



From laboratory to series production: HPB develops electrode manufacturing together with Mathis AG and TSE Troller AG

- Implementation partnership for the industrial series production of HPB electrodes
- TSE Troller AG supplies structurally matched coating dies
- Mathis AG supplies coating and calendering technology
- HPB CEO Dr Sebastian Heinz: “With TSE Troller and Mathis, we are expanding our ecosystem of machinery and plant engineering partners for our manufacturing licensees at the highest level.”

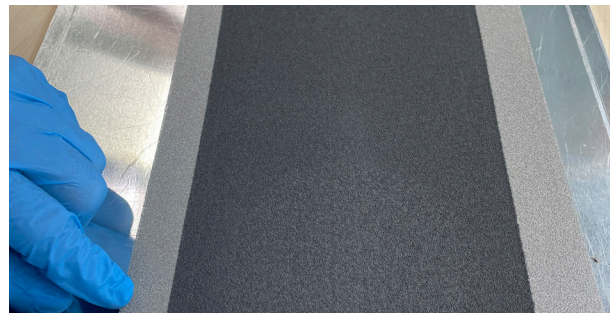
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HPB is working closely with two Swiss specialists on the coating process for its solid-state battery electrodes: Mathis AG in Oberhasli and TSE Troller AG in Murgenthal. The partnership focuses on preparing for industrial series production for future manufacturing licensees of HPB technology. The process windows defined by HPB are intended to remain valid on these series-production systems without licensees having to determine the coating parameters again on their own equipment. For HPB as a technology licensing company, this transferability is a key criterion.

Dr Sebastian Heinz, CEO of HPB, says: “With TSE Troller and Mathis, we are expanding our ecosystem of machinery and plant engineering partners for our manufacturing licensees at the highest level. With Mathis and TSE, we have two partners for whom the coating and application of materials have been a core business for decades. This partnership supports our manufacturing licensees in setting up their series production and provides valuable experience in handling our materials.”



Open-pore nickel foam with a 3D structure



Uniformly filled nickel foam

Two partners, one integrated process

Electrode coating is the process step that determines the quality of a cell. The active material is introduced into the current collector as a suspension, dried and subsequently calendered – in other words, compacted under defined pressure.

For HPB, however, the conventional roll-to-roll process is not the relevant approach: the coated web is not rewound but cut into individual sheets. This roll-to-sheet process corresponds to HPB’s stacked cell design – and places even greater demands on the coating process because every individual sheet must meet the specification. Variations in coating weight cannot be corrected at any subsequent process step.

Partner	Contribution	Relevance to series production
TSE Troller AG	Coating dies for laboratory and series-production widths, structurally matched to one another	Uniform coating thickness is the key quality requirement – in the roll-to-sheet process, for every individual sheet. The matched design ensures that coating behaviour remains unchanged.
Mathis AG	Coating systems with integrated drying, calendering and coat weight measurement	Supplies the coating systems for series production based on HPB’s specifications.

Why the die determines scalability

In pre-metered coating, the suspension exits the die through a slot whose height must remain constant across the entire web width. TSE Troller AG manufactures these slots to an accuracy of 0.5 micrometres and covers coating widths ranging from just a few millimetres to more than 1.5 metres. For HPB, the decisive factor is not so much the individual accuracy as the matching of the tools: the narrow development die and every subsequent series-production tool are designed according to the same fluid-dynamic specifications. Changes in series-production width at manufacturing licensees therefore becomes a matter of format rather than a new development task. This significantly increases flexibility in any series-production environment.

Maick Nielsen, CEO of TSE Troller AG, says: “The benefit of a precision die is not reflected in the measurement report, but in the scrap that is avoided. If a development team does not have to redefine its coating parameters when moving to series-production widths or later in the process, this saves months of work and considerable quantities of material. That is exactly what we design the tools for HPB technology licensees to achieve.”

Coating, drying, calendering – the data basis for series production

Mathis AG has been building coating and finishing systems for laboratory and production applications since 1968 and has transferred its expertise to electrode manufacturing: coating metallic substrates in roll-to-sheet operation – in HPB’s case, for example, nickel foam – as well as heated calenders for controlled compaction and drying systems.

Because coating, drying and basis-weight measurement are combined within a single system, the effect of a parameter variation can be captured immediately rather than having to be reconstructed across separate process steps. This provides the process windows for the respective series-production process.

Beat Mathis, CEO of Mathis AG, says: “A process is only ready for transfer when the measurement data generated during development remain valid on the series-production system. Because coating, drying and basis-weight measurement are integrated into a single system at Mathis, HPB can immediately see the effect of every parameter variation – without having to determine it all over again later.”

A building block of the licensing strategy

HPB does not manufacture batteries itself but grants Market, Manufacturing and Component Licences. What is transferred is therefore not simply cell chemistry, but a manufacturing process that can be reproducibly implemented using commercially available production equipment. A licensee should be able to manufacture the electrode on its series-production equipment using the parameters documented by HPB. Mathis and TSE provide the complete electrode production line for this purpose or, potentially, upgrade existing equipment.

Facts & figures on the collaboration

Partners	Mathis AG, Oberhasli (Switzerland); TSE Troller AG, Murgenthal (Switzerland)
Subject	Implementation partnership for the electrode coating process in industrial series production
Process	Roll-to-sheet – the coated web is cut into individual sheets, corresponding to HPB's stacked cell design
Process steps	Coating, drying, calendering, basis-weight measurement
Target scale	Industrial series production at licensees using tools matched to series-production widths
TSE expertise	More than 60 years of experience in pre-metered coating; slot accuracy of 0.5 µm; coating widths ranging from a few millimetres to more than 1.5 metres
Mathis expertise	Plant engineering for coating and finishing since 1968; coating systems, heated calenders, laboratory and production dryers
Result for licensees	Documented process windows that remain valid on their own series-production equipment
Start of collaboration	Initial discussions in early 2026; joint test series since spring 2026

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About HPB:

HPB develops a solid-state battery based on a non-flammable solid electrolyte that forms inside the already assembled cell. It builds on more than 30 years of fundamental research into the chemical causes of battery ageing. The company does not manufacture itself but grants market, production and component licences; the technology is patent-pending in 96 countries. The operating company, High Performance Battery Technology GmbH, is based in Bonn, Germany; High Performance Battery Holding AG is headquartered in Teufen, Switzerland.

About Mathis AG:

Werner Mathis AG, headquartered in Oberhasli, Switzerland, has been building equipment and machinery for dyeing, coating and finishing web materials since 1968 – for laboratory as well as production use. For battery manufacturing, the company supplies application and coating systems, heated calenders and laboratory and production dryers, either as standard units or as customised solutions.

About TSE Troller AG:

TSE Troller AG in Murgenthal, Switzerland, develops and manufactures coating dies and applicator systems for pre-metered coating processes and has more than 60 years of experience in this field. Its tooling is used in the paper and converting industries as well as in electronics and battery manufacturing, covering coating widths from a few millimetres to more than 1.5 metres.