Atlas Copco

"ALTURE® detects potential errors before they occur and saves us a lot of time in the reaction. This has a significant effect on the production quality."

– Niklas Doschko, Electrical System Engineer, CNH Industrial

Success Story

Unlocking the full potential of tightening data analysis with *ALTURE®*

How CNH Industrial uses data-driven software to be proactive in the assembly process and set new quality standards.

Thanks to the intelligent, data-driven software solution *ALTURE®*, CNH Industrial has established efficient processes along the entire assembly line. Through the automatic analysis of tightening data and the early elimination of problems CNH Industrial takes productivity and product quality to a new level.

Manual analysis of tightening data

Leading agricultural equipment manufacturer CNH Industrial operates a tractor final assembly plant in St. Valentin, Austria. The quality of the final products depends on a large number of tightening processes in the final assembly stages. That's why CNH Industrial must ensure flawless tightening processes. In the past, the evaluation of tightening data was done manually, which was time-consuming and error-prone. In order to live up to the motto "Solve problems before they arise", CNH Industrial has adopted a proactive approach to the assembly process. The goal is to detect anomalies and negative trends in the tightening data automatically and in real time, eliminate deficiencies in the processes and thus reduce rework to a minimum. This is the only way to achieve the highest safety and quality standards.

Comprehensive solutions from a single source

CNH Industrial and Atlas Copco have a strong partnership in the field of tightening technology. The assembly tools from Atlas Copco have been used for many years in the assembly to mount final components up to the tractors. When CNH Industrial identified potential for optimization and automation in the tightening processes, they turned to Atlas Copco's expertise in the area of data analysis. The decision was made in favor of the data-driven software solution *ALTURE®*, which sustainably improves the safety and efficiency in the assembly process.

Unprocessed data becomes valuable information

ALTURE® enables CNH Industrial to capture all of its tightening data and use it for a complete analysis. The technical parameters set on the controllers (e.g., torque and rotation angle during tightening) are monitored by *ALTURE®*. These parameters, along with the corresponding standard ranges, serve as the basis for the analysis of production quality. In this way, the intelligent algorithm behind *ALTURE®* detects any anomalies that occur in the parameter sets and evaluates them as so-called Not-OK (NOK) trends. The software even goes one step further and formulates potential causes for the trends in real time. Accordingly, the user is provided with several recommendations to take action, so that corrections can be made early on.

Nutrunner QMX

Torque Wrench STRwrench

Measuring equipment QAT

Pistole Cable Nutrunner Tensor ST

Data collection and process improvement software ToolsNet 8

Pistol Cordless Pulse Tool TBP

The products

Unique sensitivity to data

Thanks to *ALTURE®*, CNH Industrial is now harnessing the full potential of tightening data analysis along the assembly line. Today, the assembly team is informed immediately when the predefined parameters are exceeded or not met. If there are too many deviations in the values, the software communicates precise recommendations to the user. For example, it recommends to check the material coating or the screw thread for lubricant. Thanks to these sort of suggestions, the assembly team already detected new components with modified materials which would have affected the parameters of the fastened joint. By adjusting the technical parameters in good time, it was possible to avoid faulty assembly and the reworking of numerous tractors.

From reactive to proactive behavior

Thanks to the unique sensitivity of *ALTURE®* to deviations in the tightening data and the intelligent recommendations, CNH Industrial can make the right decisions for the assembly process at an early stage. For the first time, CNH Industrial is able to be proactive instead of merely reacting to situations. The result: improved initial production and an increase in productivity. The increased efficiency in the assembly line also resulted in valuable resources such as materials being used sparingly. This is how CNH Industrial is laying the foundation for more sustainable production.

"ALTURE® allows us to work in a more proactive and even preventive way in the final assembly."

– Niklas Doschko, Electrical System Engineer, CNH Industrial

Manual analyses are now a thing of the past

At CNH Industrial's assembly plant, manual analyses of tightening data are now history. So are long waiting times for personal feedback within the assembly team. Thanks to *ALTURE®*, tightening data is automatically analyzed, deviations from technical parameters are detected early on and proactive measures against production errors can beare initiated immediately. Even damaged hardware can be quickly identified and reported with *ALTURE®*. The response time on the assembly line has decreased immensely.

"When ALTURE® detects an issue in the assembly line, it sends me clear notifications and recommendations on how to fix the issue. I also have ALTURE® on my Apple Watch, so I receive a notification directly on my wrist."

– Niklas Doschko, Electrical System Engineer, CNH Industrial

Further plans on an international level

The proactive and preventive way of working at the Austrian production site is attracting great interest from CNH Industrial's international plants. The plants are in close contact with each other to roll out this advanced technology internationally.

Key results

| Proportion of OK tightenings increased to **98%** | Up to **100%** achievement of productivity | Seamless process monitoring and evaluation |

Breaking new ground through innovation, sustainability and productivity.

In a constantly evolving world, CNH Industrial knows from many years of experience in the the agricultural and construction equipment industry that true innovation means going beyond the limits of the known. Today, the focus is more on environmentally friendly technologies that will shape the future.

CNH INDUSTRIAL

www.cnhindustrial.com

About CNH Industrial

CNH Industrial is a world-class capital goods company specializing in equipment and services for the agricultural and construction industries. The company is represented through its brand portfolio, which includes Case IH, New Holland Agriculture, CASE and New Holland Construction Equipment. Throughout its more than two-century history, CNH Industrial has been a pioneer in its sectors and continues to be passionate about innovation to improve the efficiency and success of its customers.

As a truly global company, CNH Industrial's more than 40,000 employees form part of a diverse and inclusive work environment focused on empowering customers to create a better world.

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