

Railway engineering | **Inductive components with high frequency stability**

SMP presents inductive components with high frequency stability for use in railway engineering. The components can be used in all power electronic systems, such as inverters for three-phase synchronous motors or power units. The materials produced specially by SMP for the purpose are effective for all frequencies into the gigahertz range. The components reduce disturbance currents and voltage peaks in current converter systems that are created by parasitic effects and clocking elements of the current converter system. The role of the material in this context is critically important: the objective is to achieve stable inductivity at the operating point through the entire frequency spectrum, in order to maximise damping of the interference. Compared with standard technologies that make use of materials such as ferrite, electrical sheets and nanocrystalline sheets, the inductive filter systems from SMP have noise levels as much as 40 dB[μ V] lower, and they weigh up to 40 percent less. Since the materials are not susceptible to magnetostriction, they do not generate any noise. Because of their stability in terms of inductivity, the components can be manufactured with lower inductivity, allowing the system a broad dynamic range. Voltage peaks that occur periodically with the clock frequency of the inverter are reduced dramatically, which in turn prolongs the service life of the electric motors. The fast switching SiC and GaN semiconductors impose significant demands on the magnetic materials. The overall efficiency of the system is enhanced by the very low losses in the materials used for SMP products. Moreover, fewer filter components are needed, so volume is reduced, and the cost-effectiveness of the power electronic system as a whole is increased substantially. Inductive components from SMP are used in many applications in high-speed trains, underground trains, freight trains and passenger trains. The manufacturer is

a leader in the development and production of electronic components designed to improve the efficiency, safety and performance capability of ultramodern rail vehicles. Headquartered in Graben-Neudorf in the region of Baden, the company specialises in the development and manufacture of electronic filter systems, inductive components, medium-frequency transformers and magnetic moulded parts. The components portfolio is designed for currents of up to 2000 A, in special applications up to 3000 A, and for frequencies as high as the gigahertz range. The materials specially developed and manufactured by SMP for this purpose have a high saturation induction of up to 2 Tesla. The individual components can be produced in sizes ranging from 19 mm to 300 mm and weighing from 0.05 kg up to 130 kg. The temperature class H (up to 180°C) insulation system is UL certified. Ingress protection ratings up to IP66 are available depending on application. HL classes according to E EN 45545 can be specified upon request. In Italy, SMP is represented by Sisram S.p.A. (Turin).



Investments | **Moldova gains ground as electronics manufacturing hub**

Moldova is emerging as an increasingly attractive destination for high-value electronics manufacturing and wiring technologies, and the latest investment by Cornelius Electronics, UK-based producer of wiring harnesses and interconnection systems, is a clear example of this trend. The company is investing €5 million to expand its manufacturing capacity at the Edineț Industrial Park in northwestern Moldova, reinforcing its role in the European supply chain for advanced electrical assemblies used in electric motors, renewable energy and automation. The plan includes three new production halls totaling over 3,000 m²

dedicated to high-reliability wiring harnesses and connection assemblies for sectors such as healthcare, AI, rail transport and e-mobility, with all output destined for EU markets. Supported by a Memorandum of Understanding between Invest Moldova Agency, Innovate Moldova and the Municipality of Edineț, the expansion is part of Moldova's strategy to attract high-value manufacturing and build local clusters in electrical assembly and wiring technologies. Cornelius currently employs 81 people—over 80% women—underlining the social and economic impact of export-oriented investments in regional industry. The project



also fits into the broader growth of UK foreign direct investment in Moldova under the 2020 Strategic Partnership, Trade and Cooperation Agreement, and contributes to reshoring and regionalization trends in Europe's electronics and wiring harness market, a key component base for motors, automation systems and electric drivetrains.