Industrial Automation and Wireless IoT is the fourth strategy report from Berg Insight analysing the latest developments on the market for wireless IoT applications in industrial automation worldwide.

This strategic research report from Berg Insight provides you with 180 pages of unique business intelligence including 5-year industry forecasts and expert commentary on which to base your business decisions.

**Highlights from this report:**
- **Insights** from 30 executive interviews with market leading companies.
- **360-degree overview** of the IoT ecosystem in the industrial automation industry.
- **Comprehensive overview** of key applications for wireless IoT solutions in industrial automation.
- **In-depth analysis** of market trends and key developments.
- **Detailed profiles** of over 69 key players in this market.
- **Updated forecasts** by wireless technology, region, market vertical and device segment lasting until 2023.
The installed base of wireless IoT devices in Industrial Automation to reach 50.3 million in 2023

Wireless technologies are integrated into a wide range of devices that can be used throughout an automation system, from the supervisor level all the way to the control and field levels. The devices can be broadly divided into two segments: automation equipment and network equipment. In the automation equipment segment, high-volume product categories featuring wireless communications capability include instrumentation such as industrial sensors, as well as wireless I/O and field devices that connect to sensors, actuators and machines. Important product categories within the network equipment segment are wireless access points, gateways, routers and switches.

The adoption of wireless solutions in industrial environments is often a gradual process and an initial deployment typically comprises clusters of wireless devices connected to an existing wired network. Although wired networking solutions are still predominantly used for industrial communications between sensors, controllers and systems, wireless solutions are widely used as wire replacement in hard to reach or hazardous areas, on moving machine parts and on portable equipment. Proprietary radio solutions have traditionally been used to support these use cases and is still used in many applications today. Standardised wireless technologies such as Wi-Fi, 802.15.4 and Bluetooth have advanced to become the leading wireless technologies for industrial applications. Cellular technologies based on 5G could expand the addressable market for wireless communications as it allows for deployments where requirements related to bandwidth, latency or capacity cannot be fulfilled today.

Berg Insight estimates that annual shipments of wireless devices for industrial automation applications including both network and automation equipment reached 4.6 million units worldwide in 2018, accounting for approximately 6 percent of all new connected nodes. Growing at a compound annual growth rate (CAGR) of 16.3 percent, annual shipments are expected to reach 9.9 million in 2023. The installed base of wireless devices in industrial automation applications is forecasted to grow from an estimated 21.3 million connections at the end of 2018 to 50.3 million connected devices by 2023.

Automation equipment such as wireless instrumentation is offered by many large automation vendors as part of complete systems for automation of industrial processes, but also by specialised providers.

- Emerson became the first company to market WirelessHART products in 2008 and is today the largest provider of wireless instrumentation devices. The company has an installed base of more than 42,000 wireless networks worldwide and serves many leading players across various process industries. Major wireless instrumentation vendors further include Yokogawa and Honeywell, which both provide field devices based on the wireless technology ISA100.11a. Pepperl+Fuchs significantly strengthened its position in the wireless field device market through the acquisition of MACTeK in 2015, a provider of HART protocol devices. Other major industrial automation vendors that provide wireless field devices include ABB, Endress+Hauser, Schneider Electric and Siemens. Wireless I/O and field devices are also offered by a diverse range of players that are primarily active in the industrial communications and control markets.

Major providers of wired industrial network equipment also offer wireless solutions to enable customers to monitor and control devices wirelessly in parts of the plant that are normally not connected to the control room due to accessibility or wiring costs. These include Siemens, Cisco, Belden, Moxa and Phoenix Contact, which all offer comprehensive portfolios of industrial wireless devices such as routers, gateways and wireless access points. These companies typically partner with large automation vendors as a go-to-market strategy. Cisco has for example developed the Ethernet and IP-networking based architecture for industrial Ethernet applications – Converged Plantwide Ethernet (CPwE) – together with Rockwell Automation. Additional providers of industrial Wi-Fi devices are Acksys, Advantech, Antaira Technologies, Beijer Electronics Group, Data-Line, Hilscher, HMS Networks, INSYS Microelectronics, MB Connect Line, MC Technologies, NetModule and Red Lion Controls.

Cellular and unlicensed ISM radio solutions are typically used for data acquisition and backhaul communications in distributed automation applications. The largest provider of cellular IoT gateways and routers in the industrial space include Sierra Wireless, followed by Cradlepoint, Cisco, Digi International, InHand Networks, HMS Networks, Maestro Wireless, GE’s industrial communications group GE MDS, Robustel Technologies, Advantech, MultiTech Systems, NetModule and Eurotech. Major vendors of proprietary radio solutions are GE MDS, FreeWave Technologies and Banner Engineering.

This report answers the following questions:
- Which are the major applications for wireless IoT in industrial automation?
- Which are the leading wireless IoT solution providers for industrial automation applications?
- What offerings are available from device vendors, platform vendors and service providers?
- What are the key drivers behind the adoption of wireless IoT in industrial automation?
- What impact will technology advancements have on the market?
- How will the market evolve in North America, Asia-Pacific and Europe?
- Why is Big Data analytics and cloud solutions crucial for the future of wireless connectivity in industrial automation?
- How will connectivity strategies in industrial automation evolve in the future?
Executive Summary

1 The industrial automation industry
1.1 Introduction to industrial automation
1.2 Factory and process automation
1.3 Factory and process operations
1.4 Industrial automation system overview
1.5 Industrial automation evolution
1.6 The industrial automation market
1.7 Industrial automation market segments
1.7.1 Industrial software
1.7.2 Industrial control systems
1.7.3 Automation equipment and instrumentation
1.7.4 Industrial robots

2 Wireless IoT solutions in industrial automation
2.1 Wireless automation infrastructure
2.1.1 Facilities segment
2.1.2 Service segment
2.1.3 Network segment
2.2 Operations management
2.2.1 Production and process management
2.2.2 Business management
2.3 Equipment management and regulatory compliance
2.3.1 Equipment diagnostics and maintenance planning
2.3.2 Security and Safety
2.3.3 Regulatory compliance
2.4 Business models and project strategies

3 Market forecasts and trends
3.1 Market analysis
3.1.1 Installed base and unit shipments
3.1.2 Wireless technologies
3.1.3 Regional markets
3.1.4 Major vendors
3.2 Market drivers and barriers
3.2.1 Macroeconomic environment
3.2.2 Regulatory environment
3.2.3 Competitive environment
3.2.4 Technology environment
3.3 Value chain analysis
3.3.1 Industrial communications and control industry players
3.3.2 Industrial automation industry players
3.3.3 Telecom industry players
3.3.4 IoT platform and IT industry players
3.4 Future industry trends

4 Global automation vendors
4.1 ABB
4.2 Bosch
4.3 Emerson
4.4 Endress+Hauser
4.5 Fanuc
4.6 General Electric
4.7 Hitachi
4.8 Honeywell
4.9 Keyence
4.10 Kuka
4.11 Mitsubishi Electric
4.12 Omron
4.13 Pepperl+Fuchs
4.14 Rockwell Automation
4.15 Schneider Electric
4.16 Siemens
4.17 Yaskawa Electric
4.18 Yokogawa

5 Device and software vendors
5.1 Industrial communications and control solution providers
5.1.1 Axcy
5.1.2 ADLINK Technology
5.1.3 Advantech
5.1.4 Aantara Technologies
5.1.5 Beckhoff Automation
5.1.6 Beijer Electronics Group

Glossary
**About the Author**

**Fredrik Stålbrand** is an IoT Analyst with a Master's degree in Industrial Engineering and Management from Chalmers University of Technology. He joined Berg Insight in 2016 and his areas of expertise include IoT platforms and IoT/M2M applications in the industrial markets.

**Berg Insight** offers premier business intelligence to the telecom industry. We produce concise reports providing key facts and strategic insights about pivotal developments in our focus areas. Berg Insight also offers detailed market forecast databases and advisory services. Our vision is to be the most valuable source of intelligence for our customers.

---

### Who should buy this report?

**Industrial Automation and Wireless IoT** is the foremost source of information about the adoption of wireless connectivity in the industrial automation sector. Whether you are a solution provider, device vendor, industrial automation player, telecom operator, investor, consultant, or government agency, you will gain valuable insights from our in-depth research.

### Related products

- M2M Applications in the Oil and Gas Industry
- The Global Remote Tank Monitoring Market
- Cellular and LPWA IoT Device Ecosystems
- The Global M2M/IoT Communications Market

---

### Order form

**— TO RECEIVE YOUR COPY OF INDUSTRIAL AUTOMATION AND WIRELESS IOT**

**You can place your order in the following alternative ways:**

1. Place your order online in our web shop at www.berginsight.com
2. Mail this order sheet to us at: Berg Insight AB, Viktoriagatan 3, 411 25 Gothenburg, Sweden
3. Email your order to: info@berginsight.com
4. Phone us at +46 31 711 30 91

**Choose type of format**

- Paper copy.......................... 1000 EUR
- PDF 1-5 user license ........... 1500 EUR
- PDF corporate license ........ 3000 EUR

**Family/Surname** | **Forename** | **Position** | **Company** | **Address** | **Postcode** | **Country** | **Telephone** | **Email**
---|---|---|---|---|---|---|---|---

VAT is chargeable on all orders from Sweden. Orders from all other countries in the European Union must include the buyer’s VAT Registration number below in order to avoid the addition of VAT.

**Your PO number** | **Your VAT/TVA/IVA/BTW/MWST number**
---|---

**Please charge my credit card**

- VISA
- Mastercard

**Card number** | **Expiry date (MM/YY)** | **CV code**
---|---|---

**Cardholder’s name** | **Signature**

**Billing address**

**Postcode** | **Country**
---|---

**We enclose our cheque payable to Berg Insight AB**
**Please invoice me**

**Signature** | **Date**
---|---

Reports will be dispatched once full payment has been received. For any enquiries regarding this, please contact us. Payment may be made by credit card, cheque made payable to Berg Insight AB, Viktoriagatan 3, 411 25 Gothenburg, Sweden or by direct bank transfer to Skandinaviska Enskilda Banken, 106 40 Stockholm, Sweden.

Account Holder: Berg Insight AB
Account number: 5011 10 402 80
BIC/SWIFT: ESSESESS
IBAN: SE92 5000 0000 0501 1104 0280