Machines & systems for molding material preparation

Reproducible molding material quality • Tailored solutions • High cost-effectiveness
Molding material preparation –
The driving wheel for a foundry’s production cycle

A molding material preparation system providing the required molding material with exactly the properties needed and at all times gives a boost to your production cycle.
EIRICH – Partner for the foundry industry
Globally represented as partner of the customers

EIRICH – Molding material quality
For the optimal results

EIRICH – Molding material mixers
For all performance classes

EIRICH – Range and services
All from one source solutions for your project safety

EIRICH – Systems in modular design
The fast track towards production

The EVACTHERM® process
The solution for maximum efficiency and quality
The performance potential of a modern molding plant can only be achieved with a first-class and constant quality of the molding material – This is what the name EIRICH stands for.

EIRICH has been working closely with foundries, molding plant manufacturers, raw material suppliers and research institutes for decades.

2019 – Market launch of the EVACTHERM® Technology for low performance classes < 10 m³/h and innovative further development of the inline-measuring and control system QualiMaster.

2017 – Market launch of the Intensive cooler CM4

2015 – EIRICH Control Technology IIoT

2011 – Redesign of machines for performance classes 100 - 180 m³/h

2010 – Real-time maintenance: New Condition Monitoring System

2007 – Innovative drive concept for mixers

2003 – Systems of modular construction

1993 – EVACTHERM® Technology: homogenizing, cooling, preparation and activating the bentonite in one single machine

1990 – Inline-measuring and control of key parameters of molding material

1980 – Cost-effective tower construction

1970 – Introduction of weighing technology for all molding material components

1960 – Market launch of the EIRICH Intensive Mixer
Customer closeness – Our key to success

Today the EIRICH Group comprises 14 companies in 13 countries on 5 continents and has a workforce of more than 1300 employees. In addition, some 100 industry agents are responsible for the sales of EIRICH products.

Global presence for our customers
The EIRICH molding material quality ...

The EIRICH mixing system with its unique advantages produces top molding material quality with excellent reproducibility.

The essential quality criteria for molding material are:

- Exact compliance with compactability specifications
- Excellent flowability
- Uniform for strength values

The EIRICH mixing system meets these requirements in particular:

- The perfect homogenization of return sand, new sand and additives
- The fast, complete distribution of the water which is added to the mix
- The sufficient duration of the wet mixing time
- The bentonite is completely activated and forms a uniform coating on the grains of sand

The durations of the wet mixing time is decisive for the quality of the molding material.

Example: Cycle time at 26 batches/hour. Wet mixing time approx. 80 % of total time.
... for optimal results
Molding material mixers for all performance classes

### Conventional molding material preparation

<table>
<thead>
<tr>
<th>Hourly output approx. t/h</th>
<th>Hourly output m³/h</th>
<th>Batch size/liters</th>
<th>Drive power (kW) rotor/mixing pan</th>
<th>Type of mixer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.65-1.75</td>
<td>1.95</td>
<td>75</td>
<td>5.5 / 1.5</td>
<td>R08</td>
</tr>
<tr>
<td>3.3-3.5</td>
<td>3.9</td>
<td>150</td>
<td>11 / 3</td>
<td>R09</td>
</tr>
<tr>
<td>5.5-5.8</td>
<td>6.5</td>
<td>250</td>
<td>22 / 5.5</td>
<td>R12</td>
</tr>
<tr>
<td>8.8-9.3</td>
<td>10.4</td>
<td>400</td>
<td>37 / 7.5</td>
<td>RV12</td>
</tr>
<tr>
<td>13.3-14</td>
<td>15.6</td>
<td>600</td>
<td>37 / 7.5</td>
<td>R16</td>
</tr>
<tr>
<td>20-21</td>
<td>23.4</td>
<td>900</td>
<td>45 / 9.2</td>
<td>RV16</td>
</tr>
<tr>
<td>24.6-26</td>
<td>29</td>
<td>1,125</td>
<td>75 / 15</td>
<td>R19</td>
</tr>
<tr>
<td>33-35</td>
<td>39</td>
<td>1,500</td>
<td>90 / 18.5</td>
<td>RV19</td>
</tr>
<tr>
<td>50-53</td>
<td>58.5</td>
<td>2,250</td>
<td>110 / 2x15</td>
<td>R24</td>
</tr>
<tr>
<td>66-70</td>
<td>78</td>
<td>3,000</td>
<td>132 / 2x22</td>
<td>RV24</td>
</tr>
<tr>
<td>88-94</td>
<td>104</td>
<td>4,000</td>
<td>160+90 / 30</td>
<td>R28-41</td>
</tr>
<tr>
<td>110-117</td>
<td>130</td>
<td>5,000</td>
<td>160+110 / 2x22</td>
<td>R28-51</td>
</tr>
<tr>
<td>133-140</td>
<td>156</td>
<td>6,000</td>
<td>200+132 / 2x22</td>
<td>R33-61</td>
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<tr>
<td>155-164</td>
<td>182</td>
<td>7,000</td>
<td>250+160 / 2x30</td>
<td>R33-71</td>
</tr>
</tbody>
</table>

1) 26 batches/h  
2) molding material bulk density 0.85-0.9 t/m³

### EVACTHERM® molding material preparation

<table>
<thead>
<tr>
<th>Hourly output approx. t/h</th>
<th>Hourly output m³/h</th>
<th>Batch size/liters</th>
<th>Drive power (kW) rotor/mixing pan</th>
<th>Type of mixer</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.65 - 8.1</td>
<td>9</td>
<td>375</td>
<td>45 / 7.5</td>
<td>RV11VAC</td>
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<tr>
<td>15-16</td>
<td>18</td>
<td>750</td>
<td>55 / 9.2</td>
<td>RV15VAC</td>
</tr>
<tr>
<td>31-32.5</td>
<td>36</td>
<td>1,500</td>
<td>90 / 22</td>
<td>RV19VAC</td>
</tr>
<tr>
<td>61-65</td>
<td>72</td>
<td>3,000</td>
<td>160 / 2x22</td>
<td>RV23VAC</td>
</tr>
<tr>
<td>102-108</td>
<td>120</td>
<td>5,000</td>
<td>2x160 / 2x22</td>
<td>R32VAC</td>
</tr>
<tr>
<td>143-151</td>
<td>168</td>
<td>7,000</td>
<td>2x200 / 2x30</td>
<td>RV32VAC</td>
</tr>
</tbody>
</table>

3) 24 batches/h  
4) molding material bulk density 0.85-0.9 t/m³
EIRICH – Range of services –
all from one source for your project safety

More than 2500 EIRICH preparation systems installed worldwide in all performance classes in terms of quality, throughput and efficiency.

EVACTHERM® or Cooling Technology can be installed in any foundry, whether grey, steel or non-ferrous castings.

With our range of services, we realize your task, no matter whether it is a new building, conversion or modernization.
Molding material preparation systems – complete solutions from EIRICH

EIRICH – the right partner for every piece of equipment in the preparation system:

- Molding material mixer – centrepiece of the plant
- Scale cluster for return sand, new sand, additives and water
- Control modules for optimum guidance of the molding material quality
- Industrial Internet of Things IIoT
- Moisture measuring probe for moisture correction
- Sand tester QualiMaster AT1 for inline testing and control of molding material quality
- Table feeder for achieving a demand-oriented material flow after the mixer
- Storage and conveyor technology
- Return sand conditioning equipment (Screening, cooling, ferrous and non-ferrous material removal)
- Dust extraction filters
- Steelwork / building work
Systems in modular design: The fast track towards production

*EIRICH has taken up the trend-setting concept of erecting preparation systems in the advantageous modular design at an early stage and consistently implemented it.*

The system components are mounted on individual platforms in the factory, composed and tested for function. The system is then installed on the construction site in the shortest possible time.

**Version A**
The mixer, the switchgear of the control and the scales are mounted and delivered on platforms. The remaining components and the steel construction provided locally.

**Version B**
The complete preparation system is built on individual platforms. The steel substructure can be supplied by EIRICH or provided by the customer. There is no limit to the size of the mixer.

**Version C**
Modular construction can be carried out completely with integrated front enclosure. All of the units including the silos, etc. are installed in containers. The container walls act as the front enclosure. The walls can be made of insulated sandwich or panel elements. The customer can select the color.
The EVACTHERM® process:
The solution for maximum efficiency and quality

EIRICH has developed a unique process. This process is able like no other to ensure consistent, reproducible molding material quality, despite variable basic conditions.

The special features of the EVACTHERM® process are:

- Excessive wetting of the molding material
- Reduction of the surface tension of the water (transition to the vapour phase)
- Best water distribution due to high volume requirement of water vapour
- In one step: homogenization, cooling, mixing, activation
- Constant molding sand temperature after preparation (or at the molding lines) 40 to 42 °C
- Reduction in exhaust air volumes - smaller dust extraction systems
- Reduction of filter dust volumes
- Reduction of emissions and dust in the air owing to a closed system during cooling and mixing
- Smaller volume of return sand

The users of EVACTHERM® systems worldwide confirm:

- 25% reduction in the scrap rate
- 50% less rework
- Smoother surfaces of the cast parts and better forming with pattern plate with complicated geometries thanks to flowable molding material with optimum compaction.
- Improved water retention capacity of the molds - no dehydration
- No correction of the pattern plate temperature due to constant molding material temperature under varying climatic conditions.
- Savings of app. 10 % in the addition of additives
- Approx. 40 % reduction in exhaust air volume
- Less maintenance works on exhaust air pipes necessary - no clogging, no falling below the dew point as only warm air is led through the exhaust air pipes.

Surface tension

Large steam quantities
1 litre of water produces 1673 litres of steam
**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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  - Akmola, Kazakhstan

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  - Gurnee, IL, USA

- **Eirich Industrial Ltda.**
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  - Nagoya, Japan

- **Nippon Eirich Co. Ltd.**
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- **H. Birkenmayer (Pty.) Ltd.**
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