

THE FME VISION ON THE ENERGY TRANSITION

Creating an efficient, sustainable, smart society

An unstoppable energy transition is underway. But fully achieving this transition towards a CO₂-neutral energy system would be impossible without technology. Technology enables buildings, transport and complete production lines to be cleaner and more efficient. It is the key to sustainable energy production, and allows for smarter control of energy demand, supply and consumption.

The Dutch technological industry, united in FME, has a clear vision on the role of technology in energy transition - and is actively working on breakthrough innovations. Many of these are characterised by a multidisciplinary approach, incorporating knowledge and technology from different sectors and addressing various sustainability issues at once. In the Netherlands, this makes sense: as a small, densely populated and highly developed country, it is an ideal testing ground for ambitious, integrated solutions, creating a truly sustainable urban delta.

Smart, efficient buildings

By 2035 – or sooner – all buildings in The Netherlands can be CO₂-neutral. To achieve this, buildings need to be highly energy-efficient and a key part of this is enabling them to manage their own energy needs. For example, by adjusting their energy consumption to the real-time availability and pricing of clean energy sources. It is also essential that buildings are equipped to use a variety of energy carriers: a combined, hybrid energy provision consisting of electricity, green gas and residual heat.



Industry

Technological innovation, including 'smart' industrial processes, offers industry an opportunity to drastically reduce its energy consumption. Chain integration also plays a vital role: working together to achieve more circularity and re-use of residual heat and CO₂. More and more industrial processes will be powered by electricity, making flexible use of the real-time energy supply (Power2Products). This allows energy costs to be kept as low as possible.



that of fossil fuel, and will drop further in the years ahead. The primary focus for the Dutch technology sector in the next few years will be in areas such as offshore wind, high-tech mechanical engineering for solar panels and energy from water.

Producing energy from fossil fuels

Oil and in particular gas remain indispensable as transition fuels for years to come. Gas has the lowest environmental impact of the fossil fuels. Traditional oil economies will be gradually making the transition to renewable fuels and the oil and gas sectors will have to transform themselves accordingly. For example, by focusing on bio- and solar fuels, hydrogen and biogas, which by 2030 will be mature alternatives for fossil oil and gas. In order to achieve the aims of the Paris Agreement it will also be necessary to develop technology for collecting and storing CO₂.

Transport and mobility

During the next 10 to 15 years traditional fuel-powered engines are expected to give way to cleaner drive technology in cars, lorries, ships and planes. This change will go hand in hand with the large-scale introduction of alternative fuels such as electricity, hydrogen, LNG, and bio- and solar fuels. At the same time infrastructure will be used in a smarter and more efficient way, due to improved connectivity between different forms of transport, big data and the development of self-driving transportation.

Energy infrastructure and storage

Considerable fluctuations in supply and demand need to be managed efficiently. Rather than having separate infrastructure for gas, electricity and heat, a single, integrated energy system is necessary in which energy can be converted and stored efficiently. In addition it is important to build stronger connections between European power grids, accompanied by far-reaching digitalisation in the form of well-protected smart grids and microgrids.

Sustainable energy production

By 2050 the energy supply in The Netherlands will be completely CO₂-neutral. Sustainable energy will be cheaper than traditional fuel long before then, probably by 2025. The cost price of large-scale offshore wind energy is fast approaching

About FME

FME is the Dutch employers' organisation in the technology industry. The 2,200 affiliated companies include technology start-ups, trading companies, small and medium-sized industrial enterprises as well as large industrial conglomerates. Our members are active in the fields of manufacturing, trade, automation and maintenance in the metal, electronics, electrical engineering and plastics sectors. FME members employ a total of 220,000 people, have a combined turnover of € 75 billion, their collective added value amounts to over € 21 billion, and their exports total € 39 billion. FME members therefore account for one-sixth of all Dutch exports. FME has 60 affiliated trade associations. FME mobilises and connects partners in the technology industry to meet the big challenges society faces, both today and in the future. In doing so, we increase our members' individual and collective earning power.



DUTCH TECHNOLOGY AS A TRANSITION DRIVER

A so-called 'heat roundabout' is being developed in the densely populated province of South-Holland: a network of residual industrial heat in greenhouse cultivation and district heating

Tata Steel's Hisarna test centre in IJmuiden eliminates the need for pre-treatment of coal and iron ore, leading to 20% lower CO₂ emissions compared with a traditional blast-furnace process.

Dutch technological innovation is making it possible for all public transport buses in the Netherlands to be CO₂-free by 2030.

The KINEXT is a flywheel system, capable of supplying or storing a maximum of 1 MW, with an unprecedented response time and a high power-to-energy ratio.

Dutch TSO TenneT has revealed plans for an energy island in the North Sea, paving the way for even larger offshore wind farms and creating a hub for international trade in wind energy.

The world's first refinery for bio-based LPG is being built in the Rotterdam harbour: producing fuel which can be used as an alternative to 'fossil' LPG, without any further modification.