



### Helix lumen technology

Silicon is a widespread and often used material in medicine. It is used, for example, for implants, pacemakers and cancer drug delivery systems.

Silicone offers medical devices a decisive advantage, as it goes hand in hand with a high degree of biocompatibility. However, since medical devices are subject to strict regulations, care must be taken especially with silicone to ensure that the inner diameter of tubing does not deviate from the specific values. In contrast to PET, silicone cannot be melted down and must be sorted out and disposed of in case of deviations.

Helix lumen technology represents a new technology for the exact measurement of the inner geometry during the production process of silicone tubes.

The technology works on the basis of a tomographic system and consists of an emitter and four sensors. During extrusion, the sensors continuously record and document the shape of the silicone tube. Based on the recorded data, an algorithm determines the cross-sectional view and sends it to a screen where an additional check can take place. If deviations or errors are detected, the system reports this automatically. In this way, an exact measurement of the inner diameter as well as the wall thickness can be guaranteed during the entire manufacturing process of the silicone hoses.

In combination with the HelixTwist multilumen silicone tubing technology, it can be ensured that even when navigating the silicone tubing through the body, no blockage of the lumens occurs. This provides an even tension balance across the inner and outer lumen when the tubing is bent.

By using this technology, not only a high and exact production standard can be offered, but also the scrapping of entire production lines can be avoided. As soon as changes are detected and signalled, employees can intervene immediately and readjust the production parameters. Continuous data monitoring thus contributes to increasing the product quality and precision of the medical products.

#### Innovative technological approaches

- ◆ **Company:**  
Freudenberg SE
  - ◆ **Technological base:**  
Sensor technology  
- Helix iMC
  - ◆ **Field of application:**  
Pacemakers, neuro-stimulation catheters, ventilation tubes, pumps. etc.
  - ◆ **Advantages:**  
reduces waste & environmental pollution by 25%
- Reduced processing time
- Increasing product quality through continuous data monitoring
- Improvement of the line insulation

#### The company: Freudenberg SE

Freudenberg Medical is a global partner for the design, development and manufacture of medical products and medical components. Freudenberg Medical has its competence centre for medical silicone products at the Kaiserslautern site. Silicone tubes with diameters ranging from 0.3mm to 5cm are manufactured there. These are then primarily used for pacemakers and pumps. The annual production of silicone tubes in Kaiserslautern is around 100 tonnes.

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