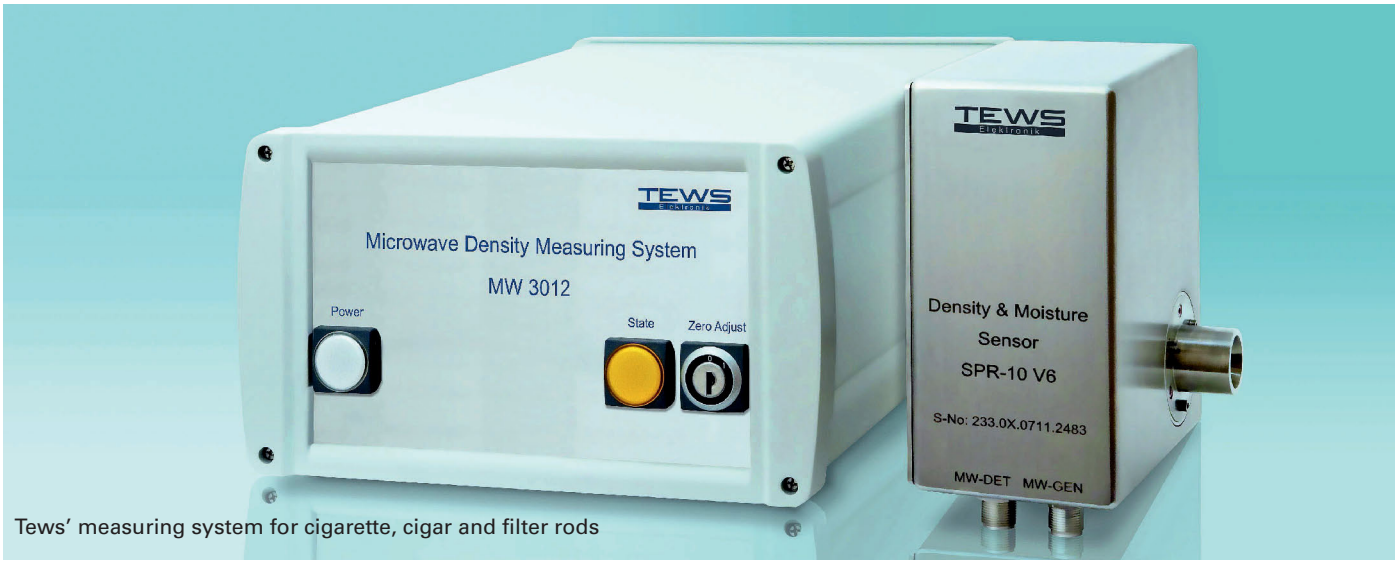
Tews backs new system

Based in Hamburg, Tews Elektronik manufactures devices for measuring moisture in leaf and cut tobacco, stems, cigarettes and cigars. The company explained its latest system to TJI, the MW 3012, which can measure 40,000 times per second ...



Tews' measuring system for cigarette, cigar and filter rods

The high-speed inline measuring system MW 3012 is our latest innovation for parallel moisture and density measurement," the company told TJI. The system measures moisture and density in cigarette and cigar rods, as well as filter rods during manufacturing – up to 40,000 readings every second.

The system is used in cigarette makers as a weight sensor for weight control systems but also in filter making. For filters, it is used in filter maker and combining machines for the measurement of capsule filters or multifilters. Here, the measurement of charcoal content is also possible. "In terms of speed, more than 15,000 cigarettes and 500 metres of filter rods per minute can be measured," the company said.

Using its patented measuring method based on microwave resonance technology, Tews has been developing measuring systems for the tobacco industry for a half-century.

The company told TJI that its main technological challenge in developing the MW 3012 was to increase the measurement speed up to 40,000 measurements per second. "This was essential in order to be able to deliver real-time results," the company told TJI. "This challenging goal has been achieved with the innovative MW 3012, installed in cigarette and filter making machines in combination with a weight control system."

WEIGHT AND DENSITY

Tews said this of the MW 3012: "In the production process of cigarettes and cigars, the system is installed in rod making machines and can replace old-style nucleonic sensor heads. It allows the simultaneous measurement of the density and moisture of tobacco rods. Due to its high measuring speed and its excellent spatial resolution, every cigarette and cigar is scanned at many different locations allowing the determination of density distributions along the rod. Based on these data, the mean cigarette weight, local irregularities as well as cutting position can be precisely determined.

As a means of controlling the production process, the MW 3012 can be combined with most customary weight control systems."

FOREIGN BODY DETECTION

Improving and maintaining high product quality standards in cigarette manufacturing requires the detection and ejection of Non-Tobacco Related Material (NTRM). When a rod is contaminated, it could be with foreign bodies such as plastic, rubber, wood, metal; or rods could contain whole stems, tobacco leaves, lumps of glue, or clews of reconstituted tobacco from different stages of the production process, Tews explained. "With microwave resonance technology, it is possible to detect these contaminated rods in cigarette production," the company said.

During the process of cigarette manufacturing, the ideal position for on-line detection and ejection of NTRMs is after the rod formation, as no further contamination can then occur. "This is where it is very easy to

Photo: Tews

eject contaminated cigarettes," Tews said. The company's inline microwave technology for rod weight measurement detects foreign bodies in the rod by analysing the moisture values with a real-time filter. "A special NTRM sensor is not required, Tews said. "The MW 3012 enables the tracing and removing of contaminated sticks at high speeds and with low additional waste."

INLINE FILTER MEASUREMENT

The MW 3012 has a big focus on filters for a good reason. "Filters play a key role with regard to the flavour of a cigarette," Tews explained. "By placing additive material in the filter, the flavour can be controlled directly. Often this additive material is placed inside the filter in the form of capsules, which are filled with liquid flavour components. Consequently, the quality of the cigarette depends on the correct amount of flavour capsules and the correct position.

"The MW 3012 delivers the data to determine the precise location of capsules placed inside the filter as well as their condition, for example, faulty or broken.

"Due to the high capsule measurement speeds of up to 40,000 readings per second, all capsules are recognised in real time. The affected filter rods can be immediately sorted out."

FOCUS ON CHARCOAL

The determination of charcoal content and distribution is also key, and plays a vital role in the quality control of filter rods. The charcoal content in filter rods can vary considerably, and this can present problems for manufacturers. "This is why continuous control is necessary," Tews said.

"The analysis of charcoal content involves considerable manual work, as the filter needs to be sliced and the grains have to be taken out and weighed. Another problem is that the distribution of the charcoal in the filter rods might not be homogeneous – the higher the content of charcoal, the more uneven the distribution across the filter rod."

The MW 3012 offers improved microwave measurement to determine charcoal content and distribution in filter rods and multi-segment filter rods, the company said.

Tews has developed new sensors where the sensitivity is adjusted to activated carbon. "Despite the conductivity of charcoal, Tews Elektronik has found a calibration that enables the detection of charcoal content within one segment, irrespective of charcoal grain size, and the determination of local charcoal distribution along the filter rods," the company said. **TJI**