HEAT AND MOISTURE EXHANGER (HME)
MOISTURE LOSS vs. MOISTURE RETURN

It is important to counteract the risks of cold and dry air during artificial ventilation. It's all about giving patients the most comfortable treatment to improve patient comfort and safety. Thus the right humidification of inspired gas in mechanical ventilation is an essential part in clincal daily routines.

THE PROBLEM

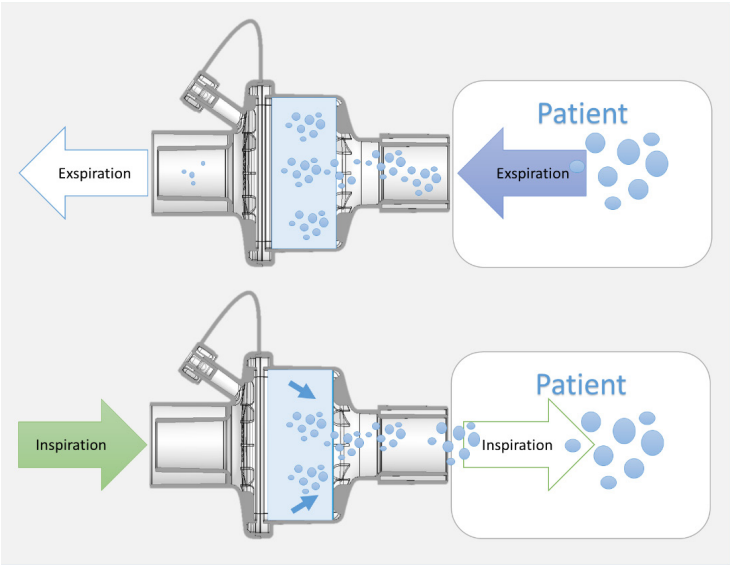
Medical gas for ventilation has a low temperature and low humidity and the risk of rapid moisture loss and heat can lead to severe patient harm during ventilation. Dry and cold gases extract moisture from the mucociliary transport system, impair the cleansing function and cause damage to the mucociliary system.

HEAT AND MOISTURE EXCHANGER (HME)

To avoid the risks of ventilation with cold and dry gases it is recommended to use artificial humidification and warming of the patients' inhaled air in all types of mechanical ventilation. One possibiltiy to supply patients who require mechnical ventilation with humidified and warmed air is the use of heat and moisture exchanger (passive humidification).

FUNCTIONALITY OF AN HME

HMEs are used to passively humidify and warm the inhaled air for patients during mechanical ventilation. During the patient's expiration, a large part of the exhaled moisture and heat of the respiratory gas is absorbed with the help of a "special membrane" inside of the HME. During the following patient's inspiration the inhaled air is humidified by passing again the membrane inside the HME.



One important parameter for Heat and Moisture Exchanger is the moisture loss. The test method is specified in DIN EN ISO 9360-1. The moisture loss represents the total amount of absolute humidity lost from the HME medium that retains a portion of the patient's expired moisture and heat which should be returned to the respiratory tract during inspiration.

DRÄGER HUMIDSTAR PLUS AND TWINSTAR PLUS PORTFOLIO

Part Number	Description	Moisture Loss (mg H20/l air)*	Moisture Output (mg H2O/L air)*
MP05730	HME HumidStar 55 Plus	≤ 7,8 at VT= 500 mL	≥ 36,2 at VT = 500 mL
MP05735	HME HumidStar 25 Plus	≤ 9,3 at VT= 250 mL	≥ 34,7 at VT = 250 mL
MP05750	HME HumidStar Trach Plus	≤ 14,4 bei Vt = 500 mL	≥ 29,6 at VT = 500 mL
MP05800	Filter/HME TwinStar 90 Plus	≤ 5,6 at VT = 500 mL	≥ 38,4 at VT = 500 mL
MP05801	Filter/HME TwinStar HEPA Plus	≤ 10,9 at VT = 500 mL	≥ 33,1 at VT = 500 mL
MP05805	Filter/HME TwinStar 55 Plus	≤ 9,4 at VT = 500 mL	≥ 34,6 at VT = 500 mL
MP05810	Filter/HME TwinStar 60A Plus	≤ 6,3 at VT = 500 mL	≥ 37,7 at VT = 500 mL
MP05815	Filter/HME TwinStar 25 Plus	≤ 11,8 at VT = 250 mL	≥ 32,2 at VT = 250 mL
MP05820	Filter/HME TwinStar 9 Plus	≤ 10,3 at VT = 50 mL	≥ 33,7 at VT = 50 mL
MP05845	HME HumidStar 2 Plus	≤ 11,5 at VT = 45 mL	≥ 32,5 at VT = 45 mL

* according to DIN EN ISO 9360-1 2009

The performance data correspond to the values of standardized measurements carried out by certified laboratories under defined test conditions:
- defined performance parameter: moisture loss
- former performance parameter: moisture return (or moisture output)
- many suppliers, guidelines and publications still refer to moisture return
- moisture loss and moisture return are linked and can be converted into each other
- moisture output can be calculated from measured moisture loss by the following formula: *Moisture output = 44 mg/L – moisture loss (mg/L)*