

Chapter XVI

Application of Computer Technology in Mechanical Industry of China

Jian-Xiong Liu

Kunming University of Science and Technology, China

Zheng-Ming Xiao

Kunming University of Science and Technology, China

Cha-Biao You

Kunming University of Science and Technology, China

Yu-Fei Wu

Yunnan Telecommunication Co., Ltd., China

ABSTRACT

With its constant development and completion of function, and its fast popularization in the world, the impact of computer technology on the mechanical industry of China is more and more far reaching. CAD, CAM, CAE, CIMS, computer controlling, and network information play a very important role in the rapid development and promotion of the quality of the mechanical industry in China. The application of computer technology has made enormous contributions to the improvement of the manufacturing industry and economic development of China. In this chapter, the application situation of CAD, CAM, CAE, CIMS, computer controlling, and network information technology in the mechanical industry of China is analyzed.

INTRODUCTION

With the constant development and perfection of computer technology, the computer has already

gotten deeply into modern industrial production and all aspects of people's daily lives, playing more and more extensive and important functions. Meanwhile, the computer has had more and more

extensive and deep application in Chinese industry, and the capability of industrial enterprises in China has been strengthened constantly and powerfully.

In order to get rid of traditional dependence on experience and coarse mechanical design and machine methods, namely, simple turning, milling, planing, grinding, manual drawing, and so forth, which have prevailed for decades in China, the introduction of computer technology into the mechanical industry has great and far-reaching meaning in accelerating the development of mechanical design, manufacturing, and quality promotion in China. Since its reform and opening, the mechanical industry of China has seen rapid development, especially as we entered the 21st century and after the country's formal accession into World Trade Organization (WTO). China's mechanical design and manufacturing industry integrated with the world progressively; as various new technologies, especially computer technologies, are introduced and applied constantly, China's mechanical industry has realized a qualitative leap.

The mechanical industry is an important industry in China's economic construction. China is paying more and more attention to revitalizing and developing its mechanical industry. At present, through participating in the keen competition of the world product market, the demand for mechanical products runs up and up while the requirement for product quality becomes higher and higher. Mechanical design and manufacturing technology directly influence the development of the manufacturing industry, product update, and competitive power. Whether the mechanical industry is developed or not, it has already become a most important sign to weigh the comprehensive strength of a nation. A combination of computer technology and mechanical industry is the only way to rapidly improve the level of the mechanical industry of China.

CAD, CAM, and CAE Technology

CAD Technology

Computer-aided design (CAD) is widely applied in industry. It has become what people are familiar with and a new technology that contributes to production. As we entered the 21st century, with the rapid development of the network application technology of the computer, CAD technology has been used widely in enterprises and has already become practical for productivity.

Study on CAD technology in China began in 1960s, but at that time, the study and application range was very narrow, mainly concentrated on a few universities and institutes. In the early 1980s, China began to relatively broaden its CAD technological studies and technology import, and began to develop domestic CAD software. Since the middle of the 1980s, the Chinese government began to popularize CAD application technology in relevant industries. In the 1990s, many study institutions in China carried out a large amount of studies on the basic theory and software development of CAD technology and got great achievement. Through the efforts over the past 20 years (X. Song, 2000), China has already preliminarily set up a CAD software industry with a certain market scale and independent copyright. It also set up an application training network and consulting service system for CAD nationwide, and made a set of CAD technical standards for China, combining the needs of CAD application projects. The country launched scientific studies fruitfully, and established a set of management systems, measures, and methods in CAD application projects. At present, China has already adopted CAD technology extensively in every field related to products and engineering design, and it is playing an important role there (Li & Chen, 2006). China is becoming the important base of the world manufacturing industry.

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