

# Heating / Cooling of Material in the Mixer

- for the refractories industry
- for the carbon industry
- for the preparation of concretes
- for any other applications

## The unique working principle

### Rotating mixing pan

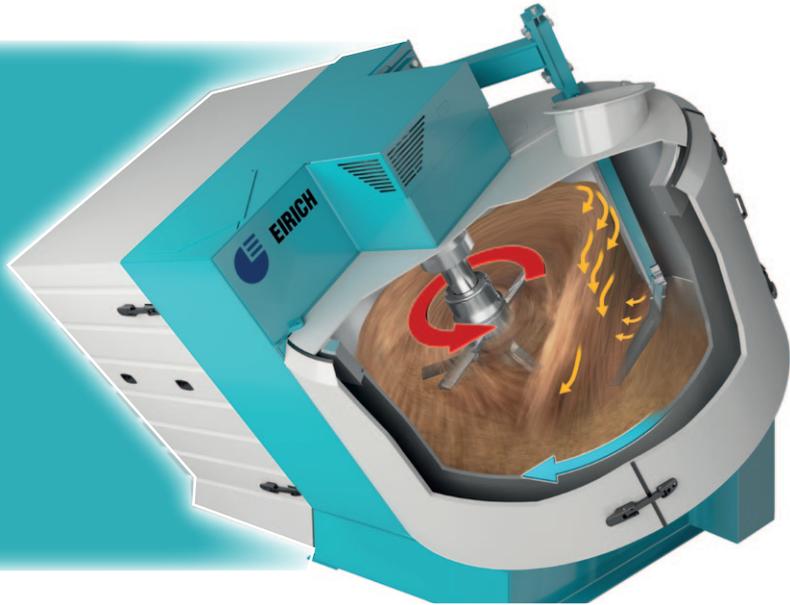
for material transport

### Variable-speed mixing tool, slow to fast

for mixing

### Separation between material transport and the mixing process

This allows the speed of the mixing tool (and thus the power input into the mix) to be varied within wide limits.



#### Heating technologies:

- Electrical hot-air fan (laboratory mixer)
- Infrared radiator (for small mixers)
- Porous burner (for any mixer sizes)
- Inductive heating (for mixers without cleaning doors, material temperature up to 250°C)

#### Cooling media:

- Cooled water / ice water / chopped ice (e.g. for concrete)
- Dry ice or carbon dioxide snow
- Liquid nitrogen

#### Heating of process material:

- The heat applied to the outside of the mixing pan is very quickly transferred to the process material
- Superheated steam fed into the mixing pan in the area of the rotor (e.g. at 300°C) is drawn in and mixed in immediately. This ensures immediate heat transfer to the material without localized heating.
- Degradation of the binder due to localized concentrations of superheated steam, which has been reported on other mixers, is reliably avoided.
- If necessary, the temperature of the mixing process can be set with an accuracy of one degree

#### Cooling of process material:

- Gaseous, liquid or solid cooling media fed into the mixing pan in the area of the rotor are drawn in and mixed in immediately, which prevents localized heating of the material
- The susceptibility of machine components to embrittlement by cooling gas, such as liquid nitrogen, which has been reported on other mixers, is eliminated

#### EIRICH customers report their experience:

- In the case of resin bonded mixes, the first batch can already be used for production by controlling the mixer temperature when work is started
- Cooling refractory concrete mixes at warm ambient temperatures (phase transformation) permits good product properties to be achieved with prefabricated parts

#### Other options:

Other options are available for special applications. Examples:

- Refractories industry, pitch-bonded mixes, material temperature 180°C:  
Combination of grain heater and temperature-controlled mixer
- Carbon industry, electrode mixes, material temperature 150° to 170°C:  
The coke is preheated by means of an electric resistance heater
- Foundries, mold material preparation, cooling of the return molding sand:  
Combined process vacuum flash cooling / reconditioning

**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.  
Put us to the test. We would be glad to tell you more.**

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**MIXING TECHNOLOGY**