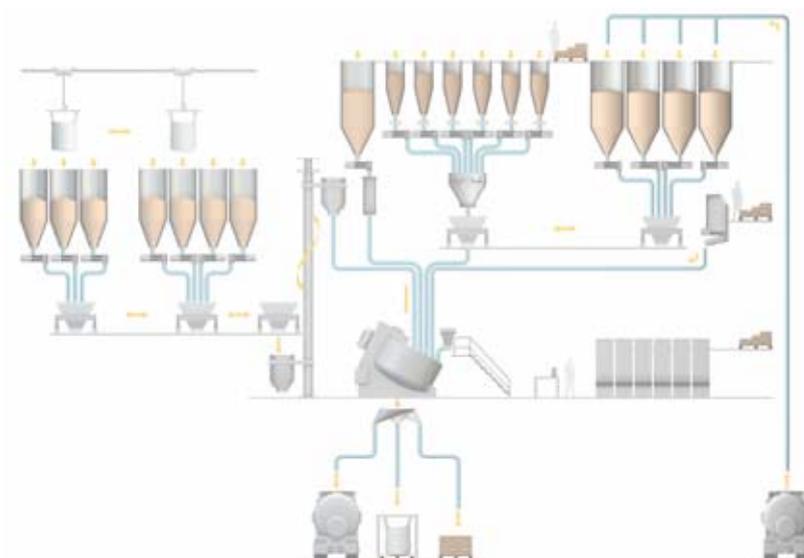


Systems for manufacturing plaster and mortar



one-stop solutions
modular layout
high performance control systems



High performance preparation technology

A varied product range **of modern building materials** for professional and home use alike **demands consistently high product quality.**

For EIRICH, the challenge is clear - to deliver solutions which ensure that all materials are prepared with

- flexible production technology
- high operational reliability
- high availability of the systems
- fully automated systems

This is why EIRICH offer a comprehensive range of individual machines, equipment groups and turnkey systems featuring the latest process control engineering – for applications ranging from the receipt of the incoming raw materials, through screening and storage right up to the production of finished products ready for shipping, including the packaging of product in containers like bags or Big Bags, or as loose product.

A one-stop solution for all your needs

Our range of products and services includes engineering, planning and the construction of complex systems (covering all aspects from the receipt of incoming raw materials right up to the provision of the end product), laboratory testing and tests with original materials in our own test center, pilot systems, machines for hire and customer services with a reliable spare parts supply network – worldwide.

Systems engineering

- Tower system
- In-line system with ground-level silo system (expandable), vertical lift and adjacent mixing tower
- Combination system
- Dual system (two mixers, one batching and weighing equipment)

Mixing technology

Complete range of mixers with effective volumes ranging from 1 liter to 8,000 liters for development and production. Use of ATEX mixers and system components is possible.

Feeding and conveying technology

Pneumatic or mechanical technology (screw conveyors or belt conveyors), mobile containers and vertical lifts – all designed and matched to the specific requirements of the raw materials.

Weighing technology

State-of-the-art technology with electronic weighing modules (load cells), or as a volumetric batch hopper for high weighing precision – even with superfine components, lightweight materials and minerals with difficult flow properties.

Measuring technology/sensors

Data acquisition for precise process control

- Teleservice
- Condition Monitoring, i.e. real time measurement of the machine condition to detect possible damages before failure
- Fill level measurement
- Speed monitoring/motion sensor
- Material flow monitoring
- Lubricant flow monitoring
- Control systems and process control engineering
- Automation
- Documentation
- Statistical analysis

for products of a consistently high quality



- e.g.:
- brick mortar
 - interior plaster, facing plaster and lightweight plaster
 - thermal insulation plaster
 - cement and anhydrite screed
 - blended cement mixes
 - adhesive mortar, putty mortar, repair mortar

The mix is the key

The EIRICH mixing principle

EIRICH intensive mixers guarantee top performance in the preparation of high quality building materials.

Three components define the EIRICH mixing principle:

- The **rotating mixing pan** continually moves the mix into the path of the revolving mixing tool.
- The **rotating mixing tool** ensures the ideal mix intensity and energy transfer.
- The **multi-purpose tool** acts as a bottom / wall scraper, providing additional agitation action. It prevents caking in the mixing pan and facilitates discharge when the mixing cycle is complete.

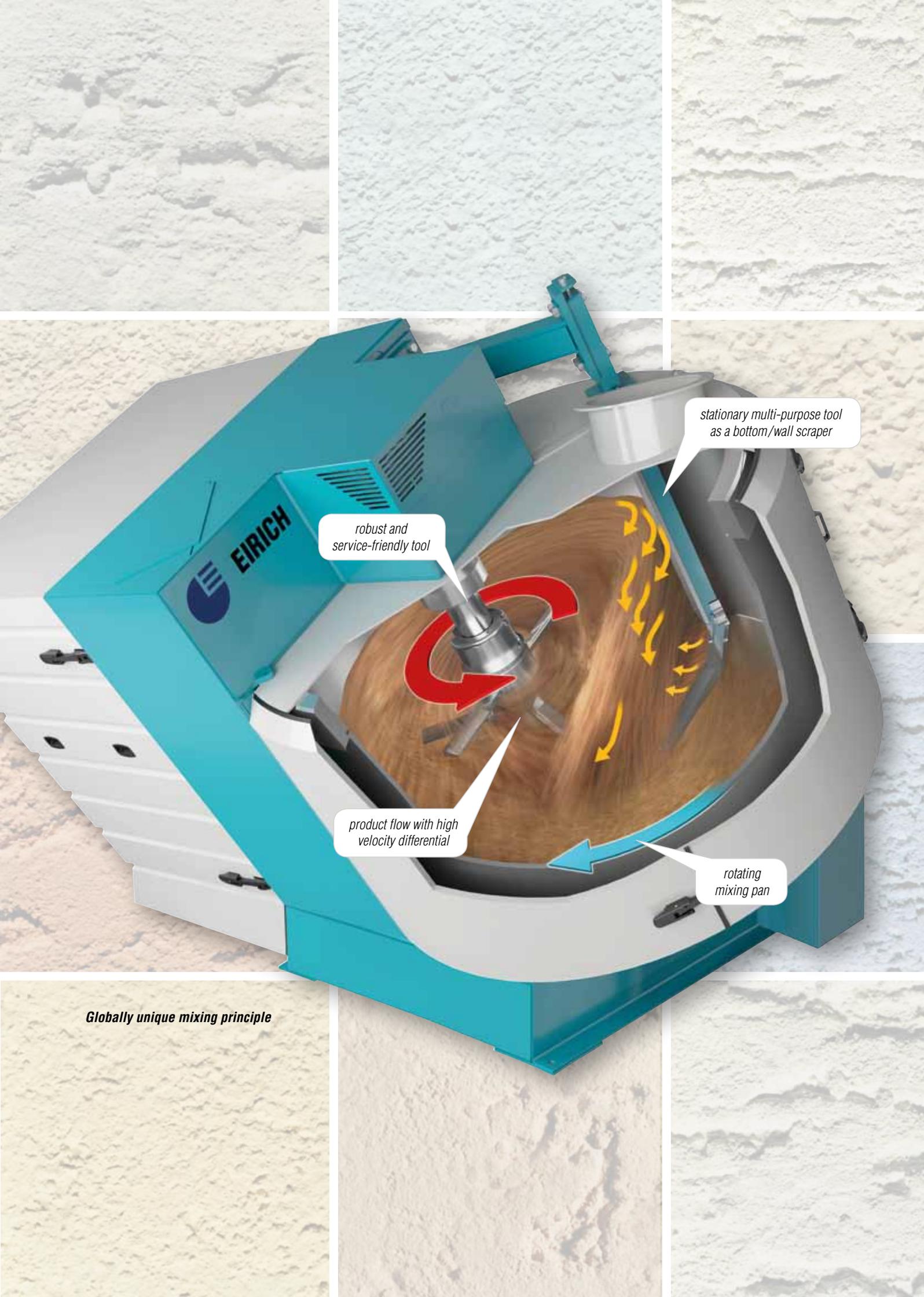
EIRICH Intensive Mixer

Its important features:

- Excellent product homogeneity even for lightweight materials, fibers, coloring agents and additives
- Mixing without segregation of material components
- Adaptation of the mixing intensity to the properties of the material
- Economic operation thanks to short mixing times and high production output
- 24 batches/h and more are possible
- High level of flexibility for a broad product range
- Gentle intermixing of delicate lightweight materials (polystyrene, mineral-based lightweight materials).
- Optimum separation of fibers
- Unchanged mix quality even for partial quantities (fill levels of up to 30%)
- Effective power input means low energy consumption
- Less wear due to the design based on a rotating mixing pan
- The good accessibility of the mixing pan, mixing tools and all drives makes the system easy to service
- Robust design for continuous industrial use with low costs associated with wear
- Optional pneumatic inside cleaning system for complete discharge of any mix residue (fast recipe changes even with colored products)



Product flow in an EIRICH intensive mixer



*stationary multi-purpose tool
as a bottom/wall scraper*

*robust and
service-friendly tool*

*product flow with high
velocity differential*

*rotating
mixing pan*

Globally unique mixing principle

EIRICH range of mixers

EIRICH intensive mixers offer outstanding flexibility and performance. Service-proven mixing technology from EIRICH has been the trusted choice for leading manufacturers for decades.

The EIRICH range of mixers covers a considerable variety of sizes to meet user-specific requirements with outstanding cost-efficiency.

Type of mixer	max. fill quantity:		max. throughput*	
	Liters	kg*	approx. t/h	approx. m ³ /h
EL1	1	1.4	○	○
R01	5	7	○	○
RV01	10	14	○	○
R05	40	56	○	○
R08	75	105	3	2
R09	150	210	5	4
R12	250	350	8	6
RV12	400	560	13	10
R16	600	840	20	14
RV16	900	1,260	30	22
R19	1,125	1,575	38	27
RV19	1,500	2,100	50	36
R24	2,250	3,150	76	54
RV24	3,000	4,200	100	72
R28	4,000 to 5,000	5,600 / 7,000	134 / 168	96 / 120
R33	6,000 to 8,000	8,400 / 11,200	202 / 269	144 / 192

*with an assumed bulk density of 1.4 kg/L

○ typical laboratory mixer for recipe development



EIRICH mixer types from 400 to 1,500 liters



EIRICH process control engineering for high-precision production

EIRICH supplies control systems and process control engineering for all levels of production process automation. These systems are not only modular and can be expanded at any time to fit applications ranging from small-scale control systems to ISO 9000-compliant master process control systems with workstations for storage warehouse, laboratory, system management etc., but they also offer a combination of tough, industry-standard hardware and special software which has been designed to meet the requirements of the industry.

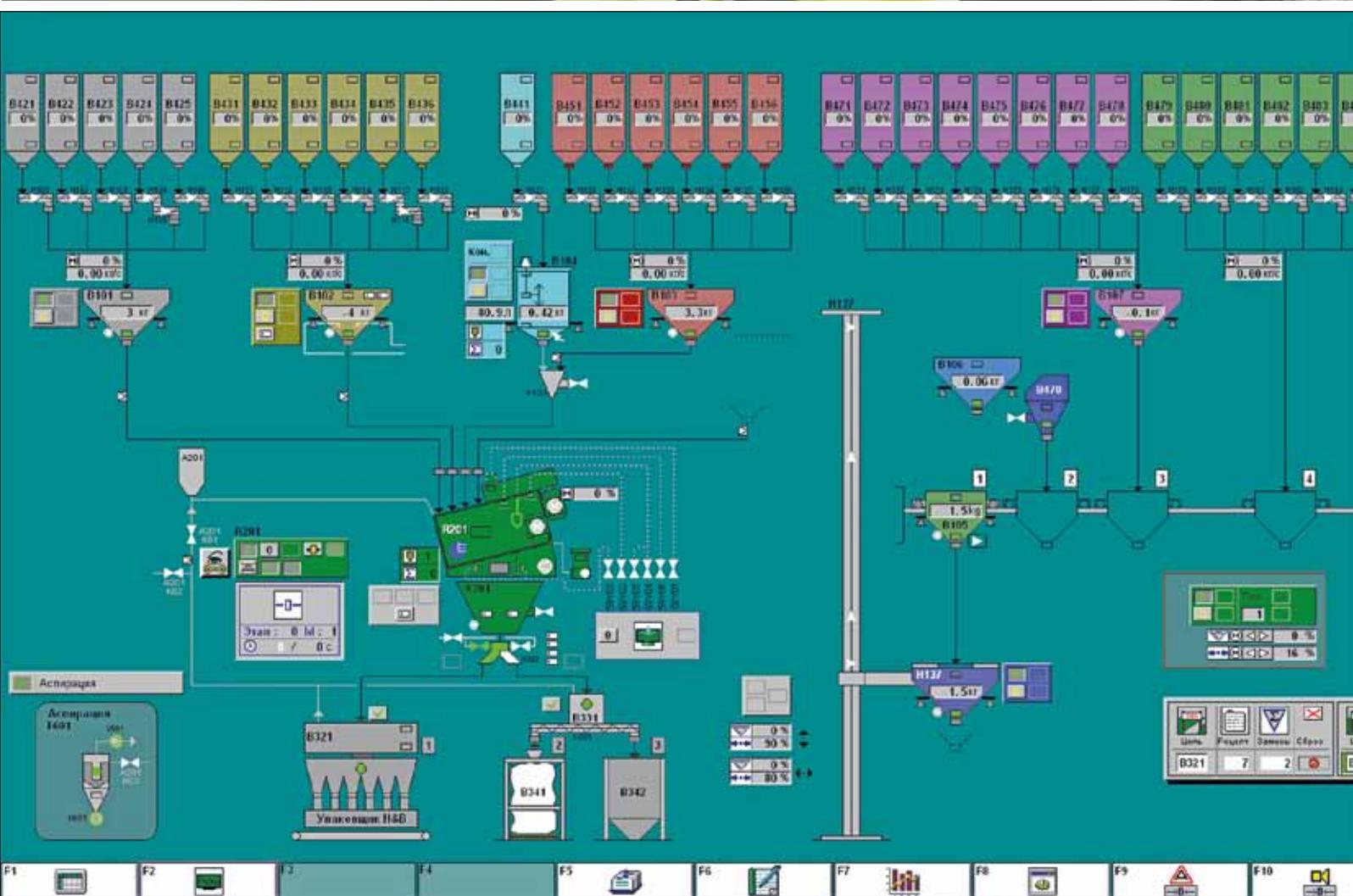
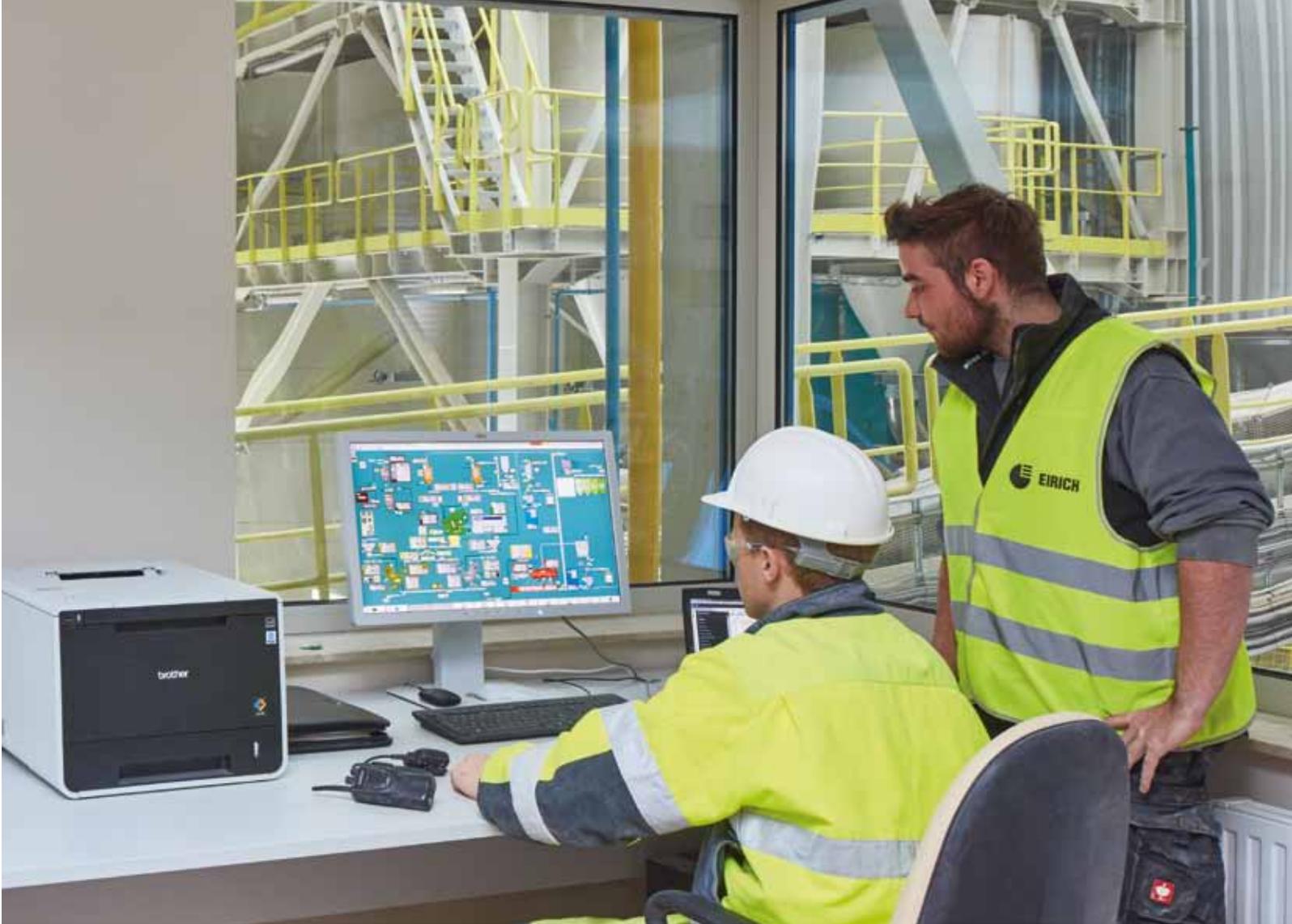
Performance characteristics of the feeding and mixing process control system

- Layout ranges from individual workstation systems up to distributed client/server systems
- Teleservice for remote access and integrated service management
- Standard interfaces for subordinate process control using PLC systems from e.g. Siemens or Allen Bradley
- Options for connection of manual input terminals
- Fault warning and fault location statistics
- Integrated database system
- Option for exporting all data for external processing

- Broad range of gravimetric, volumetric or other feeding techniques
- Master data management for raw materials, recipes and products
- Freely parameterizable feeding and mixing/preparation process
- Automatic optimization of feeding parameters including trend visualizations
- Acquisition, processing, representation and long-term archiving of virtually all operating, production and quality data produced
- Batch/production log archive with cycle time diagram

Option packages

- The MIC NT mixing process and batch control system is available for complex dry mortar systems (e.g. multiple mixing systems):
 - parallel control over up to 64 weighing/feeding devices
 - parallel processing of up to 16 mixers/production lines
 - virtually unlimited quantity structures in relation to raw materials, recipes and products
- Connection to on-site electronic data processing/ERP systems
- Load/shipment control
- Management of packaging materials
- Vehicle weighing devices for truck loading can be connected to the system (these devices can be calibrated). Production data are transmitted to the electronic data processing systems for invoicing.
- Laboratory PCs for creating recipes/types; management of the raw materials



EIRICH systems engineering – in service worldwide

EIRICH designs systems with an annual production output in the range of 4,000 - 1,600,000 t/a, featuring single or multiple mixer lines. Depending on the project-specific requirements, our solutions feature **tower systems, in-line systems or combination systems**.

This covers all of the process steps in a dry mortar production system, starting with sand drying and screening, transport, storage of raw materials, feeding and weighing, mixing and packaging technology (Big Bag, bags, construction site silos etc.). In the process, the raw materials are transported either under gravity, via mechanical systems with a vertical lift or via pneumatic systems.

Single systems are provided with four raw material and additive components, while more complex system designs can feature several dozen silos for raw materials and additives. In addition, various fiber components, lightweight materials and coloring agents also need to be taken into account.

Feeding and weighing are performed with units designed by EIRICH, such as:

- Double flap systems
- Screw feeders
- Vibration devices
- Weighbelt
- Stationary scales for large or small quantities (accuracy up to +/- 2 g)
- Combination scales for large measuring ranges (scale-in-scale)
- Volumetric batch hoppers with gravimetric weight checks
- Mobile scales
- Fiber feeding device

Requirements in terms of high precision, dust-free conditions and – if required – explosion protection directives (ATEX) are all equally satisfied.



Extract from the list of systems
delivered around the globe

- Alsecco, Germany
- Aqua Seal, Qatar
- Celco, Romania
- Egid, France
- Granol, Switzerland
- Hanil Cement, South Korea
- Hydroment, Germany
- El-Khayyat Group, Saudi Arabia
- KLB Kötztal, Germany
- Knauf, Germany
- Knauf, Russia
- Maco, China
- Nikecell, Hungary
- Parex, USA
- ParexLanko, France
- Plaxit, Abu Dhabi
- Unis, Russia
- VPI Vicat, France

Example: Compact system

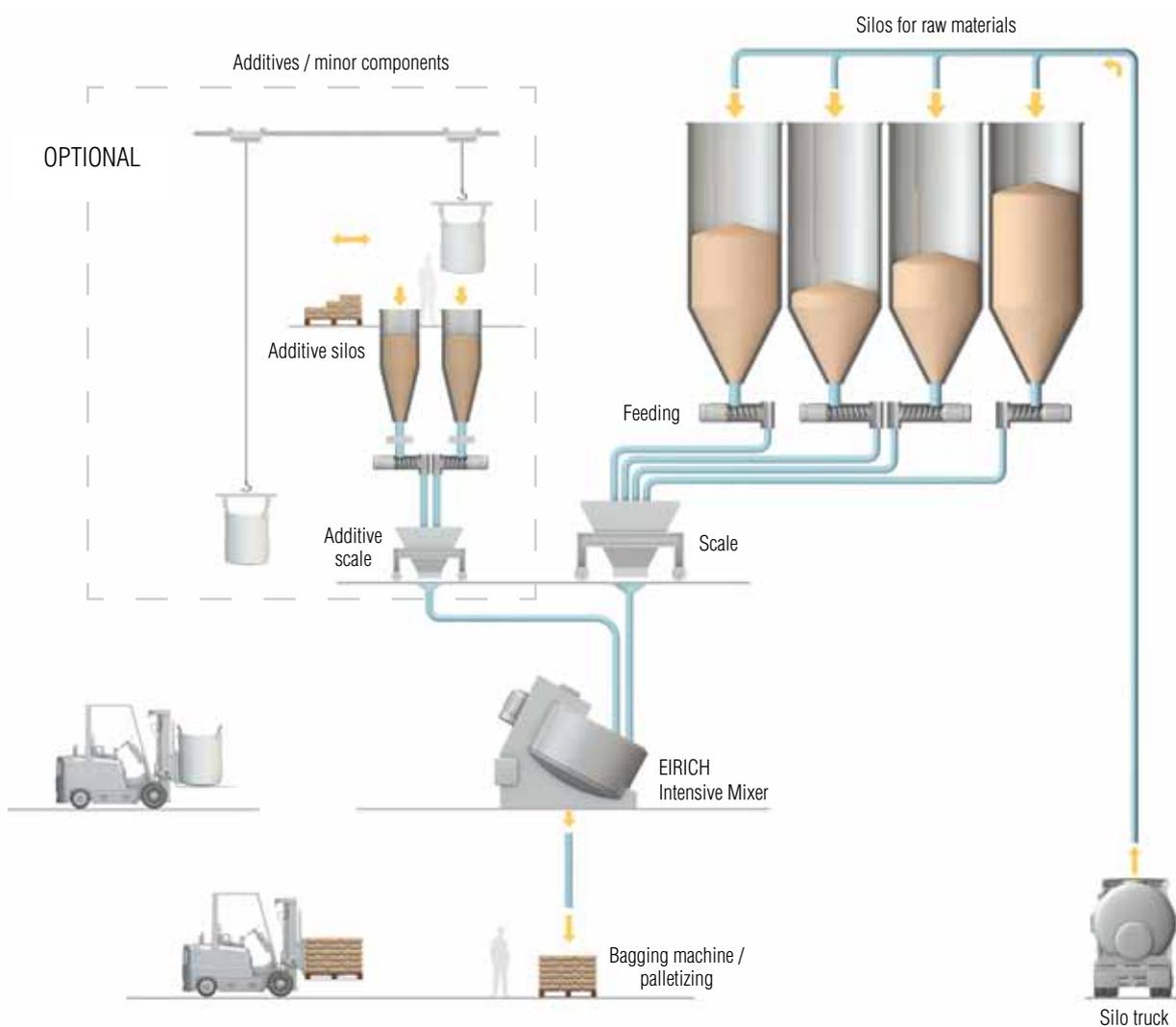
Horizontal mixing system in a compact design with an output of 1-15 t/h.

The compact system is a good solution if space is tight and the available height for installation is limited, e.g. if the silos are located outside the buildings. This systems are used for the production of smaller production volumes or even for specialist products. In addition, they are also a great choice entry-level system for access to new markets.

The compact system is operated semi-automatically in the first construction stage. In further stages it is easily possible to automate the metering and weighing of additives, as well as the bagging process. This system concept is also very well suited to difficult ground conditions, because only a low load-bearing capacity is required of the building ground or foundations.

Typical mixer sizes:

R09, R12/RV12



Tower system

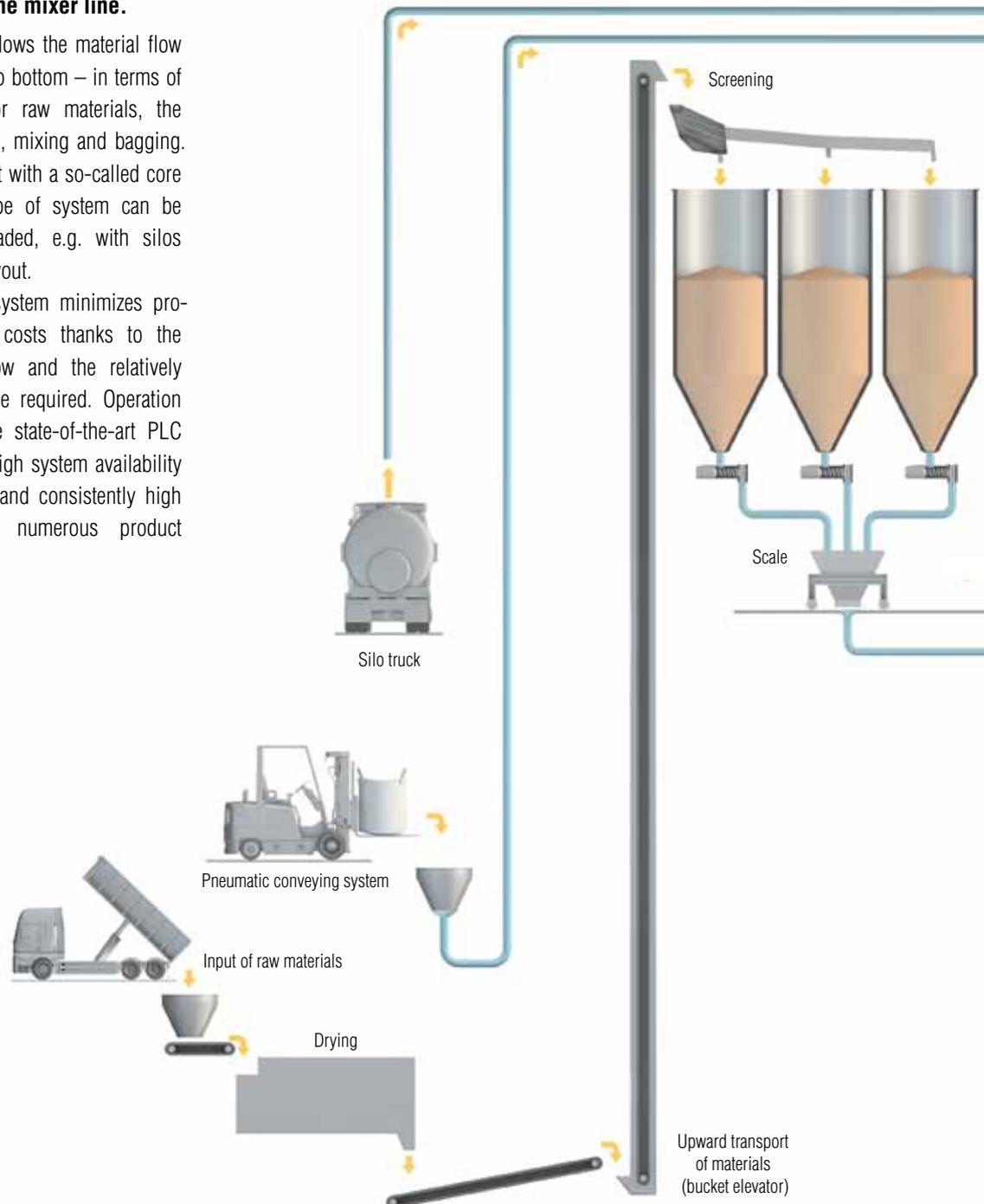
Vertically set up system with output ranging from 10 to 100 t/h with one mixer line.

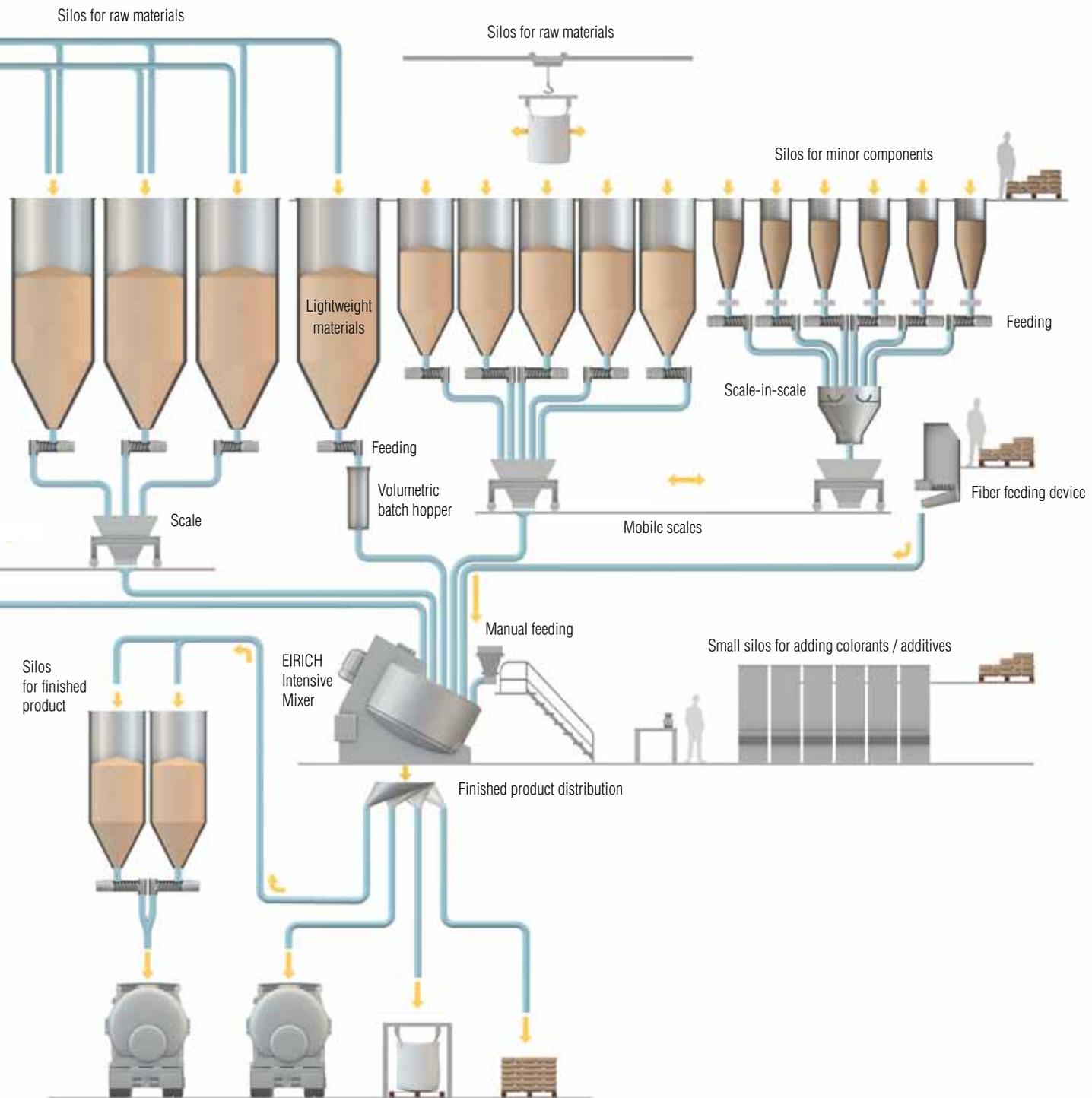
The layout of the system follows the material flow – which is vertical from top to bottom – in terms of the layout of the silos for raw materials, the feeding & weighing systems, mixing and bagging. Thanks to the modular layout with a so-called core tower construction, this type of system can be easily expanded and upgraded, e.g. with silos arranged in a satellite-like layout.

The vertical layout of the system minimizes process costs and operating costs thanks to the energy-efficient material flow and the relatively small amount of floor space required. Operation is fully automated, and the state-of-the-art PLC control system guarantees high system availability with high throughput rates and consistently high product quality, even if numerous product changes are required.

Typical mixer sizes:

R12/RV12
R16/RV16
R19/RV19
R24/RV24





In-line system

Horizontally set up system with output ranging from 10-70 t/h with one mixer line, with an option for upgrading to 100 t/h if required.

The in-line system is characterized by a horizontal flow of materials, in which the mixing tower and the packaging section are positioned next to the silos for raw materials with the feeding and weighing sections. This enables very straightforward and quick system upgrades, without the need to interrupt production for any great length of time. The transport of materials between feeding & weighing and mixing can be performed pneumatically or via mechanical conveyor technology. Although this solution requires more floor space than the tower system, the installation height is lower. As the vertical loads that need to be absorbed are only low, it is also suitable for difficult ground conditions.

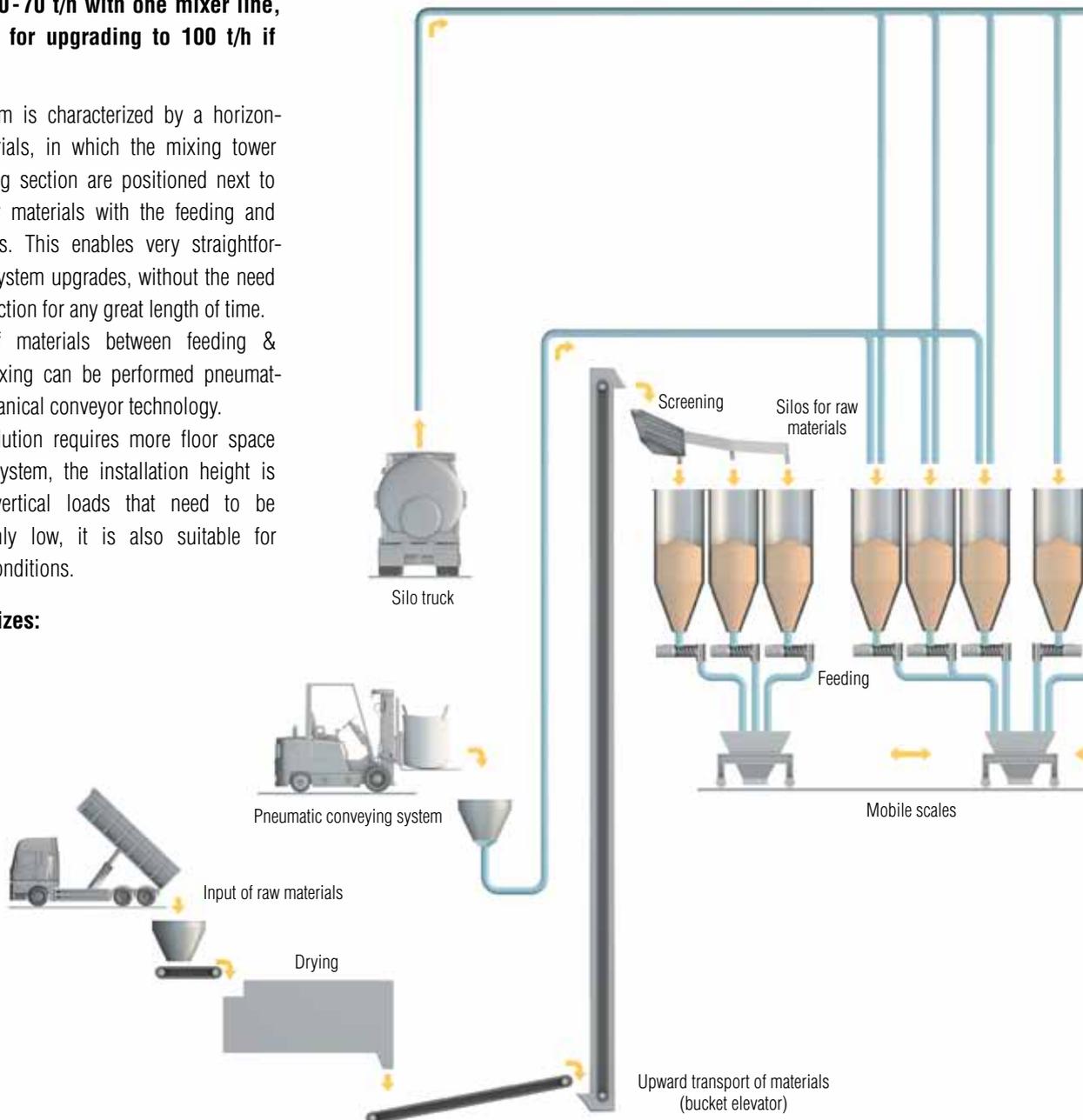
Typical mixer sizes:

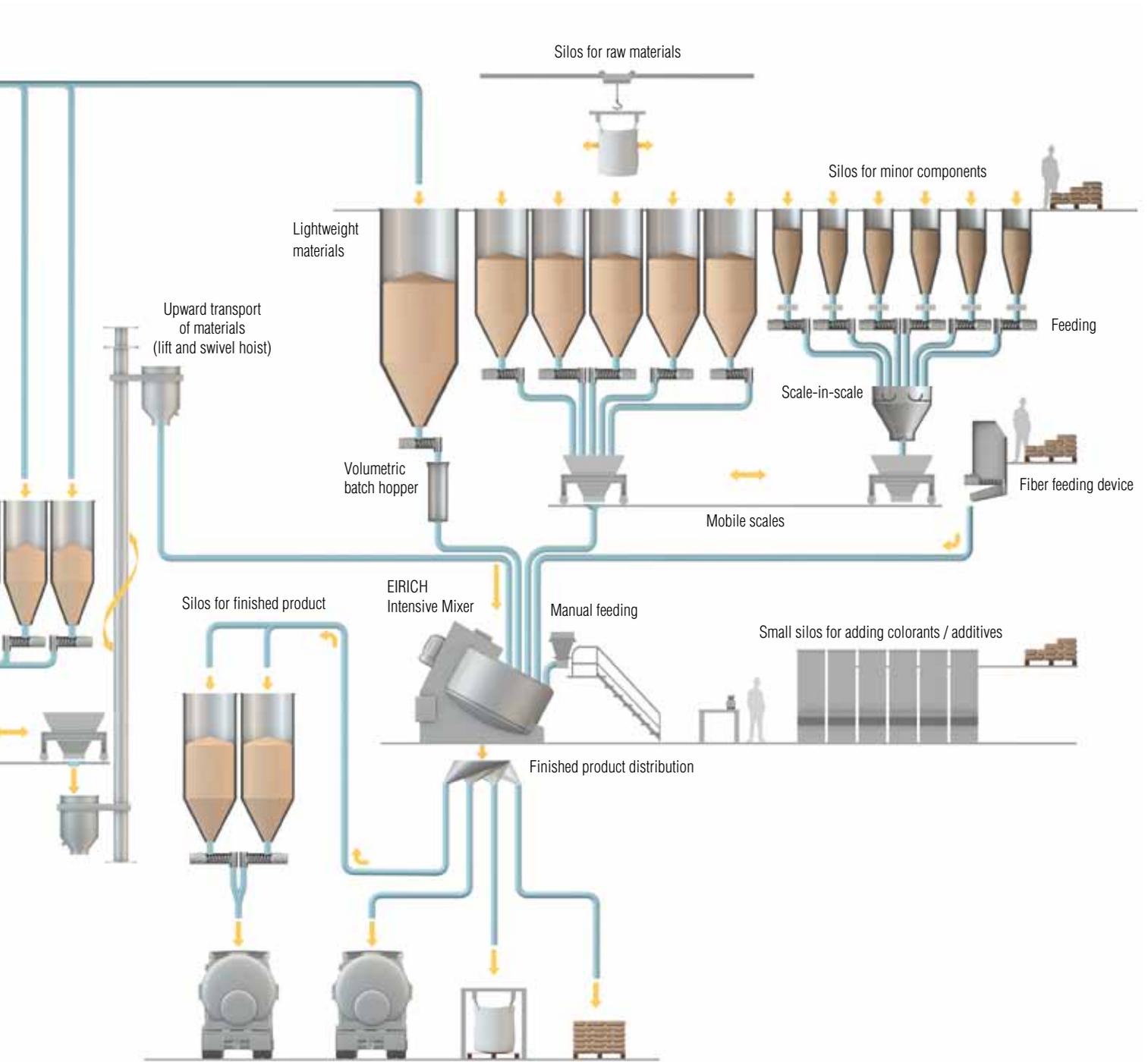
R12/RV12

R16/RV16

R19/RV19

R24/RV24





References

System for powdery and resin-bonded, crumbly specialist construction products in Germany

System concept and process steps:

- In-line system with an overall height of approx. 25 m
- System output of approx. 5 t/h of specialist products
- Highly flexibly system concept with bag or bucket filling
- EIRICH RV12W intensive mixer with a mixing volume of 400 L
- Hinged mixing pan cover for easy cleaning access



R12W intensive mixer, lift and swivel hoist Silos and scale

System for coating mortar in Albuquerque, USA

System concept and process steps:

- In-line system with an overall height of approx. 22 m
- System output of approx. 20,000 t/a in single-shift operation
- Raw material storage in eight large-volume silos (expandable to nine, if required)
- Delivery of the sand by train and truck with subsequent transport by bucket elevator
- Automatic feeding/weighing of the raw materials
- Pneumatic transport of the raw materials to the mixer after weighing them
- Storage and automatic feeding/weighing of color components and additives
- Multifunctional high-precision small scale
- Storage and automatic feeding/weighing of fibers
- Manual addition of very small quantities
- EIRICH RV15 intensive mixer with a capacity of 750 L
- Complete emptying with an automatic pneumatic system for residue-free and fast recipe change
- Packaging and palletizing
- Control of the whole system



*Pneumatic conveying system
EIRICH RV15 intensive mixer with a 10° tilt
Raw material batching*

System for special dry mortar in France

System concept and process steps:

- Tower system with an overall height of approx. 28 m
- System output of approx. 80,000 t/a in single-shift operation
- Storage of raw materials in 12 large-scale silos
- Storage and automatic feeding/weighing of 7 color components
- Storage and automatic feeding/weighing of 6 additives
- Manual addition of smallest quantities
- Feeding and weighing of basic materials
- Volumetric feeding of lightweight materials
- Multifunctional, high-precision small scale; +/- 5 g
- EIRICH RV19 intensive mixer with a capacity of 1,500 L
- Complete emptying with an automatic pneumatic system for residue-free and fast recipe change
- Packaging and palletizing

EIRICH feeding and weighing system:

The additives and coloring pigments are batched and weighed by a weighing and feeding system developed by EIRICH, which is both extremely accurate (+/- 5 g) and highly flexible in terms of weighing capability and feeding time.

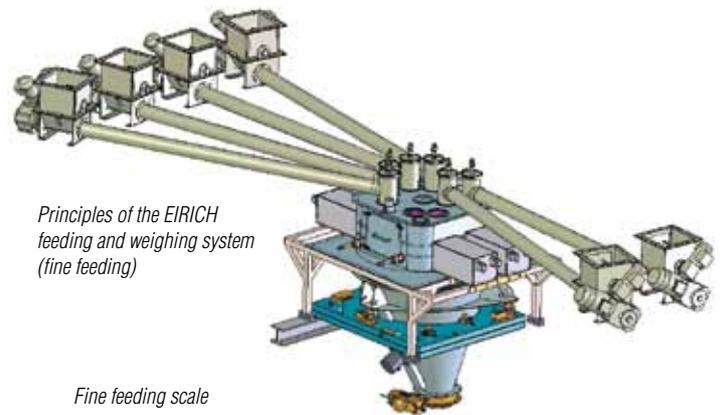
This system replaces the costly manual addition of minimum quantities and is comprised of a scale hopper with a capacity of, for example, 500 L, and up to eight double screw feeders.

Advantages

- Reproducible high-precision feeding of additives and pigments
- Shortest feeding times in batch mode by simultaneously feeding up to four components
- High flexibility over the whole weighing range
- Independent of variations in the properties of the bulk material



EIRICH RV19 intensive mixer with a 10° tilt



Fine feeding scale



System for special dry mortar in Russia

System concept and process steps:

- Tower system with an overall height of approx. 33 m
- System output of approx. 120,000 t/a in two-shift operation
- Transportation of sand by bucket elevators and distribution to raw material silos
- Big Bag emptying station with pneumatic transportation and distribution to raw material silos
- Storage of raw materials in 18 large-scale silos
- Storage and automatic feeding/weighing of 8 additives
- Storage and manual feeding/weighing of a further 15 additives
- Volumetric feeding of lightweight materials
- Mobile scale for additives and interim components
- EIRICH RV19 intensive mixer with a capacity of 1,500 L
- Packaging and palletizing
- Centralized dust extraction, compressed air generation
- Control system with power equipment, PLC and visualization



*EIRICH RV19 intensive mixer
Sand and binding agent scale
Movable scale and volumetric hopper*



System for special dry mortar in France

System concept and process steps:

- In-line system with an overall height of approx. 24 m
- System output of approx. 40,000 t/a in single-shift operation (200 d/a)
- Sand storage, sand transportation, drying and screening
- Raw material storage in large-volume silos (sand, binding agents, light-density materials)
- Storage of small quantities (additives)
- Feeding and weighing of the basic materials
- Material conveying
- Mixing
- Filling in units ready-prepared for sale



Factory building
Vertical lift above
the mixer
EIRICH RV19
intensive mixer
Finished product
discharger with
bagging station



System for special dry mortar in South Korea

System concept and process steps:

- System with an overall height of approx. 40 m
- System output of approx. 150,000 t/a in two-shift operation
- Storage of raw materials in 12 large-scale silos
- Storage of interim components in 8 x 3 m³ silos
- Storage of more than 20 different additives in swap containers
- Manual addition of up to 10 additives in smallest quantities (colors and fibers)
- Feeding and weighing of basic materials
- Volumetric feeding of lightweight materials
- Automatic additive scale with bi-directional mobility
- EIRICH R19 intensive mixer with a capacity of 1,125 L
- Complete emptying with an automatic pneumatic system for residue-free and fast recipe change
- Distribution of the finished product for direct loading onto trucks, rotation packer, Big Bag and mini-silo filling
- Pneumatic transportation (without segregation of the mixed product) to four intermediate silos for time-delayed dispatch of the product according to order requirements



*EIRICH R19 intensive mixer
Swap containers above the
movable additive scale
Main component scale with
volumetric hopper
Movable scale*



System of adhesive mortar for insulation panels in Hungary

System concept and process steps:

- Tower system with an overall height of approx. 14 m
- System output of approx. 10,000 t/a in single-shift operation (200 d/a)
- Total ground area required by the mixing system is 6 x 6 m
- Raw material storage in four large-volume silos (2 x sand, 2 x cement)
- Storage of four different additives
- Feeding and weighing of the basic materials
- Mixing
- Filling in units ready-prepared for sale

*EIRICH R15 intensive mixer
Additive storage and feeding
Single-spout packer with manual palletizer*





NIKECELL

Industrial Mixing and Fine Grinding Technology

Tradition and innovation since 1863

EIRICH stands worldwide for a comprehensive range of products and services in the field of preparation technology. Its particular focus is on mixing and fine grinding technology, with know-how developed over 150 years of close cooperation with industrial users, universities and research institutions.

Pursuing a corporate philosophy of operating internationally and thereby ensuring close proximity to every customer, the EIRICH Group has secured its place in all the key economic regions of the world.

The focus is on innovative technology for machinery and systems engineering designed to offer solutions for high-standard preparation tasks from a single source.

Applications and process technology with own test centers, a high vertical range of production and comprehensive after-sales service provide the ideal basis for the development of modern and economical processes for a multitude of industries.

**Building materials – Ceramics – Glass – Carbon paste – Battery paste
Friction linings – Metallurgy – Foundries – Environmental protection**

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