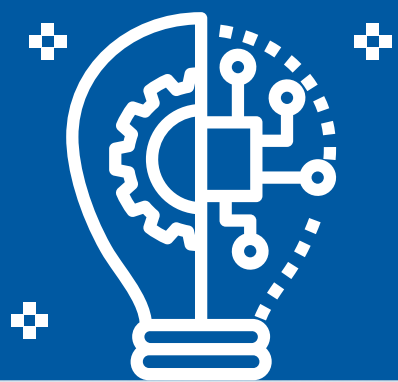




# DID YOU KNOW?

# Dräger

## ETCO<sub>2</sub> MONITORING IN VENTILATORS

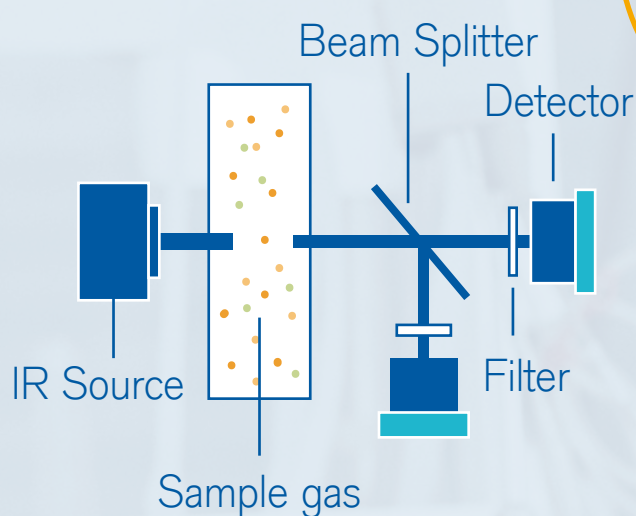


### What is it?

The air we inhale contains oxygen. The gas mixture flows into the lungs, enters the blood by diffusion and is transported to the cells by perfusion.

The cells take energy from the oxygen and generate CO<sub>2</sub> as an end product.

CO<sub>2</sub> is then transported by the cardiovascular system, diffused into the lung and breathed out.



### How is it measured?

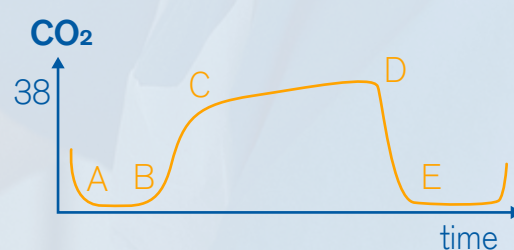
A ventilator can measure the difference in infrared absorption between the patient exhalation (sample gas) in the hoses and a reference value (calibration gas). The signal from the sensor is sent electronically for instant processing and display.



### Why is it relevant?

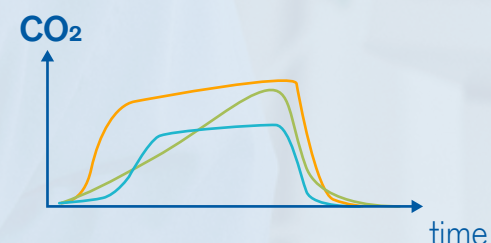
With a simple graph of CO<sub>2</sub> monitoring (Capnograph) we have a first overview on how ventilation is performing in the lungs of a patient.

#### NORMAL CAPNOGRAM EXAMPLE



Zero baseline · A-B  
Rapid, sharp rise · B-C  
Alveolar plateau · C-D  
End-tidal value · D  
Rapid, sharp downstroke · D-E

#### ABNORMAL CAPNOGRAM EXAMPLE



Normal trace  
Shunt perfusion, poor ventilation/  
alveolar emptying  
Dead space, decreased perfusion,  
normal ventilation

#### DECREASING etCO<sub>2</sub>



**Mechanical**  
Circuit leaks  
Circuit disconnection  
**Respiratory**  
Secretions  
Bronchospasm  
Hyperventilation  
Airway obstruction  
**Circulatory**  
Embolism  
Cardiac Arrest

#### INCREASING etCO<sub>2</sub>



**Mechanical**  
Increased dead space  
Exhalation valve faulty  
**Respiratory**  
Depression  
Insufficiency  
Obstructive disease  
**Circulatory**  
Hyperthermia  
Cardiac Output Metabolism  
Nutritional status

### Why is it helpful to improve outcome?

Data coming from the patient are essential to adapt the settings of the ventilator.

It is essential to measure CO<sub>2</sub> production in real time as it is the end product when cells take energy from oxygen.

Reasons why etCO<sub>2</sub> (end tidal CO<sub>2</sub>) decreases or increases can be mechanical, respiratory or circulatory.

