Contents

Foreword 3

Editorial 5

Contents 8

Executive Summary World Robotics 2016 Industrial Robots 11

1 Introduction 20
1.1 Sources and methods 20
1.1.1 Compliance 20
1.1.2 Coverage 20
1.1.3 Data sources and reliability of data 20
1.1.4 Operational stock and accumulated annual sales 21
1.1.5 Interpretation of the concepts of shipments, sales and supply 22
1.1.6 Revision of time-series data on the robot stock and annual supply 22
1.1.7 Data coverage and where to access data for previous years 23
1.2 Industrial robots - definition and classification 25
1.2.1 Definition (ISO 8373:2012) and delimitation 25
1.2.2 Classification by types of robots 26
1.2.3 Classification by industries 35
1.2.4 Classification by applications 38
1.3 Definition and classification of service robots 39
1.3.1 Definition 39
1.3.2 Classification of service robots by application areas 40

2 Worldwide Distribution of Industrial Robots 42
2.1 Unit Sales 42
2.2 Worldwide operational stock of industrial robots 48
2.3 Estimated worldwide market value of robots in 2010-2015 52
2.4 Analysis of the effects of the business cycle on investments in industrial robots 54
2.5 Analysis of the development of robot density in selected countries 56
2.5.1 Definition of robot density 56
2.5.2 Measurements of robot density based on the total number of persons employed in the Manufacturing Industry 57
2.5.3 Measurements of robot density based on the total number of persons employed in the automotive industry and in all other branches 61
2.6 Analysis of the supply and the stock of multipurpose industrial robots in 2010 - 2015 by major application areas 65
2.7 Analysis of the supply and the stock of multipurpose industrial robots 2010 – 2015 by major industrial branches 73

2.8 Comparison between the automotive industry and all other industrial branches ... 83
2.9 Supplies of multipurpose industrial robots in 2014 and 2015 by types of robots and by countries ... 94

3 The Structure of the Distribution of Industrial Robots in Individual Countries ... 102
3.1 Introduction ... 102
3.2 Americas ... 103
3.2.1 Brazil ... 112
3.2.2 North America (USA, Canada, Mexico) ... 117
3.2.3 Rest of South America ... 141
3.3 Asia/Australia ... 145
3.3.1 People´s Republic of China ... 154
3.3.2 India ... 166
3.3.3 Indonesia ... 174
3.3.4 Japan ... 179
3.3.5 Republic of Korea ... 193
3.3.6 Malaysia ... 206
3.3.7 Singapore ... 210
3.3.8 Taiwan, Province of China ... 213
3.3.9 Thailand ... 220
3.3.10 Vietnam ... 227
3.3.11 Other South East Asia ... 230
3.3.12 Australia and New Zealand ... 233
3.4 Europe ... 238
3.4.1 Czech Republic and Slovakia ... 247
3.4.2 Hungary ... 263
3.4.3 Poland ... 271
3.4.4 Romania ... 277
3.4.5 Russian Federation ... 283
3.4.6 Balkan Countries ... 288
3.4.7 Other Eastern Europe ... 292
3.4.8 Austria ... 296
3.4.9 Belgium and the Netherlands ... 304
3.4.10 France ... 315
3.4.11 Germany ... 325
3.4.12 Italy ... 340
3.4.13 Portugal ... 350
3.4.14 Spain ... 358
3.4.15 Switzerland ... 368
3.4.16 United Kingdom ... 374
3.4.17 Denmark ... 384
3.4.18 Finland ... 393
3.4.19 Norway ... 401

3.4.20 Sweden 409
3.4.21 Turkey 418
3.4.22 All Other European Countries 426
3.5 Africa 427
3.5.1 South Africa 427
3.6 Other Countries 430

4 Forecast of Worldwide Investment in Industrial Robots 2016-2019 431
4.1 Why robot installations are continuing to increase strongly?? 431
4.2 Technical robotic trends and customer trends 433
4.3 Conclusion and forecast 2016-2019 438

5 The Profitability of Industrial Robots 442
5.1 Introduction 442
5.2 Case study 1: Robots handle and inspect beer kegs at the Haacht Brewery 445
5.3 Case study 2: Universal Robots empowers Wistron with greater production flexibility using robots 448
5.4 Case study 3: Brought technology to the point 451
5.5 Case study 4: Making light work of unloading heavy tubes 454
5.6 Case study 5: Innovative Packaging Solution 457
5.7 Case study 6: Mobile robot colleagues on wheels increase productivity and worker safety at Scott Fetzer Electrical Group 460

6 Special Feature 465
6.1 International industrial robotics standardization activities in ISO 465
6.2 Winner of the IERA Award 2016: ABB Robotics 468

ANNEX A: Yearly supply, operational stock 471