



HONEYWELL VERSATILIS TRANSMITTER FACILITATES CHEMICAL PLANT MAINTENANCE

Consistency and Reliability of Honeywell Versatilis Vibration Transmitters Compared to Hardwired Vibration Sensors in Preventing Component Failure and Minimizing Downtime

PROBLEM:

In the catalyst production facility, critical challenges such as material fatigue, defective bearings, imbalance, shaft misalignment and damaged gears of equipment frequently disrupt operations. These mechanical faults can lead to significant downtime, reduced production efficiency, and increased maintenance costs. Identifying these issues promptly is crucial for maintaining the continuous operation and long-term sustainability of the facility.



Figure 1: The Honeywell Versatilis Transmitter

SOLUTION:

Considering the critical role of fans and motors in catalyst production plant, uninterrupted operation is paramount. [A.Hock](#), a channel partner of Honeywell, developed an easybox utilizing LoRaWAN technology for data retrieval, and deployed eight Honeywell Versatilis vibration transmitters in the catalyst production plant, where the uninterrupted operation of fans and motors is crucial. The Honeywell Versatilis Transmitter, a versatile, low-power, multi-variable sensing platform, supports 3-axis vibration, surface temperature, audio acoustics, and additional ambient parameters. It incorporates the advanced LoRaWAN® protocol and provides a BLE option for sensor configuration and local diagnostics via the intuitive Honeywell Versatilis Connect mobile app. These sensors were installed on motors for fans exceeding 75KW, crucial for plant operations.

Observation and Analysis:

Data collected since the end of 2023 was analyzed following DIN ISO 10816-3 standards (Table 1). Also, a comparison of vibration data was done using a conventional vibration data logger. The objective was to ascertain the equivalence of data accuracy between the two methodologies. Sensor placement played a vital role in capturing comprehensive vibration data. The equipment in question was classified under medium machines.

		Large machines 300 kW < power < 50MW	Medium machines 15 kW < power < 300 kW
in/sec peak	mm/sec peak	Large machines height < 315 mm	Motor 160 mm < height < 315 mm
0.61	11.0	Damage Occurs	
0.39	7.1		
0.25	4.5	Restricted operation	
0.19	3.5		
0.16	2.8	Unrestricted Operation	
0.13	2.3		
0.08	1.4	New commissioned machinery	
0.04	0.7		
0.00	0.0		

Table 1: ISO 10816-3 Standards for the measurement and evaluation of the mechanical vibration of machine. (new: DIN ISO 20816). Purple box indicates where the **mean rms** values lie with respect to ISO Standard.

CONCLUSION:

- **Wireless vs. wired measurements:** The Honeywell versatilis transmitter data consistently aligned with the conventional wired sensor data, indicating similar reliability in assessing motor conditions (Figure 1). Referring to statistical values of **mean rms** indicated in Figure 2 and Figure 3, it can be observed that the mean value of Versatilis sensor fall within 10-20% of the mean value of the wired sensors.
- **Sensor installation and monitoring:** Proper sensor installation is crucial for the continuous monitoring of rotating components, in line with ISO 10816 standards. Considering the **mean rms** value obtained from both sensors, the equipment falls under unrestricted operation (Green) zone (Table 1, indicated with purple dashed box).
- **Easy integration without additional infrastructure:** The LoRaWAN Easybox enables comprehensive monitoring without necessitating additional infrastructure.
- **Dashboard with early warning system:** The implementation of a dashboard featuring a traffic light early warning system empowers maintenance staff to promptly address issues before they lead to component failure. It also allows to monitor other parameters (Figure 4). The fault threshold can be easily set using Honeywell Versatilis Connect application.

The integration of wireless sensor technology, meticulous data analysis, and advanced alarm systems has established a robust foundation for preventative maintenance within the chemical plant, achieving the set objective. Given the success in matching the performance of wired systems, the customer is now keen to integrate remote maintenance capabilities with the existing real-time monitoring. This enhancement will further elevate the operations of the chemical plant, optimizing both efficiency and reliability.

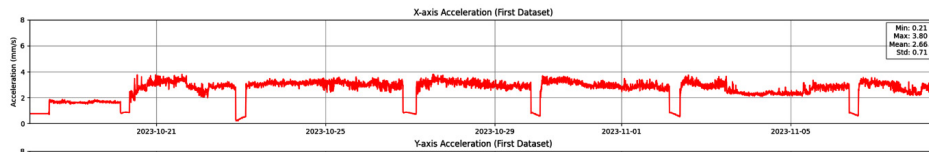


Figure 2: Acceleration data (mm/s) of X-axis from Honeywell Versatilis Transmitter.

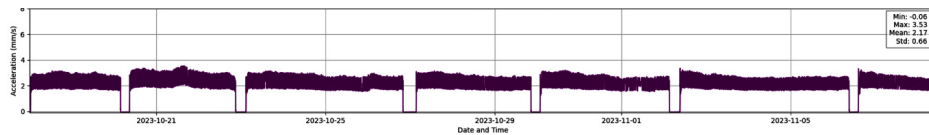


Figure 3: Acceleration data (mm/s) of single axis from conventional wired sensor.

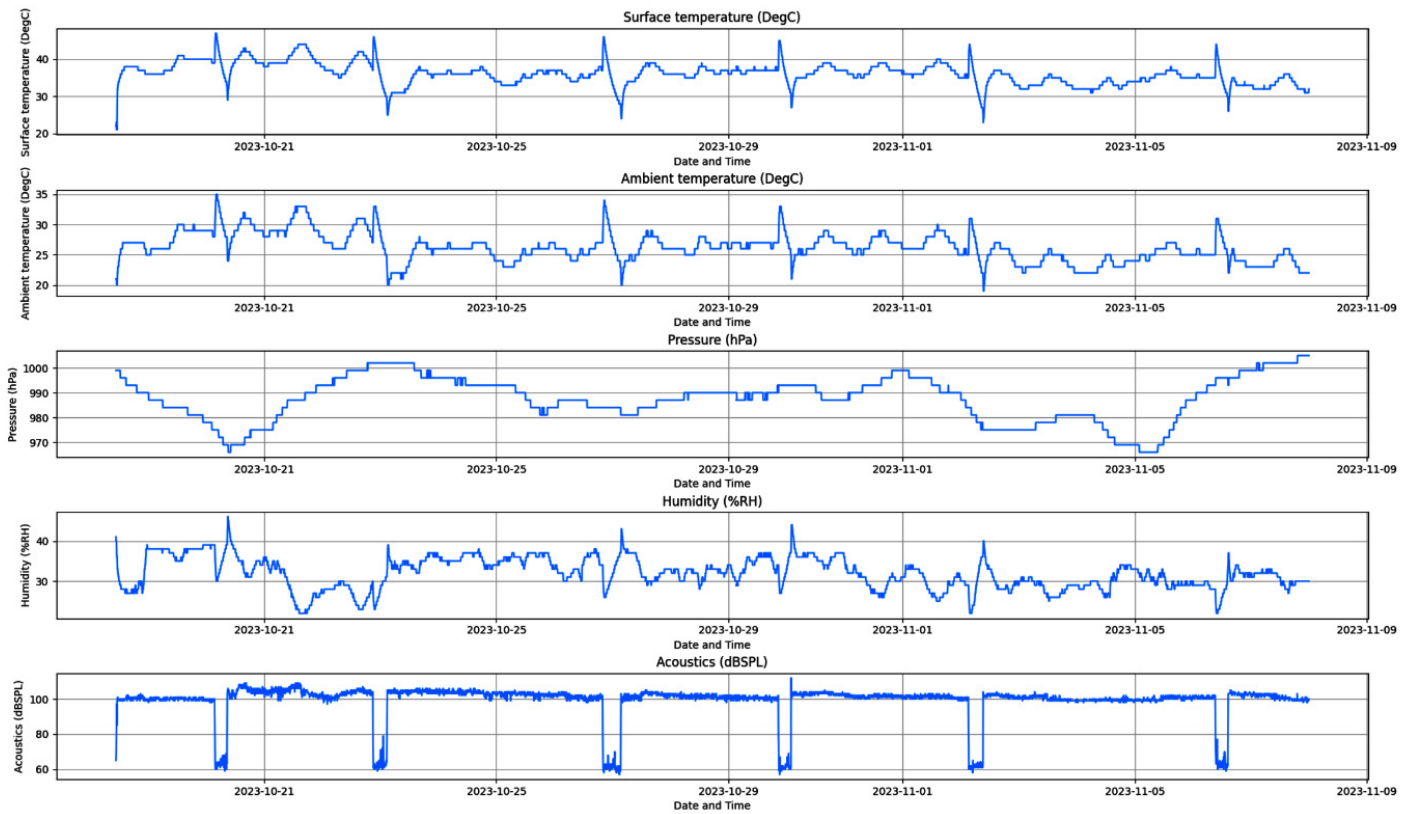


Figure 4: Times series data of temperatures, pressure, humidity, and acoustics from Honeywell Versatilis Transmitter.

[Learn more about sensor and equipment health monitoring by visiting the **Honeywell Versatilis Transmitter** page.](#)

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