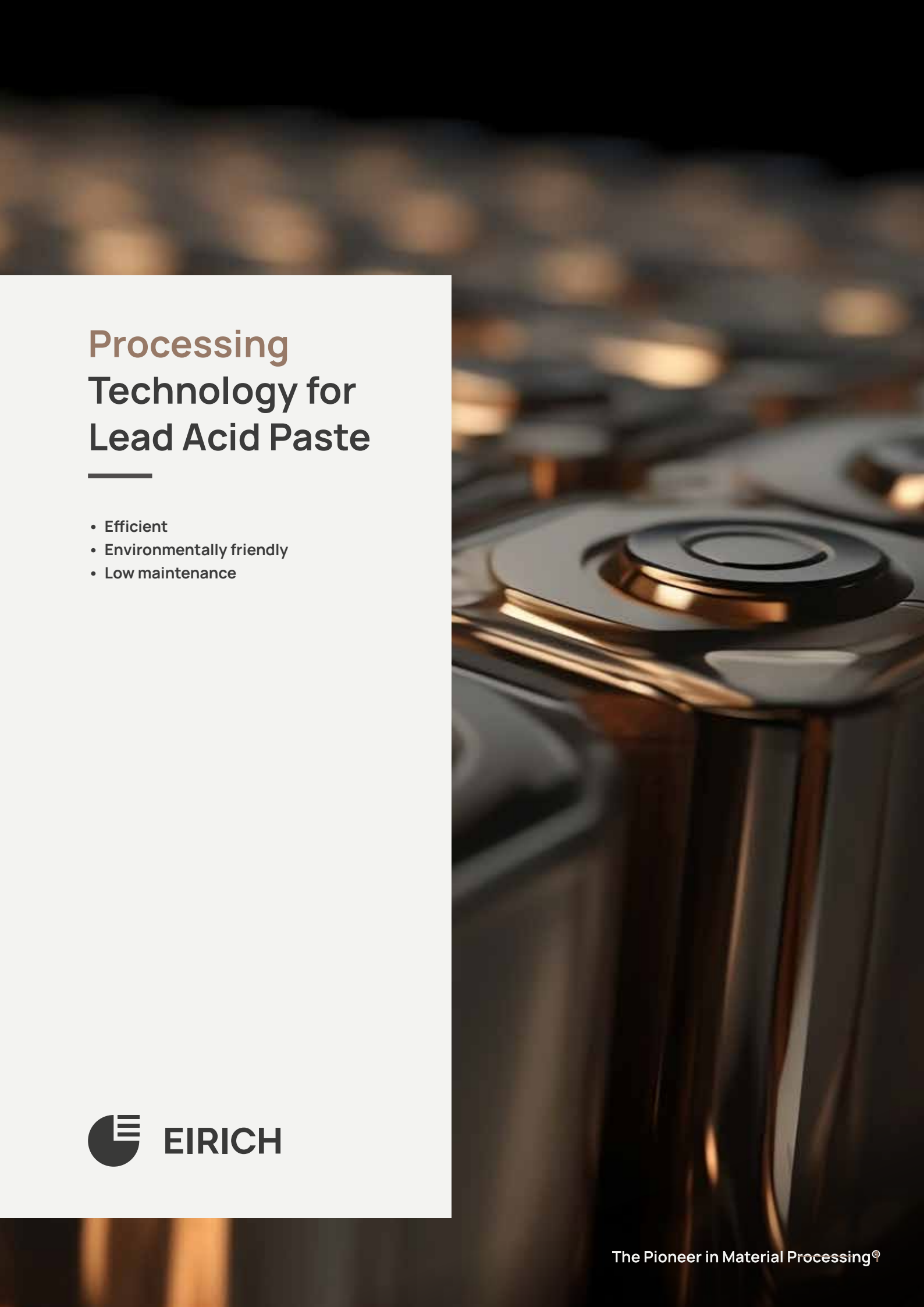


Processing Technology for Lead Acid Paste

- Efficient
- Environmentally friendly
- Low maintenance

EIRICH

The Pioneer in Material Processing®

Innovative technology for the battery industry

Sophisticated technology for the efficient and economical preparation of lead acid paste – which also takes account of environmental interests – is vital to attain the high standards of quality imposed on battery systems.

For several decades now, Eirich has been supplying innovative, future-proof technology. This technology, supported by a complete package of services, is based on intensive research conducted in close cooperation with the battery industry.

Process technology
The unique EVACTHERM® process for the preparation of lead acid paste, which was developed by Eirich, has since been implemented in more than 95 systems for top-name manufacturers worldwide. The optimal system configuration is assembled from the Eirich module system to meet the user's specific needs, e.g. production range, capacity and degree of automation.

EVACTHERM® mixing reactor
A closed, environmentally friendly processing system enables exact reproducibility of reactions and hence paste quality.

Feeding and weighing technology
Modules – developed and manufactured by Eirich itself – are available for the automatic feeding of all raw materials, additives and fibers in exact compliance with the formula.

Process control
The latest technologies are used to control and monitor the entire production flow with automatic measurement and correction of penetration.

Systems engineering
Systems engineering from Eirich means: Fully automated systems for the preparation of lead acid paste from one source. Services range from consulting, engineering, building of machines and complete systems, control and instrumentation technology, installation, commissioning and operator training to after-sales support and the reliable delivery of spare parts – worldwide.

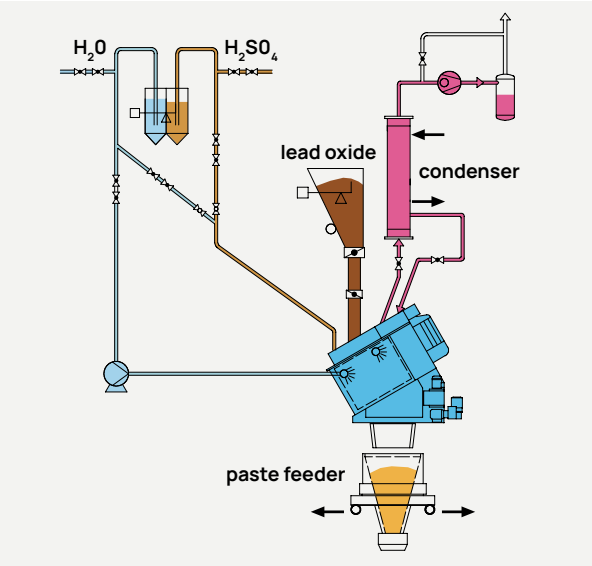
EVACTHERM® Mixing Reactor:
An efficient, high-capacity and environmentally friendly system

The EVACTHERM® mixing reactor is a closed system in which the mixing and reacting processes take place under controlled conditions.

The mixing principle

The outstanding processing effect is achieved by

- the rotating mixing pan, which with each rotation directs the paste into the eccentricallyplaced, high-speed rotating mixing tool. This results in material flows with a high velocity differential.
- the inclined rotating mixing pan, which in conjunction with a stationary, multi-purpose bottom-wall scraper ensures a pronounced vertical circulation of the material flow.
- the multi-purpose bottom-wall scraper, which reliably prevents material build-up and accelerates the discharge of the batch at the end of the mixing cycle.



Schematic of the process

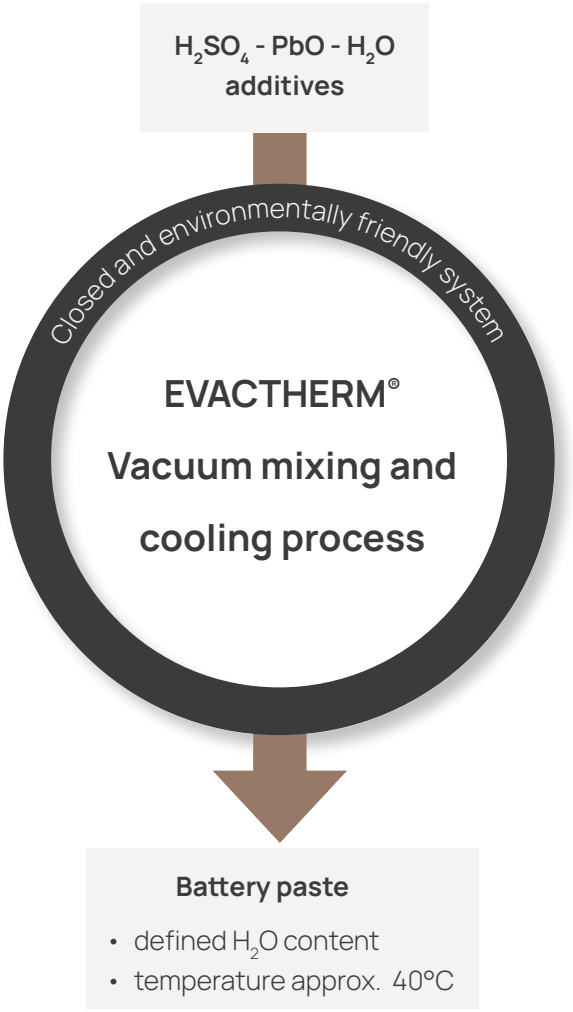
The worldwide unique Eirich mixing principle

The reactor principle

The EVACTHERM® process is based on the relationship between a liquid's boiling point and ambient pressure. The lower the ambient pressure, the lower the boiling point of water. By controlling the pressure in the mixer it is possible to set and control an exact temperature curve throughout the reaction period.
The temperatures specified in the formula are reached in the shortest possible time. The resulting steam is condensed and the condensate returned to the process.

Process reliability and operational safety

Acids and additives are distributed quickly and evenly. Automatic penetration control by the EVACTHERM® process ensures consistent rheological properties.
The EVACTHERM® mixing reactor is rugged in design, has simple drive systems and requires only two mixing elements. There is no contact between the product and the shaft seals and bearings. Automatic self-cleaning is performed at the beginning of each new batch. The self-adjusting seal of the discharge gate ensures an optimal leak protection of the mixing pan.



EVACTHERM brings advantages

Unlike conventional air cooling, vacuum cooling with the EVACTHERM® process brings you decisive advantages in terms of process engineering and technology:

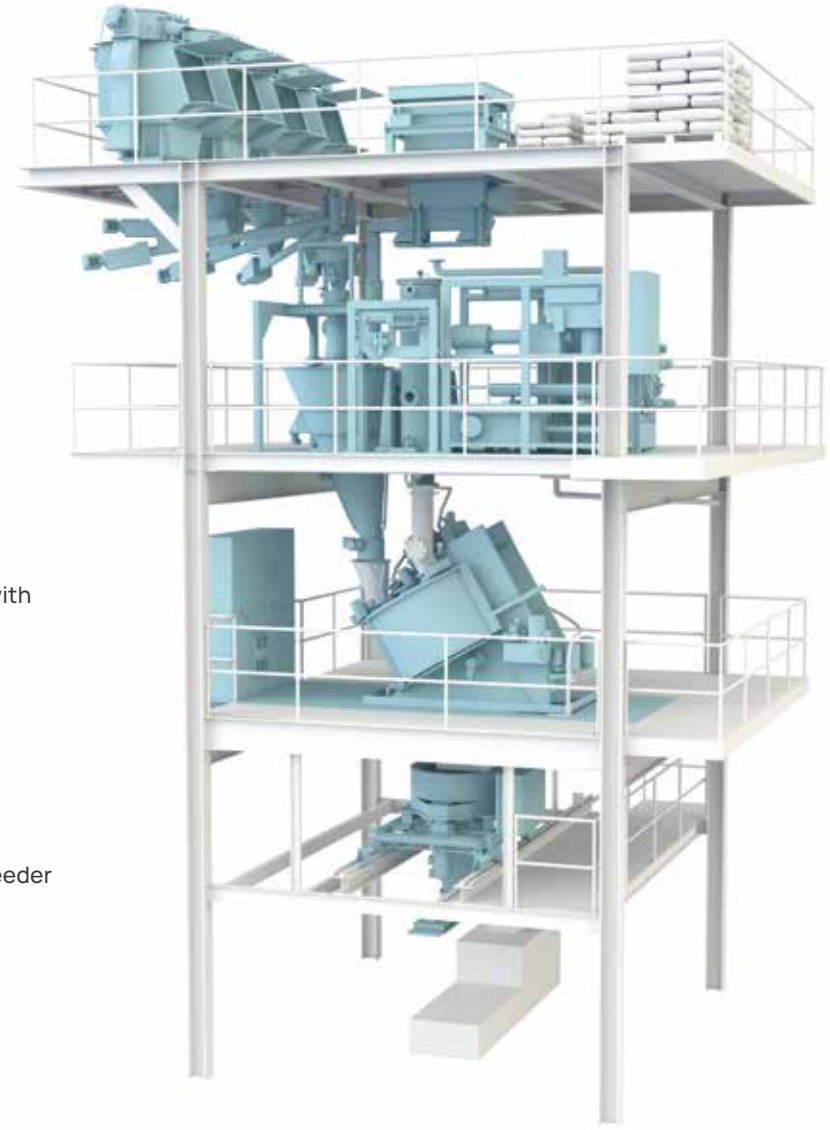
- No dependence on fluctuations of air temperature and humidity
- No corruption of formulas by loss of raw materials in the cooling air
- Exact compliance with preselected temperature curves
- No local overheating in the mixing reactor
- Effective process control
- Paste of reproducible, constant quality
- Automatic penetration control
- No large currents of outlet air requiring special cleaning
- A closed, environmentally friendly system
- Self-cleaning of the pan with formula water at the beginning of each new batch

Additive and
fiber feeding
(option)

Module:
Weighing and
vacuum unit

Module:
Mixing and reacting with
RV11VAC / RV15VAC
Control system

Paste feeder



The module system

For the economical processing of lead acid paste by the EVACTHERM® process Eirich developed an efficient module system which has set new standards worldwide. The various modules, all built by Eirich itself, are standardized to be particularly good value for money and friendly in use.
The modules are preassembled by Eirich. All functions and sequences are fully tested, together with the control system. This guarantees the shortest possible installation and commissioning times plus a high level of operational reliability – from the very outset.


EIRICH

Additive and fiber feeding

Storage and a fully automatic additive and fiber feeding system (optional).

Weighing and vacuum unit

The module consists of a lead dust scale, liquid scales, condenser and vacuum unit.

Mixing and reacting

Both processes are performed in the EVACTHERM® mixing reactor. The module comes with an RV11VAC or an RV15VAC mixing reactor, depending on the capacity requirements.

RV11VAC
900 kg of lead acid paste per batch
Depending on the production range this results in an output of 2,700 to 3,600 kg/h.

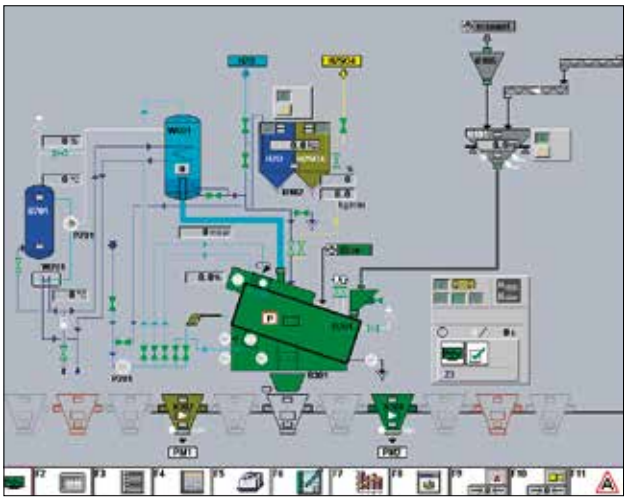
RV15VAC
1,500 kg of lead acid paste per batch
Depending on the production range this results in an output of 4,500 to 6,000 kg/h.

System with 2 mixers type RV11VAC

High-pressure cleaning nozzles
Pin-type rotor

Control system

Special software was developed for the processing of lead acid paste. Used with a modern process visualization system and PLC it enables all functions to be controlled and monitored.
The system representation graphics and the input/output masks are particularly user-friendly.



The user surface provides:

- Function keys for data input
- Pull-down menus for raw materials, formulas and process data
- Displays of operating data and logging options
- Optional selection of detailed displays and function groups
- Troubleshooting help

Paste feeder

The paste feeders are mobile and ensure a continuous supply of material to the pasting lines. One paste feeder is used for each pasting line. Several pasting lines can thus be supplied by one EVACTHERM® system.

EIRICH

The Eirich Group, with the Gustav Eirich machine factory as a strategic center in Hardheim, is a supplier of machines, systems and services for mixing technology, granulating/pelleting, drying and fine grinding. Our core competencies are procedures and processes for the treatment of loose materials, sludge and mud. We are a family-run company with 16 locations worldwide.

More information at:
www.eirich.com

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