

## Aachen Colloquium Sustainable Mobility 2025: Shaping the Future of Mobility

The global automotive industry is undergoing one of the most profound transformations in its history. Driven by climate imperatives, digitalization, shifting geopolitics, and evolving customer expectations, the sector faces a fundamental reinvention. Electrification, software-defined vehicles, automated driving, and sustainable value creation are redefining how manufacturers, suppliers, and research institutions innovate and collaborate.

Amid these sweeping changes, the **Aachen Colloquium Sustainable Mobility 2025** once again proved to be a leading international platform for research, development, and innovation in the field of sustainable mobility. Experts from industry and academia gathered to discuss the most pressing challenges, the latest technological breakthroughs, and the most promising pathways toward the future of the automobile - from alternative propulsion systems and new business models to digital ecosystems and AI-driven vehicle intelligence.

### Inspiring Keynotes: Vision, Innovation, and Collaboration

Three high-profile plenary sessions formed the core of this year's colloquium, each exploring one of the key themes shaping tomorrow's mobility landscape.

The opening plenary set the tone by bridging the gap between technological innovation and the emotional connection people have with the automobile. **Emilio Scervo, CTO of Bugatti Rimac** emphasized that "true innovation comes from passion - and passion is what drives us to achieve what once seemed impossible". His statement captured the spirit of a session that explored how sustainable mobility can combine technical excellence with emotional appeal.

Another central theme was the increasing role of Artificial Intelligence (AI) across the automotive value chain - from design and simulation to testing and continuous software optimization. **Dr. Nikolai Ardey, Executive Director at Volkswagen Group Innovation**, highlighted how agent-based AI enables seamless, multimodal interaction between driver and vehicle, paving the way for intelligent, adaptive mobility concepts. Yet, as he reminded the audience, "AI can change everything—but not physics".

The session also addressed the immense structural and societal challenges facing the industry: tightening regulations, global competition, and the mounting pressure to achieve true sustainability. **Prof. Lutz Eckstein, President of the VDI (Association of German Engineers)**, underscored the importance of stable regulatory frameworks and open technology policies: "No one will invest billions if the rules of the game keep changing", he warned, advocating for a technology-neutral approach that embraces PHEV, EREV, and green molecules alike. He stressed that strong networks - linking research, industry, and policy - are crucial to navigating this transformation successfully.

### Start-Ups and the Power of Innovation

A highlight of the colloquium was the lively **plenary session on start-ups**, featuring prominent venture capitalists alongside young founders from the mobility sector. The panel discussed funding, scaling, and strategic partnerships between start-ups and established industry players. The key message: innovation thrives where capital, creativity, and technological expertise intersect.

**Marcus Behrendt, Managing Director of BMW i Ventures** offered a word of caution: “Today’s hype can easily become tomorrow’s pain,” referencing the overheated blockchain boom where many investments evaporated. Even major corporations with thousands of researchers cannot keep pace alone, he noted - “because out there, countless brilliant minds are innovating.” His takeaway: collaboration beats isolation. Partnerships and an open mindset are the true catalysts for progress.

**Peter Mertens, former Audi executive and industry thought leader**, was equally candid: “We are in the biggest, most complex, and most dangerous transformation the automotive industry has ever faced.” He stressed that survival mode leaves little room for collaboration - and yet, collaboration is exactly what’s needed.

Universities and research institutions, he argued, play a pivotal role: “When the big players build walls, academia becomes the engine of innovation”. Open ecosystems and interdisciplinary research are essential to bridging the gap between industry, start-ups, and society.

The takeaway from the session was clear: isolation won’t drive progress. Size alone does not guarantee a future. Software and AI accelerate development, but simply rebranding as a “software company” is no strategy. True innovation demands cooperation, openness, and a willingness to learn from each other.

### **Sustainable Offroad Applications: Realism Meets Innovation**

The final plenary session turned to offroad applications - a smaller but vital sector that underpins everyday life in agriculture, forestry, and construction.

Energy density was a central topic: in offroad machinery, it determines performance, uptime, and economic viability. While alternative powertrains are becoming established in passenger mobility, their adoption in agriculture and forestry remains a major challenge. Farmers cannot wait for batteries to charge - they must harvest when the weather allows.

**Michael Kuhn, Vice President Development Vehicles of Kässbohrer Geländefahrzeug AG** noted: “Our customers clearly demand zero-emission solutions. But physics applies to everyone - beyond roughly 600 to 650 horsepower, today’s battery or hydrogen systems simply can’t deliver. Right now, HVO offers the best balance between CO<sub>2</sub> reduction and high energy density”.

**Martin von Hoyningen-Huene, Member of the Group Executive Board: BU Tractors and Implements; SU Engineering of CLAAS** agreed, adding that some machines will always require liquid fuels, while electric powertrains will grow in importance for shorter, local operations. Depending on application, renewable fuels such as HVO, B100, or methane will continue to play a crucial role.

**Gerrit Marx, CEO of CNH Industrial**, emphasized that true climate action in agriculture must go beyond tailpipe emissions: “Cover slurry tanks, capture the methane, and turn it into energy - that’s the right lever, not just electrification where physics set limits”.

The conclusion: sustainable offroad mobility demands pragmatic, physics-based solutions. Advanced renewable fuels and systemic efficiency gains will dominate in the near term, while battery-electric solutions will expand where use cases and infrastructure make sense.

Digitalization and automation are also transforming this sector. Advanced prediction systems and digital twins are helping optimize resource use and decision-making. “Unpredictable weather has become the biggest risk for farmers,” Marx explained. “Digital twins allow us to merge weather, soil, and machine data in real time - enabling smarter, faster decisions”.

The message was clear: even off the paved roads, the future of mobility is intelligent, connected, and data-driven.

### **Start-Up Showcase and Exhibition Highlights**

A major focus this year was on start-ups driving fresh innovation in electric propulsion, energy management, battery technology, and charging infrastructure. Their agile approaches and creative solutions added valuable momentum to the mobility transformation.

Complementing the conference program, a comprehensive industry exhibition featured 22 companies showcasing cutting-edge technologies and products - from propulsion systems and testing solutions to digital development tools.

**FEV** presented a wide-ranging innovation portfolio including robotics, software, battery technology, and zero-emission propulsion. Highlights included a humanoid robot for advanced robotics applications and an SOVD demonstrator connecting diagnostic and maintenance data to the cloud. In the battery domain, FEV showcased the Mahindra BE 6e featuring the jointly developed AMAL battery and integration of ProLogium’s semi-solid-state cells for high energy density, fast charging, and outstanding safety.

**fka** demonstrated how physical prototypes and digital twins can accelerate innovation. Using virtual reality, visitors experienced the levelXData traffic platform from drone and in-vehicle perspectives, explored LiDAR systems under adverse conditions, and viewed the digital twin of a hybrid powertrain test bench. The “Concept Corner” featured an optimized VW ID.3 with drone integration and a modular R&D drive-by-wire kit for testing automated driving functions in production vehicles.

Established suppliers and technology providers also underscored how electrified and alternative powertrains are maturing toward reliable series production.

### **Networking That Drives Collaboration**

Beyond the technical sessions, the Aachen Colloquium once again impressed with its outstanding networking opportunities. In an open and inspiring atmosphere, participants from academia, industry, and start-ups engaged in lively discussions - during exhibition tours, evening events, and informal exchanges between sessions. The message was clear: sustainable mobility is not just about innovation, but about collaboration.

### **Looking Ahead**

The **Aachen Colloquium Sustainable Mobility 2025** demonstrated once more that the transformation of mobility will only succeed through collective effort and open dialogue between industry, research, and young innovators. The wealth of ideas, insights, and connections generated this year provides a powerful foundation for the journey ahead.

The mobility community now looks forward to **Aachen Colloquium Sustainable Mobility 2026**, where the next generation of sustainable technologies and strategies will take center stage once again. The organizers look forward to welcoming guests back to Aachen in October 2026.

If you have any questions, please contact:

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