



PC Control ensures product quality and customer satisfaction

## Test rig for electric toothbrushes helps ensure longer lasting products

Test engineering solutions for the household appliance industry are an important business segment for inotec AP GmbH. The systems are generally one-off designs, and are used worldwide by household appliance manufacturers for quality assurance and product refinement. Automation technology from Beckhoff is responsible for simplifying the operation of the generally complex applications and documenting the test results for inotec AP.

Test engineering from inotec AP in Wetzlar, Germany, is widely utilized by the household products industry to test products according to the real conditions faced by consumers. Electric razors or electric toothbrushes, for example, are endurance tested. Particular value is placed on ease of operation of the test equipment, documentation of the test parameters and, of course, the results.

The ZP-03 is a test rig specifically for electric toothbrush endurance tests. The system can accommodate up to 24 toothbrushes which face one another in rows of 12. Toothbrush designs are tested according to their expected lifecycle over approx. 100 hours using artificial sets of teeth and toothpaste emulsion. Pneumatic bellow cylinders and force sensors guarantee even pressure of the brushes onto the teeth. To achieve conditions that are as realistic as possible, the devices are used on different tooth shapes and are subjected to frequent idle periods. The systems are used for quality assurance tests but al-

so to test new designs. Interchangeable holders allow the test rig to be used with the most diverse brush types and to be adapted to new models.

### **Beckhoff Panel PC for control and visualization**

The test rig is controlled by a Beckhoff C3340 19-inch Panel PC. It not only controls the sensitive proportional pressure technology used to apply the cleaning forces and the mechanical actions, but also records all relevant parameters, such as current consumption, runtime, failures etc. The data are received by the Bus Terminals via 150 analog and 100 digital inputs and outputs and are transmitted by PROFIBUS to the PC where they are stored and statistically analyzed. The PC controller and operating unit are housed in a separate cabinet which the operator can position anywhere. The system has a graphic interface for ease of operation and rapid understanding of the comprehensive test possibilities.



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The system's compact design and standardized Windows interface provide the user with further benefits such as essential interfaces to company networks. The TwinCAT PLC and the Visual Basic graphical display provide system clarity and ease-of-use. In addition, the test rigs, which are used worldwide, can be accessed at any time via remote desktop and are accessible for remote servicing. An additional uninterruptible power supply is included as standard to ensure a stable system overall.

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