

Solutions for the fuel cell.

Fuel cell systems are a key technology for generating energy sustainably, and thus also for climate-friendly mobility with no harmful emissions. Using hydrogen as a fuel in a noiseless electrochemical process leaves only water and atmospheric oxygen as emissions. This process does, however, bring some challenges. To enable the safe and efficiency-optimized operation of fuel cell stacks, Hengst offers high-performance filtration solutions.

The Hengst **Blue.iox ion exchanger** ensures a rapid lowering of the initial ion concentration within the coolant circuit, which prevents electrical short-circuit effects in the fuel cell. The system also includes a **cathode air filter**, which protects the fuel cell's central components from particles and harmful gases, plus a novel **separator module for water management**.

Good reasons for the ion exchanger Blue.iox:

- **Simple maintenance**
Filter cartridge can be replaced without special tools.
- **Clean filter replacement**
No leakage of coolant.
- **Easy to customize**
The modular design allows for different capacities.
- **Minimum differential pressure**
Thanks to optimally matched resin filling.

The water separator prevents water accumulation, flooding and blockages in the fuel cell stack.

The cathode air filter shields the fuel cells from harmful gases and particles and ensures an airflow-optimized system.



Mathias Diekjakobs and Mike Zacharzewski were instrumental in developing the modular solutions for the fuel cell. They provide exciting insights and share their experiences from the perspective of both developer and customer.

How do you assess the significance of fuel cells as a technology for the mobility revolution?

Mathias Diekjakobs: Fuel cells and hydrogen play an important role in a transition to sustainable mobility. Thanks to the changing framework conditions, we have excellent prerequisites for the success of this technology. Their advanced maturity also speaks in favor of a broad market launch. The cost, however, remains a challenge.

How is Hengst positioning itself as a leading filtration solutions supplier?

Mike Zacharzewski: Hengst is using its broad filtration expertise to make fuel cell technology more efficient. Our extensive experience in developing and producing filtration and fluid management modules for leading vehicle manufacturers has created many synergy effects, from the pre-development and simulation stages to production.

Which products play a central role here?

Mike Zacharzewski: One key product is the ion exchanger. Fuel cell vehicles must meet the standards for high-voltage components, and the electrically conductive

components must comply with a minimum insulation resistance. The Hengst Blue.iox ion exchanger ensures a rapid lowering of the initial ion concentration within the coolant circuit and can be integrated in the main flow or in parallel with components of the coolant circuit. The ion exchanger is available in capacities up to 1500 meq and various designs.

Mathias Diekjakobs: Our filtration solution for the cathode air is another important component. We are already involved in several international development projects with it. The cathode air filter is available in various designs, as customer requirements can vary greatly.

How are the solutions offered to the customers?

Mathias Diekjakobs: To meet the special requirements of a highly fragmented market, we offer modular solutions. We also develop customized filtration systems to meet specific requirements.

Do you have any other questions?

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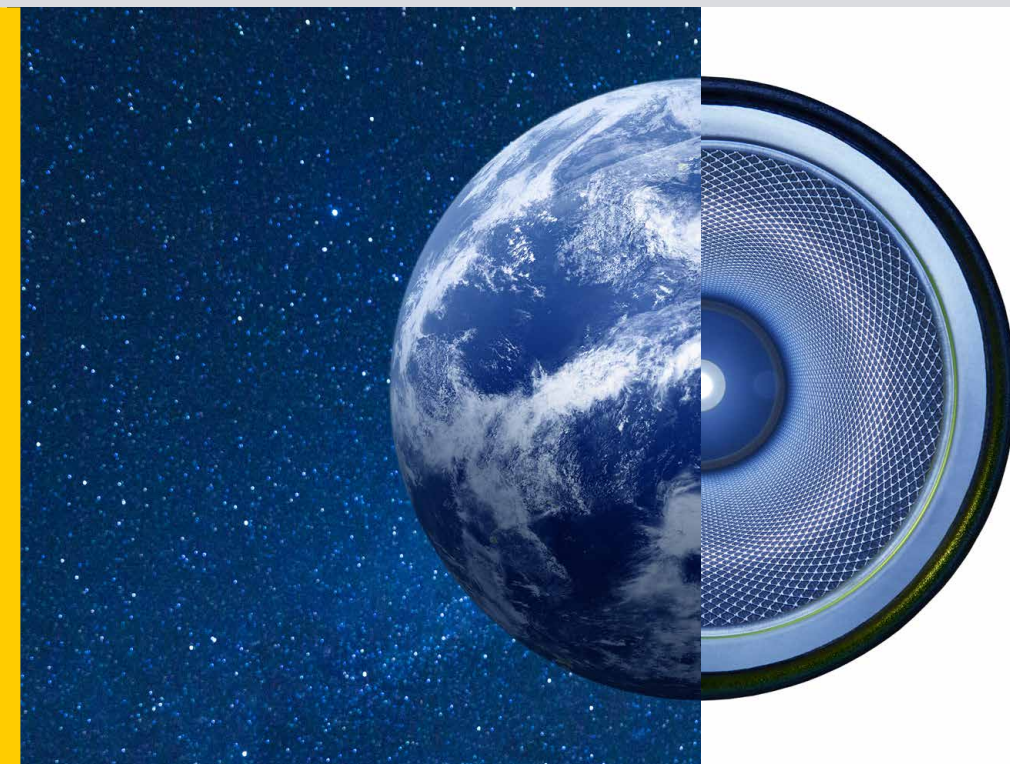
As a family operated company with 3,500 employees at 21 locations, Hengst Filtration is known worldwide for its innovative filtration and fluid management solutions.

Our products are used in millions of applications around the world to make something cleaner. But we can do even better. We think filtration – in everything we do. We deliver leading edge filtration systems for the fields of plant and machine engineering, industrial filtration, hydraulics, life science and health care.

Our custom-tailored solutions are used in medical cleanrooms, air conditioning systems, cleaning machines, industrial systems, electric tools and robots.

We are also an OEM supplier for the international automotive and motor industry and a development partner for sustainable drivetrain and mobility concepts.

For the fuel cell, we offer high-performance solutions for economical use at three places in the system.



Making our planet a purer place.

Mobility, Health, Economy, Environmental Protection & Sustainability: Our daily work focuses on the major issues of our time. With the goal of making the planet a cleaner place. This enables worldwide forward-looking technologies in all industries.

Innovative components for high performance and safety.

Developed as standard or customized modules, Hengst fuel cell solutions provide a valuable contribution towards CO₂-neutral mobility. They are used at three places in the system: in the cooling circuit, in the air supply, and in the hydrogen supply. The Blue.iox ion exchanger can be integrated in the main flow or in parallel connection with components of the coolant

circuit. It is available in capacities up to 1500 meq and in various designs for applications in passenger and commercial vehicles, in agricultural and construction machinery and for stationary applications. A screw cap allows the filter cartridge to be changed cleanly using standard tools.



The **cathode air filter** prevents damage to the fuel cell catalyst and membrane by separating out e.g. sulfur gases and ammonia particularly effectively.



The **Blue.iox ion exchanger** ensures safe and efficient operation by minimizing the electrical conductivity of the cooling medium.



Using an innovative valve technology, the novel **separator module for anode gas recirculation** combines the function of water-droplet separation and gas discharge.

