Digital Factory

teknowlogy | PAC

Lufthansa Industry Solutions

Lufthansa Industry Solutions
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Lufthansa Industry Solutions

teknowlogy's highlights

- Strong capabilities in the fields of **supply chain and logistics,** combined with technological know-how in the fields of IoT, data analytics, artificial intelligence, and data science make Lufthansa Industry Solutions an interesting player for the digital factory.
- The implementation of various localization solutions is a core capability, with the **tracking and tracing** of objects and workers (e.g. vehicles, tools, spare parts) for a variety of purposes (e.g. inventory, theft protection, safety) being a major use case.
- Very interesting use cases in the area of **anomaly detection.** Examples are damage detection and damage traceability for goods and containers, which are particularly interesting use cases for insurance companies.

Short vendor description

- Lufthansa Industry Solutions (LHIND) is a wholly-owned subsidiary of Lufthansa Group emerged in 2015 from former Lufthansa Systems AG.
- LHIND focuses on process consulting, IT and strategy consulting, IT systems integration and development, application management and IT systems operations, as well as program and project management.
- LHIND is a specialist in aviation, logistics and transport, as well as manufacturing and automotive.

Key facts:

Web:
www.LHIND.de

Employees in Germany *:
1,900

Offices in the DACH region:

- Norderstedt
- Berlin
- Hamburg
- Frankfurt
- Köln
- Oldenburg
- Raunheim
- Stuttgart
- Wetzlar
- Wolfsburg
- Basel (CH)
- Bern (CH)

* PAC estimates

Lufthansa Industry Solutions:
Selected use cases in the digital factory

Data-driven services	Connected assets that are equipped with sensors provide data about malfunctions, allowing the OEM of those assets to take immediate action such as replacing assets.
Connected worker	Workers can be enabled through voice-controlled solutions (i.e. workers are given audio instructions). For example, LHIND has developed a prototype for the voice-operated inspection of auxiliary power units. Augmented reality (AR) solutions on tablets enable workers to carry out inspection tasks more efficiently. Indoor localization of workers, including monitoring of vital functions of connected workers, such as temperature or pulse, combined with anomaly detection techniques, supports safety concepts on the shop floor.
Inventory tracking	Tools, assets, and vehicles are tracked on the shop floor, and there is communication with the MES to confirm the location, operation mode, and availability of production assets for certain production processes.
Asset location monitoring	Manufacturers can equip their vehicles on the shop floor (e.g. forklifts) with sensors in order to identify empty runs, laden runs, and shunting activities from movement patterns and load conditions using data analytics. This data can be utilized to optimize the performance of such vehicles.
Condition monitoring	Use cases relate to real-time vehicle monitoring and monitoring of wind power plants, as well as retrofitting of legacy equipment and machines, including an end-to-end integration of eligible machines into modern production lines.
Autonomous data capturing	Solution using autonomous drones to carry out inspection tasks for wind turbines.
Autonomous transportation systems	LiDAR-based 3D scanning and mapping.
Automated replenishment	Development of a prototype of an e-Kanban solution.
Digital quality control	Visual quality inspections using data from video sensing and algorithms to detect anomalies, including damage detection and traceability of damage to goods, containers, etc.
Plant management	Theft protection solution for expensive production assets, utilizing real-time location and tracking services.
Yard management	Solution to manage parking spaces in order to optimize logistics processes.
Predictive analytics/predictive maintenance	LHIND was involved in the OMAHA (Overall Management Architecture for Health Analysis) project, which was funded by the German government until 2017. The goal was to develop scientifically sound forecast models for monitoring the condition of airplanes based on sensors and big data analysis in order to increase the efficiency of MRO operations.

Lufthansa Industry Solutions:
Relevant player in the following use case clusters

teknowlogy | PAC considers Lufthansa Industry Solutions as a relevant player in the following use case clusters.

In these clusters, Lufthansa Industry Solutions has proven to be able to cover all relevant use cases.

Asset performance management	✓
On-site asset/plant monitoring	✓
Networked production monitoring	✓

Predictive shop-floor analytics	✓
Predictive shop-floor maintenance	✓

Asset location monitoring	✓
Inventory tracking	✓

Own solutions/IP

Condition monitoring:

Connected factory assets allow for near real-time visibility into production processes through the monitoring of equipment's key metrics via data from PLCs or from sensors (e.g. energy consumption, vibration) and of environmental conditions via data from sensors (e.g. temperature, moisture, dust). Alerts can be generated automatically if certain key metrics are exceeded.

Logistics engine and analytics platform (LEAP):

Platform that enables the integration of various localization solutions.

teknowlogy's assessment

Strengths

- In LHIND's Data Insight Lab, data scientists and data architects work together to turn data from all sorts of sources and in various formats into insights, with one of the aims being to optimize processes in the digital factory.
- Ensuring data security is a major topic. When it comes to utilizing sensor technology, LHIND enables manufacturers to have a secure, encrypted, end-to-end communication of data.
- Very strong in use cases related to the tracking and tracing of objects, assets, tools, vehicles, etc. on the shop floor, in the warehouse, or in the supply chain. The combination of logistics know-how and IoT (incl. sensors and data analytics) in particular is a USP of LHIND.
- Very strong in use cases related to anomaly detection, such as digital quality control, but also damage detection and traceability of damage to goods, containers, etc. The latter is particularly interesting for insurance companies.
- Very strong domain know-how in maintenance and repair processes for the aviation sector, which can be leveraged for customers in other manufacturing sub-segments.
- PoCs for use cases are often tested in the aviation space (e.g. Lufthansa), but there are numerous client references outside aviation, such as in the industrial goods sector, in automotive, and in CPG, but they are under NDA.

> **"Having its roots in aviation, logistics, and transport, Lufthansa Industry Solutions has become an absolutely relevant player in the digital factory, thanks to its domain expertise in logistics and maintenance, and its strong capabilities in the fields of IoT and data analytics."**
>
> **Klaus Holzhauser, SVP Digital Innovation & IoT, teknowlogy | PAC**

Digital factory use cases overview:
Lufthansa Industry Solutions

Digital Factory Use Cases	Capabilities
Sourcing	
Advanced supplier insights	-
Production planning	
Virtual commissioning	-
Flexible process control	-
Demand-driven real-time production scheduling	-
Production	
Asset performance management	✓
Automated replenishment	✓
On-site asset/plant monitoring	✓
Networked production monitoring	✓
Warehouse picking	-
Safety and security	✓
Assembly support	-
Mobile data capturing	-
Visual quality inspection	✓
Predictive quality control	-
Automatic quality control	-
Energy optimization	✓
Automated energy optimization	✓
Digital production twin	-
Next-generation factory automation	-
Additive manufacturing	-
Material optimization	-
Factory safety and security	✓
Predictive shop-floor analytics	✓
Predictive shop-floor maintenance	✓
Robotics and cobots	✓
Smart intra-logistics vehicles	-
Autonomous transportation systems	-
Autonomous data-capturing devices	✓
Asset location monitoring	✓
Inventory tracking	✓
Service and support	
Maintenance support	✓
Data-driven business models	✓
Smart training	✓
Logistics	
Smart yard management	✓
Fleet and route optimization	✓
Transit tracking and tracing	✓

About teknowlogy Group

teknowlogy Group is the leading independent European research and consulting firm in the fields of digital transformation, software, and IT services. It brings together the expertise of two research and advisory firms, each with a strong history and local presence in the fragmented markets of Europe: CXP and PAC (Pierre Audoin Consultants).

We are a content-based company with strong consulting DNA. We are the preferred partner for European user companies to define IT strategy, govern teams and projects, and de-risk technology choices that drive successful business transformation.

We have a second-to-none understanding of market trends and IT users' expectations. We help software vendors and IT services companies better shape, execute and promote their own strategy in coherence with market needs and in anticipation of tomorrow's expectations.

Capitalizing on more than 40 years of experience, we are active worldwide with a network of 150 experts.

For more information, please visit www.teknowlogy.com and www.sitsi.com, and follow us on Twitter or LinkedIn.

