

INDUSTRIAL CONSTRUCTION | BY-PRODUCT COKE PRODUCTION



BENEFIT FROM OUR EXPERIENCE



About CONCORD GROUP

CONCORD GROUP is an industrial construction holding specializing in implementation of investment projects in metallurgical and coke making industries, power generation and road facilities.

Currently the Holding includes 11 specialized construction companies, operating under the single brand of CONCORD GROUP.

Years of experience combined with vast expertise and innovative approach enable us to offer effective solutions in execution of turnkey projects.

We guarantee accurate and timely work execution, reliability and quality according to international standards. Completed facilities and the processing equipment are certified according to internationally recognized quality control systems.

CONCORD GROUP is capable of solving complex engineering and construction tasks mainly with its own internal resources.

CONCORD GROUP's track record includes large-scale successful projects accomplished worldwide.

Among our clients are some of the world's largest steel makers and energy providers. CONCORD GROUP holds leading positions in implementation of iron & steel projects in the Ukrainian market.

We are focused on building long-term relationship with our customers that continues throughout the service life of the facility and beyond. Representative offices of CONCORD GROUP in various countries let us provide prompt maintenance service to all of our clients.



CONCORD GROUP Management System has been developed in order to provide foundation for growth of the Holding. The System is focused on integration and cooperation along with philosophy of sustainable development in each particular sector.

Since its foundation CONCORD GROUP has been socially- oriented in its activity and has been encouraging social values progress, unity, civil liability and social interests..

Mission and Values

CONCORD GROUP maintains corporate vision and fundamental values, strives for mutually beneficial cooperation with our clients and partners providing highest quality, just and fair management:

- Continuous management system improvement and enforcement of compliance with the International standard requirement ISO 9001.
- Analysis of current and potential customers' needs, aiming at exceeding their expectations.
- Permanent quality improvement and enhancement of service competitive position, production process improvement, applying latest BAT.
- Establishment and development of mutually beneficial and long-term partnership with stakeholders.
- Continuous training for personnel and its involvement into production management process.
- Personnel motivation for pursuing current and strategic goals.
- Unconditional compliance with applicable legislative requirements, international agreements, sectorial and corporate documents as well as national legislation of the countries CONCORD GROUP operates in.

Range of Services

There are more than 100 units of mobile equipment available at CONCORD GROUP some of which are unique in Ukraine:

- Dump trucks with a load-carrying capacity from 5 to 16 t.
- Wheel type excavators with bucket capacity up to 0.5 m³.
- Crawler excavators with bucket capacity up to 1 m³.
- Truck cranes with lifting capacity from 14 to 30 t.
- Building cranes with lifting capacity from 25 to 100 t.
- Loaders with bucket capacity up to 1.85 m³.
- Bulldozers, concrete lorries with capacity from 5.25 to 7.5 m³.
- Tractors, special-purpose transfer platforms etc.



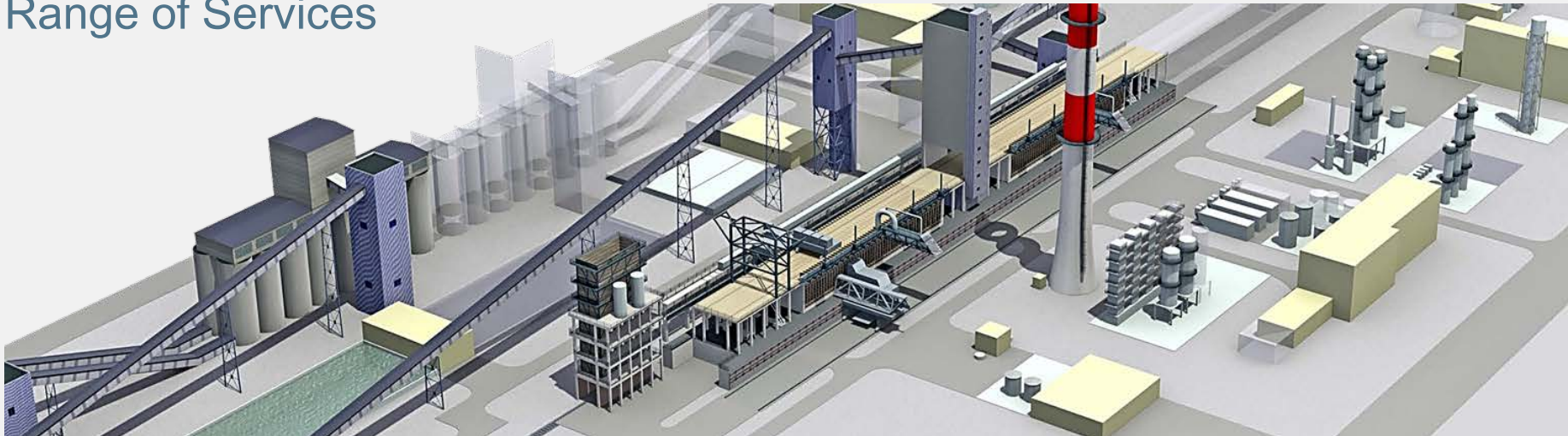
AUXILIARY EQUIPMENT PARK

Our own construction and auxiliary equipment park ensures operational continuity and decreases costs.

All the equipment is supported by highly-skilled operating staff and is able to be in operation on three-shift bases.

Substantial equipment fleet is a guarantee of work done on time with high quality, compliance with environmental standards and effective resource management.

Range of Services



CONCORD GROUP offers the ultimate technological concepts and executes the whole engineering work cycle:

- Current production analysis and recommendations on its improvement as well as up-to-date technologies implementation.
- Integrated design documentation for construction, rebuilding, expansion and technical re-equipment of operating enterprises.
- Automation systems for the technological process.
- Environmental impact assessment.
- Research and development.
- Construction design supervision.
- Providing a wide range of engineering services.

DESIGN AND ENGINEERING

CONCORD GROUP special-purpose design department provides the whole project range for metallurgical and by-product coke plants, power industry and transportation infrastructure.

Knowledge of current construction technologies and the accumulated experience help optimize the projects while at the primary development stage, carry out their audit, cut the construction time and expenses.

CONCORD GROUP experts supervise project execution from the very beginning up to its final completion. Close cooperation with contractors accelerates complex issues solution and reduces error probability.

CONCORD GROUP experts have all the necessary permits and certificates allowing them to design industrial facilities (such as shops, warehouses, storage bunkers etc.), infrastructural facilities (such as highways, bridges, overpasses), equipment (such as coke and metallurgical machinery and equipment, cranes, conveyor belt system etc.), and civil construction as well (such as office centers, apartment buildings, multifunctional centers etc.).



CONCORD GROUP is one of the world's leading companies in engineering, supply for by-product coke industry.

We offer innovative solutions in turn-key projects, revamping and modernization of coke production facility and coke oven battery hot repair as well.

Wide range of services we suggest comprises engineering and construction of coke production facility, namely: coke oven batteries, coal and coke handling plants, coke- quenching unit (wet or dry quenching), by-product plant and auxiliary equipment.

Projects implemented by our company comply with the high standards of coke quality and production efficiency, industrial emission control, energy consumption, serviceability and safety, while using modern and progressive automation and management systems.



OUR BENEFITS:

- Full range of solutions is provided by single company, starting from particular service maintenance to turn-key projects.
- Solution adaptability thanks to vast spectrum of applied technologies.
- Individual approach is applied to each production sector.
- Latest BAT application to provide extended campaigns implementation as well as economic and environmental efficient coke production.

Range of Services



DESIGN AND ENGINEERING

Provision of package design services related to construction of new, revamping of existing and upgrading of operational coke production facilities.



CONSTRUCTION

Turnkey construction of coke production facilities. EPC contracts implementation, general contractor functions, performance of construction and erection works of any complexity.



PRODUCTION EQUIPMENT

Design, manufacture, installation and setup of machinery and production equipment for coke production facilities as well as maintenance service and repair, and supply of spare parts.



RECONSTRUCTION AND UPGRADING

Reconstruction and technical re-equipment of coke plants, including optimization of coke production process.



DELIVERY OF EQUIPMENT AND MATERIALS

Delivery of refractory material, coke production equipment, metal structures, coking machinery, electrical equipment etc.



REPAIR AND RESTORATION

Performance of repair and restoration works using the partial coke oven rebricking method and an innovative ceramic welding technology within the existing production environment.

Range of Services



TURNKEY PROJECTS

With its experience and competence, CONCORD GROUP is capable of performing construction and erection works of any level of complexity and reliability under peculiar conditions of the existing production environment, including:

- Coke oven batteries for production of furnace and marketable coke.
- Furnaces for production of specific types of coke and thermal treatment of carbonaceous and other materials.
- Machinery, mechanisms and manufacturing equipment for coke shops.
- Equipment and installations for dry and wet quenching of coke etc.



SUPPLY OF EQUIPMENT, METAL STRUCTURES AND MATERIALS

- Coke oven machines, main process equipment of coke making plant.
- Main equipment of dry quenching facilities.
- Coke screening facilities and coke testing robe taking equipment.
- Equipment of by product and recovery facilities.
- Supply and delivery of refractories (for complex projects).
- Supply and delivery of electric, instrumentation and automation equipment.

Range of Services

COKE OVEN REPAIRS

CONCORD GROUP is highly competent in rendering the complicated and special services related to coke oven repairs without interrupting the production process.

Depending upon the extent of brickwork damages, technologies applied, and work conditions, coke oven repairs are subdivided into 5 groups:



RENEWAL OF COKE OVEN CHAMBERS GEOMETRY

- Elimination of narrow spaces with minimum dynamic impact.
- Abrasive-jet machining of defects at coke oven chambers surface.



CERAMIC WELDING

- Renovation of industrial ovens lining without suspending of those, and cooling down by method of high-temperature synthesis of refractory material at the hot damaged surface of oven brickwork.



PARTIAL RE-LINING OF COKE OVENS

- Repairs of refractory brickwork with one-side, two-side and through re-lining of heating walls group.
- Repairs of coke oven batteries lower structure.
- Repairs of coke oven batteries top.
- Repairs of regenerator walls and checkerwork.



BRICKWORK OF NEW COKE OVEN BATTERIES

- Coke oven batteries for blast furnace and commodity coke production.
- Ovens for production of special-type coke and thermal processing of carbonic and other materials.

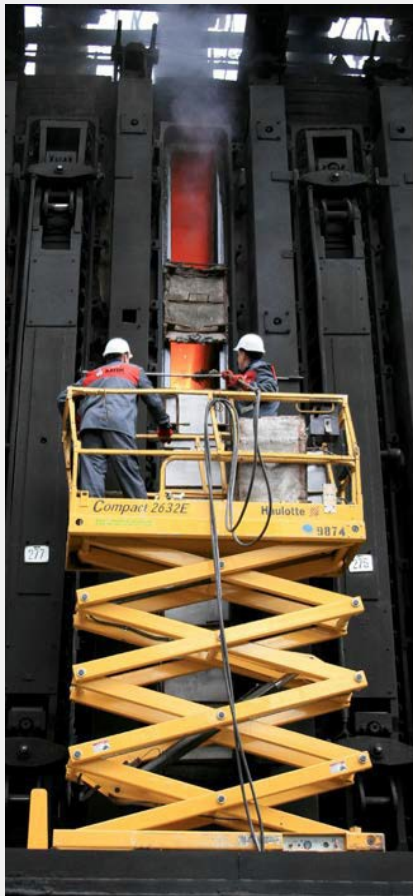


REPAIRS OF EQUIPMENT

- Replacement of buckstays, frames, flashplates and coke oven doors.
- Movable machines.
- CDCP blocks.
- Repairs and upgrading of heating system.

Range of Services

COKE OVEN REPAIRS



“HOT REPAIRS”
without putting the ovens out of operation
or with non-durable production interruption

TEMPERATURE MODE:

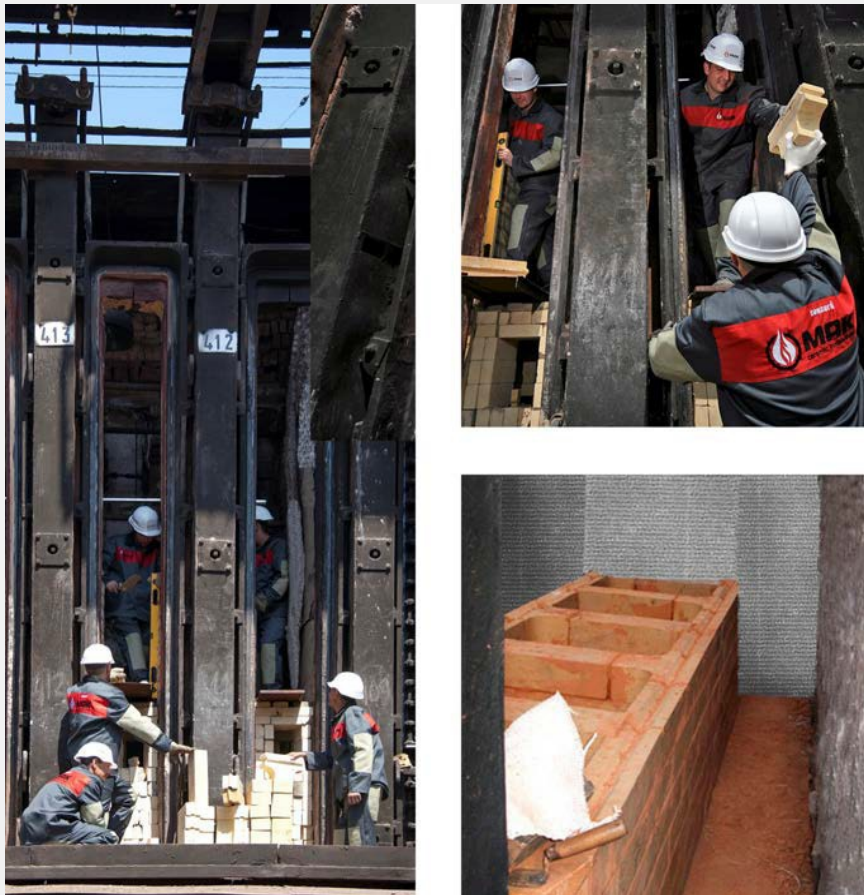
Temperature in all the vertical flues of the repaired and adjacent heating walls is not lower than 900°C.

TYPE OF RENDERED SERVICES:

- Ceramic welding.
- Wet and semi-dry gunniting with various mixtures.
- Manual puttying.

Range of Services

COKE OVEN REPAIRS



**«Hot repairs»
with partial cooling of repaired vertical flues
and other oven areas**

TEMPERATURE MODE:

Temperature in the adjacent heating walls and non-relined vertical flues is not lower than 800°C.

TYPES OF RENDERED SERVICES:

- One-side repairs of individual heating walls to the depth of 4 vertical flues.
- Two-side relining to the depth of 8 vertical flues with possibility of inclined flues area repairs.
- Repairs of regenerator walls and checkerwork.

Range of Services

COKE OVEN REPAIRS



**«Hot repairs»
with partial interruption of heating and cooling
the brickwork of adjacent heating walls group**

TEMPERATURE MODE:

Temperature in adjacent Heating walls and non-relined vertical flues is within the limits of 400-800°C depending upon the quantity of buffer chambers (2 buffer chambers or 4 buffer chambers).

TYPES OF RENDERED SERVICES:

- Relining of individual heating walls and regenerators.
- Relining of heating walls and regenerators with sequential-group method.
- Relining of the oven roof.

Range of Services

COKE OVEN REPAIRS



**«Cold repairs»
with cooling the oven group brickwork
or the whole coke oven battery**

TEMPERATURE MODE:

Complete interruption of the repaired area heating.

TYPES OF RENDERED SERVICES:

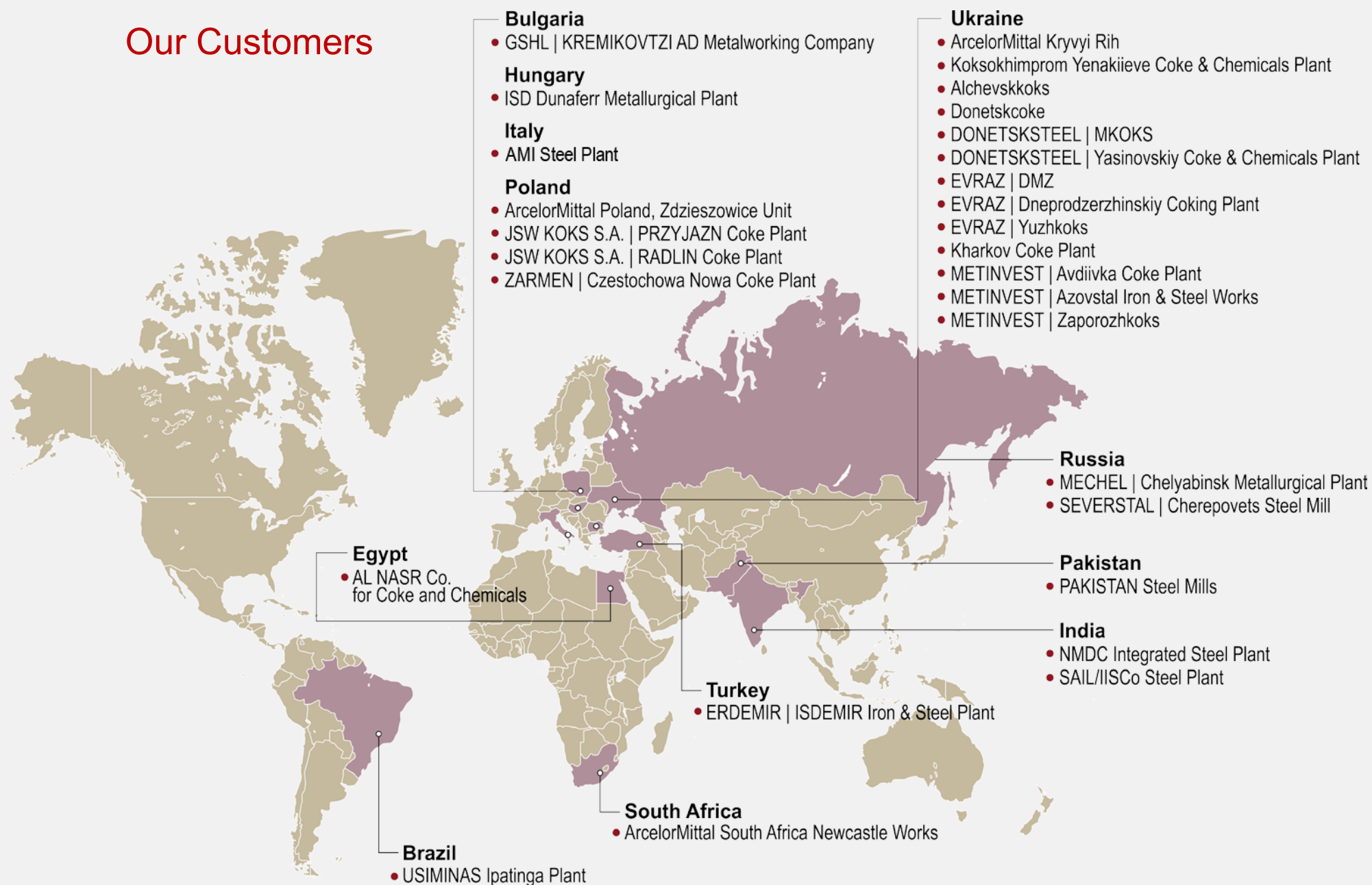
- Complete relining of coke oven battery within the previous dimensions with repairs of flues, reinforced concrete slabs and buttress walls.
- Rebuilding of individual oven groups.



INDUSTRIAL CONSTRUCTION

By-product Coke Production
Selected Projects

Our Customers





ARCELORMITTAL KRIVYI RIH
UKRAINE, Kriviy Rih

Coke Oven Plant No.1



Coke Oven Batteries No. 5 and 6.

TECHNICAL PARAMETERS:

Coking chamber height:	5,0 m
Coking chamber volume:	35,8 m ³
Number of coking chambers:	114 (2x57)
Ovens type:	twin vertical flues, side-fired.

SCOPE OF SUPPLIES:

Earth works:	82 541 m ³
Steel structures:	8 452 t
Amount of refractory materials:	34 356 t
Installation of in-situ reinforced concrete structures made of refractory concrete:	8 837 m ³
Installation of in-situ reinforced concrete structures:	21 907 m ³
Arrangement of concrete blinding coats:	5 767 m ³
Driving of prefabricated reinforced concrete piles:	2 496 pcs.
Cable routing:	140 km



Revamping of Coke Oven Batteries Nos. 5,6 as well as Coke Oven Plant No.1 infrastructure facilities – is one of the basic strategy project of ARCELORMITTAL KRIVYI RIH investment program.

At place of coke oven batteries suspended in 2012 there will be constructed two brand-new coke oven batteries of increased capacity with integration of smokeless coal blend charging technology, de-dusting system as well as erection of aspiration and ventilation units.

Revamping of Coke Oven Batteries Nos. 5,6 is being implemented under the conditions of operating Plant and provides for 2 construction stages:

STAGE 1

- Coal Handling Plant;
- COB No.6 consisting of 57 ovens for stamped coal blend of gun-flue design;
- Coke Screening Facilities;
- Coke Oven Gas Condensation and Cooling Plant;
- Installation of mechanized decanters with binding (2 pcs.) at new foundations;
- Power Plant facilities;
- External water supply and sewerage networks and facilities.

STAGE 2

- Coke Oven Block COB No.5 consisting of 57 ovens for stamped coal blend of gun-flue design;
- External water supply and sewerage networks and facilities.





AMI TARANTO PLANT
ITALY, Taranto.



Coke Oven Batteries No. 9 and 10.

TECHNICAL PARAMETERS:

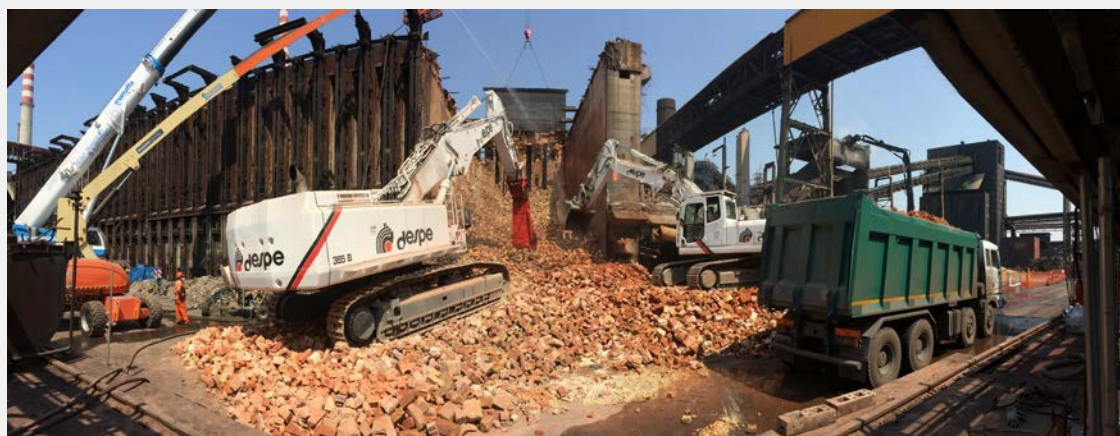
Coking chamber height:	6,5 m
Coking chamber volume:	39,5 m ³
Number of coking chambers:	86 (2x43)

Ovens type – paired vertical flues and recirculation of combustion products.

Combined heating system, underjet type.

SCOPE OF SUPPLIES:

Steel structures:	1 200 t
Equipment:	1 459 t
Amount of refractory materials:	15 260 t
Concrete:	3 304 m ³
Bars:	722 t





In 2010, AMI made a decision on upgrading and partial reconstruction of facilities of by-product coke plant at AMI, Taranto, including coke oven batteries No.9 and No.10, power supply facilities and interplant cable networks of the battery No.9.

This decision was made due to requirements of the Integrated Environmental Authorization plan (AIA).

In December 2013, CONCORD GROUP, having won a bidding, signed a contract for reconstruction of the coke oven batteries No. 9 and 10.

EPC contract includes the following works:

- Elaboration of basic and detailed engineering;
- Supply of equipment and refractory materials;
- General construction works.

The scope of works of CONCORD also includes supervision and engineering support of the works, drying and heating-up, start-up of the battery, driving the battery to full capacity, commissioning of the complex of the coke oven batteries.





USIMINAS IPATINGA PLANT
BRAZIL, Ipatinga.



Coke Oven Batteries No.3

Due to toughening of environmental regulations in Brazil, the Customer has decided to carry out the reconstruction and modernization of coke oven batteries No 3 as well as reconstruction of corresponded facilities on USIMINAS Ipatinga Plant, while plant is in operation.

TECHNICAL PARAMETERS

Oven height:	5,05m
Chamber volume:	35,8 m ³
Number of ovens:	110 (2×55)

PVR type with twin vertical flues and waste products recirculation. Heating scheme – mixed gas, underjet type.

SCOPE OF SUPPLY

Steel structure:	8 417 t
Equipment:	6 781 t
Materials:	125 000 t
Coke machines:	1 300 t
Personnel involved:	100





The project includes two-stage operation:

STAGE 1

Reconstruction of coke oven batteries No3 with complete replacement of technological equipment including:

- basic engineering;
- detailed engineering;
- basic and auxiliary technological equipment;
- complete modernization of automatic process control system;
- material supply.

STAGE 2

Reconstruction of COB No3 corresponded facilities including:

- automation system for filling coal tower;
- dry an wet quenching system;
- coke oven machines;
- coke ramp (main and stand-by) of COB №3. Installation of gates;
- by-product recovery plant;
- outdoor lighting, earthing and lightning protection;
- underground mains of water supply and sanitation.

Furthermore CONCORD GROUP scope of works includes supervision and technological support of the whole process of construction, drying and heating up of coke oven batteries using the convection method and regasification units LPG, driving up to the rated capacity and commissioning of COB № 3 with corresponded facilities



JSW KOKS S.A. | RADLIN Coke Plant
POLAND, Radlin.



Coke Oven Battery No.1-bis

TECHNICAL PARAMETERS

Oven height:	5,05 m
Chamber volume:	35,8 m ³
Number of ovens:	86 (2×43)

Ovens with paired vertical flues and recirculation of combustion products.

Heating scheme – coke oven gas, underjet type.

SCOPE OF SUPPLY

Steel structure:	750 t
Equipment:	8 469 t
Materials:	98 230 t
Coke machines:	920 t
Personnel involved:	180





Due to the necessity of technical re-equipment of the enterprise, changes of the European environmental standards, and requirements for working conditions improvement, the Customer decided to build a new coke oven battery with a stationary system of coal charge ramming and correspondent facilities in the coke plant ZABRZE.

Scope of civil and erection works of CONCORD GROUP in the project:

- battery brickwork;
- reinforcement of coke oven battery;
- reinforcement of ovens brickwork;
- assembly of flash plates, frames, doors;
- assembly of gas-intake system including accessories of ovens heating with coke oven gas, gas and air valves;
- assembly of gas-outlet system including gas collecting mains and crossover gas main, hydraulic-assisted stand pipes, industrial pipelines;
- assembly of reversing system including reversing mechanism and hydraulic reversing device;
- manufacturing, supply, mounting and putting into operation of a set of coke machines which contains: two door extracting machines, ceiling car, two electric locomotives, two quenching cars.
- drying and heating up of the battery;
- commissioning.



ERDEMİR | ISDEMİR Iron & Steel Plant
TURKEY, Iskenderun.



Coke Oven Battery No.4

TECHNICAL PARAMETERS

Oven height:	5,0 m
Chamber volume:	27,3 m ³
Number of ovens:	69

PVR type with twin vertical flues and waste products recirculation.

Heating scheme – mixed gas, underjet type.

SCOPE OF SUPPLY

Steel structure:	4 650 t
Equipment:	1 100 t
Materials:	20 000 t
Coke machines:	501 t
Personnel involved:	130





In 2008 ISDEMIR Steel Plant started realization of production modernization and transformation investing program (MTI), which apart from commissioning of new facilities for the production of flat products, provided the reconstruction of coke oven battery № 4 as well.

CONCORD GROUP won the tender and began turn-key pad-up reconstruction of coke oven battery №4 including heating up and commissioning of COB №4 with set of corresponded facilities.

Main scope of civil and erection works for reconstruction of the battery carried out by CONCORD GROUP:

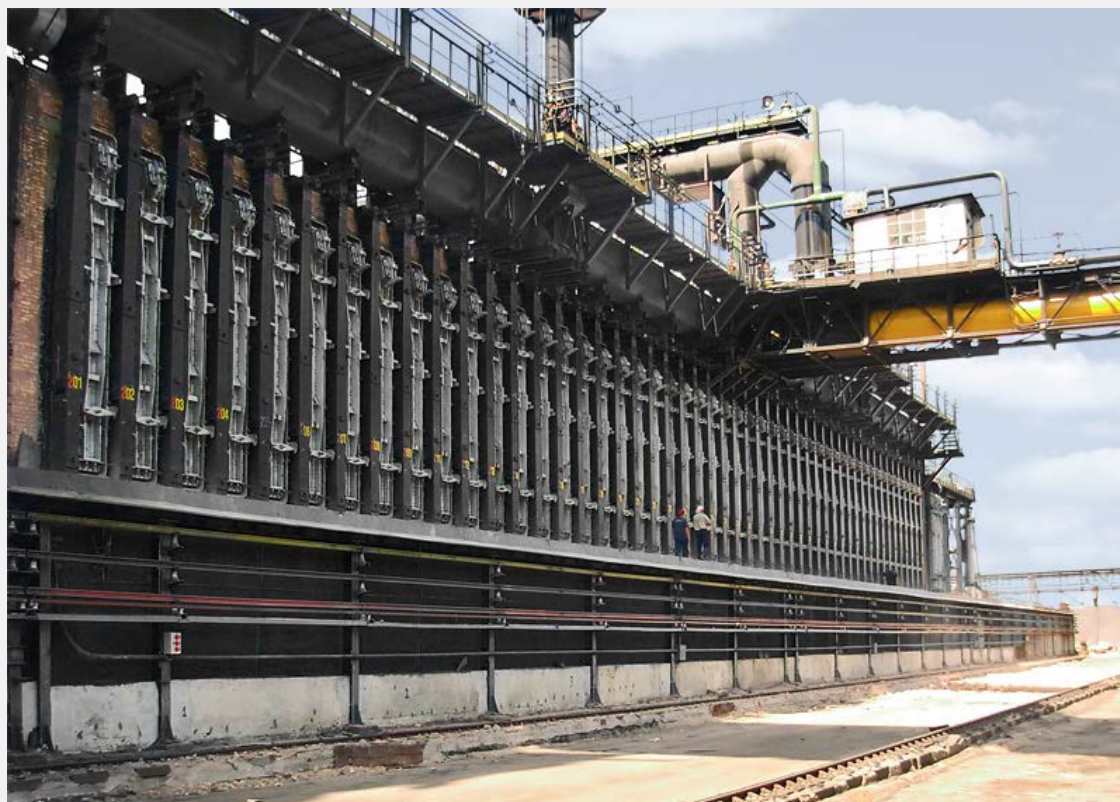
- basic engineering;
- detailed engineering;
- basic and auxiliary technological equipment supply;
- coke machines supply;
- refractory material supply;
- supervision of civil works; masonry;
- assembling of COB technological equipment;
- replacement of end, intermediary, service benches;
- dustfree coke pushing manifold with ventilation unit;
- HPLA pumphouse;
- interplant pipelines;
- electrical & instrumentation schemes replacement;
- complete modernization of automatic process control system;
- drying and heating up;
- putting into operation.



PAKISTAN STEEL MILLS
PAKISTAN, Karachi.



Coke Oven Battery No.1 and No.2.



TECHNICAL PARAMETERS

Oven height:	5,5 m
Chamber volume:	30,3 m ³
Number of ovens:	98 (2x49)

Ovens with paired vertical flues and recirculation of combustion products.

Heating scheme – coke oven gas, underjet type.

SCOPE OF SUPPLY

Steel structure:	1 360 t
Equipment:	6 312 t
Materials:	46 334 t
Personnel involved:	120

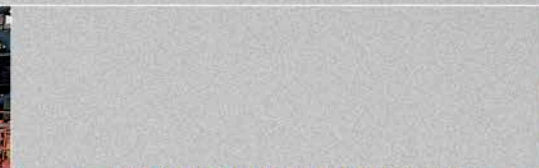




Coke oven battery №1 was designed by GP "Giprokoks" (Ukraine) and commissioned in 1984. After more than 20 years of work as a result of physical deterioration and adverse operating conditions, the battery was on the verge of a full stop.

Main scope of civil and erection works for reconstruction of the battery carried out by CONCORD GROUP:

- basic engineering;
- detailed engineering;
- basic and auxiliary technological equipment supply;
- refractory material supply;
- dismantling of the existing project;
- complete replacement of battery's brickwork upper structure with partial keeping of inclined flue zone (45%) and separating walls of regenerators (80%);
- complete replacement of gas-outlet equipment (gas collecting mains and cross over gas main, hydraulic-assisted stand pipes);
- complete replacement of all industrial pipelines;
- replacement of 100% oven brickwork reinforcement; flash plates, frames, doors;
- replacement of accessories of ovens heating with coke oven gas;
- replacement of electric systems, upgrading of electrical and instrumentation schemes, implementation of automatic process control system;
- drying and heating up, commissioning.



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