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Smart Manufacturing

From Insight to Action: Elevating Employee Efficiency with Smart Detection and Targeted Data Delivery

J. Behnke
General manager for Smart manufacturing
INFICON, Cologne, Germany



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Joint Presentation INFICON and ST

Biography

Mr. Behnke has 40 years of semiconductor industry experience including: logic and memory manufacturing, technology/product development and fab operational excellence. As the GM of Final Phase Systems an INFICON Product Line, John leads a team that develop and deploy SMART software solutions that enable fabs to improve their manufacturing efficiency. FPS's suite of software solutions are built upon a common Datawarehouse which enables advanced Fab Scheduling and optimized WIP movement as well as other related capabilities. He is also a Co-Chair of the Semi North America Smart Manufacturing Special Interest Group.

Prior to FPS John served as the CEO and President of Novati Technologies, the SVP and GM of the Semiconductor Group of Intermolecular, the CVP for Front End Manufacturing, Process R&D and Technology Transfers at Spansion and the Director of AMD's Fab 25's Engineering and Operations groups where he was a founding member of AMD's Automated Precision Manufacturing (APM) initiative which led the Semiconductor industry's development and use of APC and other advanced factory systems. He also led the successful conversion of Fab 25 from Logic to Flash memory which was enabled through the virtual automation of the fab.

Mr. Behnke earned a B.S. degree in Mechanical Engineering with an Industrial Engineering Minor from Marquette University. Mr. Behnke holds five U.S. patents.

References

New Approaches and Innovations to Improve Effective Use of Vacuum Assets in Cleanroom and SubFab

P. Johnson
Chief Architect
Edwards Vacuum, Business Transformation,
Semiconductor Service, Burgess Hill, United
Kingdom



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Edwards is developing new technology solutions and business models to minimize risk and uncertainty from maintenance events on process-critical vacuum assets. We are already successfully deploying our domain knowledge with on-prem AI solutions, enhancing tool uptime and efficiency, UD prevention and MTBS extension, and identification of wider vacuum infrastructure issues.

Building on this, we are developing a long-term easily scalable approach to data capture and analysis. This is driven by several innovations including cloud-based technologies addressing data volume, AI scope and accuracy, and a flexible document-based data store, to allow easy extension to additional data sets.

We have also developed a Wi-Fi solution to the first-mile equipment connection problem, allowing for economically viable data collection and analytics will that benefit many fabs.

Together with portable data analytics tools it will accelerate demonstration of AI solutions to process issues, and subsequent deployment at scale for all fabs. In the presentation we will discuss these current and new approaches and technologies, illustrated with relevant case studies.

Biography

Name : MR.Paul Johnson

Job Title: Chief Architect

Department: Business Transformation, Semiconductor Service

Education:

Bachelor of Engineering degree in Electrical & Electronic Engineering, University of Sunderland

Experience:

Paul joined Edwards Vacuum in 2023, he is focused on building new software tools to aid predictive maintenance within the vacuum & abatement space.

He started his career in Semiconductors in 1993 at Fujitsu Microelectronics, before moving to Applied Materials in 2000, working in a range of increasingly senior roles in Field Service.

He then joined Netflix in 2010 as Director of Engineering where he oversaw software development including various projects using Artificial Intelligence to predict failures.

He is now bringing this experience with Artificial Intelligence and big data systems to semiconductor manufacturing.

References

Roadmap for Semiconductor Exhaust Gas Treatment Equipment Towards Carbon Neutrality

A. Morihara
CTO of Kanken Techno
Kanken Techno Co., Ltd., Kyoto, Japan



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Various efforts are being made across industries to achieve carbon neutrality by 2050. In this context, at semiconductor manufacturing facilities, the abatement of greenhouse gases (GHGs) such as fluorinated gases emitted from manufacturing equipment represents a significant challenge. Additionally, achieving carbon neutrality across the entire supply chain for Scope 1, 2, and 3 is necessary. From Kanken Techno, a specialist manufacturer of abatement systems in Japan, we will present guidelines and recommendations and introduce the technology that addresses these directions.

Biography

Atsushi Morihara
Chief Technology Officer
Headquarters
Kanken Techno Co., Ltd.
Professor, Ph.D
Laboratory for Zero-Carbon Energy
Tokyo Institute of Technology

Education:

- Professor Tokyo Institute of Technology 2012-*
- Visiting Researcher Massachusetts Institute of Technology 1994-1996*
- Doctor Degree Tohoku University 1991-1994*
- Graduate TOKYO University 1977-1981*

Experience:

- CTO KANKEN Techno 2017-*
- CTO Global Environment Group Mitsubishi Corp 2008-2017*
- General Manager Power generation Group HITACHI Ltd. 1981-2007*

References

Fire Risks & Challenges in Semiconductor Manufacturing Environments

M. Donaghy
Business Development Manager
Honeywell, Business Development, Bracknell,
United Kingdom



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The semiconductor manufacturing process taking place inside the Wafer FAB presents extreme fire risks and challenges. On a FAB facility, there are two main building types - manufacturing facilities (FAB & assembly & test and packaging) and offices. The manufacturing building is typically a large-volume, high-ceiling structure with intricate and convoluted architecture that does not lend itself to traditional smoke detection, maintenance access for regulatory checks may also not be easy to achieve. Within these complex buildings, there are several functional rooms with their own individual fire risks.

Honeywell Building Automation serves the Semiconductor market globally through a variety of life safety solutions including :

Fire Systems & Sensors - Protect people and premises with leading integrated and networked solutions including voice alarm and emergency lighting

Advance Detection - Proactive early warning detection solutions to overcome specific challenges and keep mission critical semiconductor FAB's running

Software Solutions - Provide software that supports remote-assisted inspection and maintenance, alarm transmission, site monitoring, digital compliance

Projects Support - Work directly with end-users, consultants, and system integrators to support the standardization of fully compliant, EU integrated fire systems

Our comprehensive approach to safety can help support increased productivity, performance, and operational uptime.

Biography

Mark Donaghy is an experienced international business development leader currently based in the UK with 13 years' experience in the areas of automation & robotics, battery manufacturing and fire & life safety. Mark holds a construction Bachelors in construction management and a further degree in leadership & management from the Royal School of Military Engineering. Mark spent 22 years in the British Army (Royal Engineers) deploying on global operations throughout his career in UK Armed Forces. Mark began his second professional journey outside of the military in 2012 and has been a part of the Global automotive industry working for companies such as Porsche Consultancy, KUKA Systems Battery BU, ABB Robotics & Honeywell.

Mark is spearheading the business development in Europe for Battery Gigafactory's & Semiconductor manufacturing verticals, supporting clients with life safety solutions strategies & design (fire & gas advanced detection). Mark is also part of a global Building Automation team that provides expertise & guidance in early warning detection solutions to overcome specific challenges and keep mission critical European sites running.

References