# Magnos28 with microwing technology

ABB can look back on 75 years of innovation in the field of continuous gas analysis – working to improve production efficiency and measurement performance. Introduced in 2017, ABB's new Magnos28 paramagnetic oxygen analyzer with its patent-pending microwing technology, is the all-in-one sensor device leveraging ABB's technology leadership. It is the newest product in the palette of the Advance Optima and EasyLine continuous gas analyzer series.

**Form follows function**
The Magnos28, takes advantage of automation technology to revolutionize paramagnetic oxygen analysis. The microwing technology using a silicon sensor replaces the conventional sensor consisting of the traditional glass dumbbell and its circuit path, mirror, mounting and taring weights. Ideally suited, ABB's microwing sensor reacts accurately to changes in oxygen concentration changes thanks to its very low mass, high width-to-thickness ratio and optimized magnetic field distribution in the measurement position. These absolutely reproducible silicon sensor elements are at the heart of the Magnos28 analyzer. Sub-micrometer precision, achieved during production, improves reliability and performance – ensuring that ABB's customers can make successful measurements rapidly under challenging process conditions.

**Adopting new production technology**
Sub-micrometer precision is achieved by incorporating the latest digital manufacturing technology to produce the microwing. Applying semiconductor-based production technologies, multiple sensors can be manufactured on a wafer slice – a completely new approach to magneto-mechanical oxygen sensor production.

By avoiding the manual yet critical production tasks, ABB turns what was once a complex, time-consuming and labor-intensive task into an elegantly simple and super-efficient process. Under absolutely clean conditions, the microwing is automatically positioned and bonded to a platinum wire with manufacturing tolerances of less than one micrometer. Each production step is tightly controlled and verified during assembly, securing the production of each sensor with optimized and reproducible quality.

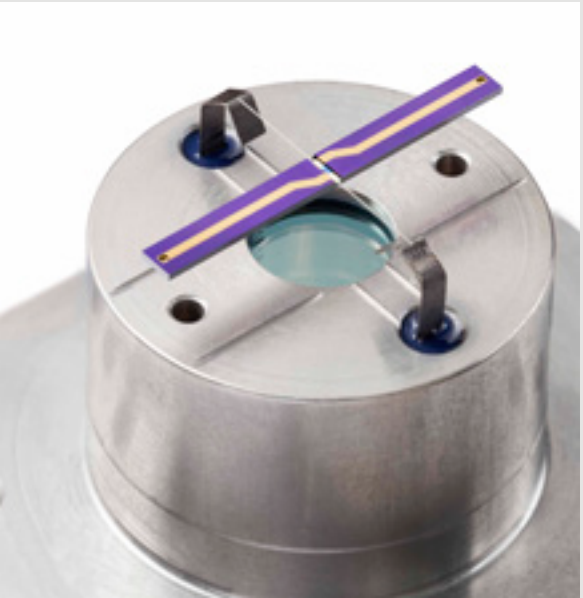
Using a patent pending sensor balancing process, laser ablation removes miniscule amounts of the wafer coating, perfectly aligning the microwing within the center of the magnetic field.

**Measure for measure: setting new limits**
The Magnos28 oxygen analyzer can measure rapid changes in the concentration of the sample gas and yet it is characterized by long term stability. Calibration of the zero-point with ambient air or nitrogen is usually only required once a month. Moisture influence is drastically reduced and no longer restricts sensitive measurement tasks at very low oxygen concentrations – as low as 0.5 volume percent. At typical gas cooler temperatures (3 °C), the influence of moisture on the measurement is within the detection limits of the instrument (50 ppm). The new sensor measures the pure magnetic properties of both diamagnetic and paramagnetic gases – matching the theoretical and physical values practically without deviation.

An internal gas flow management system directs sample gas to the microwing which, responds instantly. Compared to its predecessor, the Magnos28 internal chamber volume is lower by a factor of three. The rapid gas exchange translates to a 15 percent increase in response time. These features make the ABB Magnos28 gas analyzer perfect for threshold monitoring or for any situation characterized by rapidly varying conditions. Neither external factors such as pressure and temperature, nor internal signal noise have relevant influence on the resulting measurements.

The Magnos28 state-of-the-art design allows super-precision in severely challenging environments. The innovative microwing sensor technology enables reliable oxygen measurement of a wide variety of solvents and corrosive gases. A careful selection of inert materials reduces drift substantially and practically eliminates the adverse effects of solvents. Sensitive parts of the Magnos28 internal chamber such as the pole shoes are protected by specially selected coatings. Excellent measurement properties are achieved with improved drift stability even in the presence of corrosives such as sulfur compounds. The new technology avoids glue or lead solders, which, in the traditional glass dumbbell design could react with the gas matrix and interfere with the reliability of the measurement.

The improved drift stability and ability to measure at very low oxygen concentrations provides customers with enhanced sensitivity and reliability. The robust Magnos28 with the revolutionary silicon-based microwing technology sets the stage for the future of paramagnetic oxygen measurement. ABB's rigorous design standards and use of innovative automation production techniques make this possible. ●



# New 38 kV circuit breaker

An innovative design of medium-voltage indoor vacuum circuit breaker actuated by servomotors is under development by ABB. The main target of the servomotor actuation is a dramatically increased mechanical life of the breaker – delivered thanks to the intrinsic ultralong life of the motors themselves and the optimized travel curve for the vacuum interrupters. The servomotor actuation also brings superior circuit breaker performance in terms of mechanical operation compared with competitors' offerings based on either traditional spring mechanisms or magnetic actuators. This breaker will be rated for 38 kV 2,500 A with a 31.5 kA short-circuit current.

Ultra-durable circuit breakers are highly appreciated by steel manufacturers – who can switch the breakers that protect their electric arc furnaces up to 100 times a day. A pilot installation was agreed with one of the world's biggest steel manufacturers, NUCOR, and at the start of 2017, the new ABB breaker became operational in NUCOR's steel plant in Seattle, United States. The rich experience delivered by validation of the solution within a real application and the deep engagement with the customer will be key contributors to a successful product launch early in 2018. ●