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建筑环境与 设备工程 专业英语



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前 言

中国加入 WTO,因特网的广泛使用,为我国科技工作者的国际交流提供了机会和条件,也带来了不小的压力。建筑环境与设备工程专业的学生在两年基础英语和科技英语学习的基础上,需要对专业英语的知识有所了解。其目的有:一是扩大专业词汇,以便阅读专业文献;二是掌握英语文献查阅技巧,三是对本专业的国际动态有所了解。其中,后两者具有鲜明的时代特色:在中国改革开放以前,国际交流不广泛,阅读文献可能是被动的,学生对国际动态的了解也不是必要的。但目前,国际上文献量增加到海量的级别,主动寻找有用的文件甚至比被动阅读文件还要重要;同时,学生不论日后打算在国内从事科技工作还是赴海外深造,都需要对本专业的国际研究进展、新技术发展、有关学会工作动态、相关高等院校的情况等进行了解,他们需要得到这些方面的概貌信息。在我国目前的教育体系中,这部分知识和技能训练没有在任何一门课程中得到体现,许多本科毕业生,甚至部分研究生都没有掌握了解这些信息的基本渠道,表现在:即使通过了大学英语四级、六级考试,他们也不知道如何从互联网和图书馆查询本专业的信息;或者找到了本专业的网站及资料,但没有办法得到有用的信息。

本书主编近年进行了广泛的国际交流与合作、信息收集整理,包括到国外进修访问、主持国际会议、与国外有关单位进行合作研究和联合办学、主办互联网信息网站、撰写国际刊物和会议论文等工作,认为专业英语课程应能兼顾这三个方面,即除扩大专业词汇量之外,还要掌握本专业国际交流的基础知识和了解国际交流的基本渠道和方法。本书就是根据这一设想进行的一种尝试。

按照建筑环境与设备工程专业英语 24~40 课时的要求,本书将互联网上有关本专业的信息、主要国际学会的作用与使命、本专业研究的热门领域、有关高等院校、主要国际刊物和国际会议等信息,以课文和附属材料的方式组织起来,希望能做到:

1. 部分内容作为专业技术文献阅读,希望学生增加专业技术词汇量,并对学生了解本专业的概貌起到提纲挈领的作用;
2. 部分内容采用国际学术交流中常用信息和工具,涉及实用的词汇,对学生查询专业文献以及进行国际交流起到训练作用;
3. 部分内容对学生具有保存价值,为他们日后从事技术工作和出国深造提供信息。

作为一种新的尝试,教学方法也要做相应的改变。特别是对于通过互联网查询和阅读有关信息,需要学生进行实际操作,也就是说,增加了实习环节。随着计算机和互联网的普及,这一方法应该可以实现。

本书是湖南省内设有建筑环境与设备工程专业的七所高等院校教师合作的产物。张国强编写第 1、2、3 课和阅读材料 8、9、10;陈晓编写第 4 课;陈焕新、廖胜明、胡烨编写第 5、7、9、13 课;刘建龙编写第 6 课;王汉青编写第 10、12 课,并与寇广孝合作编写第 8 课;邹声华、刘帅编写第 11 课;陈友明编写第 14、15 课和阅读材料 11、13、14、15,并与黄宇合作编写阅

读材料 12;张冷编写阅读材料 1、3、4;张泉编写阅读材料 2、5、6;符俊萍、赵渝渝编写阅读材料 7;王镇参加编写并负责全书文稿整理工作。全书由张国强、陈友明、王汉青、陈焕新、邹声华担任主编。本书中有关材料节选整理自有关原版教材和论文集,特向原作者表示真诚的感谢!

本书作为建筑环境与设备工程专业本科生教材,也可供本专业研究生和相关技术人员参考。由于时间有限,书中存在不妥或错误是难免的,恳请广大师生批评指正。

作者

2003年6月

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Unit One

HVAC&R and Internet

I. Text

Introduction

[1] Internet is influencing the world, including Heating, Ventilation, Air Conditioning and Refrigeration (HVACR) Industry. Education, training and research in this field are changing their way for the appearance of Internet, mainly by distance education, searching literature on the Internet, etc. As the same time, the business model on which the traditional HVACR industry relied, is also changing little by little. There is Internet marketing and sales, also the web-enabled HVACR equipment are also appearing these days. It should not be strange to hear the most of advancement in HVACR industry will be connected with Internet in the near future.

[2] The following are three paragraphs that describe the Internet influencing HVACR industry from different viewpoints.

1. Wheeler on HVACR: Is the Internet for You?

The World Wide Web Can Bring You New Customers and New Business at a Much Lower Cost.

[3] If you're a regular reader of my column, you've likely noticed that I list an e-mail address for your use in contacting me. That's my preferred method of communication today, other than talking. I'm not home much, so I'm hard to contact by phone, and like most folks, I don't like the hassle of writing and mailing letters. I'm happy to hear from you, but I'd prefer it if you'd use e-mail. That shouldn't be too much of a problem for most of you since almost every company is computerized, and Internet service providers are usually quite inexpensive.

[4] Yes, computers are complicated but sending e-mail isn't, and that's the main use I have for mine. I've been sending my columns—and even photos—to this magazine by e-mail for several years. What's so good about e-mail? Well, I can never find stamps, and my computer keeps up with the addresses. Just send me a message, and I have your e-mail address on file. Plus, I don't have to pay for long-distance phone calls or worry that you won't be in when I call. I turn on my computer every evening when I get home, read all my e-mail and send return messages right away. It's the main method of communication for the new millennium.

[5] If you buy a computer just for e-mail, you'll find many more uses for it later on, as I have. You can instantly send messages to any Internet-connected computer in the world for a

monthly service provider fee and the cost of local telephone service. I do all my banking by e-mail. Sound radical? You'd be surprised to see how many companies use this method. I have most checks paid to me direct-deposited, the bank sends checks out to pay my bills (I write them by e-mail), and I balance my checkbook online every evening.

[6] I shopped for houses on the Internet before I moved to Florida. I startled one local resident whose house was for sale when I called him up from Cleveland to ask a question. He was surprised to find that his house was listed on the Net on the local newspaper's home page.

Other Uses for the Internet

[7] Of course, e-mail isn't the only thing I use the Internet for. The HVACR industry has a slew of interesting sites that are well worth a visit. There are Internet HVACR magazines, shopping locations; even some of my articles in this magazine are posted every month (www.supplyht.com and also www.contractormag.com). Just use one of the search providers and type in the key phrase HVACR, HVAC, refrigeration, air conditioning or whatever. If you are looking for my past articles, search under Jim Wheeler HVACR.

[8] Two industry sites that have contacted me recently are:

- The HVAC Mall, which has a broad listing of information, suppliers, etc. (www.hvac-mall.com);
- Mech Data, an HVACR and plumbing-industry job/people location service (www.HVACjob.com and www.PLUMBjobs.com).

[9] The Internet is the world's fastest-growing marketplace. So should your company have its own Web site? Yes! Every company in the supply-house business, as well as all manufacturers, should be on the Web to better serve their customers and to cut their business expenses. Forget the hype. What your customers want is a page with an updated catalog, pricing and a secured site so they can place orders. They should have a password that they can update periodically to access certain ordering and pricing areas. Assign someone to monitor incoming orders and requests throughout the day. If you have several branches, you'll need only one person to handle the orders for all offices.

[10] If you do this right, you'll soon find that a large portion of your business will come over the Internet at a much lower cost to you. And you'll pick up a lot of new customers.

[11] How do customers get your Internet address? Post it on everything you send out and on all your advertising. If you're "trolling" for business outside your normal sales area, get involved with a group listing such as the HVAC Mall to make it easier for customers to locate you.

[12] You really need the Internet if your company has products or services that might interest people outside your local sales area. Do you sell at discount? Do you specialize in a particular product line? Do you have rare parts? Do you have special deals? Do you offer a special service that may appeal to a national or international audience, or do you manufacture something that meets a special need?

[13] What will it take to get your company on the Net? One of the fastest-growing businesses

today is a company that designs Web sites. Tell the designer what you want the site to do. Ask for an estimate on how long it will take and the cost, and include a provision that your people are trained and all bugs are worked out before final payment is made.

[14] You say you're too old to learn to use the Internet? My 81-year-old uncle just bought his first computer and he's having a ball.

2. Put the Internet to Work for You

[15] As increasing numbers of consumers turn to the Internet for local home repair, maintenance and remodeling services, HVACR contractors and other tradespeople across a wide spectrum services are quickly realizing that the environment in which they have operated for many years is radically changing.

[16] The challenge facing business owners and HVACR contractors is to adapt to the changes in the way home services are sought, supplied and delivered. Those contractors who successfully make this transition will reap rewards in the form of increased profits and sustained growth. However, those who don't may soon be looking back at missed opportunities presented by the growing reliance on the Internet for consumer services, which is expected to reach \$ 250 billion by 2004, with home services presenting the greatest growth potential, according to E-Offering, a national e-commerce authority.¹

[17] All business owners and contractors know that quality leads are essential to running a successful business. Too often, HVACR professionals find themselves wasting valuable time following up on inappropriate or false leads. In these instances, the consumer may be just getting additional bids to confirm a choice they've already made, or simply exploring costs associated with a particular project they might want to have done in the distant future. That's fine for the consumer, but it costs the provider dearly in both time and effort. Today, more and more HVACR contractors and business owners are seeking to remedy this situation by using technology—specifically, the Internet—to gain better leads and enhanced information about a particular job request.

[18] One Colorado-based contractor, Roy Steiner, of Steiner Construction, claims that he saves several hours each week, bolstering his productivity by as much as 10 percent by relying on the Internet to gain quality leads. The message should then be clear: HVACR professionals need to “get connected” to keep pace with the times.

[19] Contrary to a popular belief among many HVACR professionals, contractors and business owners need not possess great degrees of technical sophistication or invest in a lot of expensive hardware or software to get in on this emerging trend.

[20] That's because a growing number of companies are offering a “technological on-ramp” that allow entrepreneurs to leverage the power of the Internet, bridging the gap with phone and fax communication until they are completely online.

[21] One such company is ServiceMagic.com, an online marketplace for local home services. Here's how it works: Consumers visit the ServiceMagic Web site (www.servicemagic.com) and complete a service request form, answering a series of job-specific questions, such as job

type, scope and location, to ensure that the right floor covering installers are approached with the right request. After the request is processed using the site's proprietary technology, the consumer is provided with up to three prescreened, interested companies by the next business day.

[22] Additionally, consumers using the service can view contact information, past performance ratings, reviews from neighbors and, possibly, an estimate on the proposed job and a link to each business's Web site.

[23] The benefits of this system are readily apparent. First, by providing contractors with only those leads that they have described as appropriate for their business, based on job size and scope, geographic location, job time frame and other criteria, companies like ServiceMagic can match the right service professionals with the right consumers every time.

[24] Additionally, ServiceMagic only connects its members with informed "ready-to-act" consumers. As a result, HVACR contractors will find an affluent, highly educated and enthusiastic new audience in the "e-consumer". Generally, online home service consumers are Internet-savvy homeowners who are 25-55 years of age, earning in excess of \$50,000, meaning they have the income levels necessary to invest in a wide range of home services, from simple repairs and maintenance to complete remodeling projects.

[25] Furthermore, some sites help educate the consumer prior to the transaction via an online resource center with a full library of insightful project tips and articles. As a result, customers are "ready-to-act" and informed about the project so they can better communicate with the HVACR service professional they've selected, while helping the service professional develop a realistic quote on the work to be bid on.

[26] As we all know, differentiation is key in today's highly competitive marketplace. For example, ServiceMagic's members have the opportunity to further differentiate themselves from their competition by becoming "certified".

[27] To become certified, network members must garner a minimum of three excellent ratings from consumers, a requirement that provides an incentive for the professional to offer optimal levels of service and creates a win-win for both the consumer and the provider.

[28] Some referral services also provide their members with a variety of benefits to help them increase their competitiveness, such as free Web sites, customized insurance and payroll administration programs and discounts on materials and supplies.

[29] A key question in the minds of those reading this is probably about the costs associated with joining a network such as ServiceMagic's. While costs vary considerably for memberships in service professional networks, business owners receive a tremendous return on their investment considering the numerous benefits associated with membership.

[30] In summary, opportunities for HVACR contractors are plentiful for those willing to adapt to this new and lucrative way of doing business. The question that each contractor must ask himself or herself is, "Can I afford not to get in on the action?"

3. Carrier, IBM to Launch Web-Enabled A/C

[31] Carrier Corp. and IBM Corp. have announced the development of a new wireless remote monitoring and control service called Myappliance.com. Built on an Internet infrastructure supported by IBM hardware, software, and services, the monitoring service will be introduced in Europe this summer.

[32] My appliance will provide Web-enabled air conditioners that wirelessly communicate in real time with devices such as mobile phones and PCs. With the new remote control service, Web-enabled air conditioner owners will be able to set temperatures or switch the units on or off wirelessly, from anywhere at any time, using the secure Myappliance.com website.²

[33] Dealers will have individual unit control and will be able to access key customer data. Myappliance will also send fault codes and other diagnostic alerts instantaneously to mobile phones, e-mail, or fax.

[34] According to the companies, the service will enable Carrier dealers to differentiate themselves from the competition with faster service response times, improved first-time fix ratios, and improved service scheduling. Unit performance and maintenance information over time can be gathered and recorded to anticipate and address potential problems.

[35] Carrier said that it chose IBM as the primary provider of technology and services for this solution because IBM supports industry standards across a range of wireless technologies and devices. IBM will design the end-to-end architecture from the embedded Java in the air conditioning units to the backend Web servers to the Web browsers in mobile phones, and perform the systems integration.³

[36] IBM will also provide the hardware — eServers running AIX — and the software — WebSphere Everyplace Suite Enterprise Edition, WebSphere Application Server, and Visual Age Micro Edition J9 Virtual Machine.

[37] “Carrier has been focused on providing more value-added benefits to our customers to increase their appreciation of the air conditioning units they buy,” said Alceste Murada, vice president, residential light commercial products, and general manager, Southern Europe, for Carrier.

[38] “Working with a company such as IBM, which supports open standards across multiple wireless technologies and devices, allows us to eventually extend this new remote control and diagnostic service around the world, catering to the device preferences of customers in each region.”⁴

[39] “This engagement is a great example of how a complete IT infrastructure—including software, hardware, and services — can speed up time to market of innovative, wireless solutions,” said Michel Mayer, general manager of pervasive computing for IBM.

[40] Carrier plans to launch the service from Wireless Application Protocol (WAP) phones this summer to several hundred commercial and residential customers in primary European countries, as part of its new line of Night and Day console split-system air conditioners.⁵ The program is then expected to be extended throughout Europe and to North America, and will eventually support other devices, such as personal digital assistants (PDAs).

II. Vocabulary

1. wheeler	n. 精明的商人;车夫,车轮制造者
2. folk	n. 人们,亲属
3. startled	adj. 震惊
4. a slew of	许多,大量很大的数量或数目;很多
5. plumbing-industry	给排水行业
6. hype	vt. 夸大,天花乱坠的广告宣传
7. troll	vt. 搜索,在一个区域游荡寻找某人或某物
8. bolster	vt. 支撑,支持,帮助
9. entrepreneur	n. 企业家,创办人;创业者
10. proprietary	adj. 所有的,私人拥有的 n. 所有者,所有权
11. prescreen	n. 预先筛分
12. affluent	adj. 丰富的,富裕的
13. enthusiastic	adj. 热心的,热情的
14. savvy	v. 知道,了解
15. garner	vt. 取得;获得
16. incentive	n. 刺激,鼓励,动机 adj. 激励的
17. lucrative	adj. 有利的,赚钱的,合算的,待遇好的
18. infrastructure	n. 下部构造,基础下部组织
19. diagnostic alerts	诊断警报
20. instantaneous	adj. 瞬时的,及时的
21. embedded	adj. 内含的
22. preference	n. 偏爱,优先

III. Notes

1. However, those who don't may soon be looking back at missed opportunities presented by the growing reliance on the Internet for consumer services, which is expected to reach \$ 250 billion by 2004, with home services presenting the greatest growth potential, according to E-Offering, a national e-commerce authority.
译:但那些未能发现并适应变化的业主就会很快发现随着客户服务对互联网的依赖程度的增加而失去很多盈利机会。全国电子商务权威 E-Offering 提供的数据表明,截至 2004 年,网上服务的消费额将达到 2500 亿美元,其中家庭服务消费额的增长潜力最大。
2. With the new remote control service, Web-enabled air conditioner owners will be able to set temperatures or switch the units on or off wirelessly, from anywhere at any time, using the secure Myappliance.com website.
译:引入了这项新的远程控制服务后,网络控制的空调机组的使用人员通过登录 Myappliance.com 的安全站点,能够随时随地设置温度或开关空调机组。
3. IBM will design the end-to-end architecture from the embedded Java in the air conditioning units to the backend Web servers to the Web browsers in mobile phones, and perform the

systems integration.

译:IBM 将设计端对端的体系结构,从空调机组的嵌入式 Java 程序到后端网络服务器到移动电话的网页浏览器,并执行了系统一体化集成。

4. Working with a company such as IBM, which supports open standards across multiple wireless technologies and devices, allows us to eventually extend this new remote control and diagnostic service around the world, catering to the device preferences of customers in each region.

译:和 IBM 这样一个支持多种无线技术和设备的标准的公司合作,使得我们最终能够将这项新的遥控和诊断服务技术运用于世界各地,满足每个地区顾客对设备的需求。

5. Carrier plans to launch the service from Wireless Application Protocol (WAP) phones this summer to several hundred commercial and residential customers in primary European countries, as part of its new line of Night and Day console split-system air conditioners.

译:Carrier 今年夏天计划开始通过无线应用协议(WAP)电话向一些主要的欧洲国家的几百家商业和住宅用户提供这一服务,并将这项服务作为日夜监控分体式空调机组的一部分。

Unit Two

Sustainable Built Environment:

A Big Goal Through Small Steps

I. Text

Introduction

[1] One of the major current directions in global progress and development is sustainability. What is the meaning of sustainability? One of the definitions used states that: sustainable development means to meet the needs of the present without sacrificing the ability of future generations to meet theirs.¹ A sustainable approach is a more advanced form of an integrated approach. In simplified terms an integrated approach has the objective of encouraging all discipline experts to join forces and to work together in a particular area, while a sustainable approach includes the above, but also to work together with a specific purpose, which is ensuring that the environment is left intact to the extent to which it is possible.

[2] A very important challenge, which is facing the future of sustainable development and a sustainable approach, is how to link the general understanding for the need of sustainable development with the specific goals, targets and responsibilities of individual organizations and professionals.² At the moment there is often a gap between the outcomes of actions undertaken and the requirements of sustainability. It would not be surprising to find that many professionals asked what exactly sustainability means in relation to their professional areas, and what exactly to do towards achieving sustainability, would not be able to provide an answer. Thus, the nature of the problem is: how to provide an interface between a global approach and vision, and practical actions taken at each level of decision-making or implementation.

[3] Sustainability in relation to progress and development of the built environment has been of increasing interest for almost a decade now. There have been an increasing number of papers devoted to the themes of sustainability or integrated approach and many national and international meetings and conferences have had sustainability or integration, as a main focus.

[4] What has been achieved to date in the area of sustainable development in the built environment?

- Most importantly the need for sustainable development in application to the built environment has been demonstrated in qualitative and to a certain degree also in quantitative terms. In particular, estimates have been developed of the contribution of the built environment to global energy consumption, green house gas emissions or consumption of materials. There are

also figures showing how dramatic decreases in resource consumption and environmental impact can be achieved through a proper integrated approach. In Australia it has been consistently demonstrated that through the application of good design and demand management techniques in key systems areas, such as lighting and HVAC, reductions in energy consumption of some 30~50 percent can be achieved. These numbers speak for themselves and are the best advocates for a sustainable approach.

- Elements of sustainable development in the built environment have been identified and presented in terms of building life cycle analyses (LCA). These are all the aspects including planning, design, construction, operation, maintenance, renovation, demolition and recycling. There are numerous publications devoted to LCA in general and in practical terms.
- It has been demonstrated through an increasing number of studies conducted in many countries that the quality of the indoor environment is directly related to health and well-being. A comprehensive literature review by Fisk showed that there is moderate to strong evidence that characteristics of the internal environment significantly influence rates of a large number of health end points including: communicable respiratory illness, allergy and asthma symptoms and sick building symptoms.
- Global cost benefit analyses have been conducted in relation to various types of internal environments and it has been demonstrated that significant financial gains could be achieved when a sustainable approach is adopted to the built environment. This means that gains in energy and resource savings, productivity increases, decreases in health care costs well outweigh the costs of the higher quality materials used, better technologies and designs that improve overall building performance.

Progress in Implementation of a Sustainable Approach

[5] From the summary presented above it can be seen that the path for implementation of a sustainable approach has been paved both in terms of establishing the need and identifying ways how to do it.³ Is thus, sustainable development an everyday practice? The answer to this question is unfortunately negative, as in a large number of cases a great disparity exists between the theory of sustainable development and practice. There are a number of reasons for this disparity, the most important of them including:

1. Complexity

Complexity arises from a large number of the elements involved in the process and a need for an interdisciplinary approach, involving not only different technical or scientific experts, but also professionals of different roles and responsibility in relation to the process.

2. Lack of Combined Responsibility and Short Term Economic Gains

Practical implementation of sustainable development would require existence of one single point of reference, meaning one organization with an ultimate responsibility for this. While some governments have established offices that are to deal with sustainability, these offices do not normally have power to oversee or coordinate activities of all the government areas that should contribute to various aspects of sustainable development. The complexity of the situation

and the dispersion of responsibilities can be illustrated on the example of the Australian State of Victoria: "In Victoria, we have the EPA Victoria maintaining ambient air quality, the Department of Planning and Development looking after ventilation standards, the Department of Health examining reported microbiological problems, a private association BOMA guiding building owners and managers, with nobody responsible for advising people on indoor air quality for their homes.

In the absence of an organisation with combined responsibility for sustainable development, individual aspects related to the built environment are dealt with by different organisations in an uncoordinated manner, and what is more, with a focus on short term financial gains or savings by these organisations, rather than long term economic benefits to the whole community.

3. Lack of Expertise or Negligence

Most available cost benefit analyses in relation to the built environment have been conducted based on and with the assumption of application of the existing technologies relevant to this area, which means that utilizing the existing knowledge and technologies could result in visible progress in the quality of the indoor environment, even without development of new technologies. A review of papers presented in professional journals as well as at conferences reveals that a large fraction of them are case studies which typically (but not always) present situations of serious, usually health problems, directly linked to problems with indoor air quality or other aspects of the indoor environment. The conclusion in the vast majority of these cases is, that the situation could have been prevented using scientific and practical knowledge already available in this area, and either taking a somewhat broader approach or adhering to good professional practice.

4. Lack of Reliable, Combined Sources of Information

In recent years the increase of information in relation to all aspects of the built environment have probably been closer to exponential than linear.⁴ This information is in the form of professional publications, material on the Internet, promotional material of manufacturers and service providers, government publications, environmental group statements, and last but not least, word of mouth. It is not only for lay people that this jungle of information is impossible to navigate, but also is becoming increasingly difficult to do this for many professionals. This relates on one hand to the need to access and collect a large body of information, assess its reliability, and interpret so it can be used for the intended areas of application.

How to Put the Theory into Practice

[6] One of the critical needs is to find ways in which the existing knowledge and the technologies that are available would be implemented into everyday practice in the area of the built environment. There are a number of key elements that should be considered in this process, which are listed below.

[7] Closing the gap between academic research and the needs of industry

- The most common targets of research and development programs are new technologies or pro-