

# Novel system that enables tracheostomized patients to speak during long-term mechanical respiration (T-Vent system)

## Projekt Status

- Prototyp established

## Benefits

- enables tracheostomized patients to speak during long-term mechanical respiration
- avoidance of PEEP loss
- shortened weaning period
- a reduction in microaspiration by lowering the secretion load
- a positive influence on the bacterial flora in the throat and a reduction in the burden of hospital germs
- Easier relearning to speak after long-term respiration

## Patents (all granted)

- EP 2 964 299 B1
- EP 3 495 011 B1
- US 10,173,021 B2

## Offer

- The technology can be licensed or assigned
- Collaborations regarding further development welcome

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Scientists from University Medical Center Mainz (Germany), Clinic for Anesthesiology, have for the first time successfully developed a system (T-Vent system) that enables tracheostomized patients to speak during long-term mechanical respiration without loss of pressure in the lungs during respiration. A special tracheal cannula (Fig. 2) together with a control unit (Fig. 1) for regulating the volume of speaking air, forms the basis for the "T-Vent system".

In many cases, the loss of language leads to depression, anxiety and isolation of the people concerned. Not only the psychological stress for the patient, but also therapy and care measures are made more difficult.

In contrast to conventional respirations systems the T-Vent System is a combination of an improved tracheal cannula with a speaking conduit and a respiration conduit and a computer-controlled speaking system that monitors the breathing cycle of the patient and allows speaking during the exhalation phase by an adapted additional air flow in the direction of vocal cords. By means of a measuring unit the expiration of the patient is measured (flow and pressure measurement), rated (computer-aided analysis) and an exhalation profile is created. The patient receives via a separate lumen of the tracheal cannula the calculated additional, controlled air flow (flow and pressure measurement) that imitates the exhalation through the mouth and thus lets the vocal cords vibrate (Bernoulli vibrations) and makes a phonation possible.

The respiration of the patient is not changed or influenced by the T-Vent system.

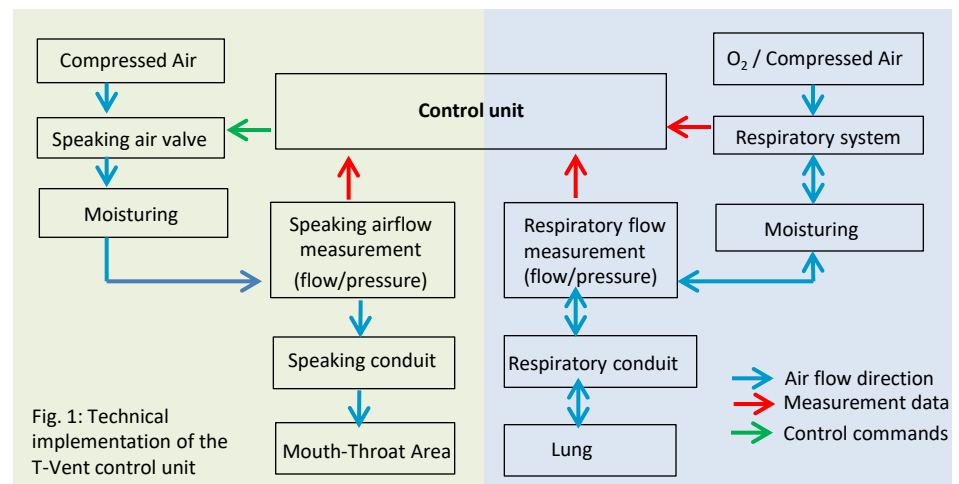


Fig. 1: Technical implementation of the T-Vent control unit

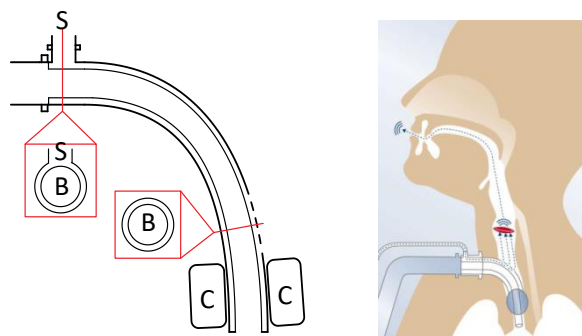


Fig.: 2 Schematic drawing of the T-Vent tracheal cannula (Fig. left) ( S = speaking conduit, B = respiration conduit, C = cuff) and its anatomical position in the trachea (Fig. right). The arrows represent the air flow through the speaking conduit through the tracheostomy tube in the direction of the larynx. The speaking air enables the vocal cords to vibrate and thus enables phonation.