

Long-term data from the smart pump monitoring system at the Rötelsberg pumping station

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Good news: Proactive monitoring at the Rötelsberg pumping station of Fernwasserversorgung Oberfranken (FWO) is progressing smoothly. The successful deployment of the "vibDOT" multi-sensor node by BestSens AG demonstrates that the technology can detect potential negative trends early, thanks to continuous real-time data collection. However, due to the advanced system in place, no such negative trends have occurred, as reflected in the data from recent weeks and months [see Figure 1]. As a result, the monitored pumps are performing at their expected high levels, with no deviations in performance.

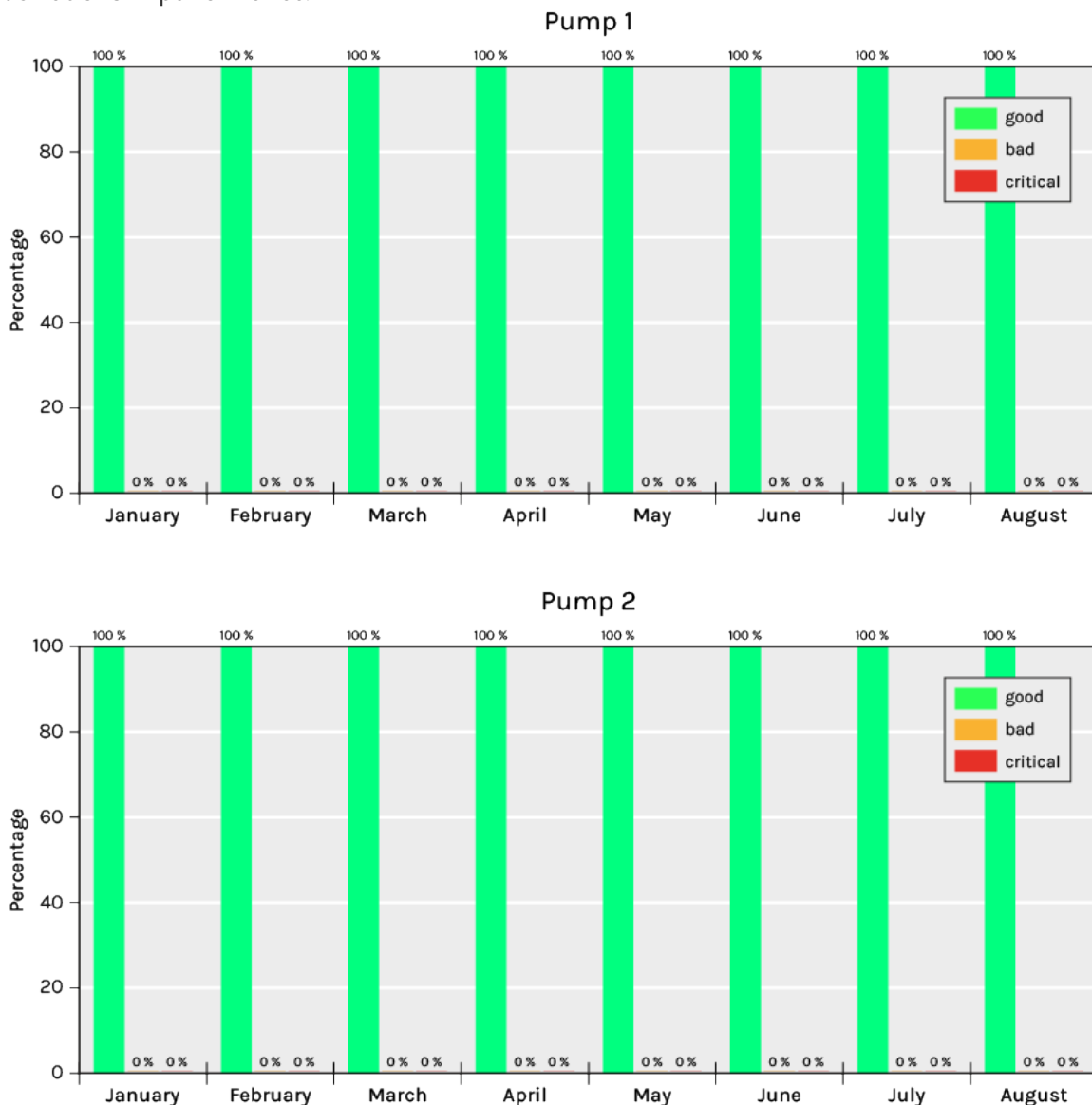


Figure 1: Condition data of the monitored pumps at a glance

The vibDOT monitors various parameters including vibrations, temperature, rotational speed and direction, as well as the start/stop behavior of the pumps.

“We are very pleased to confirm that, thanks to vibDOT’s condition monitoring, there are no operational deviations in the monitored pumps. This allows us to carry out all planned maintenance as scheduled, with no unplanned downtimes,” says Marco Brandl, Head of Electrical Engineering and IT at FWO.

A detailed analysis of the data further reveals the oscillation behavior—specifically, the vibrations—of the pump. Figure 2 illustrates the vibration velocity (RMS), with the data distribution for different months displayed as a violin plot. Once again, all recorded values remain within the green range.

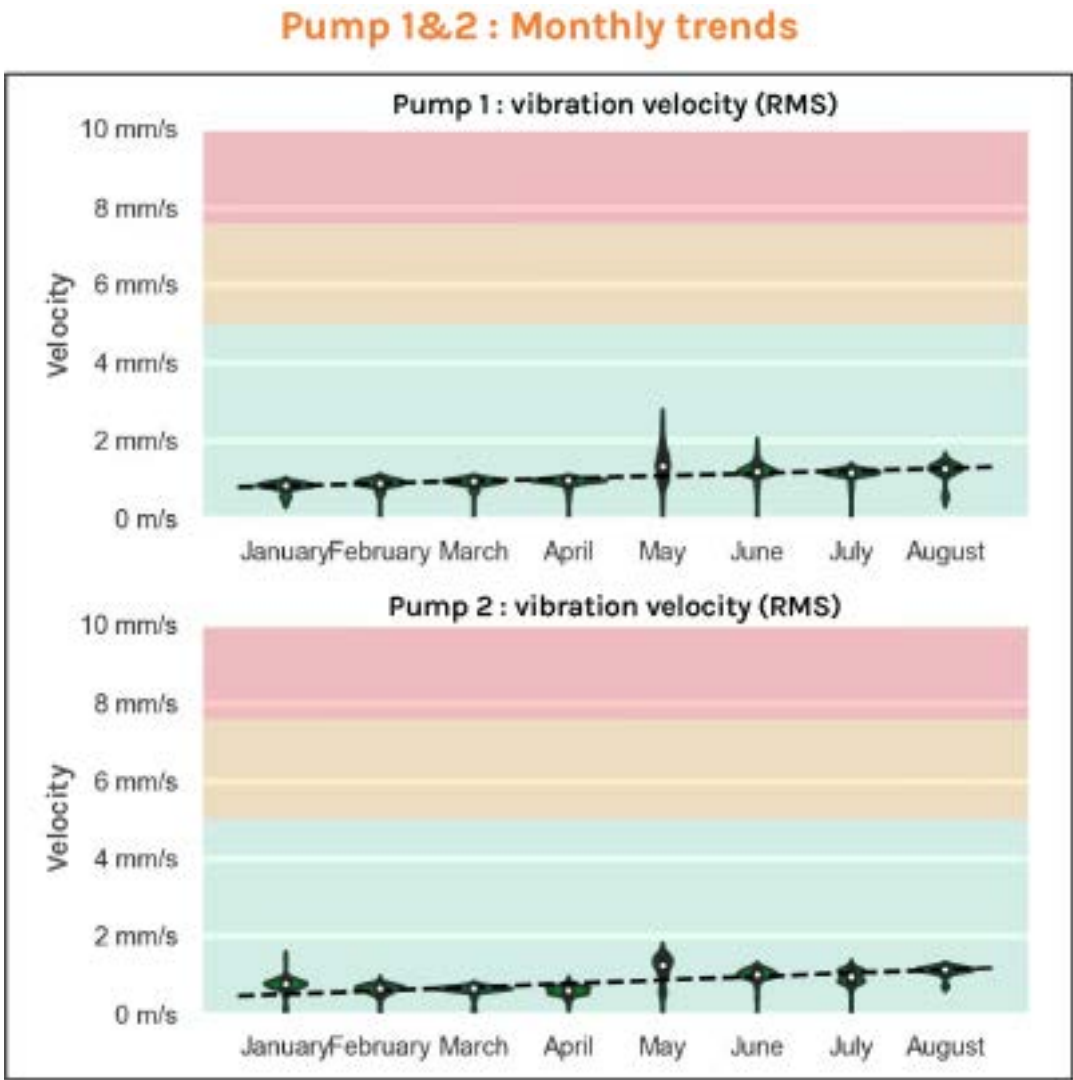


Figure 2: Violin plot of the vibration velocity(RMS)

The following graph, using sample data, illustrates what the scenario would look like if necessary action were required for a pump:

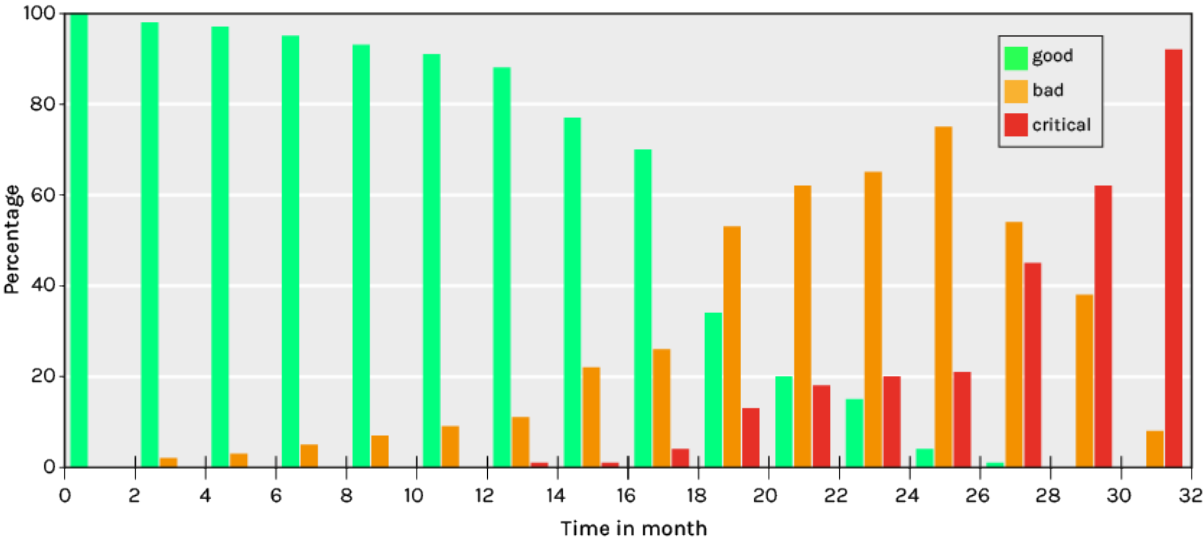


Figure 3: Sample data of a pump with increasing signs of wear

Over a period of 32 months, the first 12 months passed with few incidents and only around 10% in a bad condition towards the end. As the months progressed, however, it became apparent that the bad conditions increased exponentially and critical conditions also occurred. As a result, the critical states finally rose sharply at the end of the period and, in this example, led to a complete failure. There can be many reasons for this: Operating conditions outside the recommended performance range, for example (overload or dry running). Long-term damage such as the wear of seals and bearings due to excessive friction or the occurrence of cavitation due to fluctuating pressure conditions.

The vibDOT sensors in the Rötelsberg pumping station continue to continuously record vibration data during pump operation. This ensures that the pumps run efficiently as expected and that any deviations can be detected at an early stage so that proactive measures can be taken if necessary to promote smooth operation.

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About BestSens

BestSens AG develops, produces and distributes high-tech sensors, software and electronics for monitoring pumps and rotating equipment. Patented and technological highlights include the monitoring of mechanical seals and bearings in pumps. With the expertise gained from the practical experience of the last decade, we develop solutions from practice - for practice, so that the digital transformation of our customers can be implemented cost-efficiently and immediately. This is how we continuously set new standards in industrial process automation.

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