TQ SUSTAINABLE ENERGY

FUTURE MARKETS MAGAZINE by EBV Elektronik

"2020 marks the start of the decade of renewable energy. Costs are sinking, the markets for clean technologies are growing, and the benefits of a change in energy policy have never been so clear."

Francesco La Camera, Director IRENA

TECHNOLOGICAL INNOVATIONS ARE REVOLUTIONISING THE ENERGY MARKET

A POLITICAL MOVEMENT

According to a study conducted by the World Economic Forum, 2020 saw annual investment in a fundamental change of energy policy surpass a value of USD 500 billion worldwide for the first time. In future, investment is likely to increase even further as more and more countries – among them the biggest carbon emitters – commit to reducing their CO_2 emissions.

16.6

billion USD for a green industrial revolution, CO_2 emissions to be cut by 78 per cent by 2035 – United Kingdom

134.8

billion USD invested in renewable energy in 2020, 14th five-year plan accelerates sustainable development – China

3.098

trillion USD total global investments

1.2

trillion USD for sustainable investments over the next decade as part of the European Green Deal – EU

1.7

trillion USD in federal investments over the next ten years, by 2050 100 per cent clean energy – USA

31.5

gigatons of CO_2 emissions in 2020 due to energy use

(Source: IEA)

37

billion USD in investments until 2025; Green New Deal for green infrastructure, clean energy and electromobility – South Korea

9.8

billion USD provided by multilateral fund to developing countries for period 2020–2023 – Green Climate Fund

2,799

gigawatts in global capacity for generating power from renewable energy sources at the end of 2020

(Source: IRENA)

THE DECADE OF SUSTAINABLE ENERGY

The last decade was the warmest worldwide since records began. This is an urgent reminder of just how important the targets of the Paris Agreement on climate change are for keeping global warming well below two degrees Celsius. In particular, the energy landscape needs to change and reduce its CO_2 emissions for targets to be met – and it is doing so at an increasing pace: in 2020, more investment flowed into renewable energy, electromobility, and energy storage than ever before. According to Bloomberg New Energy Finance, over 500 billion US dollars was invested globally in decarbonisation.

IRENA (the International Renewable Energy Agency) reports that the global capacity for sustainable, regenerative energy grew by more than 260 gigawatts over the past year. More than 80 per cent of the new electricity capacity added during that period was derived from renewable energy sources, with 91 per cent of this capacity relying on solar and wind power.

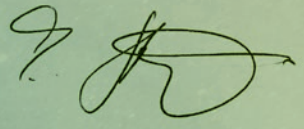
Semiconductors are a key technology in this transformation: in photovoltaic cells they generate electricity from light, and they convert energy in converters such that it can be fed into the grid with minimal losses. Semiconductors make drive systems more efficient, monitor all manner of systems integrated into the energy chain in sensors, and use the Internet of Things to link sustainable energy generation up to consumers in such a way that the supply and demand are in perfect balance.

In power electronics, semiconductors play a crucial part in converting, transmitting, and using energy more efficiently. In the view of market analysts at Yole Développement, the global market for power electronics is worth around 17.5 billion US dollars and will grow at a rate of 4.3 per cent between 2019 and 2025. Today, the largest share of the market for power components is accounted for by silicon MOSFETs, which make up 45 per cent of the total value. IGBT modules comprise the other major power electronics segment, which had a market volume of 3.7 billion US dollars in 2019.

Furthermore, energy-saving chips made of new materials like gallium nitride (GaN) or silicon carbide (SiC), which can avoid up to 90 per cent of energy losses in power conversion, are becoming more and more important. Market Study Report predicts that the global market for SiC and GaN power components will grow from around 570 million euros in 2019 to over 1.8 billion US dollars by 2025.

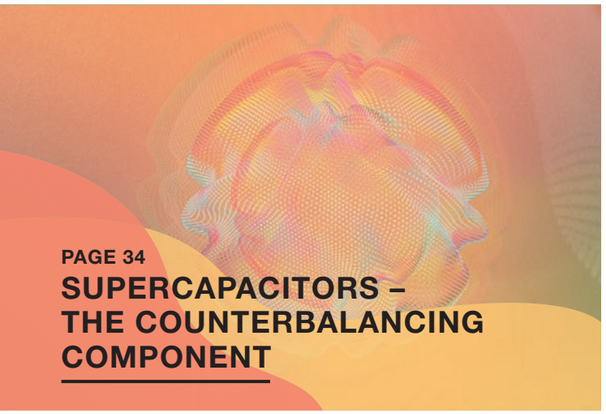
With new technologies like this and growing levels of investment worldwide, there is nothing to stop the years ahead from being defined as the decade of sustainable energy. However, this continues to require enormous levels of investment – yet it also offers tremendous opportunities for start-ups and established companies concerned with the efficient, sustainable generation, distribution, and use of energy. This new issue of 'The Quintessence' shows how varied the systems and technologies in this sector really are. Here at EBV, we use our innovative products and application-specific expertise to help our customers turn their ideas into solutions for a more sustainable future.

Yet we shouldn't get too carried away: the share of renewable energies in the global primary energy supply is just over 13 per cent, so none of us can rest on our laurels. After all, the targets of the Paris Agreement are more than merely political goals – they are humanity's best hope for averting catastrophe.



Thomas Staudinger
President EBV Elektronik

CONTENTS

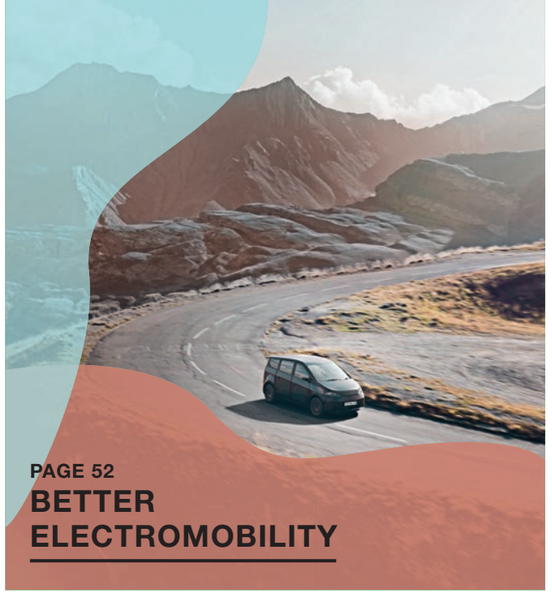


STORAGE

The energy landscape is changing at an accelerating pace.

SUSTAINABLE POWER GENERATION

Already today, electricity from photovoltaic and wind is cheaper than coal-fired.



CONSUMPTION

ELECTRONICS INSIDE

Digitalisation and sustainable energy go hand in hand.

DISTRIBUTION & TRANSMISSION

VISIONS & VIEWS