Preparation Technology for Lithium-Ion Battery Electrodes

Preparation of dry mixes, pastes and degassed coating slurries in one single EIRICH mixer.

Innovative preparation technology for battery manufacturers and producers of raw materials.

- EIRICH MixSolver® combines several process steps in one machine for preparation of coating slurries
- Absolute bubble free slurries with EvacMix® vacuum technology
- Continuous coater slurry supply with EIRICH Conti Feeder concept
- In-line Rheometry allowing just-in time quality assurance and production
- Mixing Technology for Next-Generation Electrodes (Dry, All-Solid State) and Active Material preparation (e.g. Specialty Graphites, Si-based Anode materials, Precursor, Functionalization of Cathode Active Materials)
- Explosion protection according to ATEX directives
- Fully automatic plant concepts

The Pioneer in Material Processing®
The unique EIRICH preparation principle

A rotating mixing pan for transporting the product

Variable-speed mixing tool, slow to fast, for adapted mixing, fibrillation, coating, kneading, dissolving and dispersing

The effect
By separating the product transport from the mixing process, it is possible to vary the speed of the mixing tool (and thus the power input) within wide limits.

The preparation principle of using one machine allows:
- Precisely controlled power input and introduced shear forces in wide ranges
- Complete disintegration of agglomerates
- Homogeneous distribution and complete dissolution of binder
- Fibrillation of polymeric binders
- Optimal wetting of active materials, conductive carbon black, even CNT, binder and additives
- Processing / adjusting to any viscosity
- Very short processing times (just minutes)
- High quality assurance and reproducibility due to continuous process monitoring
- Visualization and Documentation of temperature, pressure and power input

Other advantages:
- No detrimental dead zones and temperature gradients in the mixer
- Easy access and cleaning of the mixer; can be automated on request
- Small footprint
- Low energy consumption
- Excellent scale-up capability
- High flexibility

EIRICH customers with production machines as well as research institutes report benefits compared to other preparation technologies:
- Drastically reduced processing times
- No product cooling required – optional double jacket cooling available
- Powdery binder can be added directly, without preparing a separate solution
- Excellent degassing results with EvacMix® technology without additional processing time
- Homogeneous coating surfaces
- Excellent adhesive properties of the coating on conductor foils
- Improved electrochemical properties of the cells
- Minimal deviations from standard
- Same processing and similar plant concepts for anode and cathode

Bear in mind:
The appropriate mixing system is at least as important as your formula.

Top-name manufacturers around the world work with EIRICH mixing technology.
We would be glad to provide references on request.
EIRICH is a research partner for universities.