

**MECHATRONICS: Japan's Newest Threat**, by V. Daniel Hunt

**REVIEWED BY RANGA KOMANDURI<sup>1</sup>**

*Mechatronics: Japan's Newest Threat*, by V. Daniel Hunt is a well-written, easy-to-read book on this subject. For those readers who are not familiar with the work "Mechatronics," it is a term coined by the Japanese to describe the integration of mechanical and electronic engineering. Mechatronics is thus an integrated approach to product and manufacturing system design. It is used primarily in factory automation and encompasses the next generation machines, robots, and smart mechanisms. In Japan, the mechatronic approach is accelerating the already rapid process of transforming new ideas into products.

The 386 page book contains an index, the following 11 chapters (divided into four parts, namely, background, applications, technology, and assessment), two appendices (glossary and reference materials), and a subject index.

**Part I BACKGROUND**

1. Introduction to Mechatronics
2. Mechatronics System Elements

**Part II APPLICATIONS**

3. Factory Automation
4. Office Automation
5. Home Automation

**Part III TECHNOLOGY**

6. Computer Integrated Systems
7. Smart Robots
8. Machine Vision Systems

**Part IV ASSESSMENT**

9. Technology Assessment
10. Trends in Mechatronics
11. A Blueprint for the Future

Chapter 1 gives a brief introduction to mechatronics, the Japanese approach to mechatronics, benefits of mechatronics, and identifies the challenges to American management resulting from Japan's implementation of mechatronics.

Chapter 2 describes the basic elements of a mechatronic facility, their current state of development, and how they should expand to become part of factory automation. Since the realization of the advancement in society depends on the

successful implementation of factory automation, the author points out the need to be aware of the mechatronic approach and how system elements, when integrated, can contribute.

Chapter 3 deals with factory automation. It begins with a brief overview, followed by an introduction on computer integrated manufacturing systems, smart robots, and machine vision systems which are further elaborated in chapters 6-8.

Chapter 4 describes current status and future potential of office automation under the mechatronics blueprint. New tools and advances in the existing tools are expected to be developed in the same integrated fashion; these will be more efficient, and more responsive to modern society and its needs.

Chapter 5 covers the future home and its automated systems. It is anticipated that the home automation of the future will be highly interactive with its occupants. Based on the automated systems of the office, the home will surround its occupants with new tools, facilities, and computerized services to make living style significantly different and hopefully better than it is today.

Chapter 6 deals with integrated computer systems, technology, and techniques that will integrate the "islands of automation" currently used in manufacturing into mechatronic systems.

Chapter 7 briefly reviews the state-of-the-art robotics technology.

Chapter 8 describes the basic elements of the machine vision system as an integral part of the mechatronic system.

Chapter 9 gives a technology assessment of the various mechatronic elements, their integration, and current level of their development and application.

Chapter 10 describes how mechatronics will establish trends in factory automation, office automation, and home automation based on U.S. Department of Commerce estimates, and predictions from Prudential Bache.

Chapter 11 provides a blueprint, according to the author, for the future development and impact of mechatronics, describing opportunities for system integration and enhanced productivity, the impact of mechatronics on people and their jobs, and the changes already underway to incorporate mechatronics in our educational curriculum.

The author has provided a strong case for the adaptation of mechatronics in the U.S. He argues that now is not the time for complacency. He points out that the U.S. must improve the efficiency of its product marketing, engineering, and production operations now or else it will be difficult to compete with Japan in the production of goods and services.

The book is highly recommended for those interested in technology and management. It is also recommended for technical libraries.

<sup>1</sup>Directorate of Engineering, National Science Foundation, Washington, D.C. 20550.