

Event Recap: Smart Production Solutions (SPS) – November 2022

Manufacturing Technology team

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Show overview

SPS 2022 in Nuremberg

- The Smart Production Solutions (SPS) trade show, held in Nuremberg from November 8–10, 2022, is a leading trade show for electric automation; this year's show assembled professionals from around the globe after a three-year absence. The event covered automation and offered solutions in the following areas, among others:
 - Electric drives/motion control
 - Mechanical infrastructure
 - Sensor technology
 - Control technology
 - Software and IT manufacturing
 - Human-machine-interface devices
- The previous edition gathered approximately 63,000 attendants and over 1,580 exhibiting companies. This year, there were approximately 44,000 attendants and 1,000 exhibitors. With COVID-19 having normalized virtual events, SPS 2022 was complemented by a digital platform, “SPS on air.” Through the platform, participants could initiate contact and book appointments before the show started and could continue their digital exchanges after the show, from anywhere.
- Sylke Schulz-Metzner, vice president of SPS, shared insights about what to expect, saying, “...with issues such as the energy crisis, reshoring, and the environment, many people in the field have realized that the key to dealing with a lot of these challenges is investing in automation. With the rise of cutting-edge solutions, which will also be on show at the SPS this year, visitors from various areas will be able to address their questions to leading experts and receive qualified input.”



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Omdia team at the event



Mark Watson
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Zara Fennell
Senior Analyst
Electric Motor Systems

Key takeaways

Key takeaways

- Although the recession has been at the back of everyone's minds, order books have been strong enough that manufacturers have not yet seen its impacts. However, with the impact of inflation, manufacturers must provide additional information dividing units vs. prices, which was not the case before. Lead times have been improving over the past few months, but it is still a limiting factor for growth. It has been reported that growth in manufacturing and intralogistics is growing. On the bright side, the large order books will buffer any reduction owing to the recession. Orders are seen to be flat for the time being, but revenue may be high. Due to the elevated prices, Omdia expects to see decreasing prices.
- Uncertainty is a recurring topic, with companies trying to figure out inflation, China's zero-COVID policy, the Russia-Ukraine war impacts, supply chain issues, and COVID-19 recovery, with disparities in orders versus revenue. Supply chain issues are easing but continue to disrupt manufacturing. Based on strong order books, the outlook for 1H23 is promising, but 2H23 appears much more uncertain if manufacturing and automation follow the general economy into recession.
- Domestic Chinese vendors are growing in prominence and becoming more of a threat in certain sectors (i.e., motor players like Wolong and Inovance).
- Trends of energy efficiency, sustainability, and digital transformation have been a focus among attendees. These trends are enforced and are necessary as part of manufacturing solutions. Cybersecurity was another important topic, with different technologies, white papers, and collaborations announced.



Source: Omdia

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Key takeaways from the Omdia team

- Alex West shares his thoughts on the progress companies have made toward industrial sustainability: “Automation vendors are reviewing the design and components of their equipment but also introducing new services and solutions to support customers in their sustainability transition”
- Alex West also shares his key takeaways: “...reducing energy consumption, waste, and downtime, as well as considering the end of life of a product are key topics of discussion this year”
- Mark Watson highlights uncertainty, resilience, and sustainability as major themes at SPS: “...companies have experienced bounce back post-COVID-19, they’ve really seen that in their order books, and I think that’s what is going to carry companies through 2023, with the outlook of 2024 much more uncertain...”
- Mark Watson also shares his key takeaways: “... the word that keeps popping up is uncertainty, with the Russian Ukraine situation ongoing, supply chain issues continue to impact the ability to deliver orders- while we see that easing, it’s still an issue; as well as inflation and ongoing impact of Covid in China...”
- Peter Taylor shares his insights into the biggest challenges the manufacturing technology is facing heading up to 2023: “...the rise in energy cost- the impact that has on end users, on business, on manufacturing, and essentially on the cost of goods and the demand then for those goods...”
- Zara Fennell shares her thoughts on the immediate future of the manufacturing tech industry: “...most companies I’ve spoken to have order books filled until the first quarter of 2023, some for the full year, and won’t see the repercussions and impact until 2024...”



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Peter Taylor

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Zara Fennell

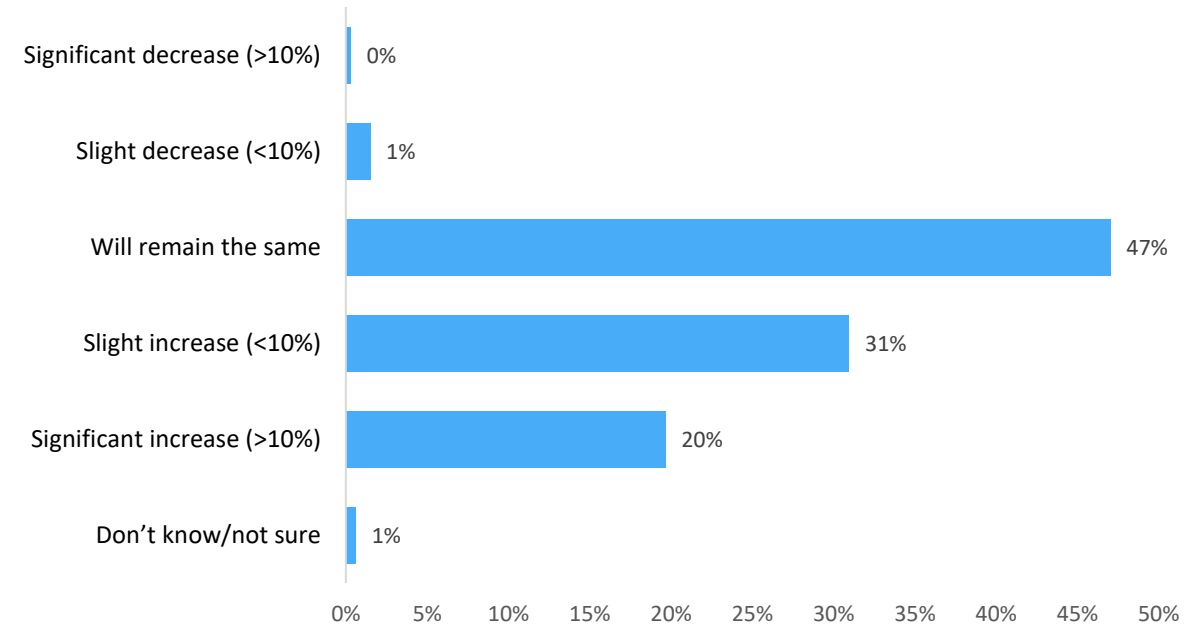
Senior Analyst
**Electric Motor
Systems**

Top stories

Sustainability highlights (1/4)

- Sustainability has been a recurring topic of discussion at SPS 2022 with companies assessing their technology and strategy roadmap are modeled around sustainability innovation and IT/OT convergence.
- As manufacturers wrestle with the challenges of introducing and accelerating their investments in sustainability strategies, automation vendors at the show were similarly considering their own environmental footprint as well as how to support their customers with this transition.
- Besides internal improvements, many industrial automation vendors are going through a degree of organizational restructure to ensure their companies are best positioned to support customers with their sustainability transition; this includes the formation of new teams, recruitment of additional personnel and skillsets, as well as through the development of new solutions and services.

How do you expect your company's investment in its manufacturing environmental sustainability strategy to change over the next 12 months?



Note: n=336
Source: Omdia

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Sustainability highlights (2/4)

- Some notable areas manufacturers are reviewing both in their use of technologies, new processes, and the materials and components used include:
 - The use of more energy-efficient electronic components such as IGBTs and microcontrollers
 - The consideration of new material usage, whether this be a switch to different plastics or metals to support recycling or reuse, or even the experimentation with technologies such as nanotechnologies on equipment coatings, to minimize CIP (clean-in-place processes)
 - Product designs, with a focus on the products' end of life, and the ease with which a product could be remanufactured or disassembled with components reintroduced for new products
 - Introducing quality control technology within their own manufacturing processes, for example, machine vision systems with AI and analytics capabilities, to provide early fault identification and reduce material and energy waste
 - Optimizing spare part management to minimize customer downtime and increase OEE and, subsequently, sustainability
 - Reviewing and nurturing supply chains to support a circular economy as well as more localized supply chains
 - Replacing product manuals and certifications with QR codes printed on devices

Sustainability highlights (3/4)

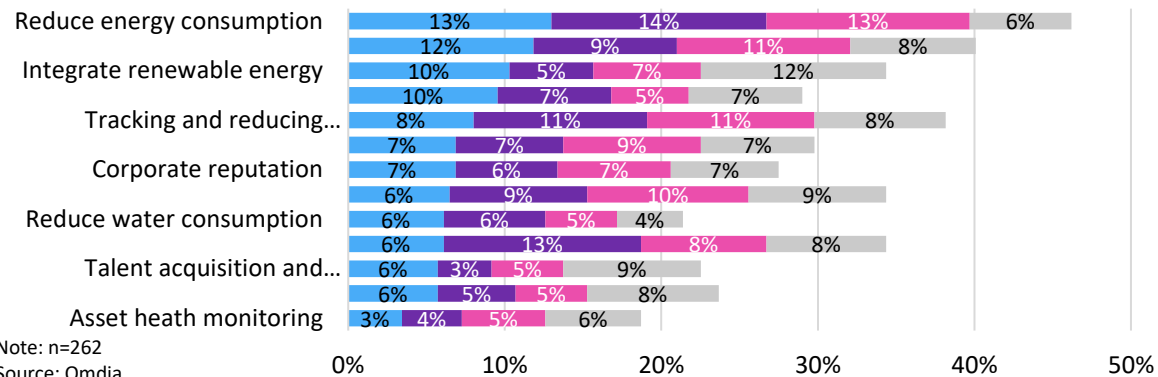
- Vendors are also reviewing how to support their customers, who are increasingly asking for end-to-end environmental support, with enhancements as well as the introduction of new solutions:
 - The transition to higher-efficiency motors and components (e.g., gearboxes)
 - The increased focus on a solutions-based approach to selling automation, which will package products such as drives and other efficiency-enhancing equipment
 - Linked with the trend to a more solutions-based approach to selling equipment, some industrial automation equipment vendors are introducing more consulting services to include environmental sustainability expertise
 - Improved connectivity of automation, such as motors, to support the collection, contextualization, and analysis of data, such as energy consumption; the optimization of operations; and better integration of data into energy management systems
 - Integration of edge compute on devices for products that can both capture and provide analytics to support energy management systems locally, for example, on drives
 - Dashboards to help manufacturers track and trace their carbon footprint
 - Manufacturers are also reviewing how they can work with their supply chains to support a circular economy for their products, which may extend to new business models, such as an automation-as-a-service model

Sustainability highlights (4/4)

- Although many product launches at the show highlighted a sustainability angle, many of these products were very similar to previous solutions. Some exceptions that were announced at SPS 2022 include the following:
 - Siemens presenting a new feature of its Analyze MyDrives Edge application that shows how efficiently drives are running as well as their energy consumption, operating costs, and CO2 footprint.
 - Siemens also introduced a new QR code feature that it will print on products, thereby eliminating the need for paper-based manuals and certification.

Q2: Rank in order of importance, the top 5 factors influencing your organization's decision to invest in operational sustainability initiatives? Where 1 = most important

Rank 1 Rank 2
Rank 3 Rank 4



Note: n=262
Source: Omdia



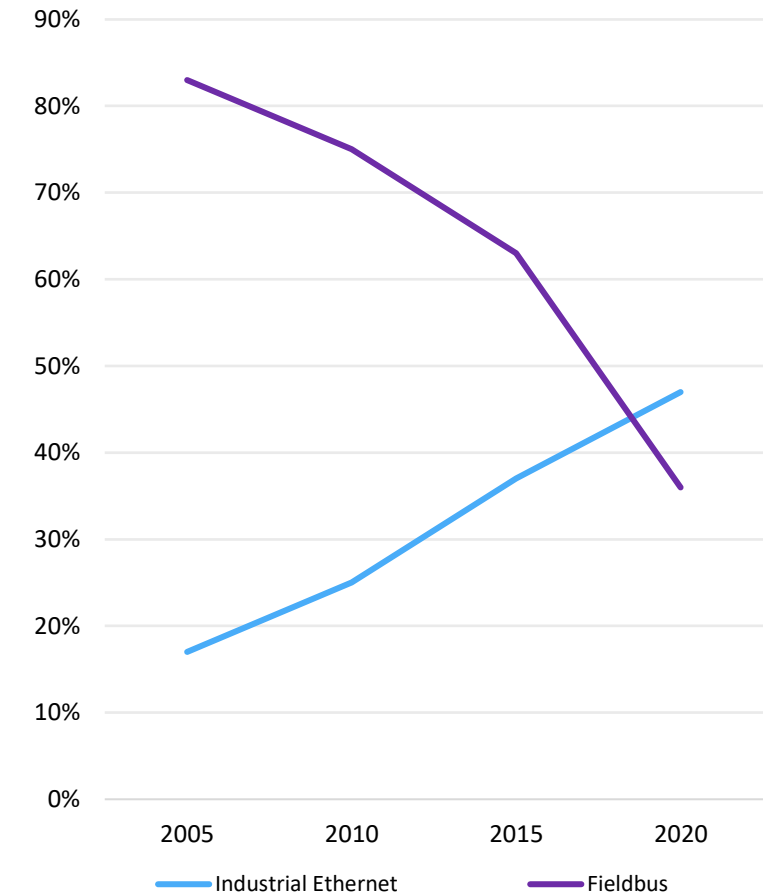
Source: Omdia analyst photo

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Industrial connectivity highlights (1/3)

- The connectivity market showed exceptionally strong growth in 2021 and 2022; this should continue in 2023.
- Industrial connectivity trends at SPS covered **secured, converged, and interoperable networks across all automation layers and different manufacturer ecosystems**. The major enablers are, on one hand, the growing share of Ethernet and extension of Ethernet to a field level, and on the other hand, interoperability techniques like OPC UA and TSN.
- ODVA announced at SPS that conformance testing is now available for EtherNet/IP network-enabled devices that communicate over the Ethernet-APL physical layer. Vendors are invited to place their test orders on ODVA's website.
- The announcement's impact was that APL infrastructure and field devices that support Ethernet/IP could officially be released. This is good news for the process industry automation device manufacturers and their customers and another step towards adopting APL technology.
- ODVA also announced that it became a new co-owner of the PA-DIM specification along with FCG, OPC Foundation, NAMUR, PI, VDMA, and ZVEI.
- PI-DIMs target is protocol-agnostic communication of process automation field-level devices using OPC UA information modeling techniques.
- OPC UA achieved an important step in involving field level into the OPC architecture and announced the release of OPC UA Field eXchange (UAFX) Specifications.
- This release lays the foundation for upcoming specification extensions, which will address the controller-to-device (C2D) and device-to-device (D2D) use. The first devices using this functionality are expected to hit the market within the next two years.

Growth of the industrial ethernet share in industrial connectivity (based on yearly shipped connected nodes)



Source: Industrial Communications Report – 2021 Analysis, Omdia

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Industrial connectivity highlights (2/3)

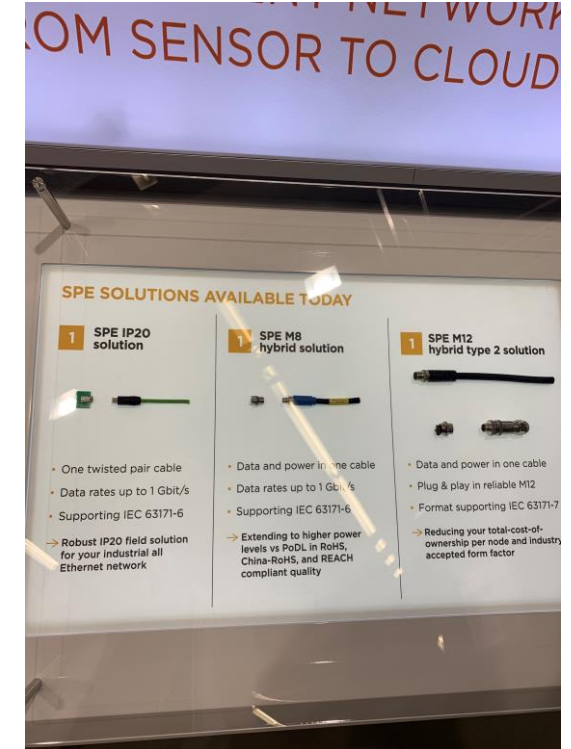
- The SPE partner network celebrated the three years of the organization and highlighted the milestones of SPE technology development.
 - Several **SPE demonstrations** were seen at the exhibition at different companies, showing the capability and maturity of SPE technology.
- EtherCAT had a press conference at SPS and presented, against the major marketing trends, the concept of **fieldbus separation from the network** for hard real-time requirements. EtherCAT argues that the Ethernet at the field level for hard real-time requirement applications, like motion control, can impact the stability of the control, increase the vulnerability of the field devices toward threats, and requires additional IP address management and installation efforts.
 - Those are valid objections that need to be considered while developing and introducing new connectivity technologies at the field level.
- TSN switches were presented at several companies' booths, but the vertical devices ecosystems are still missing, and horizontal will be developed after the finalized standardization. Siemens and Mitsubishi demonstrated TSN advantages with their PROFINET over TSN and CC-Link IE TSN versions.

**Demonstration of EtherNet/IP over APL
bz Endress and Hausner at ODVA booth**



Source: Omdia analyst photos

**SPE solutions overview at TE connectivity
booth**

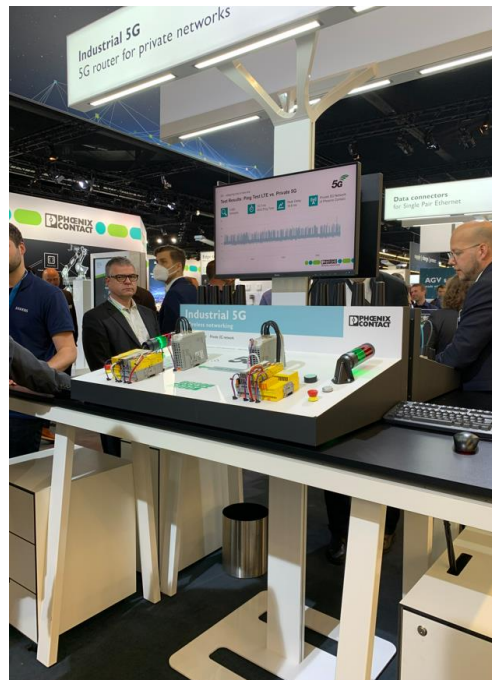


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Industrial connectivity highlights (3/3)

- **5G was presented** at Siemens' booth with private industrial end-to-end Siemens solutions and networking devices. Several 5G routers were also demonstrated by other companies.
 - 5G is still at the initial adoption stage in industrial connectivity.
- **Cybersecurity** was another important connectivity-related topic at SPS, with different technologies, white papers, and collaborations announcements.
 - Cybersecurity and safety are gaining more importance with the IT technologies coming into OT. Awareness of the cybersecurity threads for equipment and workers' safety is growing.

Demonstration of 5G communication and safety signal transfer with the router of Phoenix contact at Phoenix contact booth

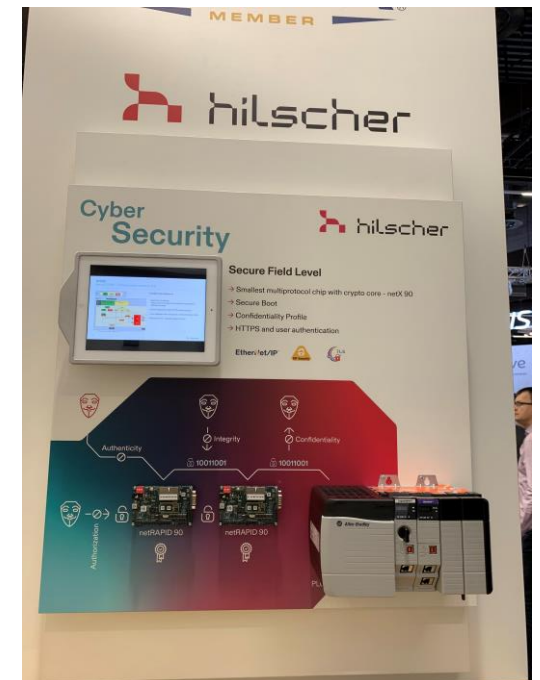


Source: Omdia analyst photos

CIP security demonstration with multivendor application at ODVA booth



Field-level security solution by Hilscher at Hilscher booth



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Electric motor and drive systems – Highlights

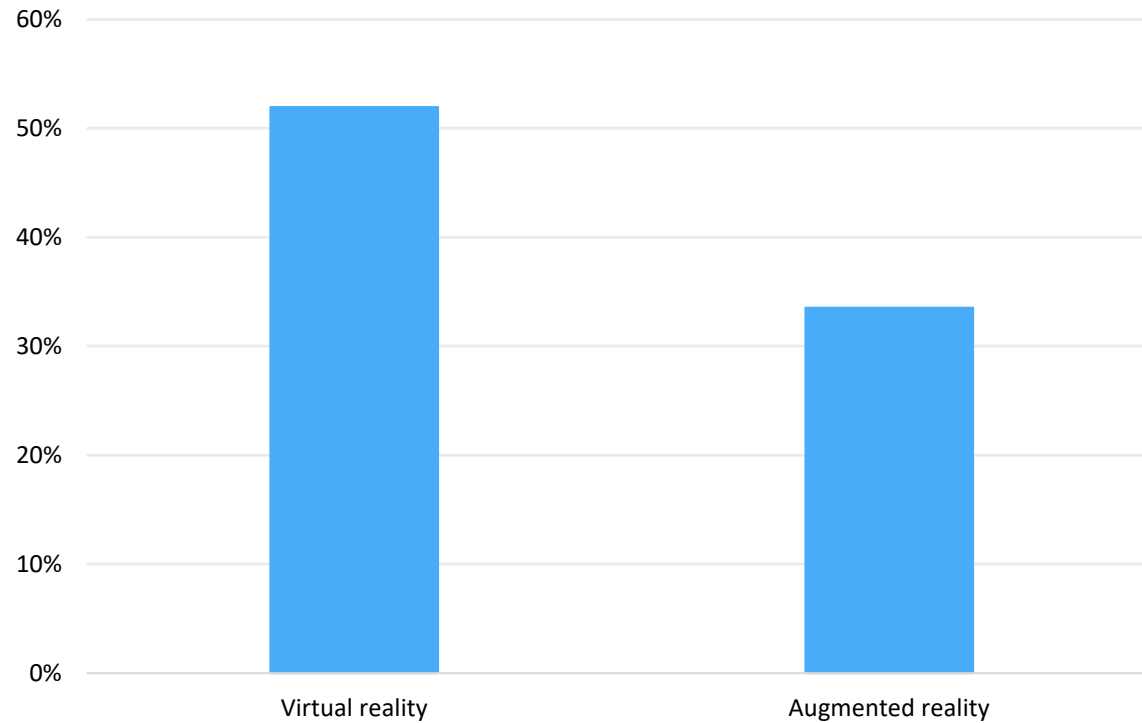
- Geared motors and gearbox manufacturers reported no notable change or trends in the industries they are selling to. Logistics and processing were the most commonly mentioned sectors being sold to. They expect to see a 10% decrease across all industries and mentioned an increase in sales to the food & beverage (F&B) sector.
- All companies are experiencing supply chain issues and difficulty accessing parts and components. The long lead times affect order books and customer retention. The reported lead times for some parts have gone from three days to six months. Companies are looking at alternative suppliers/multiple suppliers, but customers want transparency throughout the supply chain (for green sourcing and legal reasons; for instance, no illegal labor). Manufacturers have reported concerns about suppliers' capacity with increasing demand for products.
- Several manufacturers reported that their order books were full until the end of 1Q23, but some were full through to the end of 2023.
- Commodity prices are stabilizing, but the energy crisis is a problem. The cost of manufacturing in Europe is increasing, and customers have to absorb some of the costs. Those that manufacture in China have an advantage due to cheap energy prices.
- Geopolitical tensions such as the Russian/Ukraine war and China-Taiwan tensions have been called out. The war has had varied effects on companies, with large impacts for some and minimal impacts for others. This seemed to be less of an issue for smaller Europe-focused companies as opposed to large global companies. There has been some hesitancy about the reliance on Chinese manufacturers for parts owing to uncertainty about Taiwan and potential sanctions, the ongoing zero-COVID policy, and China's economy. There have been reports about looking to Turkey as an alternative supplier market.
- Sumitomo has highlighted pushing new products on the digitalization of gearboxes. Geared motors for preventive maintenance are being pushed because they are believed to be the next big thing in the market.
- Domestic Chinese vendors, such as Inovance, have been called out by major players; Inovance has gained brand recognition in Europe in the last year. Currently, its main markets are in China and India, focusing on sectors such as elevators, textiles, injection moulds, automation, motion controls, CNC, and packaging. It has had successes as manufacturers in China had limited supply chain issues while competitors struggled to meet orders because they produce their own chips. Inovance is investing in expansion in Europe, specifically Western Europe and Turkey.

Industrial software – Highlights (1/2)

- In a major announcement, Codesys said it was the first to launch a **virtual PLC**. Siemens will compete against them. Virtual PLCs for Codesys will start bringing revenue in 2023. They are unlikely to replace discrete (physical PLCs) soon, but this innovation will allow their customers to offset supply chain issues experienced across manufacturing currently.
- **The industrial metaverse** was not on display at SPS; when probed, most vendors commented on the need to educate different verticals on its technology and viable use cases. There is an expectation that adoption is at least five years away, but the consensus is it should be viewed as transformative and could change organizational structures; the industrial metaverse is seen as an entirely separate business by organizations.
- **Digital twins** were heavily discussed and presented at SPS. Various use cases were shown, from product designs to service twins and operational twins. Adoption is rising, driven by post-pandemic digitalization and the need to present data more constructively. Vendors believed digital twins must be the new normal and a core competency of any future industrial metaverse. Based on various use cases, Omdia expects multiple digital twins to be in operation in the industry; for example, a digital twin of a component, machine, or sales blueprint that is interoperable and works to standards set by leading vendors.
- Entry into the China market, powered by **cloud-hosted** applications such as **manufacturing execution systems (MES)** or digital twins, is still unclear. Vendors are restricted by legislation regulating the mode of entry to the market and management of data. It was unclear which cloud partners would lead these markets. Instead, the sentiment was vendors are more focused on mature markets that are investing heavily on emerging technology and digital transformation programs.
- The market is moving towards smaller production lines but with higher product customization. Actionable insights have been called out as important to customers. The value proposition customers are looking for is a suite of cloud-agnostic products. An outcomes-based consultative selling approach is now more common. However, a comment was made that trust has been harder to gain with new customers without direct contact; this is owing to the pandemic. SPS was a beneficial opportunity to highlight software use cases and promote solutions.

Industrial software – Highlights (2/2)

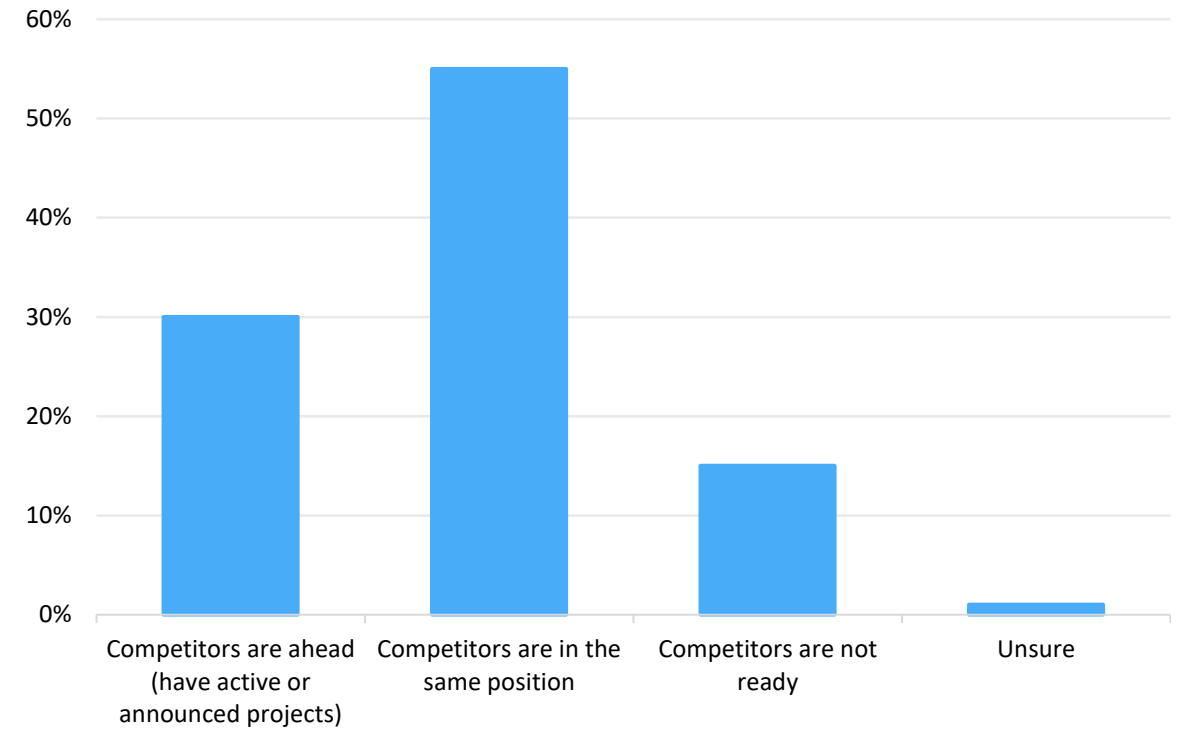
What would be essential components or key parts of an “Industrial Metaverse” for your organization?



Source: Omdia

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How do you perceive the readiness of competitors in your primary industry to adopt a digital twin?

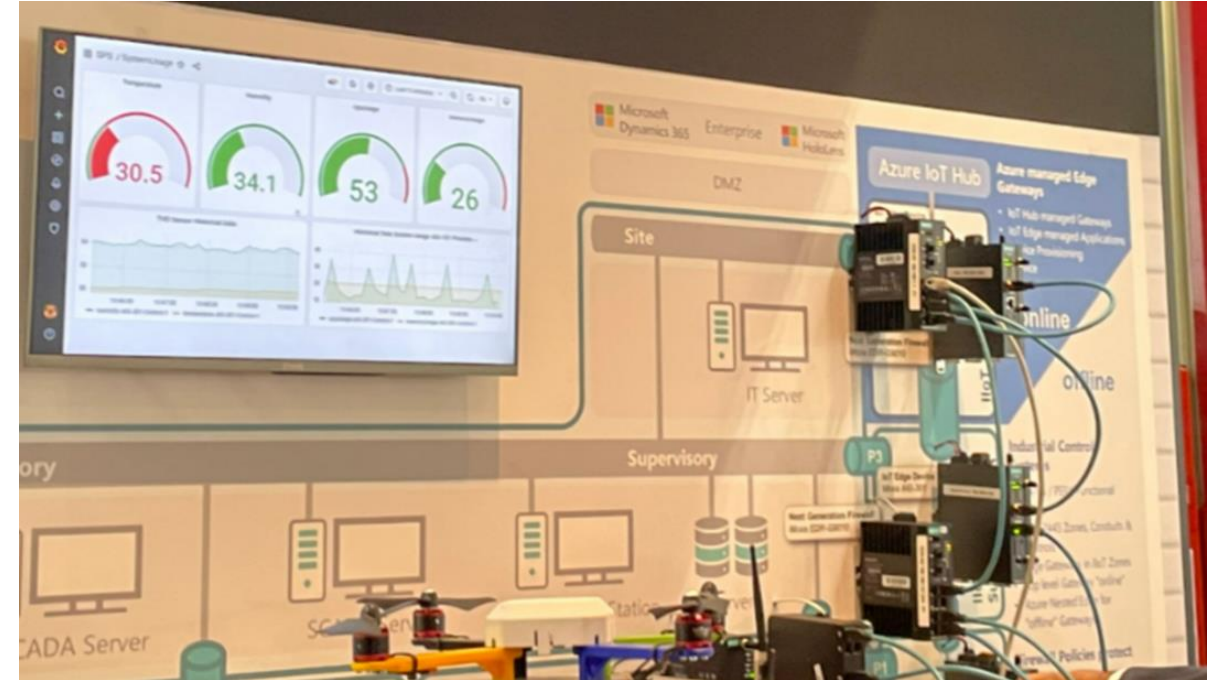


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Edge and cloud highlights (1/2)

- A major theme around SPS 2022 was the role of the cloud and edge. Many companies are looking to better understand how compute architectures of the future will evolve, specifically, which devices will be the primary locations for compute power and which will be replaced, the level of compute required, and how different applications may influence where workloads are hosted, based on requirements such as latency, compute power, and the volume and frequency of data processed.
 - While “traditional” on-premises data centers are extremely common, there is a trend growing toward a hybrid approach with greater use of the cloud combined with greater intelligence deployed at the “far edge” of manufacturing operations.
 - Manufacturers are optimistic that the use of industrial edge compute devices will continue to grow across a range of technologies; vendors continue to expand their product offerings with additional or right-sizing of compute capacity. SPS exhibits spanned the spectrum from smart sensors to micro data centers.
- The ongoing convergence of IT and OT is also shifting the conversation around what automation looks like with the emergence of software-defined automation.



Source: Omdia analyst photo

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Edge and cloud highlights (2/2)

- There is a broad heterogeneity of locations for data storage, processing, and analytics across industrial operations with traditional OT beginning to adopt IT principles, such as the use of software-defined automation and containerization. This was also a topic of increasing consideration with companies such as Bosch Rexroth and Schneider Electric exhibiting such concepts.
 - Schneider Electric and SAP also announced a collaboration to advance industrial digitalization with seamless shopfloor IT/OT integration, with one augmented reality (AR) solution demonstrated in the exhibit (EcoStruxure Augmented Operator Advisor)
- As the largest exhibitor at SPS, Siemens had a number of edge-related announcements including:
 - Version 4.0 of Simatics PCS neo, a Siemens web-based control system, extends its capability to support large-scale projects of up to 64,000 process objects and 56 controllers
 - Industrial Edge Management System V2.0 (for Kubernetes clusters) addresses IT users in production and saves IT resources, energy, and costs
 - Industrial Edge Hub provides greater license management visibility
 - New virtual edge device and new Simatic IPC edge devices offer more flexibility when implementing IIoT applications



Source: Omdia analyst photo

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Siemens press conference



- Siemens launched Xcelerator, a digital platform to make digital transformation more accessible. Xcelerator is Siemens's approach to accelerating digital transformation with cloud-based solutions. There are three pillars: a curated and modular portfolio of software and IoT-enabled hardware built on standard APIs, a growing ecosystem of certified partners; and a marketplace to explore, educate and exchange.
- At the Siemens press conference, the Industrial Edge Management and Industrial Information Hub focused on IT/OT convergence, enabling a smooth flow of data from the field to the cloud.
- There is a new version of the Simatic PCS neo control system available, presenting a new generation of 64,000 process objects and 56 controllers for the process industry. This is meant to support larger plants. The new controller is 30% smaller, offers extended communication options, and reduces the energy consumption of these controllers by up to 50%.
- Siemens also presented a feature from the Analyze MyDrive Edge application that measures the drive run, energy consumption, operating costs, and CO2 footprint- all of which link to the sustainability trend. QR codes are used to access product data, and they are paperless. Siemens's Sigreen offers a solution to carbon footprint tracking and tracing.

Source: Omdia analyst photos

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Other announcements and product releases

- Molex has announced Single Pair Ethernet Offerings in its future product portfolio.
- Maxon Motor launched five new Compact Drives, with all products designed with efficient use of resources and compactness.
- Inovance launched four new products: the high-performance Easy Series PLC, the GL20 I/O modules, the AC703 IPC motion controllers, and the SV670 servo series. They presented the MD800 compact AC again and previewed the SV680 servo drive.
- Delta launched the latest evolution of its IIoT Cloud-based Platform, the DIACloud Digital Dashboard, Pump Solutions with Delta's Fan/Pump Vector Control Drive CP2000, Time of Flight Camera DMV-T, Compact Modular CODESYS Motion Controller AX-3 Series, and Compact Modular Mid-range PLC AS Series with New IIoT Function Card.
- Deutschmann Automation presented its Unigate Falcon protocol converter/gateway. A CANopen variant of the product was announced for the near future.

Appendix

Appendix

Further reading

[Industrial Edge Networking Components – 2022 Analysis](#) (July 2022)

[Industrial Communications Report – 2021 Analysis](#) (January 2022)

[Manufacturing Execution Systems Market Potential – 2022 Analysis](#) (September 2022)

[The Cloud for Manufacturing – 2022](#) (September 2022)

[“Schneider Electric and SAP collaborate to advance industrial digitalization with seamless shopfloor OT/IT integration,”](#) Schneider Electric Global, retrieved November 17, 2022.

[“Digital Business Platform – Products & Services – Global,”](#) Siemens, retrieved November 17, 2022.

[“Milestone for the process industry: New version of the Simatic PCS neo web-based control system available,”](#) Siemens, retrieved November 17, 2022.

[“Rockwell showcases solutions for greater productivity at SPS,”](#) Rockwell Automation United Kingdom, retrieved November 17, 2022.

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Appendix

Omdia Consulting

We hope that this analysis will help you make informed and imaginative business decisions. If you have further requirements, Omdia's consulting team may be able to help you. For more information about Omdia's consulting capabilities, please contact us directly at consulting@omdia.com.

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