蒸汽发生器 |
| secondary water | 二回路水 |

| | |
|--------------------------|--------|
| moderator | 慢化剂 |
| heavy water | 重水 |
| light water | 轻水 |
| horizontal pressure tube | 水平压力管式 |
| heat transport pump | 热传输泵 |

Unit 6 Company Culture of Power Business

Part I More information about this unit

General Electric Company (GE), incorporated in 1892, is a diversified technology, media and financial services company. The Company's products and services include aircraft engines, power generation, water processing, security technology, medical imaging, business and consumer financing, media content and industrial products. The Company serves customers in more than 100 countries. The Company operates through five segments: Energy Infrastructure, Technology Infrastructure, NBC Universal (NBCU), Capital Finance, and Consumer & Industrial Products. In March 2010, the Company sold its GE Security business to United Technologies.

Part II Explanation of difficult sentences in reading passages

Passage 1

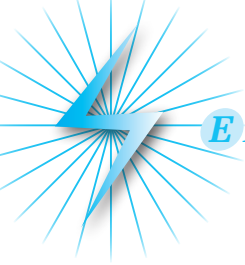
1. GE attracts leaders with an extraordinary combination of attributes: vision, passion and deep sensitivity to the big issues that challenge the world around them. (Para. 3)

Explanations: 本句是一个复合句。that challenge the world around them是定语从句，修饰issues。由with引导的介词宾语短语作leaders的定语，vision, passion and deep sensitivity to the big issues是attributes的同位语。本句的中文意思是：通用电气吸引着具有非凡综合素质的领导者来这里工作，他们具有远见卓识和热情，对挑战他们周围世界的那些重大问题很敏感。

2. It has a high-performance culture that emphasizes high-integrity business practices as well as work / life balance. (Para. 4)

Explanations: 本句是一个复合句。that引导的定语从句修饰culture。high-integrity business practices 和work / life balance都是从句中emphasize的宾语。本句的中文意思是：这家企业的文化是注重优良表现的文化，它既强调诚实做事，同时又重视劳逸结合。

3. It allows GE to connect with people and make a positive difference in the communities where GE does business and also those beyond our direct reach. (Para. 7)



Explanations: 本句是一个复合句。where引导的定语从句修饰communities。beyond our direct reach是介词短语，作为定语修饰those，指代communities。本句的中文意思是：它使得GE联系民众，为那些与GE有业务关系或尚未建立业务关系的社区做出积极的贡献。

4. Serving equally as tough critics and wise counselors, they provide in-depth oversight of the major strategic issues of the company. (Para. 9)

Explanations: 本句是一个简单句。句中的serving equally as tough critics and wise counselors是分词短语作状语，其逻辑主语是句子的主语they，而本句中的they指代的是上一句的主语GE's Board of Directors。本句的中文意思是：董事会成员既是严厉的批评者，又是聪明的顾问，他们对公司主要的战略问题可以进行深层次的监督。

5. GE's approach to corporate citizenship and to business are driven by a common understanding of the role GE can play in helping to solve the world's toughest problems. (Para. 10)

Explanations: 本句是一个复合句。GE can play in helping to solve the world's toughest problems是省略了that的定语从句，修饰role。helping to solve ...动名词短语作介词in的宾语。本句的中文意思是：通用电气公司对待公司和生意的态度都基于一个共同的理解，即：在协助解决世界最为艰难的问题方面可以发挥作用。

6. GE's corporate citizenship strategy is defined by three key pillars of energy and climate change, sustainable health care and community building, and underpinned by a foundation of operational excellence in the way that GE does business. (Para. 10)

Explanations: 本句是一个复合句。主句采用了被动语态，有两个并列谓语，一个是is defined by ...，另一个是(is) underpinned by ...。第二个谓语又包含一个由that引导的定语从句，修饰way。本句的中文意思是：通用公司的主人翁战略涵盖三个支柱观念：能源与气候变化、可持续的医疗保健和社区建设，并且通过把公司做大做强来支撑这一战略。

Passage 2

1. What we are looking for are leaders at every level who can energize, excite and inspire rather than enervate, depress, and control. (Para. 2)

Explanations: 本句是一个复合句。它包含两个从句：what we are looking for是主语从句，who can energize, excite and inspire rather than enervate, depress, and control是修饰leaders的定语从句。本句的中文意思是：我们要寻找的各个层面上的领导者应该有干劲，有激情，充满活力，而不是让员工感觉懈怠、压抑和受控制。

2. We are constantly amazed by how much people will do when they are not told what to do by management. (Para. 3)

Explanations: 本句是一个复合句。how引导的从句作介词by的宾语，里面又包含一个由when引导的时间状语从句。本句的中文意思是：我们常常会惊异地发现，虽然没有人监管如何做事，但员工们却能完成那么多事情。

3. The desire and the ability of an organization to continuously learn from any source, anywhere — and to rapidly convert this learning into action — is its ultimate competitive advantage. (Para. 8)

Explanations: 本句是一个主-系-表结构的简单句。主语是the desire and the ability of an organization, 而to continuously learn from any source, anywhere和to rapidly convert this learning into action是并列的动词不定式, 作desire和ability的定语; its ultimate competitive advantage是表语。本句的中文意思是: 如果一个机构有愿望并有能力从任何资源、任何地方不断地学习新东西, 并迅速地把学到的东西变为行动, 才是它最大的竞争优势。

Part III Examples with some of the key words and expressions

Passage 1

- take on:** start a fight with; begin to have a quality or appearance 与...较量; 呈现

e.g. This evening Manchester United will take on Barcelona.
今晚曼彻斯特联队将与巴塞罗那队较量一番。

His face took on a fierce expression.
他的脸上露出狂怒的表情。
- shape** *v.* influence and fix the form of; make to give a particular form to 影响; 塑造

e.g. Teenagers' tastes and preferences are shaped by what they see in the media.
青少年的口味和偏爱受他们在媒体中看到的東西所影响。

Research findings are often used to shape Government policy.
政府常根据研究结果制定决策。
- make a difference:** have influence on 产生影响; 使不同

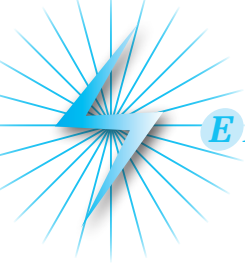
e.g. This scheme will certainly make a difference to the way I do my job.
这项计划无疑将会对我的工作方式产生影响。

One more person wouldn't make any difference to the arrangements.
多一个人也不能改变这个安排。
- donate** *v.* make a gift of something, esp. for a good purpose 捐; 赠

e.g. Last year he donated \$1 000 to cancer research.
去年他为癌症研究捐了1 000美元。

Would you be willing to donate some of your time to local charities?
你愿意花一些时间为当地的慈善机构义务服务吗?
- beyond sb.'s reach:** get outside the range or limits of one's touch or ability 在某人能力所及的范围之外

e.g. Achievements like these are beyond the reach of ordinary players.
这样的成就是普通球员所无法达到的。



It was clear to him that the knife would fall completely beyond his reach.

他明白，那把刀会落到他完全够不着的地方。

6. **take sth. for granted:** accept a fact or a situation without questioning its rightness 视某事为理所当然

e.g. Losing my job taught me never to take anything for granted.

失业使我认识到决不能认为什么事都是理所当然的。

You can't take it for granted that they'll behave themselves.

你不能理所当然地认为他们会检点自己的行为。

7. **approach** *n.* attitude; a method of doing something 态度；方法

e.g. He has a relaxed approach to life.

他以一种轻松的态度面对生活。

We need a fresh approach to sports in education.

我们需要以一种全新的态度来看待运动教育。

Passage 2

1. **amaze** *v.* fill with a feeling of great surprise (使) 惊异

e.g. You'll be amazed by how much progress we've made.

你会对我们所取得的巨大进展感到惊讶。

Dave amazed his friends by leaving a well-paid job to travel around the world.

大卫放弃待遇优厚的工作去周游世界，这让他的朋友们惊讶不已。

2. **keep an eye out (for sth.):** watch carefully 留意；留神

e.g. Though he works hard with all the kids, he keeps an eye out for the special ones.

尽管他对所有的孩子都很关注，但仍然留意那几个特殊的孩子。

He will keep an eye out, but he can not promise anything.

他会留意，但不能做任何承诺。

3. **focus on:** direct one's attention to 聚焦；集中（注意力）

e.g. We'll focus on three main topics.

我们将集中讨论三个主题。

He needs to focus more on his career.

他需要把更多的注意力放在事业上。

4. **competitive** *a.* based on competition 竞争的；有竞争力的

e.g. Many firms are struggling to survive a highly competitive marketplace.

许多公司都为了在竞争激烈的市场中生存而努力奋斗。

We offer a wide range of goods at very competitive prices.

我们提供多种产品，产品价格很有竞争力。

5. **be open to sth.:** willing to consider or receive 愿意考虑(接受) …

e.g. I have some ideas about where to go, but I'm open to suggestions.

对于去哪儿我有几个想法，但我乐意接受各种建议。

The owner of the building wants to sell and is open to offers.

楼主要卖房，并且欢迎买主报价。

6. **regardless of:** without worrying about or taking account 不顾；不管

e.g. We'll continue the race, regardless of the weather.

不管天气如何，我们将继续比赛。

The building work will proceed regardless of whether there is an agreement.

不管是否有协议，建筑工程将继续进行下去。

Part IV Key to exercises and scripts for listening

Key to Task 5:

- | | | |
|--------------------|-----------------|----------------------------|
| 1. boxes and trash | 2. at the start | 3. turning on the machines |
| 4. first-aid kit | 5. smoke | |

Script for Task 5:

Here are the safety regulations of the Northeast Electric Power Company.

- Emergency Exits:** Keep all exits clear. Keep doors unlocked. Do not place boxes or trash in front of the doors.
- Protective Gear:** All workers must wear earplugs and safety glasses on the manufacturing floor. Your supervisors will hand out the protective gears at the start of each shift. Workers must put on the protective gears before turning on the machines.
- Medical and First Aid:** There is a complete emergency first-aid kit for every 25 workers next to the main stairway on all floors.
- Fire Protection:** There are fire extinguishers and alarm pulls at every exit and in the lunchroom. There is absolutely NO SMOKING on the manufacturing floors.

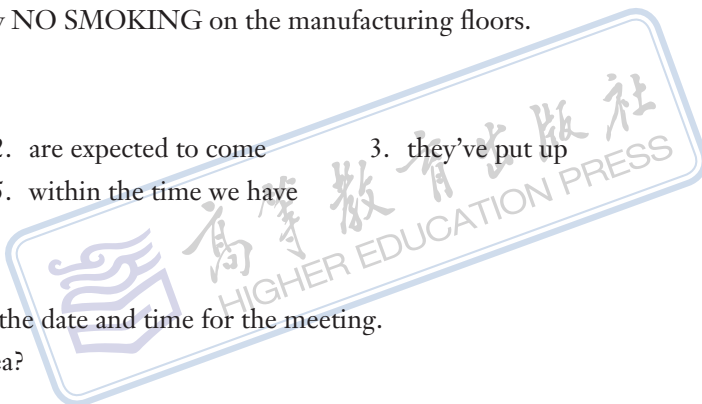
Key to Task 6:

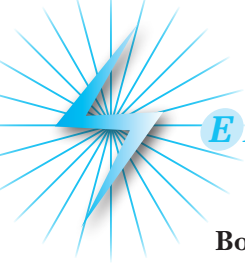
- | | | |
|--------------------|----------------------------|-------------------|
| 1. What's the time | 2. are expected to come | 3. they've put up |
| 4. a brief account | 5. within the time we have | |

Script for Task 6:

Bob Green: Well, we need to fix the date and time for the meeting.

Ming Hao: OK. What's your idea?





Bob Green: Is Tuesday morning OK for you?

Ming Hao: Yes, it is. What's the time?

Bob Green: What about 10 a.m.?

Ming Hao: Fine. Who else do we have?

Bob Green: Well, it's a meeting for brainstorming. So all the engineers concerned are expected to come.

Ming Hao: OK. How many items have we got for the agenda?

Bob Green: I think there are three. Firstly, I'll answer the questions they've put up.

Ming Hao: How many?

Bob Green: About five. Then I'll invite the project manager to give a brief account of the project.

Ming Hao: What will be the last item?

Bob Green: Of course, the brainstorming.

Ming Hao: Well, what if more questions are raised then?

Bob Green: We'll have to see how many of them can be included within the time we have.

Ming Hao: OK. I hope everything will go well.

Key to Task 7:

1. toughest challenges
2. GE's energizing workplace
3. change things for the better
4. a good global citizen
5. strategic issues

Key to Task 8:

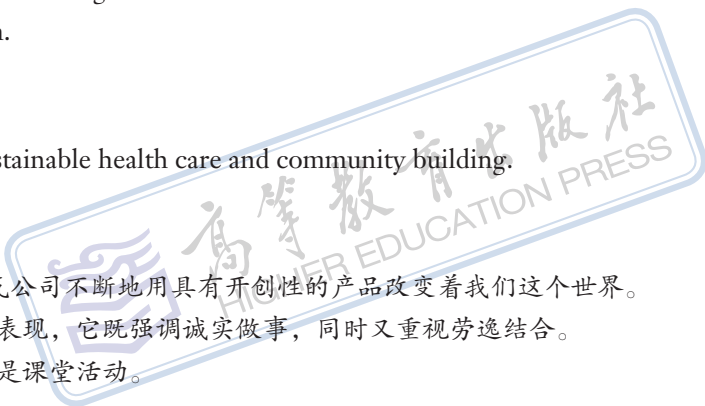
1. many business units around the world
2. it does good
3. develop skills
4. strong leadership
5. they are playing

Key to Task 9:

1. Yes. They are light bulbs, electrical cleaners and jet engines.
2. They consider their culture to be among our innovations.
3. A remarkable thing will happen.
4. Millions of hours.
5. Philanthropy.
6. Energy and climate change, sustainable health care and community building.

Key to Task 10:

1. 在过去的130多年里，通用电气公司不断地用具有开创性的产品改变着我们这个世界。
2. 通用电气公司的文化注重优良表现，它既强调诚实做事，同时又重视劳逸结合。
3. 在通用电气公司，学习不仅仅是课堂活动。



4. 学习使我们走到一起去迎接变革, 提高技能, 把事情做得更好, 并且让自己对待所有学习都充满激情活力。
5. 通用电气公司董事会要确保公司用最高水准的职业操守和忠诚来维护股东的利益。

Key to Task 11:

- | | | |
|-----------------------|----------------------------|---------------------------|
| 1. can be done better | 2. make their own decision | 3. in business |
| 4. softer values | 5. open to good ideas | 6. competitive advantages |

Key to Task 12:

1. 知识经济 / market economy
2. 竞争优势 / competitive spirit
3. 详细说明 / a step-by-step process
4. 自信的员工队伍 / creative workforce
5. 学习型文化 / learning experience
6. 软价值 / market value

Key to Task 13:

- | | | |
|-----------------------|---------------------------|------------------------|
| 1. to complain about | 2. for your reference | 3. as soon as possible |
| 4. this was caused by | 5. inconvenience (caused) | |

Key to Task 14:

(Open.)

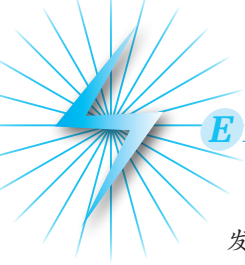
Part V Chinese translation of passages**Passage 1****通用电气公司的企业文化**

通用电气公司是一家全球性的基础设施、金融和传媒公司。它勇于面对世界上最艰难的挑战, 所生产的产品范围广泛, 从电灯泡到燃料电池技术, 从电动吸尘器到高效的飞机发动机。在过去的130年里, 通用电气公司不断地用具有开创性的产品改变着这个世界。

通用电气公司将企业文化融于创新之中。几十年来, 公司领导把公司的文化发展成今天的通用公司企业文化——不断提出创新理念并付诸于人们的生活之中。如今, 这种企业文化已成为通用电气公司遍布全球各个企业的凝聚力量。

员工

通用公司吸引具有非凡综合素质的领导者来这里工作。他们具有远见卓识和热情, 对挑战他们周围世界的那些重大问题很敏锐。当把这些想要影响世界的员工聚集在一起时, 奇迹就会



发生：他们在影响世界。

工作环境

通用电气公司是一个让人感到精神振奋的工作地。公司的文化注重优良表现，它既强调诚实做事，同时又重视劳逸结合。这就是世界各地有才能的人会源源不断地被吸引到通用电气的具有活力的工作场所来工作的原因。

志愿服务

通用相信，做善事有助于公司的成功。这种信念指导着他们的组织实践——从通用电气基金会的博爱慈善活动，到员工参与的几百万小时的世界各地的社区志愿者活动。

学习

在通用电气公司，学习不仅仅是课堂活动。学习使员工们走到一起去迎接变革，提高技能，把事情做得更好，并且让自己对待所有学习都充满激情活力。

通用电气基金会

慈善事业是公司实现做地球好公民目标的重要部分。它使公司联系民众，为那些与我们有业务关系或尚未建立业务关系的社区做出积极的贡献。

领导能力

通用电气始终认为构建强大的领导能力是一项迫切的战略任务。当日子过得顺畅时，人们对领导能力并不在意。但当世界面临动荡时，人们就希望有伟人出现。

董事会

通用电气公司董事会要确保公司用最高水准的职业操守和忠诚来维护股东的利益。董事会成员既是严厉的批评者，又是聪明的顾问，他们在公司主要的战略问题上可以进行深层次的监督。

公民身份

通用电气公司对待公司和生意的态度都基于一个共同的理解，即：通用电气公司在协助解决世界最为艰难的问题方面可以发挥作用。通用电气的主人翁战略涵盖三个重要的支柱观念：能源与气候变化、可持续的医疗保健和社区建设，而且是通过把公司做大做强来支撑这一战略。

Passage 2

杰克·韦尔奇的才能

杰克·韦尔奇，当今世界最著名的商界领袖和首席执行官之一，是通用电气公司的前任执行总裁。以下是他的一些管理经验和教训。

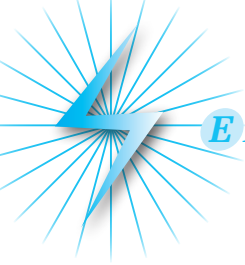
| | |
|-------|--|
| 1. 领导 | 领导者是具有远见卓识、会激励员工的人，他们很清楚怎样才能把工作做得更好。“我们要寻找的各个层面上的领导者应该有干劲，有激情，充满活力，而不是让员工感觉懈怠、压抑和受控制。” |
|-------|--|

| | |
|--------------|--|
| 2. 少点监管 | 我们常常会惊异地发现，虽然没有人监管如何做事，但员工们却完成那么多事情。在这个知识经济的新时代，人们应该自己去做决定。少一点管理就是更好的管理。严密的监督、控制和官僚主义会扼杀公司的竞争精神。 |
| 3. 明确地说出你的想法 | 最好的领导不应该给员工提供详细的操作手册，而应该能提供新点子，并明确表达可以激励下属去做的见解。 |
| 4. 视变革为机会 | 变革是企业现实的重要部分。“愿意变革是一大长处，即使这意味着公司部分业务会暂时陷入混乱。随时留意变革既令人兴奋，又使人兴趣盎然。” |
| 5. 随时随地找好点子 | 好点子是企业的生命。“今天一个可行有效的假设是：在某处某人会有个好点子，并且一个可行的冲动就是去找到这个人，了解这个点子，并把它变成现实——还要快。” |
| 6. 把价值观放在首位 | 不要紧盯着数字。“数字不是境界；数字只是产品。”要更加突出软价值观念，如团队的建设、分享理念、激励他人。 |
| 7. 建立学习型的文化 | 把公司建成一个学习型的机构，鼓励员工自由沟通和交流想法。“如果一个机构有愿望并有能力从任何资源、任何地方不断地学习新东西，并迅速地把学到的东西变为行动，才是它最大的竞争优势。” |
| 8. 培养自信 | 建立一支真正有自信的员工队伍。自信是任何学习型机构至关重要的要素。成功的秘诀是快速、朴实和自信。自信的人欢迎好点子，不管它们出自何处，都愿意分享。 |
| 9. 像小公司那样运作 | 小公司有巨大的竞争优势。它们靠好点子发展壮大——不管那些点子来自何处。它们需要每位员工，使人人都参与，并依照贡献大小奖励或裁撤员工。小公司有大梦想，它们目标远大——增值并不使它们感兴趣。 |

Part VI Data Bank

Equipment Used in Wind and Solar Power Generation

| | |
|-----------------------------------|--------|
| wind energy source | 风能资源 |
| wind-driven electricity generator | 风力发电机组 |
| control equipment | 控制装置 |
| storage facilities | 蓄能装置 |
| emergency power supply | 备用电源 |
| transmission unit | 输电装置 |
| central control system | 集中监控系统 |
| tower base | 塔底座 |



| | |
|--|----------------|
| gearing chain (main shaft, gear case) | 传动链 (主轴、齿轮箱) |
| yaw head | 偏航传感器 |
| shaft coupling | 轴联轴器 |
| nacelle | 机舱 |
| vertical axis wind turbine | 垂直轴风力机 |
| hub | 轮毂 |
| blade | 叶片 |
| crystal silicon solar cell | 晶体硅太阳能电池 |
| thin film solar cell | 薄膜太阳能电池 |
| polymer solar cell | 聚合物太阳能电池 |

Unit 7 Power Cooperation and Technician Training

Part I More information about this unit

Chinese electric power market is the fastest growing market in the world and the government is dedicated to increasing the use of electricity in the country. China is in the process of allowing independent power producers (IPP) to enter the electric power market. Over the last few years, more than 20 joint ventures have been formed with international partners.

With changes in the way Chinese power projects are financed, including build-own-transfer (自建输电) projects, it is possible that the Chinese electric power industry will provide more opportunities for foreign companies to enter the Chinese market.

Part II Explanation of difficult sentences in reading passages

Passage 1

1. In the meanwhile, SGCC fully utilizes global resources to train its personnel and implements international benchmarking to improve management. (Para. 1)

Explanation: 本句是一个简单句。它包含两个谓语动词utilizes和implements，还有两个动词不定式作目的状语修饰谓语，分别是to train its personnel和to improve management。in the meanwhile在此作时间状语，意为“同时”。本句的中文意思为是：同时，中国国家电网公司还充分利用全球资源培训人员，并采用国际基准来提高其管理水平。

2. On March 21st, 2006, SGCC and Russian Joint Stock Company-Unified Energy System of Russia (RAO UESR) jointly signed the Agreement on Making Feasibility Researches of Russia-to-China Electricity Supply between SGCC and Russian Electric Power System Co.

Ltd. (Para. 5)

Explanation: 本句是一个简单句。句子的主语是SGCC and Russian Joint Stock Company- Unified Energy System of Russia (RAO UESR), 而谓语为signed。请注意在翻译合同名称时, 虽然英语里没有书名号, 但在翻译成汉语时需加在合同名称上加上书名号。本句的中文意思是: 2006年3月21日, 中国国家电网公司与俄罗斯统一电力系统股份公司(RAO UESR) 签署了《中国国家电网公司与俄罗斯统一电力系统股份公司关于全面开展从俄罗斯向中国供电项目的可行性研究的协议》。

3. More than 300 representatives from 19 countries and regions attended the meeting and reached an agreement, which built a bridge for international cooperation on development of UHV technology. (Para. 6)

Explanation: 本句是一个带有定语从句的复合句。其中, 主句的谓语动词由attended和reached组成, from 19 countries and regions是主语的定语。which引导定语从句修饰先行词agreement。本句的中文意思是: 来自19个国家和地区的300多名代表出席会议并达成了共识, 为国际公司在超高压输电技术领域架起了一座合作的桥梁。

4. SGCC maintains a good relationship with world renowned corporations in more than 10 countries and regions, and has an extensive cooperation in the areas of enterprise development, power grids construction, power industry reform, technology exchange and environment conservation etc. (Para. 7)

Explanation: 本句是一个带有两个并列谓语的简单句。谓语动词分别是maintains和has, 它们共同修饰主语SGCC。with world renowned corporations in more than 10 countries and regions是介词短语, 修饰relationship。本句的中文意思是: 中国国家电网公司与十几个国家和地区的世界知名公司保持着良好的关系, 并与它们在企业的发展、电网建设、电力工业改革、技术交流和环保等领域有着广阔的合作。

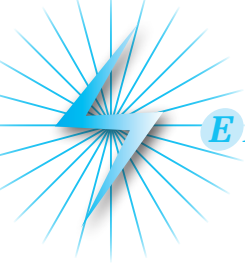
Passage 2

1. In addition, an electrician's job is very risky and there is no room for mistakes, thus requiring a professional training and qualification. (Para. 1)

Explanation: 本句是一个由and引导的并列句。thus引导一个分词短语, 作结果状语。本句的中文意思是: 不仅如此, 电气技师职业的高风险性不容许其出任何差错, 因此, 需要经过专业培训并取得相应的资格。

2. Apart from this, when you are a qualified electrical technician, you stand a better chance when it comes to promotion and job security. (Para. 1)

Explanation: 本句是一个复合句。其中, when you are a qualified electrical technician和when it comes to promotion and job security都是状语从句, 第一个when可译为“如果”, 第二个when意为“当…时候”。apart from this作整个句子的状语, 起承上启下的作用。本句的中文意思是: 除此之外, 如果你是一位合格的电气技师, 当晋升和工作机会来临之



时，你将比别人更具优势。

3. The technical school you opt for should have standard courseware and qualified faculty drawn from the industry with vast experience in the field. (Para. 4)

Explanation: 本句是一个复合句。you opt for是省略that的定语从句，修饰school，而drawn from和with短语则作为后置定语修饰faculty。本句的中文意思是：你所选择的学校需拥有标准的课件，以及来自本行业且具有大量电力领域经验的合格的师资队伍。

4. The course should cover topics like residential and commercial wiring, motor control, fiber optics, boiler installation, etc. so that after completing your electrical training you don't face any problem in acquiring a license to work as a general, commercial or industrial electrician. (Para. 5)

Explanation: 本句是一个结构复杂的复合句。介词短语like residential and commercial wiring, motor control, fiber optics, boiler installation, etc.作topics的定语，so that引导的是目的状语从句，after completing your electrical training是时间状语，动词不定式to work as a general, commercial or industrial electrician作acquiring a license的目的状语。本句的中文意思是：所开设的课程应该涵盖民用和商用布线、电机控制、光纤学、锅炉安装等领域，这样，在你完成电力人员培训去申请一般用电、商业用电或工业用电的从业资格证书时，不会遇到任何问题。

Part III Examples with some of the key words and expressions

Passage 1

1. **collaborate** *v.* work together or with someone else, esp. for a special purpose; cooperate 合作
e.g. I hope to collaborate with you to finish this project.
我希望和你们合作完成这项工程。
The two businesses will collaborate closely, particularly on new projects, such as creating color displays.
这两家公司将亲密合作，尤其是在制造彩色显示器的新项目上。
2. **utilize** *v.* make use of 利用
e.g. To avoid an oil shortage, more machines must utilize solar energy.
为避免油料的短缺，更多的机器应该利用太阳能。
I would like to utilize my knowledge in an intentional trade environment.
我希望能够在国际贸易的环境下运用我的知识。
3. **implement** *v.* carry out or put into practice 实施
e.g. We need to implement environment risk management to promote environmental awareness.
我们需要实施环境风险管理来提升环保意识。

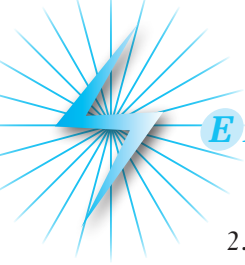
Do not undertake a project unless you can implement it.

不要承担这个项目，除非你有能力完成。

4. **breakthrough** *n.* an important advance or discovery, often after earlier failures 突破
 e.g. The year is ending with no negotiation breakthrough between the two parties in sight.
 年底将近，尚未看到双方谈判取得任何突破。
 The smooth space flight, experts say, marks a big breakthrough for Chinese scientists.
 专家们说，这次顺利的太空飞行标志着中国科学家的巨大突破。
5. **milestone** *n.* an important event which changes the course of someone's life or of history 里程碑
 e.g. His decision to accept the company's job offer was an important milestone in his career.
 他决定接受这家公司的录用，这成为他职业生涯里的一个重要里程碑。
 I will be 40 this year and really want to celebrate this milestone in my life.
 我今年就将年满40，真的非常想好好庆祝一下我人生中的这个里程碑。
6. **renowned** *a.* famous; well-known 著名的；有声望的
 e.g. Tsinghua University is a higher institution which enjoys a long history and world-renowned reputation.
 清华大学是一所历史悠久、享誉中外的高等学府。
 Her principal interest in life was to be a world-renowned pianist.
 她这一生主要的兴趣是想成为一名举世闻名的钢琴家。
7. **make best use of:** take full advance of 充分利用
 e.g. To value life is to value time and to make best use of time.
 珍惜生命，就是要珍惜时间并将其利用到极致。
 A good manager learns to make best use of whatever material he has.
 一个好的管理者知道最大限度地利用他所拥有的任何材料。
8. **reach an agreement:** get to the state of having the same opinion 达成协议
 e.g. The two parties reach an agreement over the terms and conditions of the contract.
 双方对此合同的条款达成一致意见。
 We could by no means reach an agreement on that point.
 我们在那个问题上绝不可能达成一致。

Passage 2

1. **promising** *a.* showing signs of likely future success 有希望的，有前途的
 e.g. The newspaper described her as a promising young singer.
 报纸上将她说成是大有前途的青年歌手。
 I know him to have been a promising student of intelligence and ability.
 我确信在智慧和能力方面他是一个很有前途的学生。



2. **stand a better chance:** there is a likelihood 很有可能
e.g. You'll stand a better chance of getting a job with a degree.
有了学位你才会有更好的机会找到工作。
You'll stand a better chance of getting a job if you have friends in the company who can recommend you.
假如公司中有你朋友帮忙推荐, 那么你被录用的概率会更大。
3. **reputed** *a.* generally considered to be good 名誉好的
e.g. He is said to be the reputed doctor in the city.
据说他是这个城市里久负盛名的名医。
He graduated from a reputed institute, and found a satisfactory position in the big company.
他毕业于一所有名的大学, 并在一家大公司找到了一个满意的职位。
4. **undertake** *v.* take up or accept 承担; 保证
e.g. We could undertake the work for the time being.
我们可以暂时承当这项工作。
He undertook to finish the job by Friday, but he failed.
他保证要在周五前完成这项工作, 但是他未能做到。
5. **opt for:** make a choice 选择
e.g. Would you opt for further study abroad or a well-paid job?
你是选择留学深造还是找份高工资的工作?
The only thing you should opt for is to decide what kind of life you would like to have.
你唯一需要选择的事就是决定要过什么样的生活。
6. **draw ... from:** take or pull out ... from 从...选拔 / 提取
e.g. Is that a fair inference to draw from his statement?
从他的说法中推出这样的结论公平吗?
All necessary expenses are drawn from the public welfare funds.
所有必要的费用都从公益金中支出。

Part IV Key to exercises and scripts for listening

Key to Task 5:

1. Its name is Eastern Power.
2. It was founded in 1984.
3. It is dealing in electric engineering construction.
4. It has 13 000 employees.
5. 500 people.



6. Its business principle is to provide customers with high quality services.

Script for Task 5:

Our company, Eastern Power, was founded in 1984 and it is an electric engineering construction company. It has 13 000 employees. More than 100 of them have experience on international and domestic project management and market operation. About 450 people are specializing in engineering design and 500 people in scientific research. The company also owns an extensive range of over 7 000 sets of large construction equipment.

We have a good reputation and successful record of international and domestic projects in the fields of electric power generation, power transportation, and large-scale civil engineering and construction.

We will stick to the principle of providing customers with high quality services.

Key to Task 6:

1. power construction
2. 180 power plants
3. Asia and Africa
4. manufacturers and companies
5. international market

Script for Task 6:

Bohai Boiler Ltd. is one of the leading boiler manufacturers in China, with a staff of 8 000 engineers and workers. The company has been providing a wide range of boilers for power construction, which have been installed in more than 180 power plants in nearly every Chinese province. Some of them have been exported to 23 countries in Asia and Africa.

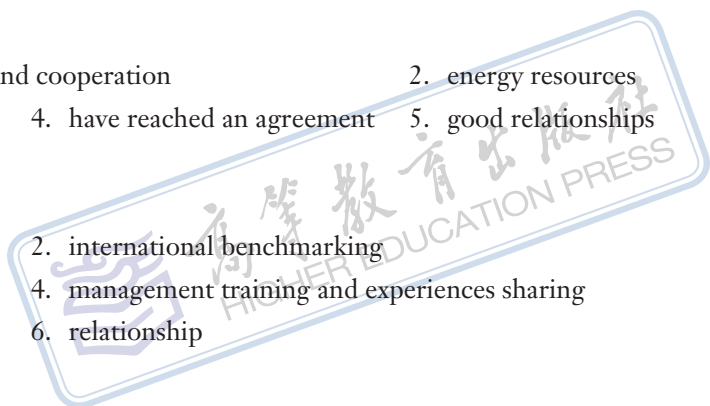
With increasing technical exchange and cooperation in production with well-established foreign manufacturers and companies, Bohai Boiler Ltd. will continuously provide top-class products and services to meet the demand for power plant boilers in the domestic and international market, just as it has been doing in the past.

Key to Task 7:

1. international communication and cooperation
2. energy resources
3. the urban power grid
4. have reached an agreement
5. good relationships

Key to Task 8:

1. cooperation
2. international benchmarking
3. senior managers
4. management training and experiences sharing
5. electric power supply
6. relationship



Key to Task 9:

1. Its purpose is to jointly develop energy resources.
2. It is the development of the renewable energy.
3. Siemens Co. Ltd, Germany.
4. In urban power grid planning and IT technology application.
5. More than 10 countries and regions.

Key to Task 10:

1. 中国国家电网公司 (SGCC) 根据其国际发展战略, 与周边国家开展合作, 共同发展能源资源。
2. 中国国家电网公司制定了雄心勃勃的计划, 要选派六批高级管理人员赴国际顶级公司进行管理培训和经验交流。
3. 在城市电网规划和信息技术应用领域进行国际咨询。
4. 这是中俄电力合作进程中的一个里程碑, 标志着两国在电力供应合作方面取得了重大进展。
5. 中国国家电网公司与十几个国家和地区的世界知名公司保持着良好的关系。

Key to Task 11:

1. skills and precision
2. electrical technician training
3. theory and practical aspect
4. electrical gadgets and devices
5. household electrical problems
6. boiler installation

Key to Task 12:

1. 专业电气工程师 / professional electric technician
2. 光明的未来 / promising career
3. 动力元件及装置 / electrical gadgets and devices
4. 进行复杂的实验 / make complex calculation
5. 家用电器 / industrial electrical equipment
6. 标准课程 / standard courseware
7. 合格的电气技师 / qualified faculty
8. 设备安装 / boiler installation

Key to Task 13:

1. concluded an agreement today on collaboration in R&D activities
2. nurturing of researchers and engineers
3. To smoothly carry out such collaborative activities
4. technical information exchange meetings
5. in a number of fields

6. take further advantage of collaboration

Key to Task 14:

1. 此工程须在与BBF公司签订的《电力采购合同》的范围内运作。
2. 《发电服务协议》将于2017年10月1日生效。
3. 根据本协议条款, BBF公司需向FHO公司出售并输送电力。
4. 本协议只能以双方书面形成的修改协议进行修改。
5. BBF公司保留所有本协议条款未明确限定的电力资产的所有权。

Part V Chinese translation of passages**Passage 1****国际交流与合作**

中国国家电网公司(SGCC)根据其国际发展战略,与周边国家开展合作,共同发展能源资源。同时,中国国家电网公司还充分利用全球资源培训人员,并采用国际基准来提高其管理水平。

中国国家电网公司已经与俄罗斯、哈萨克斯坦和蒙古国的发电企业签订了若干合作协议。俄罗斯至中国黑龙江省输变电工程的合同已在顺利运作。中俄直流联网背靠背联网工程也已开始。可再生能源(生物质能源)的开发利用是中国国家电网公司的国际合作新领域。此外,中国国家电网公司还取得了清洁能源发展机制(CDM)项目国际合作的突破性进展。

中国国家电网公司现在充分利用全球资源来培育人才。它通过世界著名报刊面向全球范围发布广告招聘高级经理,与世界顶级公司的重要合作正得到加强。中国国家电网公司制定了雄心勃勃的计划,要选派六批高级管理人员赴国际顶级公司进行管理培训和经验交流。2006年,第一批高级管理人员到德国西门子公司进行了考察学习。

此外,中国国家电网公司已经采用了国际基准以提高其管理水平,并在城市电网规划和信息技术应用领域进行国际咨询。

2006年3月21日,中国国家电网公司与俄罗斯统一电力系统股份公司签署了《中国国家电网公司与俄罗斯统一电力系统股份公司关于全面开展从俄罗斯向中国供电项目的可行性研究的协议》。这是中俄电力合作进程中的一个里程碑,标志着两国在电力供应合作方面取得了重大进展。随后,《中国国家电网公司与俄罗斯统一电力系统股份公司关于实施从俄罗斯向中国供电项目基本原则的协议》得以签署。

2006年11月28日,超高压输电技术国际会议在北京召开。来自19个国家和地区的300多名代表出席了会议并达成共识,为超高压输电技术领域的国际合作架起了一座桥梁。

中国国家电网公司与十几个国家和地区的世界知名公司保持着良好的关系,并与它们在企业发展、电网建设、电力工业改革、技术交流和环保等领域有着广阔的合作。

Passage 2

电气技师培训——职业电气技师大好职业生涯的保证

成为一名职业电气技师需要掌握许多技能和精细的手艺。不仅如此，电气技师职业的高风险性不容许其出任何差错，因此，成为一名电气技师需要经过专业培训并取得相应的资格。一旦具备了职业资格，你马上就会胜过竞争对手。当你携带着一流学校的毕业证书去参加工作面试时，很有可能获得比其他竞聘者更好的职位及薪酬。除此之外，如果你是一位合格的电气技师，当晋升和工作机会来临之时，你将比别人更具优势。如果你正计划从事职业电气技师工作，就应该参加由信誉良好的学校开办的电气技师培训。

一所好的电气技师培训学校能为你提供机会，使你学习到该课程的理论和实践。

你将学会如何修理、安装及维护各种各样的电气器件和装置。电气技师这一职业需要做大量的辛勤工作并加班加点，所以，需要你体格健壮；要看懂说明书并能进行复杂的运算，你还需要学好数学、物理和英语。你可以选学基础课程或者高级课程。高级课程可以帮你在大公司找到一份工作，而基础课程用来处理家庭用电问题则会绰绰有余。

你一定要确保你参加的培训是由一所信誉良好的主要电气技术学校开办的。你所选择的学校需拥有标准的课件，以及来自本行业且具有大量电力领域经验的合格的师资队伍。

开设的课程应该涵盖民用和商用布线、电机控制、光纤学、锅炉安装等领域，这样，在完成电力人员培训去申请一般用电、商业用电或工业用电的从业资格证书时，就不会遇到任何问题。

Part VI Data Bank

Equipment Used in the Process of Power Transmission & Transformation

| | |
|------------------------------|----------|
| transformer | 变压器 |
| power transmission line | 输电线路 |
| power distribution line | 配电线路 |
| overhead transmission line | 架空输电线路 |
| wire and conductor | 导线和导体 |
| ground wire | 地线 |
| insulator | 绝缘子 |
| pole and tower | 杆和塔 |
| guy | 拉线 |
| cross-arm | 横担 |
| hardware and earthing device | 五金具和接地装置 |
| switchgear equipment | 开关设备 |
| current transformer | 电流互感器 |
| potential transformer | 电压互感器 |

| | |
|--|-------------|
| reactive power compensation device | 无功功率补偿装置 |
| high-voltage and low-voltage distribution cabinet | 高低压配电柜 |
| circuit breaker | 断路器 |
| high-voltage shunt reactor | 高压并联电抗器 |
| gas-insulated totally enclosed composite apparatus | 气体绝缘全封闭组合电器 |

Unit 8 Power Market

Part I More information about this unit

In economic terms, electricity (both power and energy) is a commodity capable of being bought, sold and traded. An electricity market is a system for effecting purchases, through bids to buy; sales, through offers to sell; and short-term trades, generally in the form of financial or obligation swaps. Bids and offers use supply and demand principles to set the price. Long-term trades are contracts similar to power purchase agreements and generally considered private bilateral transactions between counterparties.

Wholesale transactions (bids and offers) in electricity are typically cleared and settled by the market operator or a special-purpose independent entity charged exclusively with that function. Market operators do not clear trades but often require knowledge of the trade in order to maintain generation and load balance. The commodities within an electric market generally consist of two types: Power and Energy. Power is the metered net electrical transfer rate at any given moment and is measured in Megawatts (MW). Energy is electricity that flows through a metered point for a given period and is measured in Megawatt Hours (MWh).

Markets for power related commodities are net generation output for a number of intervals usually in increments of 5, 15 and 60 minutes. Markets for energy related commodities required by, managed by (and paid for by) market operators to ensure reliability, are considered Ancillary Services and include such names as spinning reserve, non-spinning reserve, operating reserves, responsive reserve, regulation up or regulation down, and installed capacity.

In addition, for most major operators, there are markets for transmission congestion and electricity derivatives, such as electricity futures and options, which are actively traded. These markets developed as a result of the restructuring of electric power systems around the world. This process has often gone on in parallel with the restructuring of natural gas markets.

Part II Explanation of difficult sentences in reading passages

Passage 1

1. "Volume risk" is often used to denote the phenomenon whereby electricity market participants have uncertain volumes or quantities of consumption or production. (Para. 2)

Explanation: 本句是一个复合句，其难点在于副词whereby (by means of which) 的用法，其中文意思为：靠其，借以；以…为手段。在本句中，whereby引导一个定语从句，修饰phenomenon。本句的中文意思是：电量风险常被用来表示一种现象，即电力市场参与各方无法确定电力消费量或电力生产量。

2. Electricity retailers, who in aggregate buy from the wholesale market, and generators who in aggregate sell to the wholesale market, are exposed to these price and volume effects and to protect themselves from volatility, they will enter into "hedge contracts" with each other. (Para. 3)

Explanation: 本句是一个并列复合句。第一个句子的主语为electricity retailers和generators，每个主语后都有一个由who引导的定语从句；are exposed是第一句的谓语。to protect themselves from volatility是第二个并列句的目的状语，主语they指代的是前一句的主语electricity retailers和generators。本句的中文意思是：电力零售商和生产商都会受到价格和容量的影响，前者从电力批发市场批量购买电力，而后者将电力批量出售给批发市场。为了保护他们不受这些变化的影响，他们互相签署了套购保值合同。

3. However, the two simplest and most common forms are simple fixed price forward contracts for physical delivery and contracts for differences where the parties agree a strike price for defined time periods. (Para. 3)

Explanation: 本句是一个复合句。句中，contracts for difference带有一个由where引导的定语从句，where在此意为：在此合约里。此外，还要注意forward contract和contracts for differences是两种合约形式，分别是远期合约和差价合约。本句的中文意思是：然而，两种最简单和最常见合同形式是简单的实物运输固定电价期货合同，以及双方同意在固定时期内达成一种执行价的差价合同。

Passage 2

1. Each region consists of several service centres providing local customer support, including hub service centres capable of coordinating regional and national service levels when necessary. (Para. 3)

Explanation: 本句是一个复合句。主语中的providing作为后置定语修饰several service centres，而including则是介词短语作定语，也修饰several service centres。capable of这个形容词短语作hub service centres的定语，when necessary (when it is necessary) 是省略了it is的时间状语从句，修饰coordinating regional and national service levels。本句的中文意思是：每一地区都由数个服务中心组成，向当地客户提供支持，包括枢纽服务中心，必要时它能协同区域与国家的服务水平。

2. The company's first acquisition was Pennsylvania-based Electro-Mec, an electric motor repair and resale company with a reputation dating back 81 years. (Para. 5)

Explanation: 本句是一个简单句，其中an electric motor repair and resale company作Electro-Mec的同位语，with a reputation dating back 81 years则是company的后置定语。本句的中文意思是：公司收购的第一个企业是总部位于宾夕法尼亚州的电力机械公司，这是一家从事电机维修和再出售的公司，有着81年的良好声誉。

3. Another important element of IPS's acquisition strategy was finding companies focused on continuous process industries that value reliability and uptime (e.g. power plants, oil refineries, steel mills, paper mills, aggregate and cement plants, and mining companies) while expanding its capabilities in power generation, which now covers hydroelectric, fossil, nuclear, and wind power. (Para. 7)

Explanation: 本句是一个带有多级从句的复合句。focused on是分词短语，作为后置定语修饰companies；that value reliability and uptime是定语从句，修饰industries，而while引导的省略了it is的时间状语修饰前面的主句；which now covers hydroelectric, fossil, nuclear, and wind power是非限制性定语从句，修饰power generation。虽然英文句子把时间状语放在句子的最后，但在翻译成汉语时，应将其放在句首。本句的中文意思是：IPS收购策略的另一个重要原则就是要寻找那些具有可靠性和稳定性，并具有可持续发展的加工业，如电厂、炼油厂、轧钢厂、造纸厂、水泥厂和矿业公司，同时向发电领域开拓业务，现在已经涵盖水力发电、火力发电、核能发电和风力发电。

4. The Trico TCWind acquisition placed IPS in the forefront of the wind power repair and service business, with local service center coverage to 78% of the installed wind turbine market place, while also increasing IPS's presence in the renewable energy market. (Para. 7)

Explanation: 本句是一个复合句。主句的主语是the Trico TCWind acquisition, placed是谓语，其意思是“将…置于…地位”；IPS是宾语，in the forefront of the wind power repair and service business作IPS的宾语补足语。而local service centre coverage to 78% of the installed wind turbine market place作为状语修饰全句，while引导的时间状语中省略了it (The Trico TCWind acquisition) is, while在这里的含义为“同时”。本句的中文意思是：对Trico TCWind公司的收购将IPS推向了风力发电维修和服务的前沿，设在当地的服务中心覆盖已安装风力发电的市场份额的78%，同时，此次收购也提高了IPS在可再生能源市场的地位。

Part III Examples with some of the key words and expressions

Passage 1

1. **financial** *a.* involving financial matters 金融的；财务的
e.g. Most scholarship aid goes to students in financial need who do well in their first year.
大部分奖学金资助是给需要经济资助并在第一年表现优秀的学生。



The computer department demands more financial support from the college.
计算机系要求学院给予更多的财政支持。

2. **priority** *n.* status established in order of importance or urgency; preceding in time 优先; 优先权
e.g. At a time of this economic crisis, our priority should be very clear about what we need to do.
在发生这种经济危机的时候, 我们的首要任务应当是弄清我们要做什么。
But for most students, getting a job will be the top priority this year.
但对于大多数学生来说, 找到一份工作将是今年的第一要务。
3. **participant** *n.* someone who takes part in an activity 参与者
e.g. Every participant completed a detailed questionnaire about key events in their life.
每一位受测者都填了一份有关自己生命中重要事件的详细问卷。
China is an active participant in nuclear non-proliferation efforts around the world.
中国是在全球推行核不扩散的积极参与者之一。
4. **consumption** *n.* the utilization of economic goods to satisfy needs or in manufacturing 消费; 消耗
e.g. The trouble is that sweet consumption may be hard to monitor.
麻烦的是糖果消费可能很难监控。
There is a gradual increase in car consumption each year in China.
中国的汽车消费正在逐年增加。
5. **predict** *v.* make a prediction about; tell in advance 预报; 预言, 预知
e.g. Scientists still cannot predict exactly where such a quake will occur or when.
科学家仍不能精确地预测像这样的地震何时何地会发生。
Forecasts predict the storm will march up Mexico's Pacific coast.
气象预报预测, 该风暴将挺进墨西哥太平洋海岸。
6. **impact** *n.* a forceful consequence; a strong effect 影响; 效果
e.g. Some people these days suggest we all drive less to reduce the impact of climate change.
如今, 一些人建议, 我们都应减少开车, 以减轻气候变化的影响。
Swiss study showed drinking coffee before exercise may have a negative impact on the heart.
瑞士一项研究指出, 运动前饮用咖啡可能会对心脏造成不良影响。
7. **expose** *v.* to show, make visible or apparent; disclose to view as by removing a cover 揭露, 揭发; 使曝光
e.g. To prevent fire or shock hazard, do not expose the unit to rain or moisture.
为避免引发火灾或雷击, 请勿使本机淋雨或受潮。

I will expose all his lawless actions.

我将揭发他全部的不法行为。

8. **refund** *v.* pay back 退还, 偿还

e.g. After a few days' delay the shop refunded my money at last.

经过几天的拖延, 这家商店最终还是将钱退给了我。

If you bring them back with your receipt within seven days, you'll get fully refunded.

如果您在七日之内携带收据退货, 就可获得全额退款。

9. **in (the) aggregate**: in all; in total; as a group 作为一个总体

e.g. In aggregate, I am happy with my life at this moment.

总的来说, 我眼下的生活是幸福的。

In the aggregate, women outlive men by 7 or more years.

妇女的寿命整体来说比男人长7年多。

Passage 2

1. **vision** *n.* the ability to see; the visual faculty; a vivid mental image 眼光, 远见

e.g. The educational plan will fail because it has no vision.

这项教育计划因缺少远见即将失败。

He is a man of vision.

他是一位具备远见卓识的人。

2. **reputation** *n.* the general estimation that the public has for a person 名声, 名誉, 声望

e.g. The organization has a good reputation and the office displays a healthy company culture.

该组织具有良好的声誉, 其办公室展示了健康的公司文化。

The institute enjoys a reputation of offering high quality technical training.

这所学院因其提供高质量的技术培训而享有盛誉。

3. **capability** *n.* the quality of being capable — physically or intellectually or legally 能力; 容量

e.g. I think I have the capability of organizing a party.

我想我有能力组织一次社交聚会。

The submarine could allow the country to develop a nuclear strike capability from the sea.

核潜艇将使得这个国家可以发展海上核打击能力。

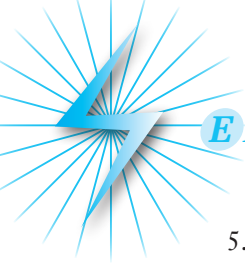
4. **comprise** *v.* include or contain; have as a component 包含; 由...组成

e.g. Women comprise 51% of the population of France.

女性占法国人口的51%。

The United States comprises 50 states.

美国由50个州组成。



5. **expand** *v.* become larger in size or volume or quantity; grow stronger 扩张; 发展
e.g. I hope to expand our exchanges and cooperation.
我希望扩大我们彼此的交流与合作。
Partners will work together to expand education programs lasting from five weeks to six months.
合作者将共同工作来推动为期五周至六个月的教育项目。
6. **perspective** *n.* a way of regarding situations or topics 观点, 视角
e.g. From a global perspective, the case for a trade tax to reduce emissions is weak.
以全球视野来看, 用交易税来降低碳排放量收效甚微。
So from the global perspective, it is very important.
所以, 从全局来看, 这是很重要的。
7. **strategy** *n.* an elaborate and systematic plan of action 策略
e.g. That sounds like a really clever marketing strategy.
这听起来真是个聪明的销售策略。
I think we should compile a full strategy guide before we do anything else.
我认为, 我们在做其他任何事情之前都应该先编制一本完整的策略指南。
8. **strengthen** *v.* make strong or stronger 加强
e.g. We all agreed on a treaty to strengthen the cooperation between our two parties.
我们都同意签署这样一份合约来加强我们双方的合作。
We are making every effort to strengthen the cooperation between our two companies.
我们正在努力加强我们两家公司间的合作。
9. **make economic sense**: have a economic meaning 有经济意义
e.g. Unlike their predecessors, these new wearable computers also make economic sense.
与传统电脑不同, 这些新型的可穿戴式电脑也有经济意义。

Part IV Key to exercises and scripts for listening

Key to Task 5:

1. It is made on an opening ceremony.
2. It is hydro electric power project.
3. The relevant Chinese companies.
4. The project will be a success.
5. It can promote their social and economic development and improve the livelihood of the local communities.



Script for Task 5:

Ladies and Gentlemen,

It's my great honor and pleasure to attend the opening ceremony of the hydro electric power project. I wish to take this opportunity to express my warmest congratulations on this grand occasion. I would also like to express my appreciation of the contributions the relevant Chinese companies make in the project. I believe this project will be a great success through their hard work and with their professionalism.

This hydro electric power project is the biggest contracted project by Chinese companies in this country. Its successful completion and operation will be another major milestone in the mutually-beneficial cooperation between the two countries. There is no doubt that this project will be a big step forward towards the goal of promoting the social and economic development in this country and improving the livelihood of the local communities.

Thank you!

Key to Task 6:

- | | | |
|--------------------|------------------------------|-------|
| 1. On my return | 2. the growth | 3. 25 |
| 4. excellent shape | 5. heartiest congratulations | |

Script for Task 6:

Ladies and gentlemen:

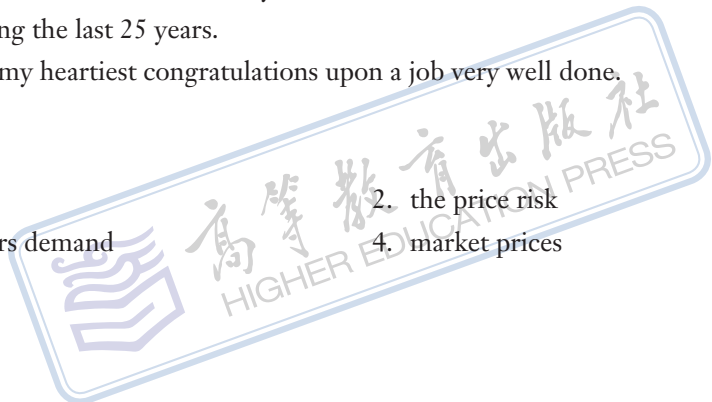
As you may know, the Hong Kong Institution of Engineers and its Electrical Engineering Division in particular were part of my professional life for a number of years. On my return to the institution today, I feel somewhat emotional as I am reminded of the days when I made my contributions to the birth and the growth of the Electrical Engineering Division of the Institution.

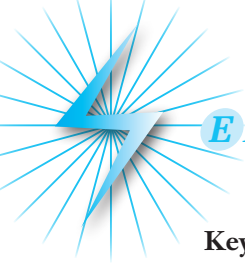
I am very glad to see that at the age of 25, the Electrical Engineering Division is now in excellent shape thanks to the devotion and efforts made by members of the successive committees and members of the Division during the last 25 years.

Mr. Chairman, please accept my heartiest congratulations upon a job very well done.

Key to Task 7:

- | | |
|--|-------------------|
| 1. financial risk management | 2. the price risk |
| 3. how much electricity consumers demand | 4. market prices |
| 5. refund the difference | |





Key to Task 8:

1. a high priority
2. price “steps”
3. financial risks
4. plant outage
5. regional market
6. hedge contracts

Key to Task 9:

1. Extremely high price volatility happens at times of peak demand and supply shortages.
2. It depends on the physical fundamentals of the market.
3. It is often used to denote the phenomenon that electricity market participants have uncertain volumes or quantities of consumption or production.
4. They sign hedge contracts with each other.
5. It is sometimes referred to as the “spot” price.

Key to Task 10:

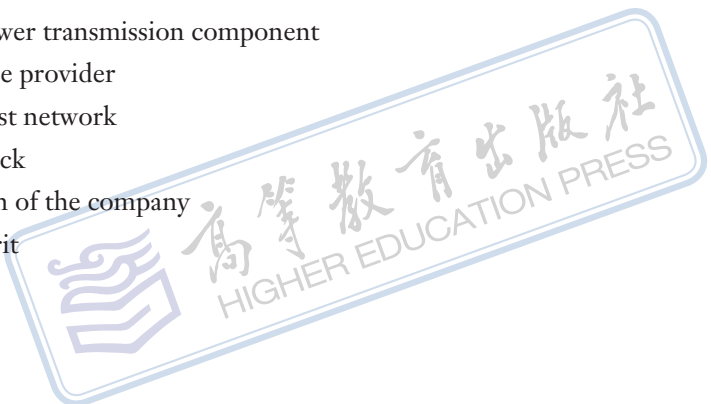
1. 电力批发市场的复杂性可能会导致电力价格在用电需求高峰期和供电不足时飙升，且变化不定。
2. 当潜在燃料或者电厂状况发生长时间变化时，价格风险可以表现为“高峰价格”和“阶梯价格”。
3. 电力零售商准确预测未来某一小时内电力需求量，仅限于数天之内。
4. 由于传统和市场结构不同，这些合同的结构也因地区市场而异。
5. 两种最简单和最常见的合同形式是简单的实物运输固定价期货合同和双方就规定时间协议达成的执行价的差价合同。

Key to Task 11:

1. electric motors
2. electrical and mechanical services
3. service perspective
4. make economic sense
5. service business

Key to Task 12:

1. 电力传输元件 / mechanical power transmission component
2. 零售服务供应商 / power service provider
3. 挨家挨户地通知 / coast-to-coast network
4. 新的反馈渠道 / new service track
5. 国家的宏伟远景 / a great vision of the company
6. 商业理念 / entrepreneurial spirit
7. 全球视角 / service perspective



Key to Task 13:

- | | |
|--|---|
| 1. the General Procurement Notice | 2. has secured a loan |
| 3. invites sealed bids from eligible bidders | 4. be conducted |
| 5. obtain further information | 6. A complete set of Bidding Documents in English |

Key to Task 14:

- | | | | | |
|------|------|------|------|------|
| 1. b | 2. d | 3. c | 4. a | 5. e |
|------|------|------|------|------|

Part V Chinese translation of passages**Passage 1****电力市场的风险管理**

金融风险管理往往是放开的电力市场各方最优先考虑的事项，原因在于电力市场的价格和用电量有巨大的变化风险。电力批发市场的复杂性可能会导致电力价格在用电需求高峰期和供电不足时飙升，且变化不定。这种价格风险的具体特征就是过于依赖市场的物质基础，如各种不同类型的电厂组合及用电量需求与天气状态之间的关系。当潜在燃料或者电厂状况发生长时间变化时，价格风险可以表现为“高峰价格”和“阶梯价格”。

电量风险常被用来表示一种现象，即电力市场参与各方无法确定电力消费量或电力生产量。例如，电力零售商准确预测未来某一小时内电力需求量仅限于数天之内，而电力生产商也无法预计电厂中断供电或燃料短缺的准确时间。还有一种综合因素是极端价格和电量不足，两者通常紧密相关。例如，峰值价格常常发生在电厂生产运行中断或电量需求处于顶峰时。引入大量的间歇性能源如风能可能会对市场价格产生影响。

电力零售商和生产商都会受到价格和电量的影响，前者从电力批发市场批量购买电力，而后者将电力批量出售给批发市场。为了保护自己不受这些不定变化的影响，他们互相签署套购保值合同。由于传统和市场结构不同，这些合同的结构也因地区市场而异。然而，两种最简单和最常见的合同形式是简单的实物运输固定价期货合同和双方就规定时间协议达成的执行价的差价合同。在差价合同下，如果实际批发价格指数在任何时段都高于执行价（参照合同），那么生产商将会退还该期限内执行价与实际价之间的价格差额。同样，如果实际价格低于执行价，则零售商也会退还生产商价格差额。有些市场也将实际价格指数称作“现货”价格。

许多其他的套购保值合约安排，如摆动期权合约、模拟投标、买方期权合约、卖方期权合约都在复杂的电力市场上进行交易。总体上，它们都是用来转移电力各方的金融风险的。

Passage 2**综合电力服务：发电厂**

没有实施工具来支撑，一个公司设定的目标只能是空想。总部设在南卡罗莱纳州的综合电力服务公司（IPS）自成为诚信电力公司的电力服务部之后，就建立起其作为国内一流电动

机、发电机和机械电力传输元件维修服务商的良好声誉。

如今，作为国内最大的独立电力服务供应商，通过2008年的三个主要的兼并行动，IPS不断提高公司的运营能力并逐渐建立起自己的企业精神。IPS总裁兼首席执行官布莱恩·布雷默说：“我们设定的目标是成为全国知名的电力和机械服务供应商。在公司选址时，我们从能够为我们4个地区的客户服务能力的考虑开始入手。”

IPS由一个自东海岸到西海岸的服务中心网组成，覆盖南部、西部、中西部和东北部地区。每一地区都由数个服务中心组成，向当地客户提供支持，包括枢纽服务中心，必要时它能协同域与国家的服务水平。

公司还从服务的角度考虑拓展业务区域。布雷默说：“我们对收购返修转卖公司不感兴趣，我们想要的是市场声誉高的公司，这样的公司有助于我们执行区域和实力策略。”

公司收购的第一个企业是总部在宾夕法尼亚州的电力机械公司，这是一家从事电机维修和再出售的公司，有着81年的良好声誉。电力机械公司的主要产业是采矿、发电、五金和造纸。

对电力机械公司的成功收购扩展了IPS的服务业务，特别是在东北市场，同时还增加了一种新的服务渠道——设备再销售。营销部副总裁约翰·柯文顿说：“原来我们的服务中心仅做维修。但是有时设备已无法再维修或维修不再有经济价值。现在我们就可以提供替代产品了。”

IPS收购策略的另一个重要原则就是要寻找那些具有可靠性和稳定性、并具有可持续发展的加工业，如电厂、炼油厂、轧钢厂、造纸厂、水泥厂和矿业公司，同时向发电领域开拓业务，现在已经涵盖水力发电、火力发电、核能发电和风力发电。

遵循这些原则，IPS收购了明尼苏达州的Trico TCWind公司，该公司业务范围是维修风力涡轮发电机并提供风电塔柱的现场服务。对Trico TCWind公司的收购将IPS推向了风力发电维修和服务的前沿，设在当地的服务中心覆盖已安装风力发电市场份额的78%，同时，该收购也提高了IPS在可再生能源市场的地位。

布雷默说：“现在，我们不但可以将我们的知识和专长运用到发电、石化、金属以及地下采矿等行业，而且也可以将其应用于风力发电中，使风力发电机运行更加可靠。”

Part VI Data Bank

Special Items of Electricity Market

| | |
|-------------------------------|----------|
| partial energy competition | 部分电量竞争模式 |
| clearing energy | 出清电量 |
| power pool | 电力库 |
| power wheel | 电力运转 |
| electricity market regulation | 电力市场监管 |
| valid grid assets | 有效电网资产 |
| power retailer | 电力零售商 |

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| generation right transfer trading | 发电权转让交易 |
| block bidding | 分段竞价 |
| floody season-dry season price | 丰枯电价 |
| peak-valley price | 峰谷电价 |
| common transmission service tariff | 共用传输服务价格 |
| contract energy decomposition | 合同电量分解 |
| capital & interest price | 还本付息电价 |
| available capacity | 可用发电容量 |
| available transfer capacity | 可用输电容量 |
| annual contract on-grid energy | 年度合同上网电量 |
| regional electricity market | 区域电力市场 |
| transmission congestion | 输电阻塞 |
| on-grid energy | 上网电量 |
| off-grid energy | 下网电量 |
| service tariff of exclusive transmission project | 专用输电工程服务价 |

