

JOINT PRESS RELEASE

Siemens Mobility and Mitsubishi Electric Europe B.V. sign MoU to push the use of high voltage SiC technology for increasing the energy efficiency of railway drive systems

Munich/Ratingen, May 10th, 2022 – Siemens Mobility and Mitsubishi Electric Europe B.V. have signed a Memorandum of Understanding (MoU) to cooperate in the field of SiC power module technology with the aim of enabling efficient and sustainable transportation and electrical energy savings in the transportation sector.

With creation of the “European Green Deal”, the EU has committed itself to being the first continent to achieve climate neutrality by 2050, meaning no net emissions of greenhouse gases by 2050. At an intermediate stage, emissions are already to be reduced by 55 % by 2030 compared with 1990. The European Green Deal will result in binding directives for individual sectors regarding CO₂ emissions.

These directives apply in particular to the transport sector, where greenhouse gas emissions are to be reduced by 90 % by 2050, alongside an increasing demand for mobility. In particular the rail industry and its suppliers, and more specifically the technologies and components used in rail transport, are important contributors to achieving this goal.

Power semiconductors play a key role in railway vehicles, from trams to high-speed trains. Standard silicon-based power semiconductors are being continuously developed, and new technologies are being advanced, such as the use of SiC (silicon carbide), which will enable even greater efficiency and the greatest reduction in weight in future. It is in fact the railroad market that is stimulating demand for more efficient energy conversion technology.

Mitsubishi Electric sets new technological standards with leading SiC technology and decarbonises SIEMENS Mobility railways.

Mitsubishi Electric’s SiC devices have proven long-term reliability in the most demanding of applications such as traction inverters in trains. The potential for energy savings through the use of Mitsubishi Electric's wide range of SiC power devices in railway technology exists particularly in the area of traction drives. In particular the full SiC 3300 V power modules contribute to energy

saving and the downsizing of traction inverters. The suitable SiC chipset for high-speed switching is used in the standardized LV100 package, which provides low stray inductance and easy paralleling capability. The power losses of LV100 full SiC modules can be reduced by approximately 75 % compared to the conventional Si power modules during the inverter operation. As a result, the efficiency of the traction inverter is increased.

Siemens has always been a pioneer in the construction of electrically powered trains. Their 140 years of experience forms the basis for the new Mireo Plus regional train platform, which enables operators to run their operations efficiently and economically without local CO₂ emissions. Using the innovative technology of the battery powered Mireo Plus, Siemens Mobility enables electrification of railway lines even without a continuous overhead contact line. SiC technology is particularly beneficial for regional trains with an innovative battery hybrid drive for use on rail sections with, or without an overhead contact line. It reduces weight to a minimum, optimizes performance, and boosts the efficiency of multiple units in terms of mileage and range. With an energetically optimized drive system, the energy absorption from the grid is nearly 10 percent less than that of today's vehicles, thanks to the use of SiC components. SiC's greatest potential is in its higher energy efficiency and reduced weight.



Mitsubishi Electric's 3300V Full/Hybrid SiC
Power Module for Traction Inverters



Siemens Mobility's
battery powered Mireo Plus B

About Siemens Mobility

Siemens Mobility is a separately managed company of Siemens AG. As a leader in transport solutions for more than 160 years, Siemens Mobility is constantly innovating its portfolio in its core areas of rolling stock, rail automation and electrification, turnkey systems, intelligent traffic systems as well as related services. With digitalization, Siemens Mobility is enabling mobility operators worldwide to make infrastructure intelligent, increase value sustainably over the entire lifecycle, enhance passenger experience and guarantee availability. In fiscal year 2021, which ended on September 30, 2021, Siemens Mobility posted revenue of €9.2 billion and had around 39,500 employees worldwide. Further information is available at: www.siemens.com/mobility

About Mitsubishi Electric

With more than 100 years of experience in providing reliable and high-quality products, Mitsubishi Electric Corporation (TOKIO: 6503) is a globally recognized leader in the manufacturing, marketing and sales of electrical and electronic equipment for information processing and communications, space development and satellite communications, consumer electronics, industrial technology, energy, mobility and building technology. Following "Changes for the Better," Mitsubishi Electric strives to enrich society with technology. The company had consolidated sales of \$36.7 billion* at the end of the fiscal year on March 31, 2022. For more information, visit: www.MitsubishiElectric.com

* U.S. dollar amounts are converted at an exchange rate of 122 yen for 1 U.S. dollar, the approximate exchange rate on the Tokyo Foreign Exchange as of March 31, 2022.

Sales offices, research companies and development centers, and manufacturing facilities are located in more than 30 countries. Mitsubishi Electric has been represented in Germany since 1978 as a branch of Mitsubishi Electric Europe. Mitsubishi Electric Europe is a wholly owned subsidiary of Mitsubishi Electric Corporation in Tokyo.

Further information can be found at

<http://www.MitsubishiElectric.de>

<http://global.mitsubishielectric.com>

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