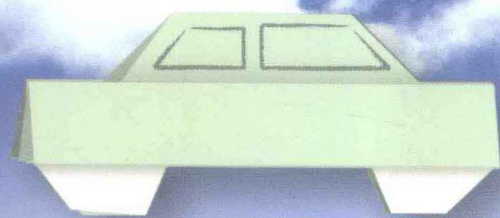


卓越工程师教育培养计划配套教材

车 辆 工 程 系 列



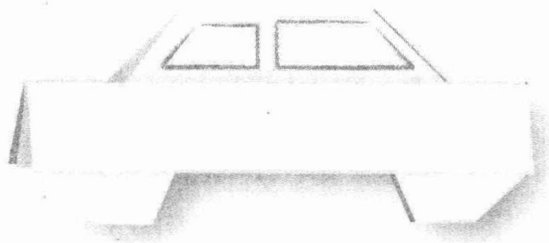
# 车辆工程英语 精读教程

马 红 主编

清华大学出版社

卓越工程师教育培养计划配套教材

车辆工程系列



# 车辆工程英语 精读教程

马红 主编

清华大学出版社  
北京

## 内 容 简 介

本书作为英语版的专业入门教材,以主题为中心,帮助学生逐步了解专业词汇、文体和内容,同时兼顾英语语言学习和专业知识的传授,培养学生分析、总结和思辨能力。其中上半部分以科技英语知识的传授为主,自然地让学生从大学英语的学习过渡到专业英语的学习;下半部分以专业英语的讲授为主,让学生利用英语了解专业知识、掌握专业词汇。

本书适合汽车专业和轨道交通专业的本科生和大专生使用,也可供相关工程技术人员参考。

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汽车是促进社会经济发展和提高人类生活质量不可或缺的交通工具。进入 21 世纪以来,我国综合国力进一步增强,人民生活水平不断提高,汽车产业高速发展。2009 年,我国因汽车产销量突破 1300 万辆而成为全球第一汽车产销大国。2010 年,我国汽车产销量均超 1800 万辆,稳居世界第一。2011 年,我国汽车产销量双超 1840 万辆,再次刷新全球历史纪录。2002 年至 2011 年的 10 年间,我国汽车产销量平均增幅超过 22%,汽车产业已经成为我国经济发展重要的支柱产业。

培养造就一大批适应汽车产业发展需求的人才队伍,是保障我国汽车产业长期繁荣与可持续发展的关键。伴随我国汽车产业的高速发展,汽车人才的短缺问题日益凸显。这不仅反映在人才培养数量上不能满足需求,而且体现在人才培养质量上存在较大差距。国外高校的汽车专业教育更加强调学生的动手能力和实践能力,学生有很多机会到汽车企业和制造车间进行实践锻炼,所以其开发创新能力更强。改革开放以来,我国的高等工程教育取得了巨大成就,但也存在人才培养模式单一,缺乏多样性和适应性,工程教育中工程性缺失、实践环节薄弱,评价体系导向重论文、轻设计、缺实践等问题。走中国特色新型工业化道路、建设创新型国家、建设人才强国等已经成为教育界和企业界的共识,这对高等工程教育改革提出了迫切要求。教育部于 2010 年开始实施的“卓越工程师教育培养计划”就是要培养造就一大批创新能力强、适应经济社会发展需要的高质量各类型工程技术人才,为国家走新型工业化发展道路、建设创新型国家和人才强国战略服务。

上海工程技术大学车辆工程专业在建设过程中,以服务国家和地区经济建设为宗旨,始终坚持学科链、专业链对接产业链的办学模式。2010 年,车辆工程专业被列为教育部“卓越工程师教育培养计划”首批试点专业。为满足车辆工程专业“卓越工程师教育培养计划”的需要,上海工程技术大学车辆工程专业的骨干教师与上海汽车工业(集团)公司和上海交运(集团)公司的技术骨干合作编写了“卓越工程师教育培养计划”车辆工程专业系列教材。该系列教材包括《汽车发动机构造》、《汽车底盘构造》、《汽车车身结构》、《汽车理论》、《汽车设计》、《汽车工程测试基础》、《汽车制造工艺学》(配习题集)、《汽车车身制造工艺》、《UG CAD 教程》、《汽车造型基础》、《车辆工程英语精读教程》、《车辆工程英语听力教程》、《汽车专业英语》等。

系列教材在编写过程中,按照理论与实践相结合的原则,参阅了大量的中外文参考书籍和文献资料,吸收和借鉴了现有部分教材的优点,参考了汽车企业的相关材料。系列教材强调理论联系实际,体现“面向工业界、面向世界、面向未来”的工程教育理念,以社会对汽车车



VI

辆工程人才的需求为导向,以实际的汽车车辆工程为背景,以汽车工程技术为主线,着力于提升学生的工程素质,强化培养学生的工程能力。系列教材具有基础性、系统性、应用性等特点,能够满足车辆工程专业“卓越工程师教育培养计划”的教学目标和要求。

上海工程技术大学 陈力华

2012年1月



2010年6月教育部启动“卓越工程师教育培养计划”(简称“卓越计划”),作为《国家中长期教育改革和发展规划纲要(2010—2020年)》和《国家中长期人才发展规划纲要(2010—2020年)》的重大改革项目。该计划旨在培养造就一大批创新能力强、适应经济社会发展需要的高质量各类型工程技术人才,为国家走新型工业化发展道路、建设创新型国家和人才强国战略服务,为中国制造业的国际化,中国工程师更好地进行跨文化交流。“卓越计划”具有三个特点:一是行业企业深度参与培养过程,二是学校按通用标准和行业标准培养工程人才,三是强化培养学生的工程能力和创新能力。

由此可见,“卓越计划”对学生的专业能力和综合素质发展都提出了更高的要求。作为大学基础课程之一的基础英语需不断完善教学大纲、教学方法,更新知识架构,丰富教学内涵。根据国家“卓越计划”的精神,学生在完成基础英语教学阶段后,不仅能达到国家英语通用要求,还必须具有相当的专业英语知识;除日常交际以外,还要在其专业领域里用英语进行有效地沟通,并具备较好的英语阅读和写作能力。

在上述大背景下,这套适用于卓越工程师班轨道交通与汽车专业学生的专业英语教材应运而生,旨在帮助学生更好地达到“卓越计划”的培养目标。教材以主题为中心,每单元包含一篇精读课文和一篇拓展阅读课文。其中上半部分以科技英语知识背景的传授为主,引导学生从大学英语的学习自然地过渡到专业英语的学习;下半部分以专业英语的讲授为主,让学生学会如何获取、运用和掌握专业英语词汇,并利用英语作为载体学习专业知识。

本套教材的特色之处在于:

(1) 将科技英语阅读和轨道交通专业英语以及汽车专业英语有机地结合起来,不仅可以满足专业英语教学要求,同时也填补了国内空白,尤其是轨道交通专业英语部分,在国内可借鉴的资料较少、国内轨道交通发展极为迅速,在各大院校纷纷开设轨道交通专业的情况下,本教材的编写无疑会有广阔的应用前景。

(2) 所选主题和内容与当前专业技术发展前沿紧密结合,不仅包括对新能源汽车、智能化汽车和公共交通乘客信息系统等新技术的介绍,还涉及对当下及未来汽车和轨道交通发展趋势的前瞻和思考,同时还收集了汽车发展史、新款车型介绍、企业发展战略等文章,拓宽学生视野并进一步激发其兴趣。

(3) 文章均为国外原版英文杂志和英文资料,保证语言地道、准确;在主题选择方面得到业内相关人士的意见和资料支持。



(4) 不仅对专业基础词汇、术语、规范表达进行系统总结和归纳,还注重培养学生对科技英语类文章的文体意识。

(5) 兼顾英语语言学习和专业知识的传授,培养学生分析、总结和思辨能力,在每篇文章的练习中都有拓展性问题,促使学生进一步去查阅资料并思考讨论,带着问题去学习和探索。

本教材由上海工程技术大学马红主编,陈振云、林建强、杨媛媛、潘智源共同编写。本书的编写得到了上海工程技术大学有关领导的高度重视和支持,谨在此表示感谢。

本书适合汽车专业和轨道交通专业的本科生和大专生使用,也可供相关工程技术人员参考。

因作者水平有限,书中难免有纰漏,还请同行和专家对本教程提出宝贵的建议。

编 者

2012.9

# 卓越工程师教育培养计划配套教材

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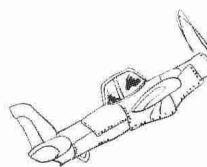
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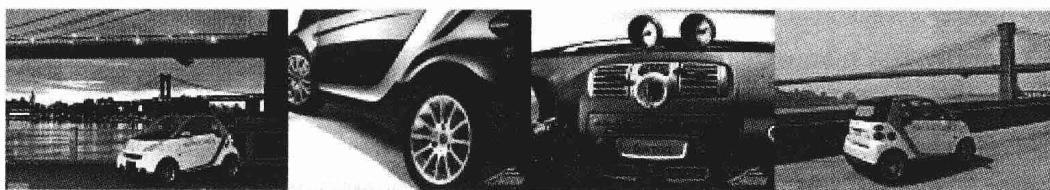


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# Unit 1

## Focus Reading



## Smart in the City

By Frederick J. Staab

In the automotive business these days, big is out and small is in. Sales of large sport-utility vehicles are down 45%. Small-car sales have increased 70%.

Of course, having suffered from \$3-plus-a-gallon gasoline for longer, the rest of the world has been thinking small for years. And there is no production car smaller than the Smart car from DaimlerChrysler.

But can a car that is just slightly more than 8 feet long and 5 feet high with 15-inch wheels co-exist with the mastodons that rule the American road? Smart has been building it since 1998, and it is the de facto city cruiser in Europe. So far, a total of 750,000 have hit the streets, with the highest concentration—50,000—being in Rome, a city famous for its narrow streets, frenetic traffic, and high gas prices.

With that in mind, I set out to see if one of these diminutive cars could be used as an everyday commuter vehicle. The laboratory for my experiment was midtown Manhattan traffic and the slog of the Long Island Expressway.

When I arrived at the garage, I was told to head for level three; the attendant said,



“You won’t have a problem finding the Smart. It’s the only one we have.” Not for long, though. Beginning in 2008, Smart will make its official U. S. debut, with a sticker price of just under \$15,000 and mileage estimated in the 50-60 mpg range.

For now, this metallic blue “fortwo” with silver accents would be the only one on the mean streets of New York. A quick walk-around made me wonder whether this car was up to the task of being an everyday commuter. It looked really tiny.

### *Attention-getter*

On the inside, there was, surprisingly, plenty of room for two full-size passengers and a small 1-foot deep shelf for your belongings. If you don’t look behind you, the Smart fortwo appears roomy; the windshield and side windows are large, and this one came equipped with an optional, fixed, glass roof that added to the openness.

A quick turn of the center-console-mounted ignition key and the 0.7-liter rear-mounted three-cylinder engine came to life. Yes, that’s 0.7 of a liter, which nets you about 60 horsepower. Our test car featured the automatic sequential six-speed transmission, which basically is a manual without a clutch pedal.

You can leave it in the “A” automatic mode, or you have the choice of shifting with steering wheel-mounted paddles or a stubby back-and-forward shifter on the floor. The transmission takes some time to get used to since there is a bit of a delay between when the pedal is pressed and you actually get moving. I coaxed the fortwo out onto West 44th Street and headed for a couple of laps around New York City before pointing its flat face toward suburbia.

Immediately the looks and comments began, mostly smiles or cautious glances at first, until I stopped for a light on Ninth Avenue. A guy waving a flag for a parking garage said, “Wow, I want to get one of those for my son.” I told him he would have to wait until 2008. “Well, how did you get one?” Let’s just say I have connections!

### *Expressway-safe*

After a few more thumbs-up and friendly smiles, both of which one rarely sees in NYC, it was time to head for the Midtown Tunnel, cutting a zigzag pattern through the Fifth Avenue rush-hour sea of cars and trucks. At a traffic light I ended up parking next to a \$320,000 Maybach. Its chauffeur looked quizzically at my car, which was about one-quarter the size of his. I told him we were driving cars built by the same company, DaimlerChrysler. “Really?” he said.

The hundreds of thousands of New York commuters who use the 70.8-mile Long Island Expressway every day know that during rush hour what should be a half-hour drive can easily become a 60-minute slog, or more. At one point in the stop-and-go I found myself completely surrounded by SUVs. My rearview mirror was filled with the image of a giant Chevrolet logo centered on its grill right above a twisted bumper that may have dealt



plain to other smaller cars. Was it coming in for the kill, or only getting a closer look? Smart touts its Tridion Safety Cell and full complement of air bags. They also are proud of the crash-test footage of an E Class and fortwo hitting head-on. But I was hoping not to have to experience those safety features; that would involve too much paperwork and explaining.

Crawling traffic meant lots of open-window car-to-car conversations, like with the guy in the Lexus who talked while his girlfriend took pictures of the car. Or was that pictures of me in the car? Hmm. Someone else asked, "Is it legal for you to have that on the road?"

As the LIE opened up it was easy for me to stay with and, yes, even pass other drivers. For the best performance, I shied away from the automatic transmission mode and made steady use of the steering wheel-mounted paddles.

### *Prius' Mini Rival*

After a weekend of making new friends and answering questions about when it was coming to the U. S., it was time to fire up the fortwo and head back to New York City.

The trip included a Bohemian woman in a Toyota Prius eyeing the Smart and, I bet, wondering if I was getting better gas mileage than she was. (They are about the same. According to the Environmental Protection Agency, the \$21,725 Prius is estimated to get about 60 mpg in city driving and 51 mpg on the highway.) And then there was a bit of excitement when a slow-moving Buick created a rolling roadblock that called for a quick lane change. Time to hit the throttle and turn all 60 of those horses loose!

After clunking over steel construction plates on 37th Street, my Smart commuter experience came to a successful end. I hadn't been run over by a Hummer nor laughed off the road.

So can a Smart fortwo be used as an everyday commuter car? The answer to that is yes, but the bigger question (no pun intended) is, will Americans go for a vehicle as small as the fortwo when they can buy more traditional cars for less? Only time will tell. The new-model fortwo scheduled to appear on U. S. roads in 2008 will be larger. About 3 to 6 inches larger, that is, in order to meet the latest crash-test requirements. (1017 words)

This article is adapted from BusinessWeek Online Thursday August 24, 8: 08 am ET

### I . New Words and Expressions

- |                             |             |
|-----------------------------|-------------|
| 1. utility /ju:'tiliti/     | n. 功用, 效用   |
| 2. mastodon /'mæstədɒn/     | n. 庞然大物     |
| 3. cruiser /'kru:zə/        | n. 巡游车      |
| 4. frenetic /fri'netik/     | a. 狂乱的, 发狂的 |
| 5. diminutive /di'minjutiv/ | a. 小的       |
| 6. slog /slɒg/              | vt. 猛击      |
| 7. expressway /ik'spreswei/ | n. 快速路      |



8. debut /'deibju:/
9. metallic /mi'tælik/
10. windshield /'windʃi:ld/
11. optional /'ɒpʃənəl/
12. mount /maunt/
13. coax /kəuks/
14. connections /kə'nekʃənɪ/
15. thumb-up
16. zigzag /'zigzæg/
17. quizzical /'kwizikəl/
18. tout /taut/
19. crawl /krɔ:l/
20. shield /ʃi:ld/
21. paddle /'pædl/
22. throttle /'θrɒtl/
23. clunk /klʌŋk/
24. pun /pʌn/

- n. 首次演出,初次露面
- a. 金属(制)的;
- n. 挡风玻璃
- a. 可选的
- vt. (安)装
- v. 耐心驾驶,小心翼翼驾驶
- [pl.] 熟人,关系(户)
- v. 翘拇指
- adj. “之”字形的,Z字形的
- adj. 疑问的,嘲弄的
- v. 招徕顾客,极力赞扬
- vi. 爬行,缓慢(费力)地行进
- n. 防护物,护罩
- n. (叶)桨,叶轮
- n. 油门
- v. 发出沉闷声
- n. 双关语

## II. Technical Terms

- |                                       |                   |
|---------------------------------------|-------------------|
| 1. SUV—sport utility vehicle          | 运动型多功能车           |
| 2. de facto                           | 事实上的              |
| 3. make an official debut             | 正式推出              |
| 4. in the 50-60 mpg range             | 在每加仑跑 50~60 英里的范围 |
| 5. side window                        | 边窗                |
| 6. ignition key                       | 点火钥匙              |
| 7. rear-mounted three-cylinder engine | 后置的三缸发动机          |
| 8. clutch paddle                      | 离合器杆              |
| 9. back and forward shifter           | 前后变速杆             |
| 10. automatic transmission mode       | 自动变速方式            |
| 11. cut a zigzag pattern              | 呈“之”字形            |
| 12. in the stop-and-go                | 时停时走的             |
| 13. rearview mirror                   | 后视镜               |
| 14. twister bumper                    | 绞型保险杠             |
| 15. air bag                           | 气囊                |
| 16. crash-test footage                | 碰撞测试连续镜头          |
| 17. hit head-on                       | 迎头撞上              |
| 18. safety feature                    | 安全特点              |
| 19. Environmental Protection Agency   | 环保署               |
| 20. gas mileage                       | 每英里耗油量            |
| 21. quick lane change                 | 快速变道              |



## Exercises

### I. Fill in the blanks with the information provided in the text.

1. \_\_\_\_\_ is in the automotive business in the recent years.
2. The writer embarked on \_\_\_\_\_ outside his laboratory.
3. This new test car model is typical of \_\_\_\_\_.
4. When the writer stepped into fortwo, he was surprised to find that fortwo was \_\_\_\_\_.
5. Peoples' reaction to fortwo was \_\_\_\_\_ when the writer was driving down the street in downtown New York City.
6. The traffic during the rush hours in the 70. 8-mile Long Island Expressway is like \_\_\_\_\_.
7. Challenges that a Smart fortwo will be confronted with in the days to come are such as \_\_\_\_\_.
8. It is implied that most Americans have a preference for \_\_\_\_\_ cars from the last paragraph.

### II. Translate the following phrases into Chinese.

1. sales of large sport-utility vehicles
2. streets with the highest concentration
3. used as an everyday commuter vehicles
4. make an official debut
5. optional glass roof added to the openness
6. sequential six-speed transmission
7. rush hour sea of cars and trucks
8. a crash-test footage of an E Class
9. hit the throttle
10. turn all 60 of those horses loose
11. be run over by Hummer
12. to meet the crash-test requirements

### III. Describe a Smart car in no less than 120 words, giving details about its uniqueness and features.

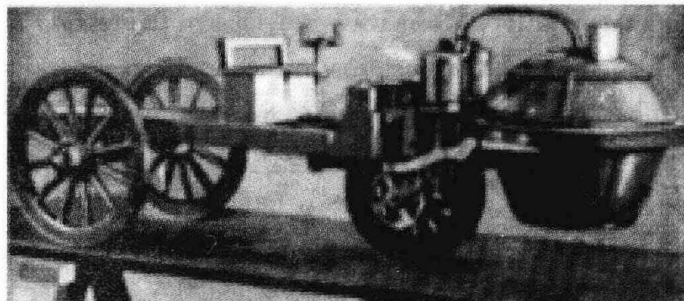
### IV. Further discussion

1. As a Smart fortwo has been put on the market, what do you think of its prospect in the automobile market?
2. What attracts you most among all the features of a Smart fortwo?





## Extended Reading



### History of Automobile Industry

In the year 1769, a French engineer by the name of Nicolas J. Cugnot invented the first automobile to run on roads. This automobile, in fact, was a self-powered, three-wheeled, military tractor that made the use of a steam engine. The range of the automobile, however, was very brief and at the most, it could only run at a stretch for fifteen minutes. In addition, these automobiles were not fit for the roads as the steam engines made them very heavy and large, and required ample starting time. Oliver Evans was the first to design a steam-engine-driven automobile in the U. S.

A Scotsman, Robert Anderson, was the first to invent an electric carriage between 1832 and 1839. However, Thomas Davenport of the U. S. and Scotsman Robert Davidson were amongst the first to invent more applicable automobiles, making use of non-rechargeable electric batteries in 1842. Development of roads made travelling comfortable and as a result, the short ranged, electric-battery-driven automobiles were no more the best option for travelling over longer distances.

Charles Kettering's invention of the electric starter in 1912 turned the process of starting automobiles faster and easier at the same time, doing away with the hand tools. Crude oil being discovered in Texas, the automobiles driven by engines that ran on gasoline became even more affordable, as the prices of gasoline reduced. The prices of electric automobiles were going through a constant rise, in spite of the fact that these were less efficient than the gasoline automobiles.

Jean Joseph Étienne Lenoir was the first to invent an internal combustion engine that ran on petroleum and attached it to a three-wheeled carriage, and successfully traversed a distance of fifty miles in 1863.

Karl Benz manufactured the first automobile (a three-wheeled car) that was affordable and compatible for travelling over long distances for its internal combustion engine that ran on gas, in 1886. Later in 1887, Gottlieb Daimler was the first to invent the predecessor of the modern automobile with an engine that had a vertical cylinder in addition to a gasoline-