1. Record Nr. UNINA9910144575903321

Titolo	Robot grippers / / Gareth J. Monkman [and three others]
Pubbl/distr/stampa	Weinheim, [Germany] : , : Wiley-VCH Verlag GmbH & Co. KGaA, , 2007 ©2007
ISBN	1-280-85454-5 9786610854547 3-527-61028-6 3-527-60989-X
Descrizione fisica	1 online resource (465 p.)
Disciplina	629.8933
Soggetti	Manipulators (Mechanism) Manipulators (Mechanism) - Design and construction Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Robot Grippers; Preface; Contents; 1 Introduction to Prehension Technology; 1.1 Grippers for Mechanization and Automation; 1.2 Definitions and Conceptual Basics; 1.3 Grasping in Natural Systems; 1.4 Historical Overview of Technical Hands; 2 Automatic Prehension; 2.1 Active Pair Mating; 2.2 Strategy and Procedures; 2.2.1 Prehension Strategy; Example of a prehension strategy; 2.2.2 Gripping Procedure, Conditions and Force; 2.2.3 Gripper Flexibility; 2.3 Gripper Classification; 2.4 Requirements and Gripper Characteristics; 2.5 Planning and Selection of Grippers; 3 Impactive Mechanical Grippers 3.1 Gripper Drives3.1.1 Electromechanical Drives; 3.1.2 Pneumatic Drives; 3.1.3 Electrostrictive and Piezoelectric Actuation; 3.2 Design of Impactive Grippers; 3.2.1 Systematics and Kinematics; 3.2.1.1 Parallel Impactive Grippers; 3.2.2 Angular Impactive Grippers; 3.2.3 Radial Impactive Grippers (Centring Grippers); 3.2.4 Internal Grippers; 3.2.5 Gripper with Self-blocking Capability; 3.2.6 Rotatable Jaw Grippers; 3.2.7 Gripper Finger and Jaw Design; 3.2.8 Self Securing Grippers; 3.2.8.1 Securing Through Spring Forces; 3.2.8.2 Securing Through Object Mass; 3.2.9 Three-finger Grippers

3.2.10 Four-finger Grippers and Four-point Prehension4 Ingressive Grippers; 4.1 Flexible Materials; 4.1.1 Pinch Mechanisms; 4.1.2 Intrusive Mechanisms; 4.1.3 Non-Intrusive Mechanisms; 5 Astrictive Prehension; 5.1 Vacuum Suction; 5.1.1 Vacuum Production; 5.1.2 Vacuum Suckers; 5.1.3 Passive Suction Caps; 5.1.4 Air Jet Grippers; 5.2 Magnetoadhesion; 5.2.1 Permanent Magnet Grippers; 5.2.2 Electromagnetic Grippers; 5.2.3 Hybrid Electromagnetic Grippers; 5.4 Electroadhesion; 5.4.1 Electroadhesive Prehension of Electrical Conductors; 5.4.2 Electroadhesive Prehension of Electrical Insulators
6 Contigutive Prehension6.1 Chemoadhesion; 6.2 Thermoadhesion; 7 Miniature Grippers and Microgrippers; 7.1 Impactive Microgrippers; 7.1.1 Electromechanically Driven Impactive Microgrippers; 7.1.2 Thermally Driven Impactive Microgrippers; 7.1.3 Electrostatically Driven Impactive Microgrippers; 7.2 Astrictive Microgrippers; 7.2.1 Vacuum Microgrippers; 7.2.2 Electroadhesive Microgrippers; 7.3 Contigutive Microgrippers; 8 Special Designs; 8.1 Clasping (Embracing) Grippers; 8.2 Anthropomorphic Grippers; 8.2.1 Jointed Finger Grippers; 8.2.2 Jointless Finger Grippers; 8.3 Dextrous Hands
9 Hand Axes and Kinematics9.1 Kinematic Necessities and Design; 9.2 Rotary and Pivot Units; 10 Separation; 10.1 Separation of Randomly Mixed Materials; 10.2 Separation of Rigid Three Dimensional Objects; 10.3 Separation of Rigid Sheet Materials; 10.3.1 Gripping of Thin Blanks from a Magazine; 10.3.2 Air Flow Grippers; 10.4 Separation of Non-Rigid Sheet Materials; 10.4.1 Roller Grippers; 11 Instrumentation and Control; 11.1 Gripper Sensor Technology; 11.2 Perception Types; 11.2.1 Tactile Sensors; 11.2.2 Proximity Sensors; 11.2.3 Measurement sensors; 11.2.4 Finger Position Measurement
11.2.5 Measuring Procedures in the Gripper

Sommario/riassunto

Since robotic prehension is widely used in all sectors of manufacturing industry, this book fills the need for a comprehensive, up-to-date treatment of the topic. As such, this is the first text to address both developers and users, dealing as it does with the function, design and use of industrial robot grippers. The book includes both traditional methods and many more recent developments such as micro grippers for the optolectronics industry. Written by authors from academia, industry and consulting, it begins by covering the four basic categories of robotic prehension before expanding into