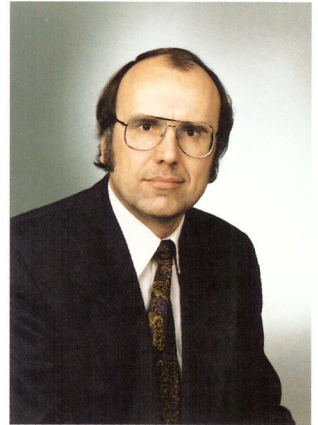


# New Innovations in Air Gauging and Control

MAWOMATIC GmbH of Arnsberg, Germany, continues to bring exciting new innovations to market in the field of air gauging and control systems. Regular readers of TNI will be no strangers to MAWOMATIC, subject of a July 1991 article that spotlighted company founder and CEO Gerhard Mietzel. Under Mietzel's leadership, MAWOMATIC's patented *PEL gauging and control system* has skyrocketed into a leadership position in the increasingly important world of air gauging systems. Using a stream of air to perform checks for presence, position, shape and dimension, air gauging is a non-contact, non-destructive measurement technology that offers excellent accuracy, high resolution and repeatable results.



MAWOMATIC founder and CEO, Mr. Gerhard Mietzel.

**M**AWOMATIC's *PEL system* - PEL is an acronym for pneumo-electric - first hit the market some 22 years ago. MAWOMATIC acquired the rights to the system in 1986 and has continuously improved the air-gauging concept by refining the basic physical principles to accommodate the latest in micro-electronics. Today's PEL system uses a directed stream of air from a special non-contact sensor nozzle to generate an electrical or pneumatic signal that provides information about the presence, position, form or dimension of a target object. These pneumatic gauges offer sub-micron gauging precision, easily making the PEL system the most precise and reliable system of its kind.

Several features put the PEL system head-and-shoulders above the competition. Topping the list is a compact, modular design that adapts easily to a wide range of customer-specific applications. When equipped with MAWOMATIC's special sub-miniature pneumatic nozzles, which measure in at just 1.2 x 4 mm, the PEL system delivers stellar performance in tight-fit environments that are completely inaccessible to conventional measurement systems. The PEL system is also suited to applications involving virtually any kind of target material, whether metallic or non-metallic, magnetic or non-magnetic, transparent or opaque. Thanks to the use of low pressure air (-6 to +10 g), the PEL system is also

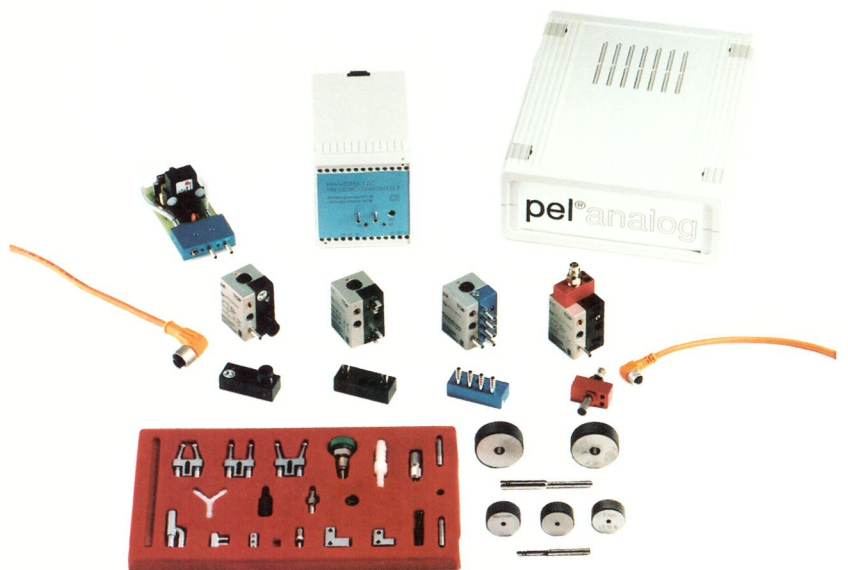
especially well suited for use with easily deformed materials, including rubber and soft plastics. Rounding out the list of impressive features: Repetitive accuracy as high as 0.2 µm; processing speeds of up to 100 operations per second; response times as fast as 5 ms; and a rated service lifetime of 10<sup>7</sup> switching operations.

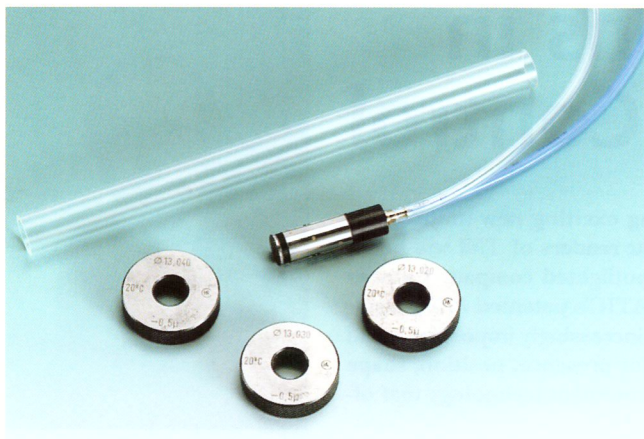
Several other technical highlights distinguish the PEL system. One of the most exciting is the *concentric nozzle*, a special nozzle system that improves on the already stunning performance of standard PEL nozzles. Like standard nozzles, the concentric nozzle also has a central, point-like source of air whose dynamic pressure is measured and

evaluated. But around this point source is a ring from which pressurized air also escapes. This creates a cone-shaped section of air that surrounds the central air source. When such a nozzle approaches a rebounding or deflector surface, the cone of air is displaced in the direction of the central measurement stream. The ring structure leverages the actual measurement effect of the central air stream, making it possible to enlarge the measurement area by a factor of 10 compared to conventional nozzles.

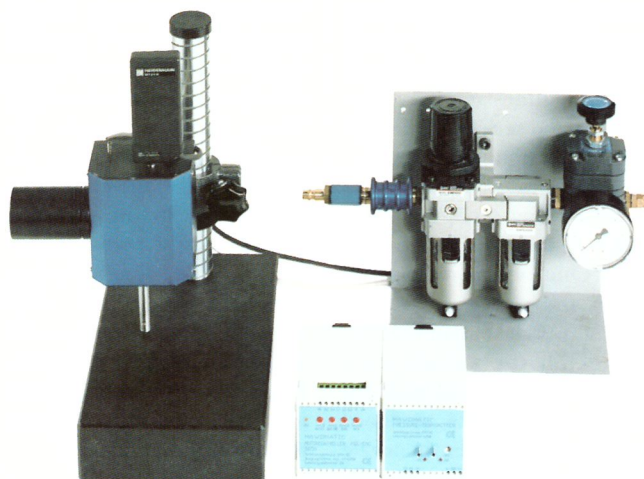
Gerhard Mietzel has also kept MAWOMATIC on the

The modular *PEL system* uses a directed stream of air from a special non-contact sensor nozzle to generate an electrical or pneumatic signal that provides information about the presence, position, form or dimension of a target object. All switching elements in the system have the same size (39 x 28 x 26 mm), making elegant combinations on a single bus bar possible. This makes it easy to combine switching elements to meet the needs of virtually any application and also makes the system easy to expand.





MAWOMATIC's new *air bearing plug gauge* is a refinement of the company's existing air nozzles and is used for the non-contact measurement of pipes and other round components. The combination of measurement nozzles with the air bearing system results in ultra-precise measurement applications.



The *PEL-CNC Luftmeßachse* is the world's first fully automatic, non-contact micrometer.

cutting edge through a series of close working relationships with some of the giants of pneumatic measurement theory and practice. This list of *Who's Who* in Pneumatics includes such notables as Japan's Tashiro Arai, founder of Nippon Pneumatic Systems Ltd., Jacques Fauqué of Silicon Valley's Sentex Ltd., and Gérard Chevillat, owner of Swiss-based Chevillat SA, an expert in master pieces for Europe's auto and watch industries.

Working with Chevillat, MAWOMATIC has developed the new *air bearing plug gauge* shown in our photo block. Designed for non-contact measurement of pipes and other rounded components, the new plug gauge combines MAWOMATIC's existing nozzle technology with ultra-precise air bearing guidance. Also new at MAWOMATIC is the *PEL-CNC*, the world's first fully automatic, non-contact micrometer. The *PEL-CNC*

(see photo) uses the principle of dynamic pressure and rebounding or deflector surfaces to automatically regulate and keep constant the distance between the device's air nozzle and the target object, thereby creating a sophisticated and extremely accurate non-contact copy system.

MAWOMATIC's PEL systems are used in applications in many key industries, including automobiles, semiconductors, microelectronics, industrial automation and special machine construction. In addition to its strong domestic position, MAWOMATIC remains very active overseas, exporting at least 50% of its annual turnover to customers as far afield as Italy, France, Switzerland, Japan, Sweden, the UK and the USA. ■

Readers interested in learning more about the MAWOMATIC PEL system are invited to contact the company directly for details.



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