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imprint™ Automation India Magazine

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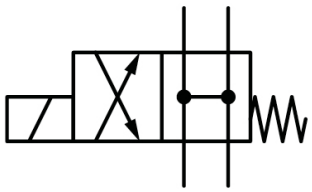
India's Automation Magazine

In this issue

- Automation News
- Automation Robotics
- Artificial Intelligence
- Automation Trends

COVER STORY

Where have all the Engineers Gone !!



Page 29

ISA Maharashtra Section

PPPA MEET 2·3·FEBRUARY 2024

Full conference topics and speaker details

Page 10

Pro Automation, Robotics & Artificial Intelligence Exhibition

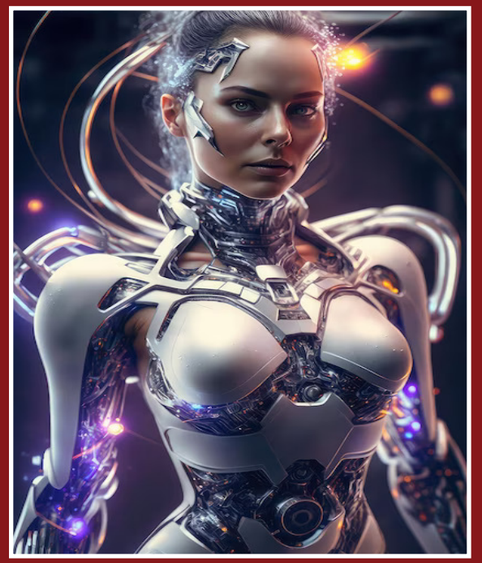
Professional | Automation | Robotics | Artificial Intelligence

PARA TECH EXPO

Sourcing solutions in industrial Automation

HALL 1

- Industrial Automation
- Industrial Robotics
- Machine Learning
- Sensors
- Cobots
- PLCs
- AGV



HALL 2

- Digital Transformation
- Artificial Intelligence
- Edge Computing
- Cyber Security
- Digital Twins
- VR & AR
- IIOT

5·6·7 FEBRUARY 2025

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Industrial Automation Leads to Excellence

imprint Automation Grid

IIOT	Cobots	Robotics	Automation
AMR	SCADA	VR & AR	Sensors
AGV	Cyber Security	Edge Computing	Digital Transformation
PLCs	Digital Twins	Machine Learning	Artificial Intelligence

March of automation in manufacturing

VENUE: CIDCO Exhibition & Convention Centre (CECC), VASHI, NAVI MUMBAI 400703

CONFERENCE

3 Day conference with leading speakers on important topics

CEO Round Table Conclave

BOOK YOUR SPACE	**Anchal Tiwari** **9821135542** **anchal.tiwari@imprint-magazine.in**	
VISIT THE SHOW		**Deepali Jaiswar** **9821135542** **imprintmagazine84@gmail.com**

Wow! The Right Catalyst !!

Automation growth in Manufacturing, packaging, warehousing is 17-20%. 5G connectivity, IIOT is spurring adoption of automation. Information on cost-effective solutions as well as future-proof solution is imperative.

Imprint Automation India magazine is a valid response to an urgent need of Indian manufacturing industry to source and connect with the right company for the correct solution.

Automation's Growth Story

The India Industrial Automation Market size is expected to grow from USD 13.23 billion in 2023 to USD 25.76 billion by 2028, at a CAGR of 14.26% during the forecast period (2023-2028).

The India Warehouse Automation Market size is expected to grow from USD 267.07 million in 2023 to USD 880.98 million by 2028, at a CAGR of 26.96% during the forecast period (2023-2028).

The packaging automation market is currently valued at US$ 74.53 Bn in 2023. By 2033, demand for Packaging Automation is expected to reach a high of US$ 161.66 Bn, the report adds.

The Pharmaceutical Automation Market is projected to reach $18.2 billion by 2029 at a CAGR of 12% from 2022 to 2029. The growth of this market is attributed to the increasing adoption of robots in pharmaceutical manufacturing, government initiatives to promote industrial development, rising investments in transforming conventional production facilities, and growing demand for safe and digitized production processes. The growing demand for IoT in pharmaceutical manufacturing are expected to offer significant opportunities for the growth of this market.

imprint™
Automation India
Magazine

Contents

COVER STORY

Where have all the Engineers Gone !!

Page 29

ISA Maharashtra Section

PPPA MEET 2·3·FEBRUARY 2024

Full conference topics and speaker details

Page 10

Masthead. Imprint

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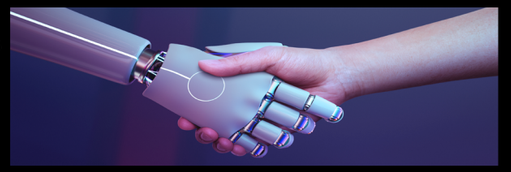

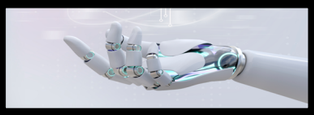

Perspective

Automation Industry Must Attract Talent

Our cover story Where have all the engineers gone is a matter of grave concern for the automation industry. What could be the reason? Low rewards and low salaries? If so, that would be irresponsible on the part of both Manufacturers the actual users of industrial automation, and automation technology companies, the backbone of industrial automation. Talent, technology, innovation, in industrial automation solutions is the key. Whatever needs to be done to retain talent in automation must be the mantra of all companies. Imprint Automation India magazine is going to be highlight this issue and encourage our industry to change in respect to retaining talent.

Focus is the next important factor specifically for Indian automation industry. Investment in research and development of automation solutions is of paramount importance to deliver automation to Indian manufacturing.

Indian government is focused on manufacturing as critical to India rather than IT services, which doesn't provide strength and actual development. Defense is the new focus and the recent wars have proved the critical factor is to be able to produce at very high speed, which means automation.

Automation thus is the most critical factor in creating modern factories in India and we need to drive automation down to even mid-scale factories.

The 14 PLI sectors present automation business. Industrial Automation companies should seek business seek a share from the 1.03 lakh crore invested in these 14 PLI sectors.

The PPPA Meet 2024 at CECC Navi Mumbai Venue is exciting. Petroleum, Power, Process Automation and a congregation of leading Automation engineers. We have detailed the list of topics and speakers with profiles in this issue. Imprint Automation India magazine is proud to be media partner of ISA Maharashtra Section. Shri Bhise and Shri Joshi need to be recognized for their selfless contribution in ensuring the success of PPPA 2024.

In response to the Automation Industry need for a more inclusive and neutral expo Infocast Systems publishers of Imprint Automation India magazine are launching PARA Tech Expo 2025. PTE will boast of a Three-Day Conference, CEO Round Table Conclave. Experiential features. And the most elite gathering of actual users and pandits of Automation Technology.

PPPA MEET 2·3·FEBRUARY 2024

ISA MAHARASHTRA SECTION OF PRESIDENT MESSAGE

Niranjan Bhise

As the President of the ISA Maharashtra Section, it is indeed an honor to extend a warm welcome to each one of you at PPPA-2024, themed "Automation Paving the Way for a New Era of Industry Excellence." This distinguished event is scheduled to unfold on the 2nd and 3rd of February 2024 at the CIDCO Exhibition & Convention Centre in Vashi, Navi Mumbai.

This marks the fifth installment in the PPPA series, a remarkable journey that commenced in 2020 at Taj, Santacruz, followed by PPPA-2021 (Virtual Event), PPPA-2022 at Four Points Sheraton, and PPPA-2023 at CIDCO Exhibition & Convention Centre. Witnessing the continued growth and success of this platform is truly thrilling.

PPPA-2024, a two-day extravaganza, is dedicated to exploring Emerging Technologies in Automation. The event encompasses a conference, exhibition, Awards ceremony, cultural program, and Gala dinner—offering a unique opportunity for Automation professionals, including End-users, Consultants, System Integrators, Turnkey Contractors, and more. Approximately 250 professionals will be present, complemented by an additional 750 joining us online via YouTube and Facebook live streaming platforms.

Dr. Upendra Joshi

I extend a special invitation to each delegate, recognizing your valuable contribution in enriching this gathering and fostering collaboration. The theme, "Automation Paving the Way for a New Era of Industry Excellence," highlights the swift evolution of our industry. This year's event serves as a platform for experts to share insights, promoting collaboration and collective growth.

Let us seize this opportunity to network, collaborate, and learn from each other. My heartfelt gratitude to the experts delivering technical sessions and our sponsors for their crucial financial support, ensuring the success of PPPA-2024.

In conclusion, I warmly welcome each one of you and wish you a productive and successful PPPA-2024.

Thank you!

Sincerely,

Niranjan Bhise
President,
ISA-MAHARASHTRA SECTION,
Year: 2023-2024.

Maharashtra Section

Speaker: Head - Program Management

nVent Hoffman

Mr. Lalit Puri

Designing a Resilient System for Hazardous Area

Abstract of the Paper:

This paper/PPT extensively examines Hazardous Areas, covering explosion properties, classification standards, and the crucial interpretation of Ex marking. It explains the key protection concepts within enclosures, outlining their advantages and limitations. The discussion includes temperature classifications and auto-ignition temperatures of hazardous gases. Additionally, the document highlights the benefits brought to the industry by Remote IOs and explores the enclosures and accessories utilized in the Hazardous Location Industry. This comprehensive exploration enhances understanding of the complexities associated with Hazardous Areas, providing valuable insights for professionals in the field.

About The Speaker:

Distinguished career spanning 26 years in Electro-Mechanical Engineering, he brings a wealth of expertise to the field, particularly with 19 years dedicated to the enclosure industry. His professional journey includes pivotal roles in the development of cutting-edge solutions for Hazardous Areas, collaborating with leading multinational corporations in India. His commitment to innovation and safety has been integral to the success of various projects, earning me a reputation as a seasoned professional in the industry. With a strong foundation in IECex principles, coupled with extensive hands-on experience, He has consistently demonstrated a passion for delivering high-impact solutions. As a speaker he is eager to share insights and lessons learned from my extensive career, contributing to the collective knowledge of the engineering community.

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PPPA MEET 2·3·FEBRUARY 2024

Maharashtra Section

Speaker: Lead – Product Marketing

nVent Hoffman

Mr. Madhu S

IEC Standards for Control Enclosures

Abstract of the Paper:

The purpose of this endeavor is to give complete knowledge before selection of an enclosure for a particular application based on various factors such as :

- Environment
- Standards
- Approvals
- Water & Dust Protection
- IP rating & their comparison & inference
- Protective coating

About The Speaker:

Graduate Engineer with 2 PG Qualifications in Management from **IIMC & IGTC.**

Seasoned Sales / Business Development professional with a combined 32 years of experience in Sales / BD/ PM & about 3.5 years as head of manufacturing.

Worked in Steel Industry for 8 years(ISPAT Industries & Tata Steel), 4 years in DOTCOM Companies and has been working in **ENCLOSURE and related industry for almost 15 years now.**

Ravindra Patil

Maharashtra Section

Speaker: Sr. General Manager QA

Delval Flow Controls P. Ltd.

HIPPS Valve Design, Manufacture, Testing and Maintenance

Abstract of the Paper:

The presentation aims at providing a comprehensive but detailed insight of the application of HIPPS valve, the design features, selection of accessories, manufacture, testing and its maintenance.

At design stage the importance of the valve's purpose and safety of the customers asset is focused on with due importance to its function of keeping the end users plant in safe working condition and mitigating the variations that lead to an emergency situation. It emphasizes the importance of the accessories and their selection criteria for the application, ease pf maintenance and reliability of the functioning of the valve. The testing of the valve to ensure that the desired results are achieved and the valve can endure for an estimated life period.

A manufacturer's perspective of features that are required but not usually stated by the buyer / end user to be incorporated in the design and manufacture of the HIPPS valve are also considered in the presentation.

About The Speaker:

Mr. Ravindra Patil has an experience of 29 years in Quality Assurance and Control in Industrial Valves and Pumps industry. He has worked with gate, Globe, Check, Ball, Butterfly, Control valves, Plug, Diaphragm, Sluice and Knife edge gate valves. Certifications garnered for the industry are API 6D, API 609, API 610, SIL, ATEX, ISO 9001, IBR, CRN, TRCU, U/L etc. He has experience in qualification tests viz., Cryogenic, Fugitive Emission, Fire safe, Vacuum, Endurance tests apart from the regular hydro and HP gas tests. He is instrumental in problem solving techniques, and failure analysis and have solved issues at site in both India and abroad. He has served the customers in India and abroad in industrial sectors ranging from Oil and Natural Gas, Power, Water, Chemical Process, Food and Beverages and Pharma.

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PPPA MEET 2·3·FEBRUARY 2024

Arka Mukherjee

Maharashtra Section

Speaker: Product Manager, IoT Solutions & Digitalization

VEGA India Level and Pressure Measurement Pvt. Ltd.

VEGA Inventory System (VIS)-Leveraging IoT for Supply Chain and enhanced plant Storage efficiency

Abstract of the Paper:

The VEGA Inventory System (VIS) represents a groundbreaking approach to Supply Chain and plant Storage Tank Management by harnessing the power of the Internet of Things (IoT).This innovative system integrates IoT Technologies to optimize –

- Inventory Control
- Enhance Supply Chain visibility
- Improve overall plant storage efficiency.
- Improve Financial Positions

VIS employs almost real-time data collection through interconnected sensors and devices, enabling seamless monitoring of Inventory levels.

The system enables:

- Automated Tracking & Monitoring of Inventories and Sensors
- Ensuring accurate and up-to-date information on stock levels
- Reducing the risk of stockouts or overstock situations.
- Real time Report Generation

Additionally, VIS enhances Supply Chain visibility by providing stakeholders with Real-Time Insights enabling better decision-making and proactive problem resolution.

Furthermore, VIS goes beyond mere monitoring, incorporating predictive analytics to forecast and optimize Inventory Replenishment strategies.

This not only reduces operational costs but also contributes to a more sustainable and resource efficient Supply Chain. The implementation of VEGA Inventory Management Systems, offering businesses a competitive edge in the era of Industry 4.0

About The Speaker:

He has more than 15 years of professional experience in the instrumentation and automation domain especially in product management, service and sales management. He has been associated with VEGA for the past 9 years. Starting as Regional Service Manager for the Western Region and Area Manager for the Eastern Region, Mr. Arka is now a Product Manager who's responsible for VEGA's IoT solutions and Digitalization. He has done his B.E. (Hons) from Burdwan University and MBA from NIT, Durgapur. He's currently pursuing a BS from IIT, Madras in Data Science and Applications. He has a keen interest in solving business problems with data-driven approach through emerging technologies like IIoT, Inventory Management for process industries and Machine learning.

Mr. Avinash Kumar

ISA Maharashtra Section

Speaker: AGM – Design

Wallmax

WALLMAX®

Cable & Pipe Transit Sealing Systems

Abstract of the Paper:

The WallMax Sealing system is currently widely used in a variety of projects to ensure perfect sealing of pipe and cable entrances and exits. The WallMax sealing system is a mechanical sealing solution for a wide range of applications, including multiple and single cable and pipe penetrations with variable diameter modules for cable or pipe diameters ranging from 2.5mm to 170mm.

The lecture will provide an overview of the engineering and technological ideas driving the WallMax sealing system. You will also discover more about the testing and certifications that WallMax Sealing Solutions has undertaken. We just passed the blast load test and ATEX (test completed but certificates are awaited).

We have also developed software to calculate cable transit size depending on cable details. There are several models and tools available in the software to help you with your task.

You will learn in detail how WallMax products can assist you during the presentation. It also shows how the product can be useful for many industries such as oil and gas, power and marine, construction, telecommunications, and manufacturing.

About The Speaker:

Avinash Kumar is a mechanical engineer with over 15 years of experience working in industries such as switchgear, electrical and electronic, automobile, and manufacturing OEM."he has been with Wallmax for over a decade. He has also worked with OEMs, such as Phoenix Contact, Whirlpool, and BCH Electric. His professional background is in new product design, development, and certification. Aside from these, he is knowledgeable with CAD/CAM technologies and numerous manufacturing procedures. He also has experience in product testing and certification.

George Thomas

Maharashtra Section

Speaker: Director of Global Sales , Strategic Support and Proposals

Adage Automation Pvt. Ltd.

Challenges and Benefits of Standardizing Process GC Application Solutions

Abstract of the Paper:

Process gas chromatographs play an important role in providing on-line chemical composition analysis that is used by the processing industry for more efficient operations, reduced environmental impact and increased plant safety. Using a wide range of chromatography columns, gives them the ability to measure nearly any compound at nearly any concentration while guaranteeing no cross-interference. Unfortunately, this flexibility of choosing between thousands of types of chromatography columns generally means that service technicians must be very familiar with chromatography to perform maintenance.

This presentation will discuss the challenges and benefits to researching and validating the use of a consistent set of column material types that can be standardized to handle many of the common applications in the hydrocarbon processing industry. The goal is that this will dramatically reduce the need for chromatography expertise for maintenance technicians with compromising the performance of the process GC.

About The Speaker:

Mr.George Thomas is currently the Director of Global Sales, Strategic Support and Proposals within the Gas Chromatographs and Integration Business Segment of Siemens Industry, Inc. in the US. George joined Siemens in 2005, his career has included past tenures with ABB, and Schlumberger in India, Bahrain, Kuwait, and Canada. George's experience has been in integrated projects including control systems, safety systems, analytical systems & process instruments within the Oil & Gas/Petrochemical industry.He received his Bachelor of Science degree in Electronics Engineering from Manipal Institute of Technology, and MBA in International Business from University of Houston.

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PPPA MEET 2·3·FEBRUARY 2024

Nitin Jain

Maharashtra Section

Speaker: Head Sales - Oil and Gas for Analytical System Business Unit

Adage Automation Pvt. Ltd.

Importance of Physical Property analysis in Refinery Process

Abstract of the Paper:

Maximizing margins is essential if the refinery is to survive in today's market. Blending analytical systems play a major part in capturing this value, especially where the plant has varying feedstocks, limited storage, changing regulatory environment and tighter product specifications. Physical Property analyzers plays a major role in the overall blending process and helps in accurate measurements of the various properties of refinery products This presentation highlights the various technologies, solutions and challenges involved in the measurement of the critical physical properties such as Flash Point, Viscosity, Pour Point, Vapor Pressure etc..

About The Speaker:

Mr. Nitin Jain is currently the Head Sales - Oil and Gas for Analytical System Business Unit of ADAGE Automation. Nitin have been working in Adage for around 7 years & his career span includes past tenures with ABB, EMERSON, FORBES MARSHALL, CHEMTROLS, in INDIA & JAL INTERNATIONAL in Saudi Arabia. Nitin's experience has been in integrated projects including Gas Analytical systems & Process instruments, Emission Monitoring Systems, Gas & liquid Metering Systems, Terminal Automation Systems- within the Oil & Gas /Petrochemical industry. He received his Bachelor of Electronics Engineering and Business Management from Pune University.

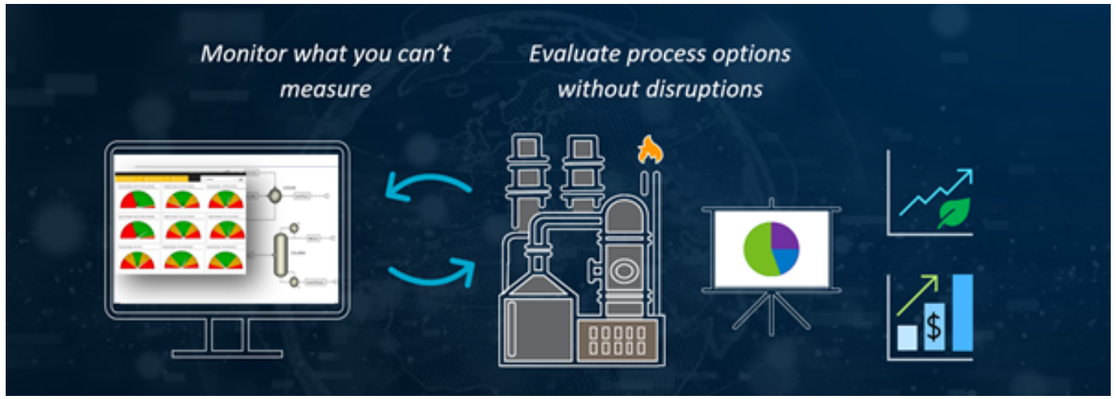
John Rodrigues

ISA Maharashtra Section

Speaker: **Business Leader, Industrial Software**
Emerson Process Automation

EMERSON

Delivering Impactful Process Information for the Next Level Operational Decisions



The focus of automation until recently has been automating manual tasks, a natural progression from Industrial revolution where machines replaced manual labour. Machine productivity or Energy efficiency has been an indirect consequence of OEM improving their design to gain market share. When addressing the problem of overall plant efficiency and design, it has been left to End users and EPC, who may not be most equipped to solve the problem.

Operations and maintenance teams are now demanding a Decision support system to tell them what they don't already know, rather than merely displaying a lagging key performance indicator. For example, predicting Energy inefficiency and Emissions, detecting problems before

outright failure, identifying process deviations and hazards, thus allowing them to take action in time and avoid downtime, losses and in the worst case, accidents.

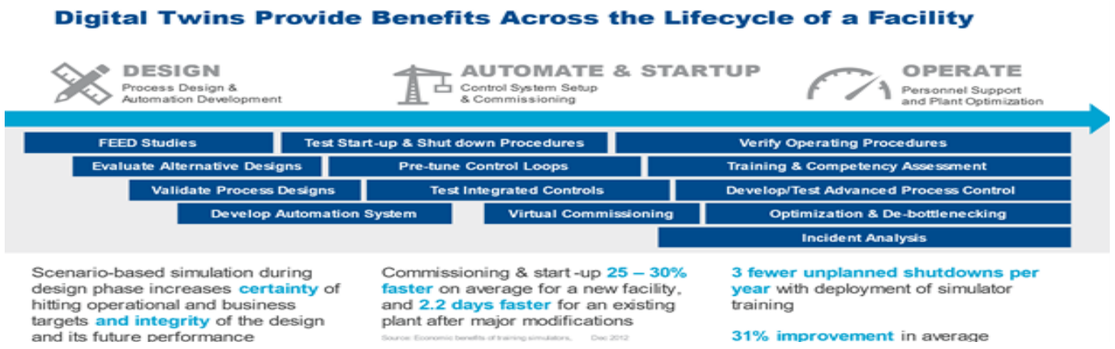
Amongst several technologies being implemented, Digital Twin has proven to be most impactful throughout the lifecycle of a facility. Many consider it a first step towards real Digital Transformation and a practical investment regardless of the size of the plant. That its done by evaluating process options without disruptions ensures plant availability. Enhanced with embedded AI/ML, this delivers cutting edge information that companies aiming for top-quartile performance are looking for.

Implementation of Digital Twin could start with innovation, when companies want to develop a new grade or a new product to meet an unmet need on the market. Digital Twin can help to understand how the operating conditions, the recipe and the sequence of events in the process influence a KPI that you want in the new product (example a new polymer or paint). You can then accelerate the innovation process with experiments, estimate capital and operating costs by integrating economic evaluation software. Thus concluding a technical and economic feasibility study for the project.

As the design matures, you could size reactors and equipment, as well as evaluate safety and controllability using both steady and dynamic models. After the plant is built, you can continue to obtain value from the models through operations for troubleshooting or debottlenecking. Other worthy goals such as Improving quality, finding recycling opportunities, Energy efficiency, Emissions and Sustainability goals can be taken up throughout the life cycle of the plant.

Along with Digital Twin, users can implement Predictive Analytics on their existing Historians to determine when maintenance is unavoidable and keep the operator from causing equipment damage. Advance warning gives staff time to plan maintenance and reschedule production to minimize unplanned downtime and financial impact. This enables effective collaboration, and organizational alignment.

The most tangible benefits are observed in Operations phase, thus enabling the ultimate goal of any enterprise – Operational Excellence and Business performance.



About The Speaker:

29 years of diverse experience in Process Automation in sales, marketing, project engineering and execution. Engineering graduate of National Institute of Technology, Suratkal, he has hands on experience with leading technologies in Field Instrumentation, Digital busses, Plant networks and Control systems. With Emerson since 2011, based at head quarters in Mumbai in various roles – regional and national, the last being Sales Leader of Distributed Control Systems for India. John is currently Business Leader, heading the Industrial Software portfolio at Emerson India, partnering with Process Industry to enhance efficiency and productivity with Industrial Software. He believes that there is tremendous opportunity to usher in workforce effectiveness for the Industry across business functions, partners and customers that ultimately results in top quartile-performance.

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PPPA MEET 2·3·FEBRUARY 2024

Maharashtra Section

Speaker: India Sustainability Leader

Schneider Electric

Rohit Chashta

Enhancing Sustainability through Digital Reporting & Visualization tools

Abstract of the Paper:

Enhancing sustainability through digital reporting and visualization tools is crucial for modern businesses aiming to optimize their environmental impact. These tools provide a comprehensive and dynamic way to track, analyze, and communicate sustainability efforts, enabling organizations to make informed decisions and engage stakeholders effectively.

Digital reporting tools offer real-time monitoring of key sustainability metrics, such as energy and resource consumption, greenhouse gas emissions, and waste generation, allowing for proactive identification of areas for improvement. Visualization tools then transform this data into intuitive and compelling graphics, such as interactive dashboards and visual representations, making complex sustainability information accessible to a wider audience.

PPPA MEET 2·3·FEBRUARY 2024

By integrating these tools into sustainability strategies, businesses can enhance transparency, accountability, and performance. Furthermore, the ability to identify trends and correlations within the data empowers organizations to set ambitious sustainability targets and measure progress with precision.

In conclusion, the utilization of digital reporting and visualization tools not only facilitates the communication of sustainability initiatives but also drives continuous improvement and innovation. As businesses strive to meet environmental targets and stakeholder expectations, these tools play a pivotal role in advancing sustainability efforts in a rapidly evolving digital landscape.

About The Speaker:

Rohit Chashta is the India Sustainability Leader for Schneider Electric, and works at the intersection of sustainability, technology, and business. He is a CMVP®, an ISO 50001 Lead Auditor, and a LEED® Green Associate™.

Rohit leads Sustainability initiatives for the company, which includes Schneider Electric's own operations, as well as working with clients to help them achieve their sustainability and decarbonization aspirations. He also leads thought leadership and standardization engagements for the company, is part of various energy and sustainability forums in the country, and has authored or co-authored reports and publications with regards to energy, climate change, technology, and sustainability.

Rohit is an Electrical Engineer and holds a masters (M.Tech) in Energy Systems.

Automation Product News

KOLLMORGEN Automated Guided Vehicles

KOLLMORGEN
www.kollmorgen.com

The world of **Automated Guided Vehicles** is expanding. New vehicle types such as carts and mobile robots are gaining ground as well as reflector and natural navigation technologies. Together they create new ways for companies to improve efficiency in material handling and warehousing, with a short payback period. The LS2000 navigation sensor and CVC700 give your automated guided vehicles the eyes and brains needed for fast and precise movements.

CVC700 vehicle controller

LS2000 navigation sensor

Freedom to choose

Navigate via reflectors, natural objects or a combination of natural navigation with reflectors added where necessary. LS2000 and CVC700 offer you lots of possibilities.

Always in control

LS2000 and CVC700 provide your automated guided vehicles with accurate data—the basis for fast and precise movements in free ranging navigation.

Built to last

No moving external parts on LS2000. Rugged design and IP 65 classification for both LS 2000 and CVC700. Compact design makes them easy to fit. Temperature range: –30°C to +55°C.

Kollmorgen was founded by Otto Kollmorgen in Northampton, Massachusetts in 1916 to design and make periscopes for the U.S. Navy's young submarine division.

Autonics BD Series

Autonics
www.autonics.com

Laser Displacement Sensors (Sensor Head and Amplifier Unit) The **BD series laser displacement sensors** can measure thickness, width, level difference, disparity, curve, evenness of target objects by detecting the amount of displacement. The sensors offer accurate and stable measurement with minimal influence from target color or material. The sensor head and amplifier unit are detachable for easier maintenance and up to 8 sensor amplifier units can be interconnected with mutual interference prevention function.

Since its establishment in 1977, Autonics has been trying to develop the overseas market with its advanced sensing and control solutions, that it is now operating 11 overseas operations and more than 100 local sales agencies, and almost 50% of its total revenue comes from overseas market.

Sensor Head and Amplifier Unit

International Society Of Automation

Setting the Standard for Automation™

Maharashtra Section

Power Petroleum Process Automation

PPPA MEET 2·3·FEBRUARY 2024

Two Day Conference & Exhibition On Automation
Venue: Cidco Exhibition &Convention Centre, Vashi, Navi Mumbai
Awards Ceremony, Cultural Programmeand Gala Dinner.

Presentation of Technologies on:

- Advances in Field Instrumentation—Sensors, Transmitters, Valves
- Open Process Automation Forum (OPAF) for connectivity
- MIMIC & Rule based Process Automation
- Automation in Green/ Renewable Energy
- Edge Computing vs. Cloud Computing
- Advances in Analytical Instrumentation
- Augmented Reality and Virtual Reality
- Automation in Hydrogen Energy
- Robotics in Process Automation
- Batch, MES, ERP Integration
- Predictive Maintenance
- Advances in IIoT
- Cyber Security

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Endress and Hauser Liquiline CM448

Endress+Hauser
www.endress.com

The **Liquiline CM448 transmitter** allows you to connect up to 8 Memosens sensors of your choice from over 12 measurement parameters. It offers automatic sensor recognition, simple operation, and standardized spare parts with all other devices of the Liquiline platform. With its inputs, outputs, controllers, and math modules, you can even control cleaning systems or dosing pumps. Heartbeat Technology helps you find the ideal balance between measuring point availability and maintenance costs.

CM448

Endress+Hauser was founded in 1953 in Lörrach, Germany. Swiss engineer Georg H.

Advantech UNO-100/300 Edge controllers

ADVANTECH
www.advantech.com

Advantech **UNO-100/300 edge controllers** for machine to intelligence applications!Aimed at factory applications such as real time monitoring, data management, and remote control, Advantech's new UNO-100/300 edge controllers feature a rugged design with wide operating temperature, shock/vibration tolerance, and a built-in TPM 2.0 module to ensure secure data transfers and reliable operations in harsh industrial environments. Their modular form factor allows these controllers to be flexibly deployed and come with diverse interfaces for optional expansion, such as PCIe for high-density I/O, PCI for motion cards, and iDoor expansion for fieldbus modules. This customizable functionality streamlines deployment and maintenance while providing cost-effective upgrades, making UNO-100/300 series edge controllers future-proof solutions ideal for realizing intelligent factory operations.

UNO-100/300 Edge controllers

When Advantech was established in 1983, its focus was on promoting industrial automation. Following several corporate transformations, Advantech has successfully developed software and IoT cloud platforms, and established complete solutions in the field of AIoT applications.

Moxa AIG-301 Series

www.moxa.com

The **AIG-301 Series** advanced IIoT gateways are designed for Industrial IoT applications, especially for distributed and unmanned sites in harsh operating environments. The gateways implement Modbus RTU/TCP master/client protocols which can help you to effortlessly collect data from Modbus devices. Moreover, Azure IoT Edge software is preloaded and seamlessly integrated with the AIG-301 to enable easy, reliable, yet secure sensor-to-cloud connectivity for data acquisition and device management using the Azure Cloud solution. With the use of the Things Pro Proxy utility, the device provisioning process is easier than ever. Thanks to the robust OTA function, you never have to worry about system failure during software upgrades. With the Secure Boot function enabled, you can prevent malicious software injection attacks, especially during the boot-up process.

AIG-301Series

Moxa Technologies is a Taiwanese technology company specializing in edge connectivity, industrial computing, and network infrastructure solutions.

Murr Elektronik Vario-X

www.murrelektronik.com

Murr Elektronik **Vario-X** is a holistic automation system from the sensor to the cloud. The system is designed with machine builders in mind. By applying agile design processes, we work together from project planning through the creation of a digital twins enabling the seamless integration of IT and OT. With apps, you can monitor your changing factory environment via secure endpoint devices and use that data to optimize production – and of course all this structured in a modular way. The highlight, however, is the advanced sensor technology integrated into each module to ensure optimal performance and availability, guaranteed by predictive maintenance.

Vario-X

Franz Hafner founded Murrelektronik in 1975 in Oppenweiler, Germany, when he began selling a single product, the RC-501/220, a surge suppression module for Siemens contactors that he produced in his garage.

OMRON TM20 Collaborative Robot

www.moxa.com

The **OMRON TM20** is the latest addition to the OMRON family of TM cobots, which are known for their ease of use, reliability, and safety. It is designed to work seamlessly with other OMRON products, including sensors, controllers, and software, to provide a comprehensive automation solution for industrial customers. The new Cobot is ideal for tasks such as palletizing, machine tending and material handling. Whilst managing heavy payloads, the OMRON TM20 has a small footprint and a reach of 1,3 meters.

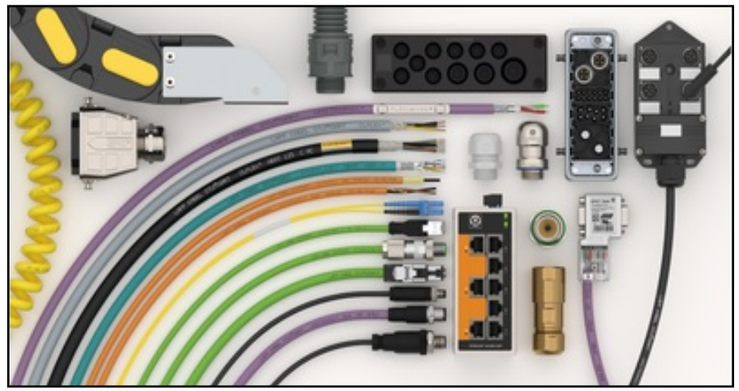
TM20

Moxa Technologies is a Taiwanese technology company specializing in edge connectivity, industrial computing, and network infrastructure solutions.

LAPP India

www.lapp.com

We will be displaying our extensive range of industrial communication solutions such as data communication cables for FIELDBUS and ETHERNET technology, industrial connectors, active network components such as ETHERLINE® ACCESS - Industrial Network Switch for smart factories, ETHERLINE® GUARD - a stationary monitoring device that continuously monitors an Ethernet cable, detects a decline in performance and display the cable status, and accessories.



Trends In Industrial Automation Technology

Trends Article on Page no. 11

Machine learning (ML) and Artificial Intelligents (AI), Cybersecurity automation, Datacenter automation, Data intelligence automation, Continuous integration (CI) and continuous delivery (CD) automation.

PEER ROBOTICS

PeerROBOTICS
www.peerrobotics.ai

At **Peer Robotics**, our mission is to revolutionize manufacturing with simple, affordable, and intelligent robotic automation solutions. Our collaborative mobile robots have the unique ability to learn from humans in real-time through our Person2Peer technology. This makes it easy for anyone to task our robots for an application, whether you're a first-time robot user or a seasoned engineer. You can ensure not only instant deployment, but also the flexibility to easily redeploy them for different tasks as your needs evolve, enabling a resilient supply chain.

RM20

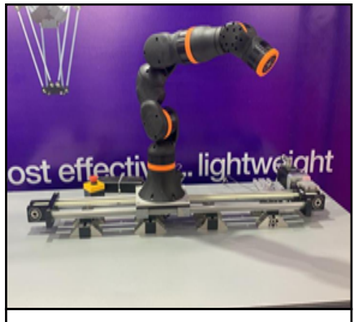
Peer Robotics delivers human-centric and adaptable mobile robots for efficient material movement in warehousing, manufacturing, and assembly lines. Gurugram based Peer Robotics as a startup was founded in 2019 by Rishabh Agarwal and Tanya Ra

Where have all the engineers gone!!

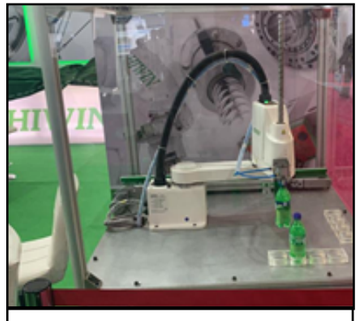
By Editorial Team

The automation industry in India is faced with a grave shortage of engineers. Imprint Automation India magazine met with the anchor booths who one and all evinced anxiety on the lack of talent, for engineering per se. We discerned the reason for Indian automation dependency on technology from established leaders from Germany, Japan, and to a small extent Taiwan and China. The front row and anchor companies (see box) displaying their latest 'innovation' were all from Japan or Germany. Engineering is not favorite with graduates and almost all gravitate to IT. Research and investment in automation solutions absent in Indian companies. Thus, established automation companies from Europe and US and Japan are the favored suppliers to Indian industry. Period.

Day 1 was rather light in the aisles. Surprisingly so in the 16th edition. None of the exhibitors were perturbed. Exhibitors were confident of a good turn out on Day 2. India's only automation expo being established now for many years organized by Industrial Automation magazine. The Expo has built up to #500 companies participating. 500 companies definitely or more likely comprehensively exhibited the entire breath of automation industry. Difficult to say how many actual users or projects seeking solutions, but surely most companies into automation networked between themselves, checking out the new feature from competition, checking out on the displays and solutions showcased. Over the three days our guesstimate was around 14000 attendees



Rebel Cobot IGUS



pick and Place HIWIN

XM-PRO10 Messung Industrial Automation & Control

RM250 Peer Robotics

including the exhibitors. Day 2 was spectacular with max crowd. Day 4 was light again. Thank God it didn't rain on any day. August being a dangerous month in monsoons!

It was a fascinating expo and the 495 booths had a lot of action with cobots swinging and pick and place actions. The regular automation solutions for factory automation. AGVs and AMRs too were on display for warehouse automation. Servo motors and sensors took up most booths. (see exhibitor list and website link box) The key growth areas of network connectivity, Ether CAT for industry 4.0 IIOT was at the Expo with good representation from leading companies like LAPP, JUMO, Murr Elektronik, Eaton, Festo. (see box of German, Japan, Taiwan, China companies with link to their website) Industrial Automation indeed has done a tremendous job in creating this platform where automation companies from countries like Turkey (Gamak) with servo motors and companies from other countries like Italy, Switzerland (Innovative sensor technology)

Automation Expo 2023, 24-26 August, Goregaon, Mumbai

TRIOMOTION

NAGMAN

Subsidiaries

It was surprising to see a high number of exhibitors providing very critical automation as being subsidiaries of major brand automation companies headquartered in Europe or Japan or Taiwan. We learnt almost all companies experiencing very high growth, over 50%, and high turnover, like 60 crores to 100 crores.

Distributors

Distributors had taken over the expo. Nearly 200+ participants were distributors displaying brands and logos of companies represented. They had product of their principals on the booth and these distributors were mostly capable of providing the solution to factories. They knew their onions. Indian cleverness in not in doubt in going one step ahead of the technology they represent and inventing a tweak that provides a workable solution. Having said that and the desperate streak of trading to the edge of the cliff doesn't mean Indian automation industry is anything to boast off. Fact is the expo said loud and clear there are 500 companies competing to provide a solution, but they are all dependent on foreign principals. Cheers!

OMRON

ALSTRUT

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Trends In Industrial Automation Technolog

Edge computing, Cloud servers, AR, VR, IIOT, 5G, Digital transformation, Remote supervision, Risk management, Data theft, production sabotage, Industrial espionage. All these trending techs make automation an exiting objective. Expensive diffi- cult and dodgy. The key is to invest in dedicated manpower. The people mantra is the Imprint mantra.

By NAI Group(*www.nai-group.com*)

Todays innovations in **industrial automation** are largely focused on interconnectivity. Powerful new technologies provide industry professioal with unprecedented abilities to see what is happening and respond in real-time. New tech is being dveloped for training, to bridge the skills gap and provide you with the knowledgeable workforce you need. And AI is improving everything from preventive maintenance to cybersecurity. These advanced technologies rely upon well-designed infrastructure and progressive leadership. “To be successful in todays climate, modern manufacturers must embrace the ongoing shifts in technology and adapt in real-time to fight back the growing number of more agile and digitally empowered competitors. Ruban Phukan on Manufacturing Automation Now we’ll take a look at the most influential trends in industrial automation and describe how they impact industry today

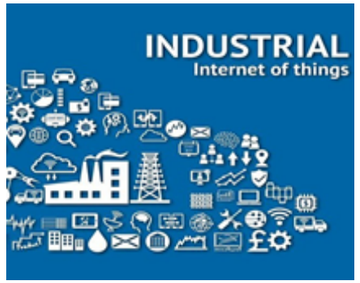
5G Boosts Interconnectivity

5G is taking the world by storm with lightning fast download speeds (around 1G/second) and a broadening reach thanks to the expanding infrastructure of satellites, cell towers and micro cells. Technology that was at one point location dependent is soon to be available to more remote areas. This is especially important to rural areas, where healthcare hampered by poor connectivity. Companies like NAI arehelping to cre- ate the equipment needed to maximize the possibilities that 5G brings to rural communities. 5G also impacts indus- try decisions and problem solving, as it enables faster downloads and more reliable connectivity.

maximize the posibilities that 5G brings to rural communities

Industrial Internet Of Things, An Essential Industrial Automation Technology

The **Industrial Internet of Things (IIoT)** refers to the interconnectivity of devices, and it is becoming increasingly relevant in all industries. Advancements in sensors and interconnects enable objects to send communications to users without them having to be onsite. And devices can operate on internet and GPS connectivity to inform their behavior. The IIoT has become essential for the agricultural industry, for example, as they rely on GPS to guide their tractors and imbedded sensors to remotely inform farmers of everything from fuel to harvest quantities.Other exapmle of agricultural examples of agricultural applications include sensors in wind turbines and drones for gathering data.



Artificial Intelligence

Artificial intelligence (AI) is transforming every area of technology. Industry professionals are using AI to predict problems with their equipment, allowing them to more effectively stay on the preventive side of maintenance and repair. AI can also be used to test out possible solutions and come to an informed decision at very low costs and without riskingdamage to machinery or personnel. Additionally, AI is being used to analyze big data to make deci- sions based on the behavior of millions of potential customers.

Cybersecurity Concerns

All this interconnectedness presents a new set of dangers for companies relying on data collection and analysis. Machines relying upon GPS, for example, are susceptible to the jamming or other tampering of GPS signals. Security breaches among even the most well-resourced and well know companies are common. With greater interconnectively comes greater vulnerability to those who would seek to interrupt production or steal information. Some of the most advanced cybersecurity uses what’s called Wave-3 or Third-Wave AI, staying ahead of the game played by **cyber attackers**.

Asset Management By OEMs

The IIoT enables **original equipment manufacturers (OEMs)** to service and maintain their equipment remotely. In a world where tech is developing faster than the workforce is able to be trained, having OEMs take care of their own equipment is a dream come true for many industry professionals. In some cases, the equipment is effectively rented from the OEM. In other cases, when the assets are purchased by the company using them, the user pays a subscription to have the OEM provide monitoring, maintenance and repair.While this approach of outsourcing asset management to the OEMs, some voices caution that OEMs may focus too much on risk management for their companys sake and not focus enough on maximizing the asset for the user.

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Bridging The Skills Gap With New Training Tech For Industrial Automation Technology

All these new capabilities offered by 21st-century tech create new needs for a highly skilled workforce. Bridging the skills gap means training must be faster and more intuitive than ever. Several new technologies are forming around these needs:

Augmented reality

Using a tablet or a pair of (very special) safety glasses, users see an overlay augmenting their natural sight. Details relevant to what they're currently looking at become visible on the screen, so the user is getting pertinent data very quickly.

Virtual reality

Virtual reality enables effective training with a 3D, immersive experience. This is especially useful for industry professionals when the situations for which personnel are being trained are difficult, costly, or dangerous to access. (Think space stations, nuclear power plants, and production facilities where stopping production for training would be costly.)

Digital twins

Digital twins are used for a wide variety of training, from guiding expert personnel in repairs to training robots through AI and machine learning. Its like an extremely advanced manual, but the diagrams are 3D and include information about what's going on with the equipment in the moment.

Providing Reliable Equipment To Power Connectivity

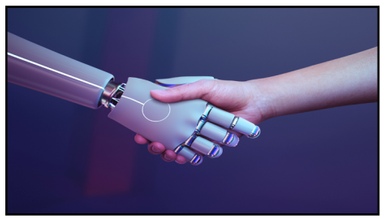
Other emerging technologies include edge and cloud connectivity, which keep managers abreast of the status of their production in real-time. This requires powerful servers and highly-integrated tech. In addition, blockchain technology enables producers to keep a clear and static log of their transactions or uses of an item. Digital transformation in all its forms is set to be the focus for the foreseeable future. Implementing these tech advancements in your company requires not only the intellectual knowledge but also the infrastructure to support your tech. NAI provides custom cable assemblies and cable harnesses to power, communicate and share data from your specialized tech, as well as with sensors, control panels and more. They've been able to keep up with the tech advancements developed over the past several decades, and they have the personnel and production facilities to keep up with the advancements you want to implement today.¶

Digital transformation in all its forms is set to be the focus for the foreseeable future

Outline Of The Global Industrial Robotics Space

Next Article Robots

Robotics is an interdisciplinary branch of electronics and communication, computer science and engineering. Robotics involves the design, construction, operation, and use of robots. The goal of robotics is to design machines that can help and assist humans.



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Outline Of The Global Industrial Robotics Space

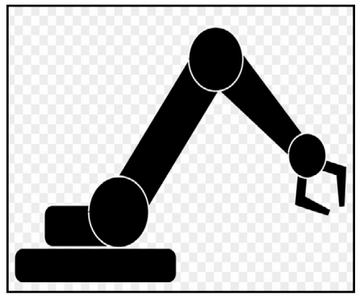
By mckinsey & Company(*www.mckinsey.com*)

Traditional robotics will evolve with artificial intelligents. Robotics applications and industrial manufacturing will become intelligent. Evidently Indian manufacturing has defaulted. Large scale manufacturing is going to be adopted in India. Demand; Consumption; Market; Pricing; Retal; are all in place. Robotics will become the primary ingredient for large scale manufacturing. So, dear readers of imprint automation India magazine this business opportunity is crystalized. Stay tuned. Cheers!

This chapter organizes and takes stock of the current state of the global industrial robotics market and its key characteristics. The resulting overview serves as a backdrop for understanding the driving factors behind the industry's expected growth and how it will come about.

Overview of products and market segments

Unlike the automotive and other machinery industries, McKinsey designates industrial robotics as "low volume, high complexity." The low-volume designation is related to the relatively small number of machines that are produced and deployed within each specification. Two realities characterize the high complexity of the industrial robotics sector: first, the breadth of different machine types that can be included under the umbrella is massive, just in the sheer number of machine types. Second, there is also great variety when it comes to the size, technology, and application areas of robots. Amid this lack of uniformity or common control systems in the robotics industry, it is important to establish a common understanding of and terminology for the scope covered before analyzing and interpreting both the end users' and sector's perspectives and outlook. For this whitepaper, we have leveraged McKinsey's definitions and categorizations of industrial robots – comprising four subcategories, of which the first is further divided into four segments (see Table 1) – and automation cells and solutions (see Table 2).



Industrial robots

Industrial robots are categorized along the lines of physical attributes (reach, weight, etc.), how they interact with humans, their mobility, and their level of autonomy.

Stand-alone industrial robots

The International Federation of Robotics (IFR) estimates that in 2017, there were around 2.1 million stand-alone industrial robots installed worldwide, with a shipment of 381,000 units globally:2

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1. The largest applications include materials handling operations like machine tending (178,000 units), welding and soldering (82,000 units), and assembling (47,000 units).

2. China is the largest regional market with 138,000 units. The top five countries (China, South Korea, Japan, Germany, and the US) make up more than 70% of the market.

3. Automotive, i.e., OEMs and, increasingly, automotive suppliers, is the largest industry with 126,000 units, followed by the electrical and electronics industry with 121,000 units.

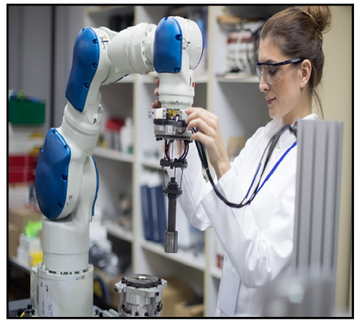
4. In 2017, articulated arms were the majority of industrial robot shipments at 65%, gantry robots were 16%, SCARA robots were 13%, and delta robots represented 1% of shipments.

Stand alone industrial robots require the presence of safety equipment – such as fences with gates interlocked to the system for safety – and operate exclusively without direct contact with human workers. They are usually fixed (i.e., stationary) and programmed for a specific application.

Collaborative robots

While collaborative robots are still a nascent market with about 10,000 to 20,000 units shipped in 2017, analysts expect strong future growth with more than 100,000 units to be shipped in 2020. The key difference between collaborative and standalone robots is that collaborative robots do not need safety fences for safe operations. Onboard safety mechanisms and a process design that enables collocation and collaboration allow these robots to operate directly and safely alongside human workers. These built-in safety mechanisms reduce the need for external safety measures, such as fencing and interlock for entry, thus reducing installation design costs.

Collaborative robots can be simpler to apply, connect, and run. Quite often, these are single robot installations with simple and discrete input/output interfaces that lower installation and programming costs. Collaborative robots provide an advantage wherever workers benefit from physical support – for example, by improving process ergonomics and potentially giving older workers or workers with restricted physical ability the assistance they need to be successful in manufacturing. The automotive and electronics sectors are where collaborative robots are currently deployed the most and used not only for incidental work (such as materials handling) but also for value adding (such as assembly). In logistics, however, this robotics category has application in value-added tasks (such as picking) and supportive work (such as kitting and pre-retail services).

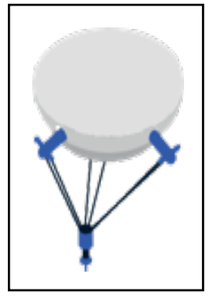
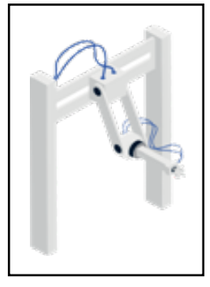
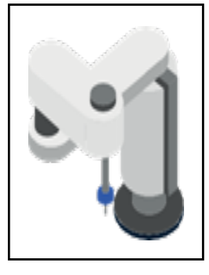


Mobile robots

Mobile robots – also known as automated guided vehicles (AGVs) – can be used in a range of applications, including warehouses and distribution centers, manufacturing intralogistics, agriculture, and other environments (especially in logistics in hospitals or retail). There are also first models and prototypes for domestic use. Expectations for AGVs are high. IFR estimates that 69,000 logistics systems had been installed in 2017 (63% of total professional service robot).

Table 1

Overview of industrial robot segments

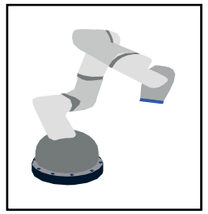
Stand alone – articulated Articulated robots have rotary joints and between three and six degrees of freedom enabling high flexibility (robot can bend back and forth).	**Application** Articulated robots are used for a range of applications, e.g., assembly, painting, arc or spot welding, palletizing, and material handling.	
Stand alone – delta Delta (also: parallel) robots have three arms that are connected to a base platform via universal joint Their arms are arranged as parallelograms to restrict the movement of the end platform. Actuators are located at the base platform, so that passive arms can be lightweight and move with great speed.	**Application** Applications that require great precision and speed: common applications include packaging, high precision assembly, and material handling.	
Stand alone – gantry/ linear/Cartesian Cartesian robots consist of three axes of control that are situated at 90 degree angles of each other. The axes do not rotate but move in straight lines, which simplifies robot control linear robots are comparably simple.	**Application** With no need for pedestals, Cartesian robots are useful where space is limited, as they can be mounted overhead.	
Stand alone – SCARA SCARA robots are modelled like human arms with an elbow, shoulder, and wrist. They have three axes for x, y, and z movement and an additional axis for movement of the end effector. The setup of the axes allows the robots to extend their arm and to retract it by folding up.	**Application** They are used for fast, repetitive, and precise pointto- point movements, such as palletizing, machine loading and assembly.	

Collaborative

Collaborative robots directly interact with human workers without safety fences and are equipped with machine learning capabilities for easier programming.

Application

They are used to support human workers' strength and precision for certain movements, in processes that require flexibility and reprogramming, or where space is limited.

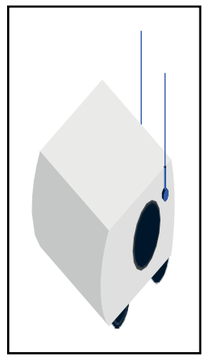


Autonomous guided vehicles (AGVs) and autonomous mobile robots (AMRs)

AGVs and AMRs are not fixedly installed but mobile. Navigation is either onboard (e.g., camera or laser based) for most advanced types or external (e.g., path based using magnetic tape, wire, or rails on the ground).

Application

Mobile robots are used for logistics and delivery as well as for moving pieces, such as boxes, pallets, or tools, in industrial settings between machinery, transfer points, or storage areas.



Exoskeletons

Exoskeletons are connected to the human body for support during heavy-duty or ergonomically challenging process steps. They are designed to boost the strength of human workers, e.g., increasing humans' capacity to carry heavy weight.

Application

They can be used in industrial applications to support worker movements (e.g., lifting in warehouses).

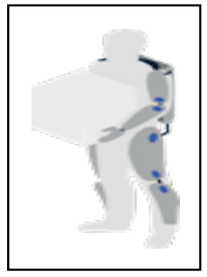


Table 2

Example of automotive production line

shipments), including around 7,000 AGVs in manufacturing environments. According to IFR,6 another 600,000 units are estimated to have been shipped by 2021 (for logistics applications both in- and outside of manufacturing). Typically, AGVs are installed in:

1. Industrial environments for moving pieces of all kinds (e.g., boxes, pallets, or totes between machinery, transfer points, or storage areas)
1. Nonmanufacturing environments, such as warehouses, airports, mail-order postal/parcel logistics centers, hospitals, or other public buildings to transport, deliver, and transfer goods.

Exoskeletons

Exoskeletons, or human-robot hybrids, are robots connected to the human body to support heavy-duty process steps. The idea is to boost humans' strength, increasing their capacity to carry heavy weight. Despite their potential, IFR's estimates for this category are moderate: 6,000 powered human exoskeletons units had been sold as of 2017, and IFR forecasts that only another 48,000 units will have been sold by 2021. The technology is quite new. Currently, the primary field of applications is rehabilitation. Application areas for use of powered exoskeletons (for lower or upper extremities) have been documented by first demonstrators, and prototypes for other use cases have been tested, e.g., human performance augmentation in defense; rescue and disaster relief; ergonomic support for reducing loads on spine, hips, and shoulders when lifting heavy weights at work, particularly in logistics.

Automation cells and solutions

Industrial robots are used in an increasing variety of structures and are often employed in complete automation systems, which consist of a multitude of industrial robots. Today, individual robots are applied as a "next step" in automation, for example, for unloading a finished part from a machine tool and afterwards loading a blank part ready for processing. A "second step" in automation are production cells, where a robot has been set up for unloading and loading several machines but was designed as a cell from scratch. These cells are often subsets of full production lines and sold through integrators to the customer. Robotics OEMs offer turnkey cells, including robotic arms, delivery systems such as adhesive dispensers, cell controllers (typically PLC), and safety equipment for specific applications. The aim is to deliver a solution for the end user and reduce complexity for the end customer, who may not have the time or know-how internally. At the same time, increased standardization for the robotics OEM can lower the cost of systems through common solutions. Whether this approach will be successful remains to be seen. Solutions, often highly customer specific, include different robots and cells. Typical examples of automation solutions can be found in automotive (e.g., body in white or paint production lines). Another example is electronics, where production is highly automated and takes place in lights-out, clean-room environments.¶

Artificial Intelligence in Industrial Automation : A Primer

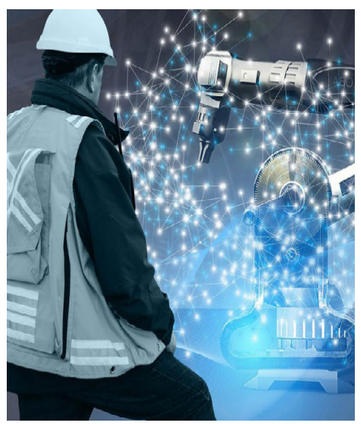
By Utthunga(*www.utthunga.com*)

Imprint Automation mantra is to provide solution and sourcing. AI is the most repeated solution by every tech wizard. Adoption of AI is impossible by the manufacturing company. Reading this primer will explain the difficulties. However, automation solutions promising AI is the only way to exploit artificial intelligence. Utthunga evidently is such a company we are glad to introduce.

Indian manufacturing only hopes of competing globally is to leap-frog into highly automated manufacturing equally exploiting AI data knowledgeably. Imprint advice is to focus on manpower that can deliver. Cheers!

Role of Artificial Intelligence in Industrial Automation

For many people, **Artificial Intelligence (AI)** means robots performing complex human tasks in sci-fi movies. Actually, it is partially true. Whatever AI offers to the world is allowing the indutral-machines to carry out superintelligent tasks. As the global industries and decision makers are facing new challenges, thereis an urgent requirement to propel manufacturing by using the most advanced technologies. Industries need to restructure & revamp their control systems and other industrial assets (software or hardware) in order to keep pace with the unprecedented speed of change. Artificial Intelligence or AI could potentially help meet these goals. AI applications are already becoming pervasive in industries like banking, gaming, retail, entertainment and more. The fourth industrial revolution is driven by new ways of automating the industrial tasks with smarter sensors, controllers, IO modules, PLCs, gateways, enterprise systems, etc. and restructuring the ways humans and machines interact to create a stronger digital ecosystem.



Role of Artificial Intelligence in Industrial Automation

With the growing changes in the customer behavior in regard to product quality and customization, it is difficult for the businesses to make changes in their system. That is where Machine Learning (ML) benefits the industries. ML is a subset of AI and empowers the computers to learn automatically from the data inputs and applies that information without any human intervention. ML aids in optimizing the production and supply chain efficiency, fraud detection, risk analysis and risk mitigation, portfolio management, GPS based predictions, targeted marketing campaigns, to name a few. Machine Learning algorithms are categorized as:

Supervised

This model needs to have a dataset with some observations and labels of the observations that can be used to predict the future events.

Unsupervised

This model needs to have a dataset with some observations without the need of labels of the observations. It does not predict the right output but explores the data and draws inferences from the data sets.

Semi-supervised

This model is positioned between the supervised and unsupervised Machine Learning families. It uses both labeled as well as unlabeled data.

How AI impacts the Industrial Automation?

Get Valuable Insights from Data

Industries generate tons of valuable data in a single day. With the right industrial AI models, all the raw data can be turned in to useful insights that can lead the designers or engineers in to discovering new ways to improve and update according to the latest technologies.

Improve Product and Service Quality through computer vision

Computer vision tends to replicate the functionalities of human vision and extract important information from the images and videos. Computer vision operates on three main elements that include visual data. high-processing computers , smart algorithms. From the industrial automation perspective, this contributes to the overall increase in production, efficiency, plant safety andsecurity.

Enhance Manufacturing techniques and handle conceptual data with Data-driven Deep Learning and Cognitive Computing

Deep Learning uses ML techniques based on artificial neural networks and is capable of extracting high level insights from the raw data inputs. congnitive computing is attentive on comprehending and reasoning at an advanced level, and is capable of handling even symbolic or conceptual data.

Boost Productivity and Safety with Collaboration Robots (Cobots) and Digital Twins

Cobots play a significant role in industries or laboratories. These autonomous systems intend to work alongside humans to pick, place, inject, analyze and pack items. They can also keep track of motion and avoid accidents or errors. Digital Twins can decrease the downtime and cost to set up such robotic systems.

Aid in Decision making with Reinforcement learning and Big Data Analytics

Reinforcement learning is a cutting edge ML technique that attempts to train the ML models for advanced decision making. The ML model uses trial and error to find the appropriate solution to any complex problem. This technique is widely used in games but it can also shape other industries. Big Data Analytics enables to discover valuable patterns, trends, correlations and preferences for industries to take better decisions.

Making Machine Learning accessible to the end-user with AI enabled chips

The cloud servers hold most of the computational, storage and networking capabilities. Cloud-based services are great for those who have access to reliable connection and high-speed internet but they are unatt ainable for those in remote areas. AI enabled chips can provide access to intelligence without cloud-based services and benefit theindustries, especially the ones operating in the remote areas.

Analyze and Predict Future Trends by Deep Learning Platforms

Deep Learning models use unstructured data sets to predict the future trends. Deep learning is crucial for image and speech recognition and depends on three different factors including intelligent algorithms, tons of data and Graphics Processing Unit (GPU) to accelerate learning.

When AI Goes Wrong?

Now AI is playing an increasingly bigger role in our lives. It appears in everything from manufacturing, retail, education and scientificresearch to banking, criminal justice, hiring and entertainment, to name a few. However, the more we trust this new technology to take important decisions, the higher is the chance for large-scale errors. To prevent such errors, we must understand how and why AI reaches certain conclusions. The two terms which come up in the mind while thinking about improving AI are:

Explainable AI

It comprises of techniques that allow systems to explain their decision making and also offer insight in to the weak and strong parts of their thinking. It will enable us to know how much we can rely on AI results and how to make improvements.

Auditable AI

It takes the help of third parties to test the thinking of the AI system by giving varied queries and measuring the results to find flawed thinking or errors.

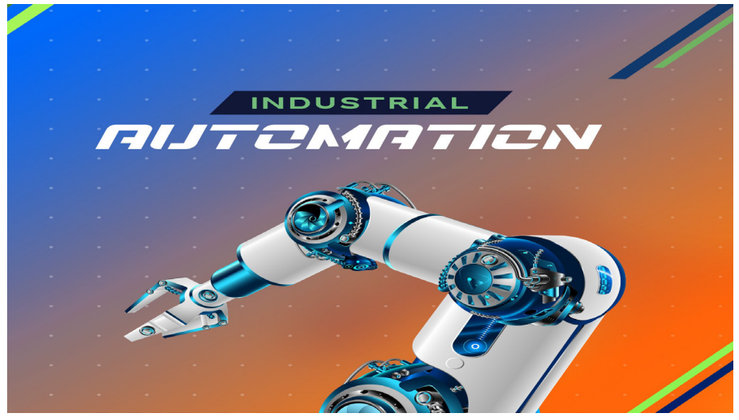
Future Trends of Industrial Automation

Further Expansion of IIoT with Predictive Analytics

Predictive maintenance programs are used to track equipment real time to enhance responsiveness and decrease unplanned outages, resulting in safer opera tions,lower expenses& higher customers satisfaction.

Growth of Edge Computing

The significant rise in data from devices which operate 24/7 often cause bandwidth issues as well as slow processing times. Edge computing technology shirfts the information storage and processing from cloud services or data centers towards the specific location where it is required, which is often the device itself. Edg computing can enable the connected devices to make use of more real-time data for bussiness decisions and process controls Since more and more IoT devices are being used, edge computing is expected to increase.



Increased Implementation of VR and AR Tools

Augmented Reality (AR) and **Virtual Reality (VR)** tools offer interactive experiences that are specifically used for personnel training. Historically, the personnel training programs have been one size fits all but with AR and VR tools, the training will be more customized based on the skills of the trainee. These technologies will also enable the personnel to train in non-disruptive and safe environment, especially when the training is on rare operations that may be difficult to understand and experience in real-world.

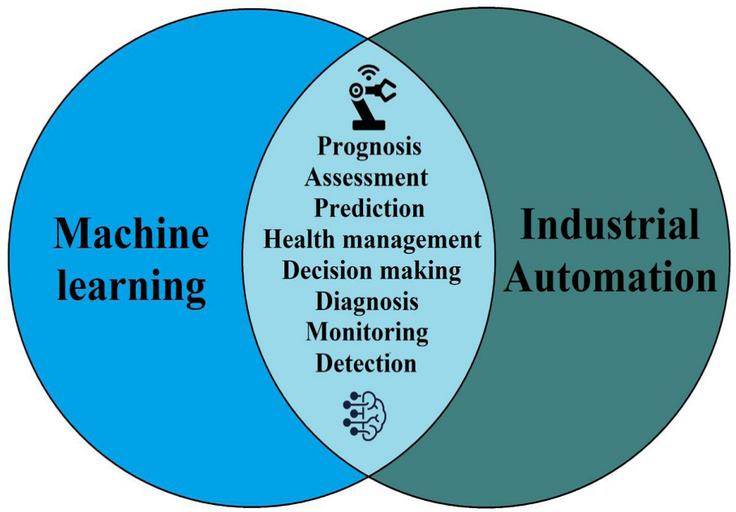
Industrial Automation Artificial Intelligence

Expansion of Smart Robot Usage

With advent of 5G network technology, availability of faster and more reliable internet connectivity along with improved satellite coverage to remote areas, the use of smart robotic applications in industries will expand rapidly.

Some Statistical Information on AI

After being a distant aspiration for the industries for many years, we are now more close to adoption and meaningful ROI of AI systems in the industrial landscape. As we see above, the potential advantage of AI adoption into the industrial ecosystem are huge. However, the articulation of the problem statements and the mapping of the right AI tools/technologies to these problem statements is fraught with several challenges. Internal champions (in the plant floor and above) and external technology providers have to collaborate deeply. The promise is there, the execution is the key. Surely, some of these technologies will get even more mature and “easy” to use with time, but choosing to wait and delay implementation will lead to a competitive handicap. Industries should act now, start small, but start now. Utthunga is a leading engineering and industrial solutions company that can tranform your business to leap in to a new world with intelligent, fast, secured and scalable end-to-end intelligent solutions. We understand the industrial domain very well, and are well positioned to leverage the new techn ologies to deliver the best -inclass solutions to our customers. For more informationon how to build an automated system with Artificial Intelligence and offer the best-fit solution for your industry requirements, contact Utthunga.¶



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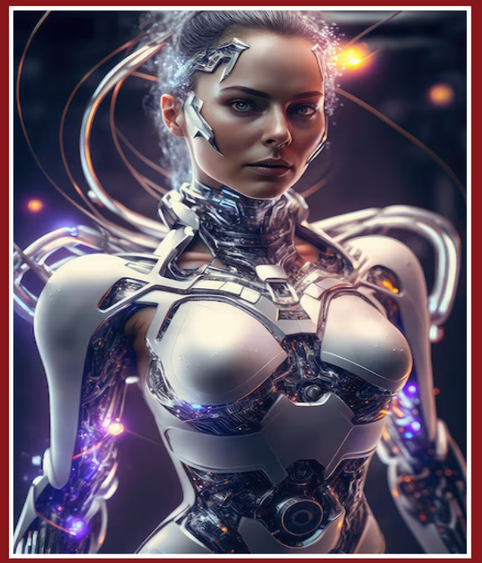

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