

1.2 Industrial robots - definition and classification

1.2.1 Definition (ISO 8373:2012) and delimitation

The annual surveys carried out by IFR focus on the collection of yearly statistics on the production, imports, exports and domestic installations/shipments of **industrial robots (at least three or more axes)** as described in the ISO definition given below. Figure 1.1 shows examples of robot types which are covered by this definition and hence included in the surveys.

A robot which has its own control system and is not controlled by the machine should be included in the statistics, although it may be dedicated for a special machine. Other dedicated industrial robots should not be included in the statistics. If countries declare that they included dedicated industrial robots, or are suspected of doing so, this will be clearly indicated in the statistical tables. It will imply that data for those countries is not directly comparable with those of countries that strictly adhere to the definition of multipurpose industrial robots.

- Wafer handlers have their own control system and should be included in the statistics of industrial robots. Wafers handlers can be articulated, cartesian, cylindrical or SCARA robots. Irrespective from the type of robots they are reported in the application "cleanroom for semiconductors".
- Flat panel handlers also should be included. Mainly they are articulated robots. Irrespective from the type of robots they are reported in the application "cleanroom for FPD".

Examples of dedicated industrial robots that should not be included in the international survey are:

- Equipment dedicated for loading/unloading of machine tools (see figure 1.3).
- Dedicated assembly equipment, e.g. for assembly on printed circuit boards (see figure 1.3).
- Integrated Circuit Handlers (pick and place)
- Automated storage and retrieval systems (see figure 1.3).
- Automated guided vehicles (AGVs) (see "World Robotics Service Robots")

The submission of statistics on industrial robots is mandatory for IFR member associations. In some countries, however, data is also collected on all types of manipulating industrial robots, that is, both multipurpose and dedicated manipulating industrial robots. Optionally, national robot associations may therefore also submit statistics on all types of manipulating industrial robots, which will be included in the publication *World Robotics* under the respective country chapter.

Industrial robot as defined by ISO 8373:2012:

An automatically controlled, reprogrammable, multipurpose manipulator programmable in three or more axes, which can be either fixed in place or mobile for use in industrial automation applications

The terms used in the definition above are explained in more detail below:

- **Reprogrammable:** designed so that the programmed motions or auxiliary functions can be changed without physical alteration;

1 2 Industrial Robots Definition And Classification

Yi-Tong Ma



1 2 Industrial Robots Definition And Classification:

NBS Special Publication ,1977 *Performance Evaluation of Programmable Robots and Manipulators* Thomas B. Sheridan,1976 *Proceedings of Symposium for International Co-operation on Industrial Robots '87* ,1987 *World Robotics* ,2004 *Control in Transportation Systems* 1986 M.M. Etschmaier,H. Strobel,R. Genser,T. Hasegawa,2014-05-23 This volume investigates developments in and management of transportation systems future trends and what effects these will have on society The book studies transportation systems planning traffic problems and the issue of conservation the use of logistics and the role of computers and robotics in traffic control **Robot Technology and Applications** K. Rathmill,P. MacConaill,S. O'Leary,J. Browne,2013-06-29 **An Overview of Artificial Intelligence and Robotics** William B. Gevarter,1982 **An Overview of Artificial Intelligence and Robotics. Volume II - Robotics** William B. Gevarter,United States. National Bureau of Standards,1982 **World Industrial Robots** ,1994 **JEE, Journal of Electronic Engineering** ,1982 **Theory and Practice of Robots and Manipulators** International Centre for Mechanical Sciences,1977 *Industrial Robots Industry in Japan* Yano Economic Research Institute,1981 Production and Use of Industrial Robots: Trends in the manufacture and use of industrial robots ,1983 *13th International Symposium on Industrial Robots and Robots 7: Future directions* ,1983 **Industrial Robotics** Harry Colestock,2005 This detailed reference shows how to achieve maximum productivity with robotics classifies robots according to their complexity and function and explains how to avoid common automation mistakes **Applications of Industrial Robots** ,1987 Compilation of selected papers on the use of industrial robots **Proceedings** ,1977 **Robotics and Industrial Engineering** Edward L. Fisher,1983 **Advances in Design, Simulation and Manufacturing III** Vitalii Ivanov,Justyna Trojanowska,Ivan Pavlenko,Jozef Zajac,Dragan Peraković,2020-06-04 This book reports on topics at the interface between manufacturing and materials engineering with a special emphasis on design and simulation issues Specifically it covers the development of CAx technologies for product design the implementation of smart manufacturing systems and Industry 4 0 strategies topics in technological assurance numerical simulation and experimental studies on cutting milling grinding pressing and profiling processes as well as the development and implementation of new advanced materials Based on the 3rd International Conference on Design Simulation Manufacturing The Innovation Exchange DSMIE 2020 held on June 9 12 2020 in Kharkiv Ukraine this first volume in a two volume set provides academics and professionals with extensive information on the latest trends technologies challenges and practice oriented lessons learned in the above mentioned areas **Science & Technology in Japan** ,1982

The book delves into 1 2 Industrial Robots Definition And Classification. 1 2 Industrial Robots Definition And Classification is an essential topic that needs to be grasped by everyone, from students and scholars to the general public. The book will furnish comprehensive and in-depth insights into 1 2 Industrial Robots Definition And Classification, encompassing both the fundamentals and more intricate discussions.

1. This book is structured into several chapters, namely:

- Chapter 1: Introduction to 1 2 Industrial Robots Definition And Classification
- Chapter 2: Essential Elements of 1 2 Industrial Robots Definition And Classification
- Chapter 3: 1 2 Industrial Robots Definition And Classification in Everyday Life
- Chapter 4: 1 2 Industrial Robots Definition And Classification in Specific Contexts
- Chapter 5: Conclusion

2. In chapter 1, the author will provide an overview of 1 2 Industrial Robots Definition And Classification. This chapter will explore what 1 2 Industrial Robots Definition And Classification is, why 1 2 Industrial Robots Definition And Classification is vital, and how to effectively learn about 1 2 Industrial Robots Definition And Classification.
3. In chapter 2, this book will delve into the foundational concepts of 1 2 Industrial Robots Definition And Classification. This chapter will elucidate the essential principles that must be understood to grasp 1 2 Industrial Robots Definition And Classification in its entirety.
4. In chapter 3, the author will examine the practical applications of 1 2 Industrial Robots Definition And Classification in daily life. This chapter will showcase real-world examples of how 1 2 Industrial Robots Definition And Classification can be effectively utilized in everyday scenarios.
5. In chapter 4, this book will scrutinize the relevance of 1 2 Industrial Robots Definition And Classification in specific contexts. The fourth chapter will explore how 1 2 Industrial Robots Definition And Classification is applied in specialized fields, such as education, business, and technology.
6. In chapter 5, this book will draw a conclusion about 1 2 Industrial Robots Definition And Classification. The final chapter will summarize the key points that have been discussed throughout the book.
- This book is crafted in an easy-to-understand language and is complemented by engaging illustrations. This book is highly recommended for anyone seeking to gain a comprehensive understanding of 1 2 Industrial Robots Definition And Classification.

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