

## **More power for supercapacitors – with the aid of Wevo potting compounds**

**Ostfildern-Kemnat, Germany. Due to the ongoing advancement and growth of hybridization and electrification, energy storage is now a significant and innovative area of development. In areas where large amounts of energy need to be delivered at short notice, supercapacitors offer decisive advantages over conventional electrolytic capacitors and metal hybrid or li-ion batteries. By using potting compounds from WEVO-CHEMIE GmbH, capacitor manufacturer WIMA GmbH & Co. KG not only benefits from a high degree of flexibility in the design and production of its supercapacitor packs and modules, but is also able to significantly improve their performance. The optimized thermal conductivity of the potting compound allows an increase in electrical capacity without leaving the optimum temperature range – this also results in a longer service life.**

As short-term storage devices in hybrid cars, supercapacitors increase their efficiency; in buses or trains, they use the energy generated during braking for propulsion; and in the event of power failures, they can provide the very high amounts of energy needed immediately. The uses for supercapacitors – also known as supercaps or ultracapacitors – are already diverse, and these components are becoming more and more important. This is because they are filling the gap between conventional capacitors and storage batteries, i.e. rechargeable batteries.

On the one hand, supercapacitors can store extremely large amounts of energy and charge – more precisely, 10 to 100 times as much as electrolytic capacitors. On the other hand, contrary to rechargeable batteries, this energy is charged or discharged in a flash when required. This is thanks to the fundamentally different way in which they store energy: while rechargeable batteries store energy by electrochemical means, and consequently, charging and discharging is relatively slow, storage in capacitors takes place directly as an electrical charge. Supercapacitors can therefore be used wherever large amounts of energy need to be discharged at short notice.

### **Benefits from using Wevo potting compounds in the production of WIMA PowerBlocks**

WIMA, a leading German specialist in film capacitors, uses these benefits in the so called supercapacitor “PowerBlock” – cascaded, double-layer capacitor modules whose capacitance, rated

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voltage and dimensions can be individually adapted to the respective application. This allows a wide range of applications, for example in the mobility sector, for engine starter modules in large construction and agricultural machinery, ships, locomotives, trams and buses, and for applications in the energy sector, such as slip controls for wind turbines or generators in emergency power systems.

The individual supercap cells of the PowerBlock are fixed symmetrically to the base and at the lid of the housing with the help of Wevo's WEVOPUR 512 FL potting compound. This facilitates customisation of the construction and innovative design of the PowerBlock. The polyurethane resin functions as a cell holder, which previously had to be manufactured and adapted to the construction form of the cells separately. In addition, the cells are protected from shocks, oscillations and vibrations due to the tough mechanical properties of the potting compound.

### **Safety and increased performance with the aid of Wevo potting compounds**

Furthermore, the cells are bonded directly to the metal surfaces of the housing. The direct encapsulation allows the thermal surface resistance to be minimized and the thermal conductivity of 0.8 W/mK to be optimally used to dissipate the thermal energy during operation. At the same time, electrical insulation is provided between the cells and the metal housing. The good dissipation of thermal energy lowers the operating temperature, prolongs the service life and ensures low-maintenance operation with up to one million charge and discharge cycles. With the high charges and energy levels of up to several thousand watts that can be delivered for short periods, electrical safety is ensured by the high tracking resistance, surface resistance and dielectric strength in the PowerBlock. In addition, the potting compound is self-extinguishing in line with UL 94 V-0 and certified according to railway fire protection standard EN 45545-2. As a result, it reduces the risk of fire and protects the PowerBlock against what is known as "thermal runaway".

### **About Wevo**

*WEVO-CHEMIE GMBH is an international, independent, family-run company headquartered in Germany and with subsidiaries in Asia and the USA. Wevo develops and manufactures innovative potting applications as well as special bonding and sealing applications based on polyurethane, epoxy and silicone – primarily for applications in electrical and electronic components. Wevo products protect sensitive components against chemicals, vibration, foreign bodies, dust, moisture and high temperatures.*

## Press information

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### ***Press contact***

*Alexandra Schubert*

*Dr. Neidlinger Consulting*

*Phone: +49 711 167 617-712*

*Email: [press@wevo-chemie.com](mailto:press@wevo-chemie.com)*