

WaterPro  
Water separator  
for fuel cells

- ✓ High efficiency
- ✓ Compact design
- ✓ Diverse use

# MANN+HUMMEL WaterPro

## Water separator for the protection of components in the fuel cell BOP

Decades of experience with water separation in air intake systems of ICE applications



Open the website for more information about products for electrified powertrains from MANN+HUMMEL.



Watch the video of the water separator for fuel cell systems.



Visit our E-Mobility Onlineshop to check our offerings and buy directly.

MANN+HUMMEL memberships and partnerships in e-mobility and fuel cells:

Hydrogen Council



European Clean Hydrogen Alliance



Arbeitsgemeinschaft Brennstoffzellen  
(Fuel Cell Working Group)



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## Water separator for the protection of components in the fuel cell BOP

### Product features and concept advantages

- High water mass flow separation up to 40 g/s
- High separation efficiency for a wide airflow range
- Separates different liquid condition types:
  - Water droplets
  - Water wall film
  - Water accumulation and plug flow
- Designed to be freezing resistant
- Continuous water drainage
- Vertical and horizontal design
- Inclination capable up to  $\pm 20^\circ$
- Package optimized compact design

### Technical specification

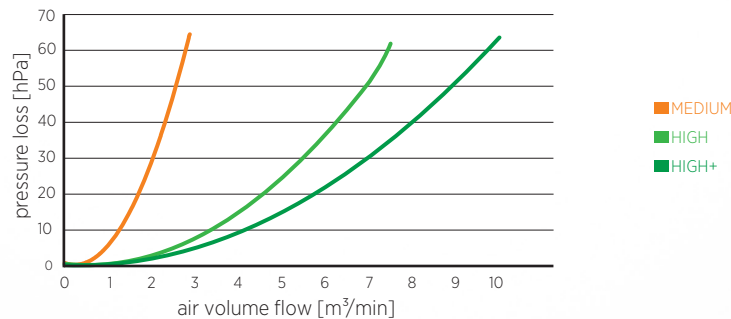
Performance class	MEDIUM		HIGH		HIGH+	
Fuel cell stack power [kW]	~ 30 - 60		~ 80 - 130		~ 150 - 200	
Air volume flow * [m <sup>3</sup> /min]	1.0 - 2.6		2.0 - 6.5		3.5 - 10.0	
<b>Type vertical</b>						
Air volume flow * [m <sup>3</sup> /min]	2	2.6	5	6.2	7	9
Pressure loss [hPa]	≤ 30	≤ 50	≤ 30	≤ 50	≤ 30	≤ 50
Separation efficiency */** [%]	≥ 85		≥ 85		≥ 85	
<b>Type horizontal</b>						
Air volume flow * [m <sup>3</sup> /min]	2	2.6	5	6.8	7	9
Pressure drop [hPa]	≤ 30	≤ 50	≤ 30	≤ 50	≤ 30	≤ 50
Separation efficiency */** [%]	≥ 85		≥ 85		≥ 85	

### Material and resistance

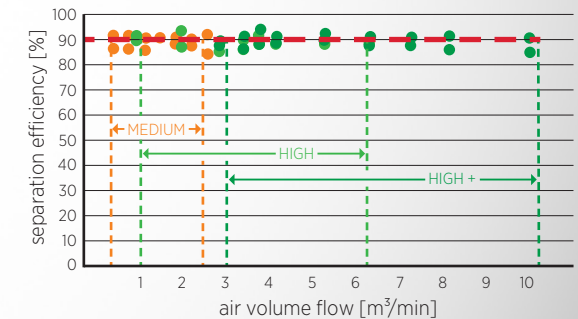
- Rapid part production technology:
  - PA and PP material
  - T = 85 °C (long term, operating)
  - Burst pressure p > 8 bara @ T = 20 °C

\* @ Lab condition: T = 20 °C | p = 1013 hPa | φ = 50 % rel. air humidity  
 \*\* @ Lab condition: Inlet droplet size distribution 10 to 35 to 100 μm  
 Efficiency in nominal separator position: vertical/horizontal

### Pressure loss \*



### Separation efficiency \*/\*\*



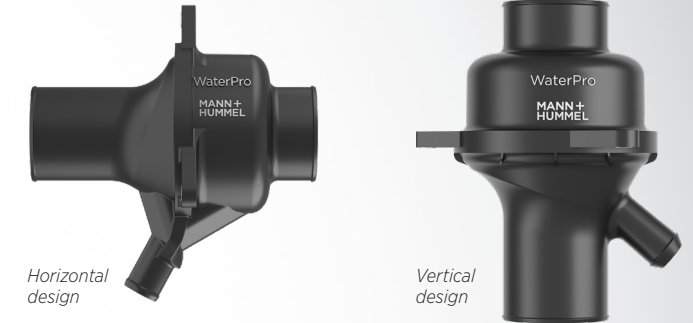
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## Water separator for the protection of components in the fuel cell BOP

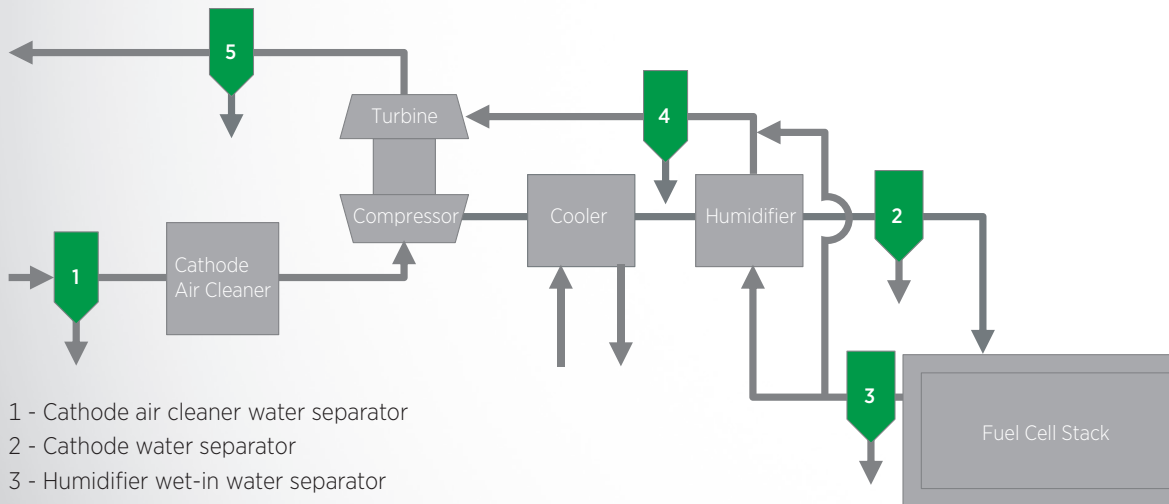
### Technical specification

Performance class	MEDIUM	HIGH	HIGH+
Fuel cell stack power [kW]	~ 30 - 60	~ 80 - 130	~ 150 - 200
Air volume flow* [m <sup>3</sup> /min]	1.0 - 2.6	2.0 - 6.5	3.5 - 10.0
Dimensions (A/B/C/D/E) [mm]	200/99/44/35/25	200/128.7/66/54/25	260/153.7/76/64/25

### Installation

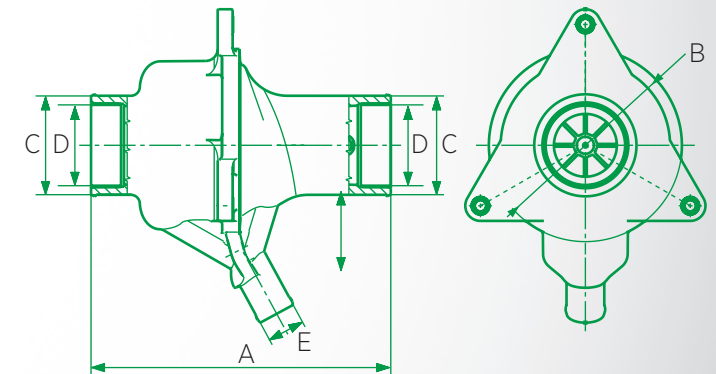


### Potential positions in the cathode air path



- 1 - Cathode air cleaner water separator
- 2 - Cathode water separator
- 3 - Humidifier wet-in water separator
- 4 - Turbine water separator
- 5 - Exhaust water separator incl. water management system

### Dimensions



- A - Part length
- B - Part diameter
- C - Outer diameter interface inlet/outlet
- D - Inner diameter inlet/outlet
- E - Outer diameter interface drainage port



## MANN+HUMMEL Contact

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