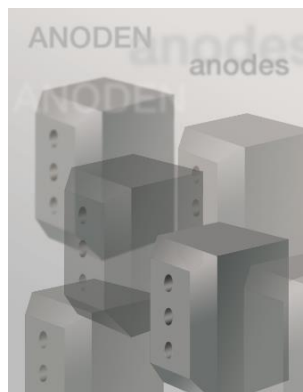
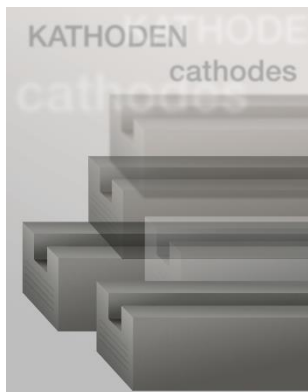

CARBON BAKING TECHNOLOGY



**RING PIT FURNACE – CLOSED TYPE
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 and 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 turn-key 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.



Closed Type Carbon Baking Furnace

CLOSED TYPE RING PIT FURNACE DESCRIPTION

The Riedhammer Closed Type Ring Pit Furnace is used for baking high-quality anodes, electrodes and cathodes. The Closed Type furnace is characterized by the following special features:

- Installation as a new plant or possibility of retrofitting/modernizing existing furnaces
- Proven refractory design with minimum number of different brick shapes
- Compliance with the strictest environmental standards
- High performance: benchmarking productivity figures
- Robust refractory design: extended lifetime and low maintenance
- Excellent baking profile controllability and temperature homogeneity ensuring outstanding final product quality
- Reference in the industry for low CAPEX and OPEX

ADVANTAGES

Our advanced furnace design offers the following advantages:

- Proven refractory design
- Extended brickwork lifetime
- Flexible design
- RH lifetime maintenance concept
- Safe production
- High operating performance
- Low operation costs

PROJECT EXECUTION

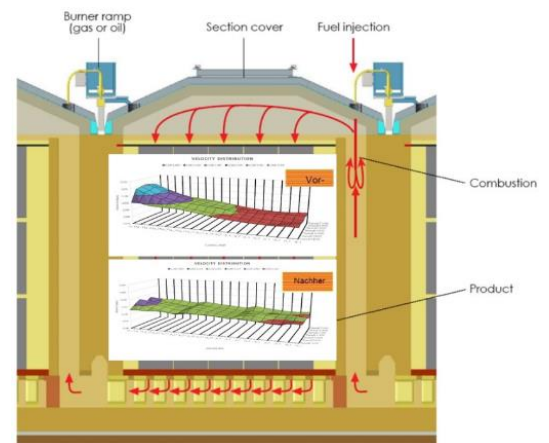
From the supply of engineering packages up to the execution of "turnkey" projects worldwide:

- 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



TEMPERATURE PROFILE IN THE SECTIONS

- Excellent temperature distribution
- Reduced consumption figures
- Optimized temperature profiles
- Maximum burnout of volatile matter – reduced level of emissions
- High operative safety aspects

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

CLOSED TYPE RING PIT FURNACE CHARACTERISTICS

Number of fire groups	1-4	nos.
Sections per fire	14-24	nos.
Pits per section	4-8	nos.
Fuel consumption anodes ¹⁾	≤ 2,3	GJ/tbp
Fuel consumption electrodes / cathodes ¹⁾	≤ 3,0	GJ/tbp
Packing material consumption	40	kg/tbp
Refractory & insulation material (maintenance figures in the first 10 years)	5-6	kg/tbp
Fluewall lifetime	> 250	cycles
Substructure lifetime	> 350	cycles

1) depending on pit loading factor

REFERENCES – CLOSE TYPE RING PIT FURNACE

During the last 15 years the Closed Type Ring Pit Furnace technology has been further developed by Riedhammer and asserted its strong position in the market.

Project	Location	Year	Type	Product	Sections
HEG Ltd	India	2003	New construction	Electrodes	24
HEG Ltd.	India	2003	New construction	Electrodes	24
CVG - Venalum	Venezuela	2003	Revamping	Anodes	32
Graphite India Ltd.	India	2003	New construction	Electrodes	24
CVG - Venalum	Venezuela	2004	Revamping	Anodes	48
Graphite India Ltd.	India	2004	New construction	Electrodes	16
OAO Ukrainskij Grafit	Ukraine	2005	New construction	Electrodes	34
Valesul Alumínio S.A.	Brazil	2006	Modernization	Anodes	48
Graphite India Ltd.	India	2006	New construction	Electrodes	24
PT Asahan Inalum	Indonesia	2007	Modernization	Anodes	30
SEC Corporation/MKK	Japan	2007	New construction	Electrodes/SC	22
Nippon Carbon Co. Ltd./MKK	Japan	2008	New construction	Electrodes/SC	26
PT Asahan Inalum	Indonesia	2008	Modernization	Anodes	30
SGL - Carbon	Malaysia	2008	New construction	Cathodes	22
SEC Corporation/MKK	Japan	2009	New construction	Cathodes/SC	22
HEG Ltd.	India	2010	Modernization	Electrodes	24
PT Asahan Inalum	Indonesia	2012	Revamping	Anodes	16
Showa Denko/MKK	Japan	2013	New construction	Electrodes	24
UNDISCLOSED	India	2014	New construction	Electrodes	24
PT Asahan Inalum	Indonesia	2016	Revamping	Anodes	30
Energoprom	Russia	2018	New construction	Electrodes	24
Ukrgrafit	Ukraine	2018	New construction	Electrodes	16
Carbon Savoie	France	2018	Modernization	Cathodes	34
HEG	India	2019	New construction	Electrodes	20
HEG	India	2019	New construction	Electrodes	24
Graphite India	India	2019	New construction	Electrodes	24

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