

ALL ELECTRIC SOCIETY

FUTURE MARKETS MAGAZINE by EBV Elektronik

A CRYSTAL CLEAR VISION OF A FULLY ELECTRIC AND SUSTAINABLE SOCIETY

THE MOST EFFICIENT PATH TO CLIMATE NEUTRALITY IS **ELECTRICAL**

Floods in southern Germany, record heat in India, drought in the Amazon, and even tornadoes raging in the middle of Europe – the consequences of the climate crisis are increasingly intruding into the everyday lives of many people. The answer to this is provided by the All Electric Society: the vision of a CO.-

neutral and sustainable world where energy is almost exclusively generated and consumed electrically from renewable resources. Instead of combustion engines, e-mobility dominates; instead of gas power plants, heat pumps are used. Even heavy industry in this scenario relies on electrified storage and systems. Primary energy demand is reduced through efficiency measures, and intelligent, interconnected systems ensure that renewable energy is used across sectors as needed. The path to this All Electric Society has long been underway. According to McKinsey, in 2023 alone, 183 billion US dollars in private investments were made globally in the electrification and renewable energy sectors.

For the electronics and semiconductor industry, the All Electric Society offers enormous potential, as it provides the key products for this vision. According to Mordor Intelligence, the market for semiconductor components for e-mobility will grow by an average of over 30 percent annually from 2024 to 2029. This includes particularly power electronics – a key technology for the energy transition, not just for e-

mobility, as it enables efficient conversion and control of electrical energy. Modern semiconductors such as silicon carbide (SiC) and gallium nitride (GaN) offer significant advantages over traditional silicon. According to a study by Yole Développement, the market for SiC semiconductors will grow

to 6.3 billion US dollars by 2027. The energy distribution segment also offers great growth potential: according to a report by MarketsandMarkets, the global smart energy market (smart grids, smart meters, etc.) is expected to grow from 170 billion US dollars in 2022 to 283 billion US dollars in 2027.

These are just a few examples that illustrate the enormous potential of the All Electric Society. And even though the vision of comprehensive electrification is currently gaining traction mainly in Europe, it has international implications and presents a global alternative to the current $\rm CO_2$ -intensive society. As a passionate semiconductor distributor, EBV is happy to help you leverage this potential. For now, I wish you an exciting read as you delve into the world of the All Electric Society!

Malle

William Caruso, President EBV Elektronik

Spending on renewable power, grids, and storage surpasses total spending on oil, gas, and coal.



Source: IEA

trillion US dollars

will go towards clean

energy technologies

183

billion US dollars in private investments were made globally in the electrification and renewable energy sectors in 2023 alone. Source: McKinsey

CONTENTS

3 | MARKET OVERVIEW The most efficient path to climate neutrality is electrical

6 | A VISION OF A CO₂-FREE WORLD The strategy is to electrify society as a whole

8 | THE RELEVANT SECTORS OF THE ALL ELECTRIC SOCIETY

A graphical overview

10 | CARBON NEUTRALITY IS ABSOLUTELY ACHIEVABLE

Interview with Joel Stratemann, Manager Business Development Integrated Energy Solutions at Phoenix Contact

FIELDS OF TRANSFORMATION

18 | GREEN ELECTRICITY ON THE RISE Providing sustainable energy for the world

22 | PREPARING THE ENERGY INFRASTRUCTURE FOR NET ZERO The grid must be modernised and expanded

PAGE 30 Leading the tansport sector to net zero **14 | NET ZERO? ONLY WITH ELECTRIFICATION!** Facts & Figures from the world of energy

> **PAGE 10** The future becomes reality in the All Electric Society Park



24 | ADAPTIVE COMPUTING CAN BOOST INDUSTRIAL EFFICIENCY Guest editorial by AMD

26 | ENERGY STORAGE – THE BALANCING FORCE Matching energy demand and consumption

30 | CLEAN MOBILITY Sustainable drive solutions for cars, ships and planes

32 | TECHNOLOGY FOR A SUSTAINABLE WORLD, IN A SUSTAINABLE WAY Guest editorial by STMicroelectronics

34 | THE GAME CHANGER FOR SUSTAINABLE HEATING Trends in heat pump technology

36 | THE PATH TO A GREEN INDUSTRY Focus on energy efficiency



40 | SECTOR COUPLING AS A KEY EN-ABLER OF THE ALL ELECTRIC SOCIETY Interconnecting electricity, heat, transport, and industry

42 | HOW SEMICONDUCTORS ENABLE GREEN ENERGY Guest editorial by Nexperia

44 | BUILDING THE INTERNET OF ENERGY The grid becomes part of the IoT

47 | EU REGULATIONS ENHANCE THE SECURITY OF CONNECTED DEVICES The Cyber Resilience Act

50 | STRENGTHENING SUPPLY CHAINS Focus on critical raw materials **52 | BUILDING BETTER EV CHARGING STATIONS** Guest editorial by Micron

54 | TOO VALUABLE TO WASTE Increasing energy efficiency with SiC and GaN

56 | PUSHING EARTH OVERSHOOT DAY Interview with Karl Lehnhoff of EBV

58 | ELECTRONICS INSIDE Product presentations of ams OSRAM and Power Integrations



The global need for key raw materials will dramatically increase.

PAGE 50

PAGE 62

"The transformation of energy brings big power shifts."

Olafur Grimsson, Chair of the Global Commission on the Geopolitics of Energy Transformation



VISIONS & VIEWS

62 | A NEW WORLD Geopolitical impacts of the All Electric Society

66 | CLEAR PATH TO NET ZERO? The IEA's pathway to limit global warming

68 | THE HEART OF THE ALL ELECTRIC SOCIETY Innovative ideas from selected start-ups

70 | GLOSSARY 73 | PREVIOUS ISSUES 74 | INFO POINT, IMPRINT 75 | MEET THE TEAM