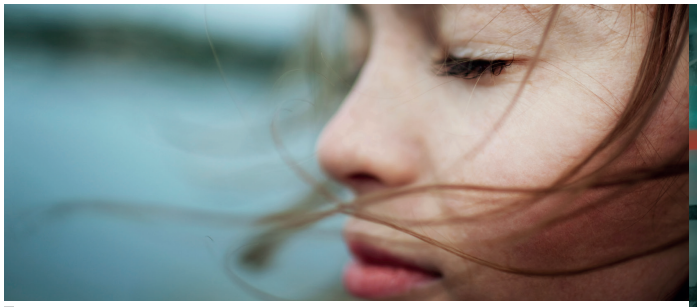

Minute volume up to 7 litres

VENTINOVA MEDICAL

The Creators

Prof. Dietmar Enk is kindly acknowledged for inventing Ventrain. Prof. Dietmar Enk, specialized in airway management for over 20 years, has committed himself to enable safe and efficient ventilation through a 'straw'. In close collaboration with Prof. Enk and his research group, Ventinova has translated his initial idea into Ventrain.

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MC016.00

Ventrain® for small lumen ventilation

VENTINOVA MEDICAL

Oxygenation and $C0_2$ removal through a 2 mm catheter

Ventrain is a single-use ventilation device specifically designed for difficult or obstructed airways.

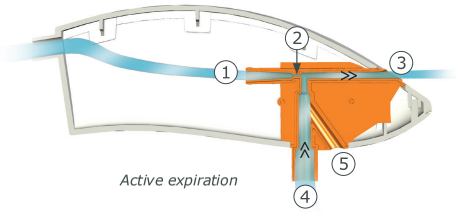
Providing full ventilation through a 2 mm catheter

Ventrain inspirates oxygen in addition to actively removing gas from the lungs, a ventilation method called expiratory ventilation assistance (EVA). EVA shortens the expiration time, increases the achievable minute volume, and prevents air trapping.

Simplicity in controlling

Inspiration *Expiration* *Equilibration*

The mechanism of EVA is explained by the cross-sectional image of Ventrain below. The gas flows via the inlet ① through a very narrow nozzle ② and exhaust pipe ③ to the outside. This flow entrains gas from port ④, which is connected to the catheter, inducing active expiration. Closing exhaust pipe ③ results in inspiration through port ④. The bypass ⑤ functions as an on/off switch. When opened, there is no significant positive or negative pressure at the catheter tip, resulting in equilibration/safety mode. While conventional ventilation depends on relatively high gas flows to obtain an effective gas exchange in the lungs and jet ventilation relies on high inspiration pressures, the EVA technology enables both active inspiration and active expiration, promoting gas exchange by the resulting turbulences in the lungs.



Active expiration

Active expiration

ventrain