

Success story 3d Signals & Eckart GmbH

Plug & play machine digitization drives hydraulics business forward

Eckart Hydraulik, a family-owned company based in Schlüchtern, Germany, can already look back on half a century of experience in the field of innovative fluid technology solutions. In particular, hydraulic rotary motors / rotary drives are the company's expertise. With more than 400,000 actuators sold, and strategic sales representatives worldwide, the company also demonstrates its strength when it comes to taking care of and motivating its 160 employees who enjoy benefits such as company pension plans, supplementary health insurance and bike leasing.

The factory is efficient and cost-effective. From the first inquiry to delivery and service, all processes are carefully handled with personal commitment of the employees. This is important for Managing Director Markus Eckart, who regards customer satisfaction very highly: "In the market, we are perceived as a technology-enthusiastic company for hydraulic drives for almost every industrial sector. We are an uncomplicated, innovative-thinking partner for technically demanding customers."

Markus Eckart keeps an eye on the market developments and closely follows IT topics with a focus on production. This is how he learned about the 3d Signals solution. In a visit at a 3d Signals customer site - SAMSON AG, he gained a first-hand impression of the 3d Signals plug & play machine digitalization solution.

Markus Eckart was immediately impressed with the non-invasive installation of the 3d Signals sensors and IoT edge device, as well as the very fast insights from the newly generated data. "Our motivation was to accurately determine a machine's availability in an automatic manner which does not depend on employees to collect machine data. The fact that virtually any machine, regardless of type, model and age can be connected was a very interesting aspect that supported our decision to choose 3d Signals. Markus Eckart sees an opportunity in working with a startup company that can respond quickly to specific product requests and customization requirements.

The company is currently focused on monitoring the live view of machines classifying reasons for idle periods in order to identify and resolve bottlenecks.

The 3d Signals solution is used in two production areas, in which production is done in two shifts. The improvements obtained in the first few months of operation exceeded the expectations, so they are now planning to connect additional machines. According to Markus Eckart, both the production managers and the machine operators see the positive change in their daily work as a result of using the system. The increased machine utilization is a confirmation of the production excellence and added competitive advantage. To the employees, this is a reinforcement of their job security.

The intentions of Markus Eckart before installing the 3d Signals system were to create transparency in the communication with his team. "Our goal was to first collect two to three months of data and then evaluate the whole project. We were surprised to see an almost across-the-board reduction in downtime, even though we hadn't implemented any measures yet," he said.

Markus Eckart was aware of the high optimization potential in his company with regard to the utilization of his machines. He cites this as one of the key decision criteria for

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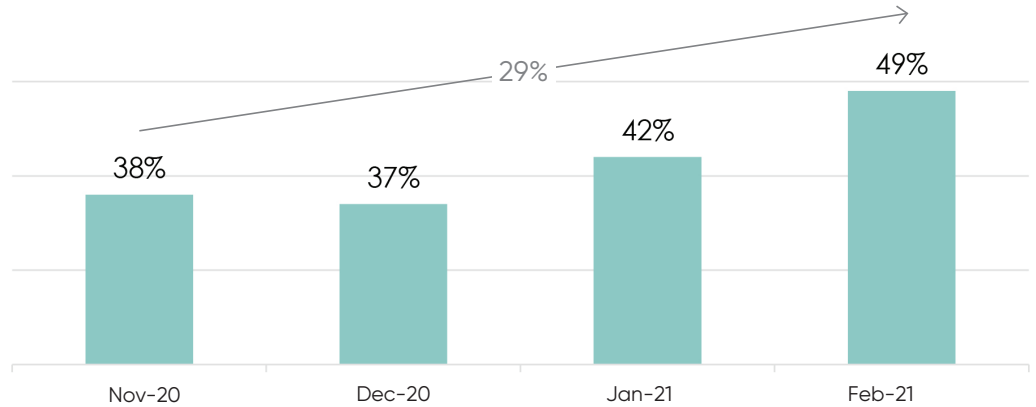
Markus Eckart,
Managing Director,
Eckart GmbH



choosing to work with 3d Signals. And from theory comes practice: "With the recording of the reasons for downtime, we will now define and implement targeted measures."

After the company has worked with the 3d Signals system for four full months, a significant improvement in machine availability was observed. Availability is measured as the ratio of actual production time (or value-adding time) to planned operating time or shift time. As can be seen in Figure 1 the average machine availability in November 2020 was 38%. This means that the machines were not producing parts in over 60% of the time. In February 2021, the machine availability was 49%, which means an increase in machine productivity of almost 30%. This increase can be attributed mainly to the visualization of data and the attention of machine operators and managers, as overall no major investment was needed to achieve this dramatic change. Certainly, the continuous communication with the employees about the importance of the 3d Signals solution also played a major role. This strengthened the acceptance and the motivation of the employees to utilize the existing machines in the best possible way.

Fig. 1 Average monthly availability with an increase of 30% between November 2020 and February 2021.



Figures 2a and 2b show that the aforementioned improvement occurred across the board. Figure 2a visualizes the improvement on each of the five working days. During the assessment period, an average of 24% higher availability was achieved per weekday. Friday is started lower due to a different shift planning which was only updated in February. With the new "flexible shift planning" feature, which has been added on the 3d Signals dView cloud software since February, the shift planning can now be adjusted per day. This is a good example of the advantages of having uncomplicated communication with a startup and the fast response time.

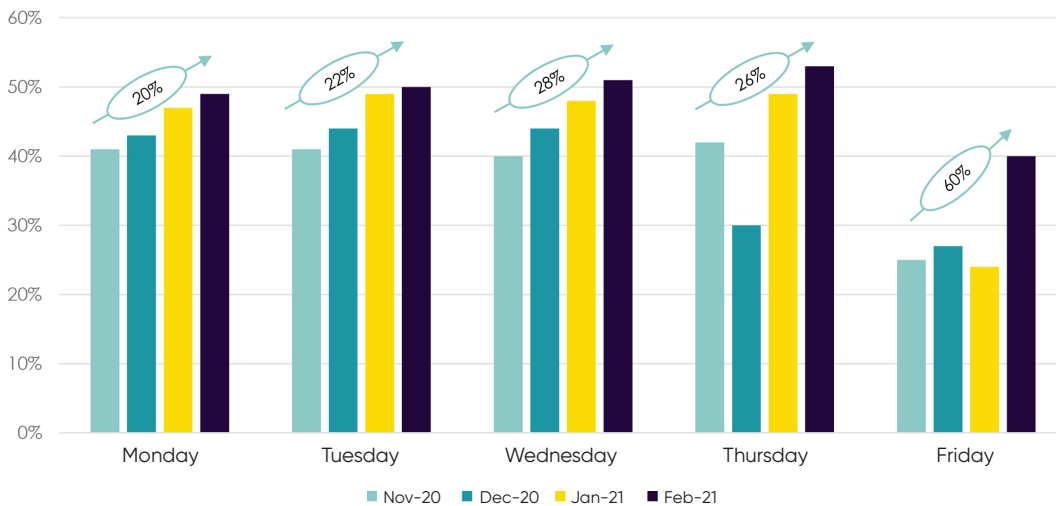


Fig. 2a Average daily availability, for each of the five working days, along the four full months after installation. Machine availability and machine utilization show a consistent trend of improvement over this time.

Figure 2b illustrates the improvement in shift productivity. While the morning shift improved by 27% in the four months after installation, the afternoon shift, which started with significantly lower productivity, improved by 38%. Thus, it almost caught up with the efficiency level of the morning shift.

Fig. 2b Average monthly availability by shift. The afternoon shift started with significantly lower availability and quickly caught up with the morning shift, which also shows a continuous improvement.

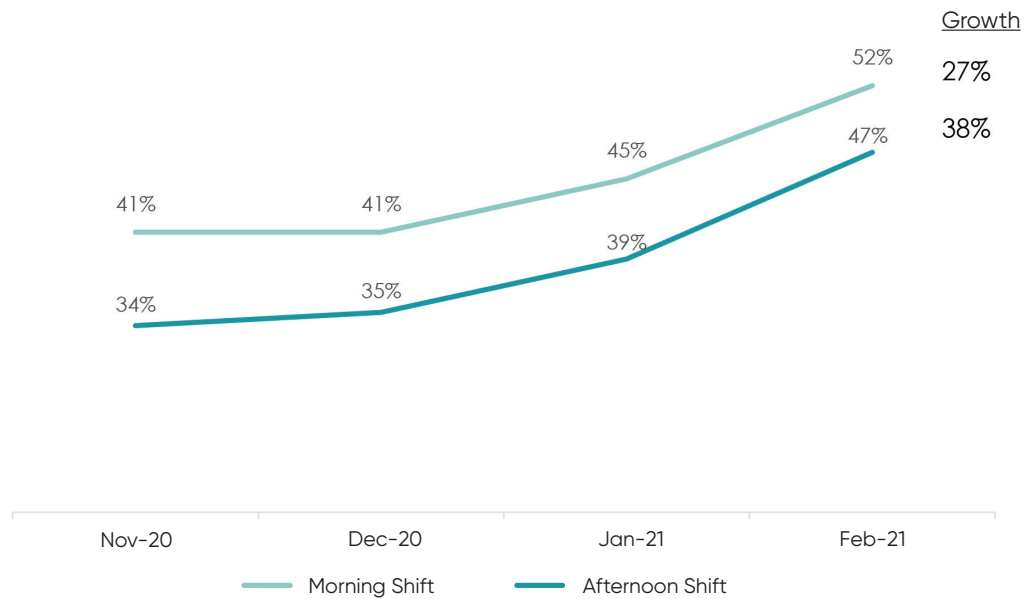


Figure 3 shows that there was a great difference between the two different production halls in November 2020, and that most of the improvement was in hall 4. While Hall 5 maintained a high average availability, increasing from 42% in November 2020 to 49% in February 2021, Hall 4 started much lower with an average availability of 27%, but then quickly closed the gap to an impressive 48% in February 2021, an increase of 77% in the last 4 months.

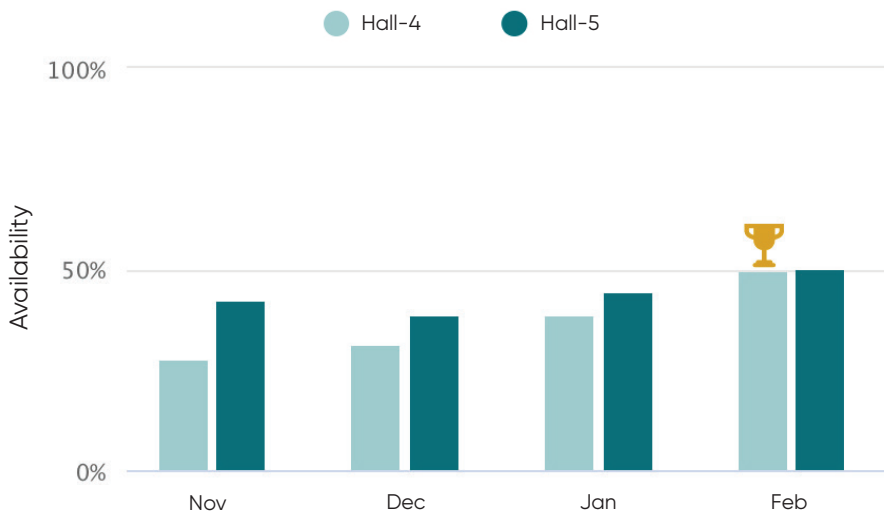


Fig. 3 Large differences in availability between the two production areas were eliminated within 4 months as both areas reached an all-time high of 48%-49% availability.

How does Markus Eckart see the cooperation with 3d Signals in the medium-term future? "We will definitely optimize certain processes, which is the point of this digitalization process. We will continue to use the 3d Signals system for this purpose and then define appropriate measures."

And based on his experience with 3d Signals, what would he recommend to other CEOs of manufacturing plants? "Have the courage to install! the very simple plug & play solution, which provides insights from day one and helps any company make further, essential data-based decisions."