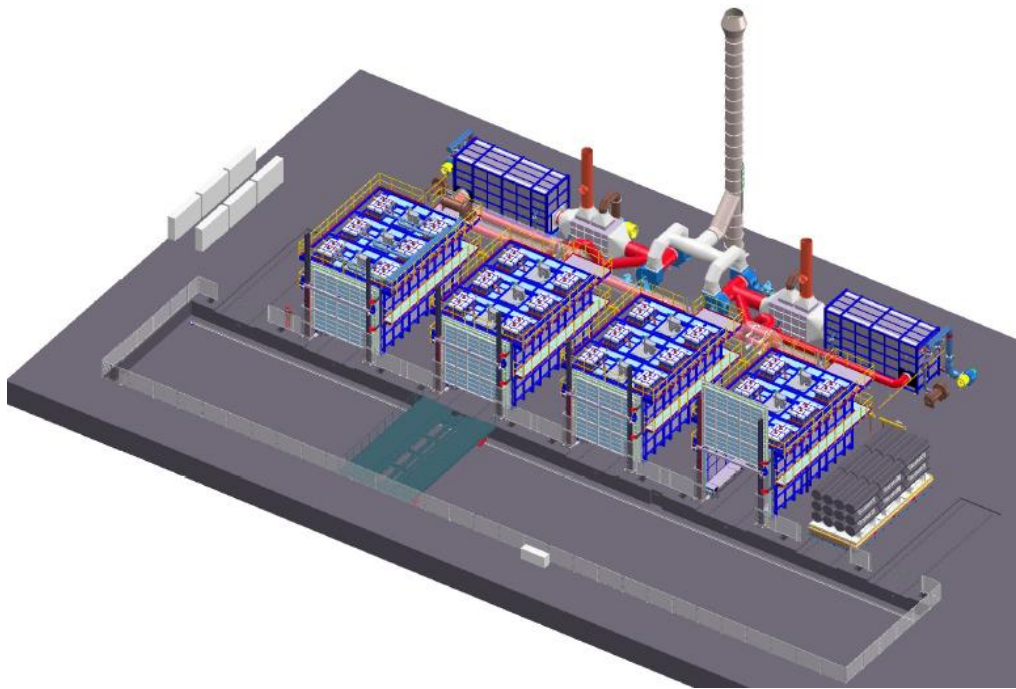

CARBON BAKING TECHNOLOGY



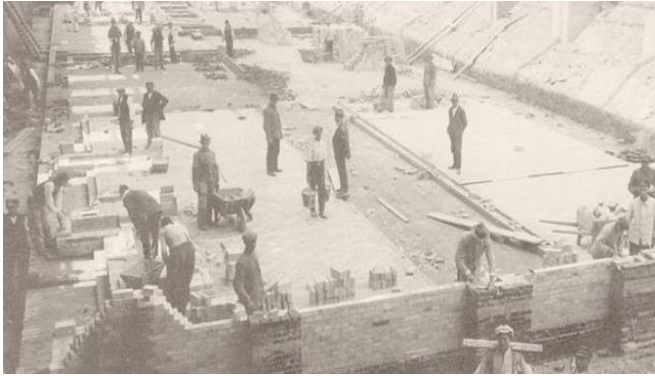
CBF – CAR BOTTOM FURNACE FOR BAKING



RIEDHAMMER
CARBON BAKING TECHNOLOGY

COMPANY PROFILE

In 1924 Ludwig Riedhammer decided to start his own company for the development and construction of industrial furnaces for manufactured carbon. Very soon the furnaces were accepted throughout the world, and paved the way for the company's success.



First Riedhammer Baking Furnace

Nowadays Riedhammer GmbH (RH), located in Nuremberg, Germany, is the leading manufacturer of industrial kiln plants worldwide and offers innovative technologies for Advanced Materials, besides its traditional business areas like ceramics and sanitary ware.

For the Carbon Industry, Riedhammer is presently the only independent supplier worldwide being able to deliver complete solutions with its proven furnace technologies for baking anodes, cathodes and electrodes, supplemented with specifically tailored solutions for the production of special carbon products.

95 years of experience and know-how guarantee a high economic efficiency and reliability of the plants.

Riedhammer provides various solutions from revamping up to new turnkey plants based on the most advanced technology and proven reliability, combining tradition and experience with state-of-the-art development, engineering, construction and commissioning to a new generation of furnaces including all required auxiliary equipment.



Riedhammer main office in Nuremberg

A worldwide network of representatives guarantees a highly efficient customer service and professional support whenever and wherever required.

The engineers and technicians of the Riedhammer team are trained to optimize project progress for the customers' benefit by reducing project run-times, thus minimizing costs and maximizing return on investment.



Courtesy of PJSC Energoprom Novocherkassk Electrode Plant

CAR BOTTOM FURNACE (CBF) DESCRIPTION

The Riedhammer CBF – Car Bottom Furnace used for baking and rebaking electrodes and special carbon blocks, is a periodic baking furnace with directed flow of the kiln atmosphere ensured by roof fans and energy-efficient internal combustion of the pitch vapours produced during the process by using the RIEDHAMMER Low-O₂-Technology.

In combination with a transfer system for furnace cars the CBF allows short charge exchange times.

The furnace is designed as a convective circulation system with directed flow control of the furnace atmosphere ensured by roof fans.

The furnace is heated by vertical high-velocity burners.

The burner system burns a reasonable part of the pitch vapors released from the products inside the furnace by means of Low-O₂-Technology.

The remaining exhaust gases loaded with volatiles are completely oxidized in a post-combustion chamber.

CBF for first baking

For first baking the furnace cars are usually loaded with steel containers (saggers) in which the products are positioned vertically and covered with packing material.

CBF for rebaking

For rebaking the products are stacked horizontally on the furnace car without use of packing material. The individual products are separated from each other by means of so-called stacking aids.

PROJECT EXECUTION

From the supply of engineering packages up to the execution of "turnkey" projects worldwide:

- Design & engineering
- Procurement & supply
- Quality control (QA/QC)
- Project administration
- HSE management
- Construction services and job site management
- Start-up & commissioning

ENGINEERING & SERVICES

Our team of specialists provides customers with the most suitable technical and economical solutions for their specific requirements such as:

- Customized solutions for the industry worldwide
- Conceptual analysis and feasibility studies
- Retrofit and modernization of existing plants
- Design and engineering of baking furnaces and baking facilities
- Supply of complete baking facilities including equipment
- CFD modelling

TECHNICAL SERVICE & SUPPORT

Our after-sales service network provides support for existing equipment and processes, and keeps customers informed about recent developments and improvements.

- After-sales service and customer support
- Optimization of baking processes
- Plant audits
- Furnace inspections
- Maintenance strategies
- Operation & maintenance training

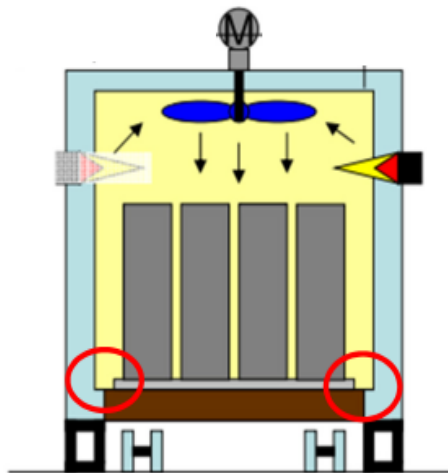
CAR BOTTOM FURNACE (CBF) CHARACTERISTICS

| TYPE | WCG 105 | WCG 177 |
|--------------------------|--------------------------|--------------------------|
| PROCESS | Rebake | First Bake |
| Useful volume | 105 m ³ | 177 m ³ |
| Max. load weight per car | 100 mt | 200 mt |
| Cars in furnace | 1 car | 1 |
| Max. design temperature | 900 °C | 900 °C |
| Baking temperature | 870 °C | 870 °C |
| Heating media | gas | gas |
| Usual baking cycle | 65-75 h or to be defined | > 280 h or to be defined |
| Atmosphere | neutral | neutral |

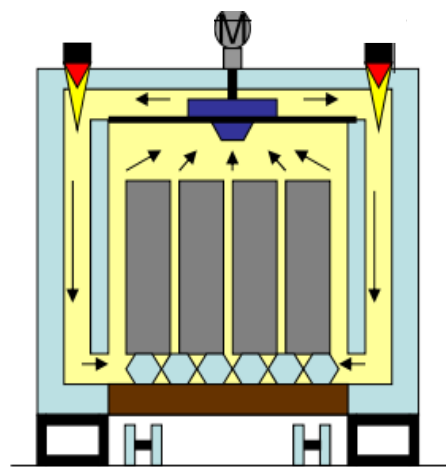
ADVANTAGES

Our advanced furnace design offers the following advantages:

- Open firing in oxygen-free atmosphere (Low-O₂-Technology)
- Reduced tar condensation and thus minimized buildup of soot and tar deposits by using forced Low-O₂-Technology
- Roof-mounted burners operating in vertical pulse firing mode
- Guided atmosphere circulation system
- Maximum load density on the car
- Best-in-class temperature uniformity inside the load stack



Common today's design



New RIEDHAMMER design

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