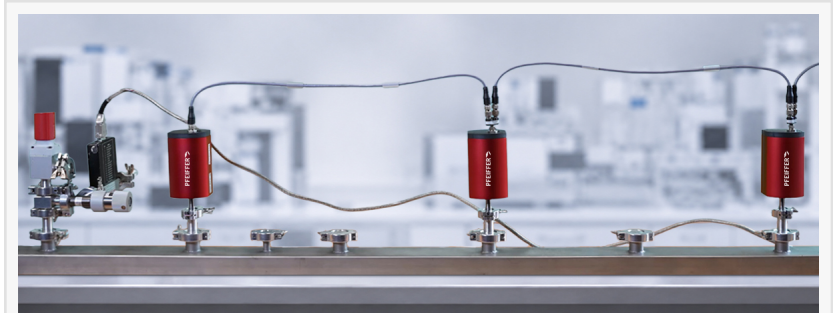


# Next-Generation Vacuum Measurement: Integrating Data, Diagnostics, and Control

*Is it Time to Go Digital?*

ASSLAR, GERMANY, June 26, 2026 /EINPresswire.com/ -- Many vacuum systems still rely on [analog gauges](#) because they are simple and reliable. But [digital gauges](#) offer advantages in communication, diagnostics, and system integration. Find out when switching to digital vacuum measurement makes sense.



Source: Pfeiffer Vacuum+Fab Solutions

What role does vacuum measurement play in process performance?

Wherever vacuum is used as an active part of production, knowing the pressure level in the process is essential for monitoring, controlling, and optimizing performance. Vacuum gauges help keep processes stable, product quality consistent, and system performance under control. This is exactly why vacuum measurement remains such a relevant topic — even in applications where the gauges themselves often receive little attention.

In many existing systems, analog gauges continue to fulfill this role reliably. The technology is well established, widely supported by controllers and PLCs, and familiar to engineering and maintenance teams.

At the same time, vacuum instrumentation is gradually becoming more connected. Digital gauges offer new possibilities such as network communication, remote configuration, and additional diagnostic information. This raises an important question for many users: Does it make sense to stay with analog gauges — or is it time to consider a digital upgrade? In practice, the answer depends less on measurement performance and more on how the gauge fits into the overall system architecture.

1. Is the measurement performance different between analog and digital gauges?

In many cases, analog and digital gauges use the same sensor technology. Measurement principles such as Pirani, capacitive, or cold cathode gauges remain identical regardless of the communication interface. This means the accuracy, repeatability, and measurement range are typically unchanged between analog and digital versions. The main difference lies in how the

pressure value is transmitted: analog gauges output electrical signals such as 0–10 V or 4–20 mA, while digital gauges transmit pressure data through communication protocols. As a result, switching to digital does not improve the measurement itself. The benefits appear in communication and system integration.

## 2. How does digital communication improve signal reliability?

Analog signals can be affected by electrical noise, voltage drops, or electromagnetic interference, particularly in installations with long cable runs. These effects can introduce deviations in the transmitted pressure signal. Digital gauges transmit pressure values as data packets rather than voltage levels. This approach makes communication less sensitive to signal degradation and helps maintain consistent readings even over longer distances. For industrial systems with distributed components or extensive wiring, this improved communication reliability can be an important advantage.

## 3. Can digital networks reduce cabling complexity?

Analog systems typically require one cable per gauge, each connecting directly to a controller. In larger vacuum systems with multiple gauges, this can quickly lead to extensive wiring. Digital gauges often allow multiple devices to share a single communication line in a bus or daisy-chain configuration. This architecture can significantly reduce the amount of cabling required. The benefits become particularly noticeable in large industrial machines like coating systems where gauges are distributed across a wide area.

## 4. What additional information do digital gauges provide?

Analog gauges usually provide only the pressure value. Digital gauges, by contrast, can transmit additional information in two directions through the communication interface. Examples include error codes, device identification, or configuration parameters. This information type can support troubleshooting, documentation, and system monitoring in automated installations. Such extended data can help maintenance teams identify issues more quickly and better track the status of installed gauges.

## 5. How does remote configuration simplify maintenance?

Many analog gauges require manual interaction for adjustments or configuration. If a gauge is installed in a difficult-to-access position, this can complicate routine maintenance. Digital gauges allow certain commands — such as adjustment procedures or parameter changes — to be sent directly through the communication interface. This enables configuration or adjustment steps to be performed remotely from a controller or computer. For systems with multiple gauges or complex installations, this capability can reduce maintenance effort and improve operational efficiency.

## When does it make sense to switch from analog to digital gauges?

Analog gauges remain a practical solution for many simple systems. Digital gauges, however, offer advantages in communication reliability, cabling, and device functionality. As vacuum systems become increasingly networked, these features are often the main reason users

consider transitioning to digital instrumentation.

Dr Sandra Thirtle-Höck

Pfeiffer Vacuum+Fab Solutions

+49 6441 8021460

[email us here](#)

Visit us on social media:

[LinkedIn](#)

[YouTube](#)

---

This press release can be viewed online at: <https://www.einpresswire.com/article/922356509>

EIN Presswire's priority is source transparency. We do not allow opaque clients, and our editors try to be careful about weeding out false and misleading content. As a user, if you see something we have missed, please do bring it to our attention. Your help is welcome. EIN Presswire, Everyone's Internet News Presswire™, tries to define some of the boundaries that are reasonable in today's world. Please see our Editorial Guidelines for more information.

© 1995-2026 Newsmatics Inc. All Right Reserved.