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Modern Design and Manufacturing

Part 1

Reading and Translating

Reading A

Read the following passage, paying attention to the questions on the left.

CAD/CAM

CAD/CAM is a term which means computer-aided design and computer-aided manufacturing. It is the technology concerned with the use of digital computers to perform certain functions in design and production. This technology is moving in the direction of greater integration of design and manufacturing, two activities which have traditionally been treated as distinct and separate functions in a production firm. Ultimately, CAD/CAM will provide the technology base for the computer-integrated factory of the future.

1. What can CAD do as far as you know? Computer-aided design (CAD) can be defined as the use of computer systems to assist in the creation, modification, analysis, or optimization of a design. The computer systems consist of the hardware and software to perform the specialized design functions required by the particular user firm. The CAD hardware typically includes the computer, one or more graphics display terminals, keyboards, and other peripheral equipment. The CAD software consists of the computer programs to implement computer graphics to facilitate the engineering functions of the user company. Examples of these application programs include stress-strain analysis of components, dynamic

response of mechanisms, heattransfer calculations, and numerical control part programming. The collection of application programs will vary from one user firm to the next because their product lines, manufacturing processes, and





	Process data	
Computer	Control signals	Manufacturing Operations

customer markets are different. These

factors give rise to differences in CAD system requirements.

Computer-aided manufacturing (CAM) can be defined as the use of computer systems to plan, manage, and control the operations of a manufacturing plant through either direct or indirect computer interface with the plant's production resources. As indicated by the definition, the applications of computer-aided manufacturing fall into two broad categories:

1. Computer monitoring and control. 2. Manufacturing support applications. The distinction between the two categories is fundamental to an understanding of computer-aided manufacturing.

In addition to the applications involving a direct computer-process interface for the purpose of process monitoring and control, computer-aided

2. What can CAM be used for?

3. What are the functions of computers in CAM?

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manufacturing also includes indirect applications in which the computer serves a support role in the manufacturing operations of the plant. In these applications, the computer is not linked directly to the manufacturing process. Instead, the computer is used "off-line" to provide plans, schedules, forecasts, instructions, and information by which the firm's production resources can be managed more effectively. The form of the relationship between the computer and the process is represented symbolically in the figure given below. Dashed lines are used to indicate that the communication and control link is an off-line connection, with human beings often required to consummate the interface. However, human beings are presently required in the application either to provide input to the computer programs or to interpret the computer output and implement the required action.



CAM for manufacturing support

NEW WORDS AND EXPRESSIONS			
category /ˈkætɪgərɪ/ n.	分类		
component /kəmˈpəʊnənt/ <i>n.</i>	部分,配件,部件		
consummate /ˈk	使圆满,使完成		
define /dɪ'faɪn/ v.	界定,给…下定义		
digital /ˈdɪdʒɪtl/ <i>a.</i> & <i>n.</i>	数字(的)		
distinct /dɪˈstɪŋkt/ a.	清楚的		
distinction /dɪˈstɪŋk∫ən/ <i>n.</i>	区别,差别		
dynamic /daɪ'næmɪk/ <i>a.</i>	动力的;动态的		
effectively /ɪˈfektɪvlɪ/ ad.	有效地		
facilitate /fəˈsɪlɪteɪt/ v.	使容易,使便利,促进		
implement /'ımplımənt/ v.	实现;执行		
input /'ɪnput/ <i>v.</i> & <i>n.</i>	输入		
integrate /'ıntı'greıt/ <i>v</i> .	使完整, 使一体化		
integration /ɪntɪˈɡreɪ∫ən/ <i>a.</i>	一体化		
interface /'ıntəfeıs/ <i>n.</i>	界面,接口		
interpret /ɪnˈtəːprɪt/ <i>v.</i>	解释,说明		

NEW WORDS AND EXPRESSIONS



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keyboard /ˈkiːˈbɔːd/ <i>n</i> .	键盘
modification /m→dɪfɪˈkeɪ∫ən/ <i>n.</i>	修改,更改
off-line /'→f laɪn/ <i>ad.</i>	脱机
optimization /⇒ptɪmaɪ'zeɪ∫ən/ <i>n.</i>	最佳化,优化
output /'aʊtpʊt/ v. & n.	输出
strain /streɪn/ <i>n</i> .	应变
stress /stres/ <i>n.</i>	压力, 应力
symbolically /sɪmˈb⇒lɪkəlɪ/ <i>ad.</i>	象征性地
terminal /ˈtəːmɪnl/ <i>n.</i>	终端
ultimately /ˈʌltɪmɪtlɪ/ ad.	最后,最终;最重要的是
give rise to	引起, 使发生
give lise to	竹起, 仅及土
move in the direction of	朝…方向移动/发展
provide for	提供

NOTES

- 1. CAD (computer-aided design)
- 2. CAM (computer-aided manufacturing)
- 3. computer monitoring and control
- 4. manufacturing support applications
- 5. peripheral equipment
- 6. computer graphics

计算机辅助设计 计算机辅助制造 计算机监控 生产支持应用软件 外围设备(外设) 电脑制图

Check Your Understanding

- I. Mark the following statements with T (true) or F (false) according to the passage.
 - □ 1. CAD/CAM is concerned with the use of digital computers to perform certain functions in design and production.
 - □ 2. CAD/CAM does provide the technology base for the computer-integrated factory now.
 - \square 3. The computer systems perform specialized design functions only with the software provided.
 - \square 4. The CAD software facilitates the engineering functions of the user firms.
 - \Box 5. The collection of application programs will never change.
 - \square 6. The CAD system requirements change with the customer markets.
 - 7. The distinction between CAM's two categories is not important to the understanding of CAM.

8. The firm's production resources can be managed more effectively with the indirect application of CAM.

II. Give brief answers to the following questions.

- 1. What will CAD/CAM provide for the computer-integrated factory of the future?
- 2. What does the CAD hardware typically include?
- 3. Why will the collection of application programs vary?
- 4. Can CAM control the operation of a manufacturing plant through the indirect computer interface?
- 5. What is fundamental to the understanding of CAM?
- 6. Besides providing input to the computer programs, what else can human beings do in the application?



Build up Your vocabulary

III. Match the items listed in the following two columns.

1. software a. programs opposed to system ones 2. user firm b. company which applies CAD/CAM to production c. the programs used to direct the operation of a computer 3. application programs 4. numerical control d. an arrangement of machines or sequence of operations involved with a single manufacturing operation 5. product lines e. control of a machine tool, or other devices in a manufacturing process by a computer 6. manufacturing plant f. factory where many things are produced 7. computer interface g. devices or programs designed to link one system to another 8. off-line h. the act or process of computing the removed heat 9. output i. information in a form suitable for transmission from internal to external units of a computer 10. heat-transfer calculations j. operating independently of an associated computer

IV. Fill in the table below by giving the corresponding translation.

English	Chinese
graphics display terminals	
	键盘
peripheral equipment	
	硬件
stress-strain analysis	
	应用程序
computer monitoring and control	
	动态响应
computer interface	
	优化设计

V. Complete the following sentences by translating the Chinese given in the brackets.

1. This technology is moving	(正朝着更广泛的应用方向发展).
(in the direction of)	
2. CAD/CAM will	(为未来的计算机集成工厂提供技术基础).
(provide for)	
3. The computer systems	(由硬件和软件构成).
4. The class	(年龄从 15 岁到 18 岁不等).
(vary from to)	
5. He decided	(要么修好这台电脑,要么买台新的).
6. This computer	(并没有与制造过程直接连在一起).
(be linked to)	
Reading B	

AutoCAD's Main Menu

AUTOCAD [®]		
Main Menu		
0. Exit AutoCAD		
1. Begin a NEW drawing		
2. Edit an EXISTING drawing		
3. Plot a drawing		
4. Printer Plot a drawing		
5. Configure AutoCAD		
6. File Utilities		
7. Compile shape/font description file		

8. Convert old drawing file

9. Recover damaged drawing

Enter selection:

Here's a listing of what each main menu selection does.

Option 0 (Exit AutoCAD) gets you back to the operating system.

Options 1 (Begin a NEW drawing) and 2 (Edit an EXISTING drawing) are where you create, edit and store your drawings in AutoCAD.

Options 3 (Plot a drawing) and 4 (Printer Plot a drawing) are where you can print and plot your drawings.

Option 5 (Configure AutoCAD) steps you through AutoCAD's interactive utility to let the CAD program know what hardware you are using.

Option 6 (File Utilities) lets you perform disk file maintenance operations just as if you were using the operating system.

Options 7 (Compile shape/font description file) and 8 (Convert old drawing file) are special situations and will not be covered in this article. See *CUSTOMIZING AutoCAD* (New Riders Publishing) or the *AutoCAD Reference Manual* for details.

Option 9 (Recover damaged drawing) is for salvaging a drawing file in which AutoCAD detects an error and will not load.

NEW WORDS

AutoCAD	计算机辅助绘图软件
configure /kənˈfɪgə/ <i>v</i> .	配置
detect /dɪ'tekt/ v.	发现,探知
interactive /ɪntəˈæktɪv/ a.	互动的, 交互的
maintenance /ˈmeɪntɪnəns/ <i>n.</i>	维修,保养
plot /pl→t/ <i>v.</i>	规划,绘制
salvage /ˈsælvɪdʒ/ <i>v.</i>	抢救, 挽救
utility /juːˈtɪlɪtɪ/ <i>n.</i>	实用,效用,(复)设施

I. Translate the following phrases into Chinese.

- 1. main menu
- 2. operating system
- 3. begin a new drawing
- 4. edit an existing drawing
- 5. recover damaged drawing
- 6. configure AutoCAD
- 7. perform disk file maintenance operations

8. interactive ability

II. Give brief answers to the following questions.

- 1. Which selection do you have to enter if you want to return to the operating system?
- 2. Where do you think you will probably spend most of your AutoCAD hours?
- 3. Which selection do you need to enter if you feel it necessary to modify an existing drawing?
- 4. What should you do every time you want to create a new drawing?
- 5. How can you print your drawings?
- 6. What is the function of Option 9?

III. Translate the following sentences into Chinese.

- 1. The drawing editor is the AutoCAD equivalent (相等物) to your drafting board.
- 2. Option 6 lets you perform disk file maintenance operations just as if you were using the operating system.
- 3. Options 1 and 2 are where you create, edit and store your drawings in AutoCAD.
- 4. If you have exited to the operating system, start up AutoCAD again by typing \IA.

Part 2 Simulated Writing

Commercial Correspondence

在现代涉外贸易中,商业函件(Commercial Correspondence)是人们普遍采用的业务联络方式。商业 函件属商业应用文,其常用格式如下:

1) 组成部分: 信头(Letterhead)、日期(Date)、信内地址(Inside Address)、收件人(Attention)、称呼 (Salutation)、事由(Subject or Reference)、正文(Body)、客套结语(Complimentary Close)、签名(Signature);

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English for Mechanical & Electrical Engineering

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有时还包括: 附件(Enclosure)、附言(Postscript)、抄送(c.c.)等。如下图所示:

Motorheat Ltd.

16 Walker Road

Coventry 01545

Attn.: Sales Manager

Dear Sir,

Re.: Inquiry About Car Heater

We are interested in increasing our range of car heaters and would like to receive information about the various models you are at present producing.

We should be obliged if you would send us your latest catalogue and price list, together with details of the CX4 heater advertised in the current issue of *MOTORING MONTHLY*.

Yours Faithfully,

F. Henley General Manager

NOTES

attn.(attention) be obliged (to) catalogue /'kætəl →g/ *n*. current issue details /di: 'teɪlz/ *n*. *MOTORING MONTHLY* price list 收信人 (对…)感激 (产品)目录册 最近的一期 详细资料 《汽车月刊》 价目表

(2) 齐头式(Block Style) 除信头外,信中所有内容均须从最左边开始,成一垂线,即保持左对齐。

Sample Reading 2

Motorheat Ltd.

16 Walker Road, Coventry 01545

General Manager Clark & Sims Ltd. High Street, Ellingham, Suffolk

Attn.: Mr. F. Henley

June 28, 2007

English for Mechanical & Electrical Engineering

Dear Sir, Re.: <u>Reply to Your Inquiry</u>

Thank you for your letter of June 24, asking for details and prices of our car heaters. We have pleasure in enclosing our latest price list and catalogue, together with details of Model CX4. Please do not hesitate to write if you require further information.

Yours Faithfully,

Tom Harris Sales Manager

Encl.

Note

Encl. (enclosure)

附件

(3) 混合式(Modified Style) 整体布局与齐头式相似,但在信的内容中,每段的开头须缩进4个字母。

Sample Reading 3

Guangdong Machinery Import & Export Corporation

61, Yanjiang Road (1), Guangzhou, China

Smith & Sons Co., Ltd. No. 1118 Green Road, Singapore

Attn.: Sales Manager

Dear Sirs,

Re.: Further Order for Tractors

We are pleased to inform you that the tractors ordered in Feb., our order PI94, arrived in perfect condition on the scheduled date and have now been distributed to our customers.

We are now in a position to order another shipment and enclose herewith our order PI124 for 30 CI860 tractors. We should be obliged if you could arrange to ship 10 of these tractors to Shenzhen, where we have just opened a new branch, and the remaining 20 to Guangzhou.

Yours Faithfully,

Zhongchen Lee Marketing Manager

Encl.

NOTES

branch /brɑ:nt∫/ <i>n</i> .	分公司
herewith /hɪəˈwɪð/ <i>ad.</i>	与此一道
in perfect condition	完好无损
scheduled date	规定日期
ship /ʃ1p/ <i>v.</i>	装运

Check Your Understanding

I. Answer the following questions based on the above letters. Sample Reading 1

- 1. Who is the General Manager of Clark & Sims Ltd.?
- 2. In which magazine were the car heaters advertised?



3. What else did Mr. Henley ask for?

Sample Reading 2

- 1. Who is Tom Harris?
- 2. Who wrote the letter of June 24?
- 3. What else was sent together with the letter?

Sample Reading 3

- 1. What does "shipment" in paragraph 2 mean?
- 2. How does the Buyer want the Seller to ship the newly ordered 30 tractors?
- 3. Why does the Buyer want to have 10 tractors to be shipped to Shenzhen?

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Follow-Up Writing

II. Complete the following business letters by putting the Chinese in the brackets into English.

Letter 1

Prosper Motor Corp.	
Tasman Building, Anzao Avenue, Auckland, New Zealand	
J B SIMPSON & CO LTD 18 Deansgate Blackpool FY37JG	
Oct. 20, 2007	
Dear Sir or Madam: Re.: (1) (询问汽车加热器价格)	
As for (2) (贵方 10 月 18 日在《汽车月刊》刊登的广告), would you please (3) (将有关的详细资料、价目表和产品目录册寄给我方)?	
Yours Faithfully,	A DAY AND A
Tony Edwards Marketing Manager	
Letter 2	

J B SIMPSON & CO LTD

18 Deansgate Blackpool FY37JG

Tony Edwards Prosper Motor Corp. Tasman Building, Anzao Avenue Auckland, New Zealand

Oct. 23, 2007

Dear Sir:



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- M: This is my first visit to Guangzhou Fair. My purpose is to establish business relations with companies in China.
- W: I'll be glad to do what I can for you.
- M: Thank you. And I'm also thinking of importing some metal materials from China.
- W: Have you anything particular in mind at the moment?
- M: I'd like to buy a large quantity of double T-iron if your price is competitive enough.
- W: We can easily supply you with that.
- M: Now I'd like to have a look at the samples on exhibition.
- W: This way, please.

Sample Dialogue 3

- M: Here are the samples. The clocks are available in all sizes.
- W: Mm. They look very nice.
- M: They are well-known for their fine quality and especially attractive to young people.
- W: Yes, these radio alarm clocks are very popular in our market.
- M: Look at these. They are fashionable in design and superb in workmanship.
- W: The quality seems all right, but the prices are too high.
- M: I don't believe you could buy radio alarm clocks of the similar quality at such a price elsewhere.
- W: Well, if we could come to terms on price, I may order in quantity at once.
- M: Our manager is coming here soon. We can make a further discussion.
- W: OK. Thank you very much.
- M: My pleasure.

Sample Dialogue 4

M: Would you like to have a look at our showroom?

W: I'd love to.

- M: This way, please.
- W: Thank you. (Entering the room) How beautiful!
- M: Where shall we start?
- W: It would take hours if we really look at everything.
- M: You may be only interested in some of the items. How about looking at the latest models?
- W: Good idea! I can just have a glance at the rest.
- M: By the way, Ms. Maeyens, how long have you been in this business?
- W: I've been in machinery for 15 years, but our company has been in business since 1950.
- M: No wonder you're so experienced.
- W: Machinery business has become more difficult recently.
- M: That's true.
- W: Do you have a catalog or something that tells me about your company?
- M: Yes, I will get you some later.



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W: Thank you.

NOTES

a complete set of bottling machine	一套装瓶机
come to terms on	就…达成协议
double T-iron	工字钢
meet one's requirement	满足…的要求
radio alarm clock	收音机闹钟
Andrew Edgreen	安德鲁·埃德格林
Brothers	兄弟公司(公司名称)

NEW WORDS

assembly /ə'semblı/ <i>n.</i>	装配,装配件
brochure /ˈbrəʊ∫ə/ <i>n</i> .	小册子
latest /ˈleɪtɪst/ a.	最新的
patent /ˈpeɪtənt/ n.	专利
showroom /ˈʃəʊrʊm/ <i>n.</i>	展览室
superb /sjuːˈpɜːb/ <i>a.</i>	极好的
workmanship /ˈwɜːkmən∫ɪp/ <i>n.</i>	工艺

USEFUL EXPRESSIONS AND PATTERNS

- 1. They are available in all sizes.
- 2. They are very popular among young people.
- 3. They are our quality products.
- 4. Our company has been in business since 1940.
- 5. We have been operating for 10 years.
- 6. Quality control is our primary consideration.
- 7. We'd be delighted to see you at our showroom.
- 8. We always have our customers' interest at heart.
- 9. My purpose is to establish business relations with your company.
- 10. We can easily supply you with the spare parts (零部件).
- 11. What do you think about it?
- 12. It's very kind of you to invite us.
- 13. If satisfactory, we may consider further orders.
- 14. How about the price list?
- 15. To be honest with you, we don't believe it will sell well in China.

I. Role-play the sample dialogues.

II. Practice speaking by following the examples given and substituting the prompts (提示) offered.

- 1. Example: The purpose of my present visit is to seek an opportunity to do business with you.
 - to examine the prospects of increasing business
 - The purpose of my present visit is to examine the prospects of increasing business.
 - Prompts: 1) to initiate (开始) business with you in electric goods
 - 2) to explore possibilities of cooperation
 - 3) to promote both business and friendship
 - 4) to establish business relations
- 2. Example: What has impressed us most is your flexible way of doing business.
 - the great achievement you have made in your business

What has impressed us most is the great achievement you have made in your business.

- Prompts: 1) the great varieties of your products
 - 2) your policy of opening to the outside world
 - 3) the principle you have been following
 - 4) your present foreign trade policy
- 3. Example: By joint efforts, <u>we can promote both business and friendship to our mutual benefit</u> (互 惠互利).
 - this transaction will turn out to be a success
 - By joint efforts, this transaction will turn out to be a success.
 - Prompts: 1) we can enter into direct business relations with you
 - 2) the printers can be introduced into your market
 - 3) our commodities will find a ready market there
 - 4) friendly relations can be maintained between us

III. Complete the following dialogues by translating Chinese into English orally.

- 1. A: 这是我们的一项优质产品. It's a great improvement upon the old model.
 - B: How is it in comparison with your old one?
 - A: 设计与材料都有所不同. It's more solidly built.
 - B: 你们提供零部件吗?
 - A: Of course. 我们时刻为客户的利益着想.
- 2. A: 我们正考虑参加中国高新技术产品交易会 (China Hi-tech Fair).
 - B: 什么时候举行呢?
 - A: I think it'll be held in October.

- B: 你们将演示(demonstrate)最新的机型吗?
- A: Yes. I'm sure you'll be interested in it.

IV. Learn to communicate in the given situation.

Student A: a representative from an M/E company in China Student B: a foreign businessman

A is showing B their models in a trade fair. Make a conversation with the following expressions: Would you please have a look at these models, sir?

They sell like hot cakes.

What about the quality then?

Many guests speak highly of them.

