BRIGHT BRABANT

Beyond boundaries, Brabant's solutions to **global challenges**

OUR CHALLENGE

Pioneering **climate-neutral energy** solutions

Globally, the urgent need for sustainable transportation due to rising mobility causing congestion, pollution, and resource depletion is a major concern. Smart & Green Mobility solutions provide hope by promoting clean energy, optimizing traffic, and cutting emissions. They offer a global blueprint for eco-friendly and convenient transportation systems.

InMotion. Charging Ahead. InMotion develops a cell-level cooling technology which aims to facilitate 'Electric Refueling', meaning that the charging times of electric vehicles become equal to those of refueling petrol-powered cars.

SMART & GREEN MOBILITY

The vast majority of automotive companies in the Netherlands are located in Brabant and Limburg, the two adjoining southern provinces. The breadth and depth of skills and expertise in Brabant is so extensive that it is no exaggeration to state that the Brabant automotive HTSM cluster can invent, design, engineer, assemble, manufacture, commercialize, install, and maintain probably any component and/or system related to Smart & Green Mobility.

The Brabant region has been a hotbed of innovation across many sectors for more than a hundred years and today its automotive industry is pushing boundaries. Companies have been collaborating, and showing what is possible by sharing resources and knowledge to advance technologies more quickly and cheaply together. There have been innovations in heavy-duty trucks and coaches, cars, batteries, charging infrastructure and advanced technologies, which are all helping to make mobility greener and smarter, more efficient and autonomous.

Open environment

National research institutes such as the Netherlands Organisation for Applied Scientific Research (TNO) that have a strong foothold in Brabant are supported by the government to set up public-private partnerships, which accelerate innovation by working closely with the industry. These institutes collaborate closely with Brainport Eindhoven, which is a community of more than 5,000 specialist High Tech and IT companies.

“We aim to have an open, innovative environment where we can use different data from different companies. We can compare different types of vehicles,” says Joelle van den Broek, principal consultant, smart and safe mobility, at TNO Traffic & Transport.

Van den Broek is also Quartermaker at MARQ – Mobility Applied Research Quarter, a brand new innovation and research centre specialising in smart solutions at the Automotive Campus in Helmond. Housed in the former Volvo Nedcar development centre, the vibrant campus brings together established industry players, startups, education, knowledge institutes and government bodies to create an open, OEM-independent and neutral setting for the development, prototyping and testing of new systems.

The neutral setting ensures all parties involved put aside competitive thinking by focusing on areas where there is a clear common interest, with collaboration used to achieve faster innovation and commercialisation.

Some 65 High Tech companies and 1,250 researchers at over 25 labs and testbeds collaborate on finding novel solutions to mobility challenges.

Triple helix in action

The Automotive Campus in Helmond is where automotive technology, and Smart & Green Mobility solutions are turned into real business opportunities, exemplifying Brainport’s triple helix approach. It is the beating heart of Smart & Green Mobility in Brabant. Some 65 High Tech companies and 1,250 researchers at over 25 labs and testbeds collaborate on finding novel

Why **Brabant excels** in **Smart** & **Green Mobility**

Industry based ecosystem

The Brabant automotive HTSM cluster can invent, design, engineer, assemble, manufacture, commercialize, install, and maintain probably any component and/or system related to smart and connected mobility and sustainable or green mobility.

Developed knowledge infrastructure

Highly innovative universities and research institutes, such as High Tech Campus Eindhoven, Automotive Campus Helmond, University of Technology, contribute to a unique ecosystem, home to innovators, researchers, engineers that create business of tomorrow.

Leading companies and value chain

Brabant is home to DAF Trucks and a perfectly woven network of knowledge institutes (University of Technology, TNO, TASS), specialized High Tech suppliers such as Altran, NTS Group and VDL, and other partners has evolved in the region.

InMotion. Charging Ahead. Because of their advancements in Electric Refueling technology, InMotion has successfully achieved a remarkable charging time of 4 minutes.

solutions to mobility challenges.

“It is the mixture of mechanical, electrical and computer science that we were the first to see,” says Maarten Steinbuch, professor in systems and control, and chair of control systems technology at Eindhoven University of Technology. “Automotive companies and numerous startups are developing that into a very strong campus. Collaboration is essential to innovation.”

The Brainport-Brabant ecosystem is a testing breeding ground. A unique infrastructure offers the industry access to open and state-of-the-art test facilities. Examples are the various test centres of TNO and Siemens/TASS at the Automotive Campus, as well as the Holst Centre (part of TNO) and the AI Innovation Center, both established on the High Tech Campus Eindhoven.

Battery Competence Cluster NL

The Automotive Campus is home to the Battery Competence Cluster NL (BCC-NL), which represents a collaboration between leading companies such as DAF Trucks, VDL Group and Damen Shipyards, startups, world-class knowledge institutions, national industry associations, and the government. Initiated by industry association RAI Automotive Industry NL, economic development agencies Brainport Development and Oost NL, BCC-NL intends to build a national consortium.

BCC-NL initiates both national and international innovation programs and collaborations, with charging infrastructure and energy storage, recycling, electric cars, ships and even planes all within its remit. With a focus on next-generation batteries, new production processes and equipment, Brabant offers a wide range of expertise through companies such as ELEO, LeydenJar, and LionVolt.

Connecting Smart & Green Technologies

Alongside greener technologies, the automotive sector will require smart mobility systems to help EVs become safer, more efficient and more autonomous. What gives

Brabant a further advantage is that it is home to ASML, a key supplier of machines that give the world’s leading chipmakers the ability to mass-produce patterns on silicon.

The equipment used to make chips requires the collaboration of many suppliers, all delivering equipment modules and components that must meet the highest specifications. A High Tech ecosystem has built up around ASML over the past decades, offering the expertise and means of collaborating that is needed for digitalisation and making mobility smarter.

For example, artificial intelligence (AI) is becoming an essential part of vehicle design, route optimisation, managing vehicle energy consumption and autonomous driving, while digitalisation is changing the face of mobility through the advanced use of large datasets to reshape navigation and safety features.

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With the need to make applications smaller, less energy consuming and able to handle more data, the next generation of chips enabled by integrated photonics

SHOWCASE

LionVolt

LionVolt is an innovative battery startup, spun out of TNO at the Holst Centre, located at the High Tech Campus Eindhoven. Founded in early 2020, its mission is to develop and scale 3D solid-state batteries that are safe and sustainable, and deliver high performance.

Backed up by seven years of R&D, the company has solid foundations on which to build. LionVolt’s vision is to establish a scalable gigafactory within the next five years and become a key player in the global battery industry.

5 most **promising** Smart & Green Mobility **start-ups** in Brabant

With over 1,500 startups, Brabant has truly became a startup province with a strong focus on technology. The Brabant40 is an initiative of several Brabant-based organizations in the startup ecosystem, including BOM, The Gate, Braventure, Rewin, and Brainport. It is a list and an award for the most promising startups in a year. The following startups made the top 40 in Smart & Green Mobility innovations.

5/50

ANTENNEX

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TULIP

xyz Dynamics

will make a strong contribution to developments such as autonomous driving and new ways of sensing that can be used for battery management systems.

Brabant is also home to PhotonDelta, a Dutch organisation focused on running a national program to build, expand and solidify the ecosystem for integrated photonics for various application areas, including mobility.

Electric flying

And while advances primarily apply to land-based transportation, Brabant also has its sights set on the skies. As a hub for the aerospace industry, the region is committed to leading the development of electric flying technology. Numerous organizations are collaborating to address the substantial challenge of producing aircraft that are 30% more fuel-efficient and sustainable aviation fuels. This is a bold step toward a future where transportation is not only smart and green on the ground but also in the air.

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Brabant is shaping the future of mobility by combining these strands of innovation and embracing a holistic vision for the automotive industry. Many organizations, including Breda Airport, NRG2Fly, Saluqi, Eindhoven Airport, Aeronamic, Fokker Services, and Dassault, are involved in developing sustainable aviation technology. The aerospace industry is facing a significant technical

SHOWCASE

VDL

VDL is a Brabant-based conglomerate with wide expertise in automotive and High Tech engineering, assembly and manufacturing. Its main activities span automotive and bus manufacturing, industrial systems, contract manufacturing, subcontracting, technical systems, public transport, equipment manufacturing and services. VDL has a pivotal role within the Brabant ecosystem.

SHOWCASE

Zero Emission Mobility (ZEM)

Eindhoven University of Technology and innovation (TU/e) have been a match for decades. Students from the technical university come up with one clever plan after another. Just like Zem: a passenger car that captures more CO2 than it emits while driving. And it may well be the most sustainable car in the world.

Auto Zem has a special filter that purifies the air. Collected CO2 is stored and by eventually disposing it, the car ensures that it does not contribute to CO2 emissions. The filter is the heart of the car. It ensures that the car captures 2 kilograms of CO2 at 20.000 kilometers. That means ten of these cars can store the same amount of carbon dioxide as a tree does on average. In the coming years, the students will continue to work on the car.

challenge in the development and certification of aircraft that are 30% more fuel-efficient and can be brought to the market by 2035. This challenge will require significant improvements in aerodynamics, lightweight structures, and fuel-efficient engines. Existing aircraft will also need to be modified to use sustainable aviation fuels such as bio-kerosene and synthetic kerosene.

With so much development of Smart & Green Technologies, the key will be to combine both strands of innovation to help define the automotive industry of the future. ●

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Scan the QR-code for more information and facts & figures about Smart & Green Mobility in Brabant.

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POWERED BY BOM