

Application of non-contacting temperature sensors thermoMETER CS, in vacuum deep-drawing equipment, Erkoform 3D

The Issue

Among other products, the company Erkodent manufactures economical deep-drawing machines for dental laboratories, which can be used e. g. for making gum shield inlays for the protection of the teeth during sports activities. Since these inlays must be made individually for each person, local production is favored over large-scale production. The temperature of the gum shield inlay blanks (plastic film) must be monitored during the thermoforming process.

The Measurement Task

Before the plastic film can be formed, it is heated to a set temperature using infrared radiators. This is done by swiveling the film over the infrared heater. In previous systems the temperature was found using contacting measurement on the radiator. Although this provided a temperature reading for the ambient temperature in the vicinity of the radiator, only indirect information about the actual product temperature and its forming capability is available. In addition the measurement method is relatively slow.

The Solution

Using an infrared sensor of the type thermoMETER CS mounted beneath the infrared heater, the film temperature is acquired during the heating process in a non-contacting manner. On reaching a temperature selected on the operating panel, the heating is stopped and the thermoform process can begin. (See illustrations, www.erkodent.com.)

Advantages

The object surface is measured quickly and directly. The measurement takes place without contact and has no effect on the object (e.g. no heat abstraction, no damage to the surface). The measurement is accurate and can be reproduced easily. The low price per measuring point is compatible with the cost structure of thermoform machines which can be afforded even by small laboratories. The decentralized application of equipment in medical, dental and analytical technology is a growing market in the field of Health Care solutions and opens up potential sales for all system and component manufacturers.

