

Mining with precision: VEGA's instruments deliver

This article highlights how VEGA's range of precision level, pressure and density measurement instruments can help mine and minerals processing plant operators to deliver success in Africa's tough operating environments.

Africa is rich in mineral resources, positioning it as one of the world's largest mining hubs. Mining operations across the continent face a multitude of challenges, however, that complicate the processes of extraction, processing and management.

Harsh environmental conditions, including extreme heat, humidity, dust and corrosive atmospheres threaten the longevity of equipment and the accuracy of measurements. Many mines are situated in remote areas with limited access to maintenance resources and technical expertise, while breakdowns can grind operations to a standstill, resulting in millions of dollars of lost revenue. These challenges highlight the necessity for robust, reliable and low-maintenance instrumentation capable of enduring tough conditions while delivering precise, real-time data. VEGA instruments

are engineered with resilience and accuracy as top priorities, and are designed to withstand harsh conditions. With comprehensive solutions that improve measurement reliability, VEGA enhances operational efficiency and supports safety measures across mining processes, from ore extraction and stockpile management to flotation and tailings management. VEGA is there every step of the way.

Level precision in tough environments

Level measurement is an essential component in mining sector processes, encompassing material storage, slurry management and wastewater treatment. Inaccurate level measurements can disrupt operational continuity and lead to issues such as material overflows or shortages. VEGA is known for offering precise and reliable solutions



Level precision in tough environments: VEGA sensors deliver reliable measurement data in all areas of metal extraction and production.

for various level measurement applications, with the VEGAPULS 6X setting a benchmark in accurate and continuous level measurement for the mining industry.

The VEGAPULS 6X non-contact radar sensor functions as a versatile solution that integrates multiple radar technologies. It is capable of handling both liquid and solid level measurements, making it applicable in settings such as tank storage, crushers and separation plants. The instrument features enhanced radar performance, providing high accuracy and reliable readings, even in challenging conditions characterised by foam, steam and condensation. This capability helps minimise interference from surrounding structures, which is beneficial for detecting material build-up and preventing interruptions due to blockages or overflows.

The extensive versatility and advanced radar capabilities of the VEGAPULS 6X facilitate effective performance, allowing users to reduce the reliance on multiple sensors across mining operations, streamlining processes and increasing efficiency.

Additionally, the device is designed for maintenance-free operation, which can lead to reduced downtime and lower associated costs. Its robust signal focus makes it suitable for a wide range of level measurement applications.

Pressure, safety and control

Mining operations require effective management of pressurised fluids and gases, making pressure measurement a critical aspect of ensuring safety and operational efficiency. VEGA offers pressure measurement solutions, such as the VEGABAR and VEGADIF series, designed to provide precise and stable readings in extreme conditions, which can enhance control and reduce safety risks.

For over 40 years, VEGA has been developing and producing smart pressure transmitters. The VEGABAR 80 series of pressure transmitters can measure gauge,



Pressure, safety and control: VEGABAR 80 and VEGADIF 85 pressure sensors accurately monitor high-pressure processes, improving both operational control and safety.

absolute or differential pressure reliably in all liquids, gases and viscous media. Specially designed ceramic CERTEC® measuring cells and metallic measuring cells enable high-precision measurement. Additionally, VEGABAR's diagnostic features support proactive maintenance and are commonly utilised for monitoring pressure in slurry lines, filtration systems and tailings dams. Their area of application ranges from -1 to 1 000 bar at process temperatures from -90 to +400 °C.

VEGABAR 80 instruments provide several advantages that make them suitable for various applications. They are resistant to both abrasion and chemical exposure, which contributes durability in challenging environments. Advanced diagnostic capabilities offer insights for predictive maintenance, helping to identify potential issues ahead of time. The VEGABAR 80 enhances safety by delivering accurate and reliable pressure measurements, which support operational efficiency and safety.

The VEGADIF 85 differential pressure transmitter is designed for precise control in applications such as flotation cells, where maintaining an optimal pressure differential is critical for process efficiency. Its compact design and robust construction make it appropriate for use in abrasive environments, allowing for reliable readings that can assist in process optimisation and reduce downtime.

Notable features of the VEGADIF 85 include its ability to provide accurate differential pressure measurements under fluctuating conditions, which supports consistent performance. The compact and rugged design is well-suited for harsh environments where durability is important. Additionally, the VEGADIF 85 can enhance process control, potentially improving yield and efficiency across various applications.

Density and slurries

Density measurement plays a key role in

the processing of ores and minerals, where maintaining the optimal slurry density is essential for effective separation and recovery. The SOLITRAC 31 provides a radiometric, non-contact solution for density measurement, making it particularly well-suited for mining operations where intrusive methods are not practical.

Using gamma radiation, the SOLITRAC 31 detector delivers reliable density measurements for slurry applications without direct contact with the medium. This non-intrusive approach makes the device suitable for use with abrasive materials for providing accurate, real-time data on slurry density—an essential factor for optimising separation processes and minimising losses. This density measurement instrument offers continuous measurement without the frequent need for shutting down for maintenance or recalibration.

The SOLITRAC 31 offers several key advantages that make it an outstanding choice for a variety of applications. Its non-intrusive design ensures resilience in abrasive environments, contributing to its durability. In addition, the device delivers precise density readings without interrupting ongoing processes, facilitating smooth integration into operational workflows. Its construction also reduces wear, leading to lower maintenance requirements and less downtime, which ultimately enhances overall efficiency.

Smarter mining

The mining industry is moving towards digitalisation, and solutions such as the VEGA Inventory System are designed for integration into data-driven environments. This system enables operators to monitor devices remotely, providing critical data insights that contribute to informed decision-making and operational efficiency.

Key advantages of the VEGA Inventory System include its support for remote monitoring of assets, which allows users to

oversee inventory from various locations. The system's capacity to facilitate proactive adjustments based on real-time data ensures that necessary changes can be implemented promptly. Additionally, the insights gained from this data-driven approach contribute to enhanced safety and efficiency, optimising overall performance.

Production optimisation

The African mining industry encounters a range of operational challenges, including remote locations and demanding environmental conditions, as well as a requirement for sustainable practices. VEGA's instrumentation solutions aim to address these challenges by offering precise, reliable and low-maintenance options for level, pressure, and density measurement. Instruments such as the VEGAPULS series, VEGABAR, VEGADIF, and SOLITRAC 31 facilitate production optimisation with reduced downtime and enhanced safety in mining operations.

By integrating these devices, mines can implement a data-driven approach to process optimisation, supporting profitability and sustainability objectives. As mining companies in Africa adapt to shifting market demands and regulatory frameworks, the adoption of VEGA's technology may provide a basis for improved operational resilience and growth.

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Density and slurries: VEGA's SOLITRAC 31 can monitor slurry density non-intrusively, achieving better recovery rates and reducing maintenance requirements.



Measurement technology from VEGA can be found in all metal production processes from mining ore to steelmaking and blast furnaces, charging and storage applications.



By integrating these devices into a digital inventory management system, mines can implement a data-driven approach to process optimisation, supporting profitability and sustainability objectives.