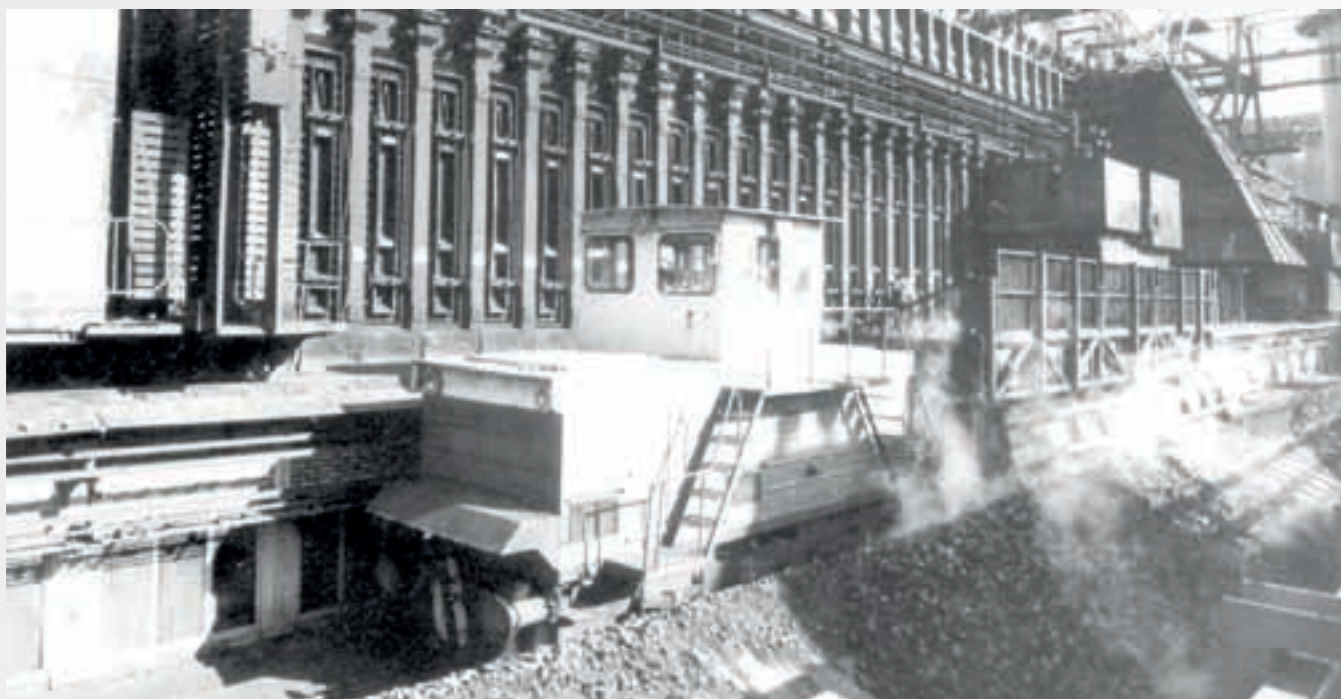




A coking plant with tradition and a future



The construction of the Coking Plant in Częstochowa Steelworks started in the years 1955-1956.

During the period between 1962 and 1973 four more coking batteries were launched. In 1974-1983 the annual production of coke produced exceeded 2 million tons.

In 2005 the Ukrainian Industrial Union of Donbas (ISD) became the owner of Częstochowa Steelworks, and consequently the steelworks was renamed ISD Huta Częstochowa Sp. z o.o. (ISD Częstochowa Steelworks Ltd.)

The Coking Plant remained a department within the structures of the ISD steelworks until the end of 2007.

In the middle of 2009 the Capital Group Zarmen Ltd. (Grupa Kapitałowa Zarmen Sp. z o.o.) acquired 100% of Koksownia Częstochowa Nowa shares from ISD Huta Częstochowa. The new owner of the coking plant started a major modernization of the plant and Koksownia Częstochowa Nowa joined the „Intelligent coking plant” project – one of the largest European projects for the collaboration of science and industry.

In May 2010 the construction of a new coking battery no. 1 started, which was one of the key stages of the plant modernization. The General Contractor was Zarmen Sp. z o.o. The battery started production in September 2011 r. The construction of battery no. 1 involved using state-of-the-art technology which makes the new coking battery completely environmentally friendly.

In September 2015 the construction of a new innovative installation for coke oven gas purification was completed. At present a new wide-chambered coking battery no. 4bis for the production of foundry coke is being built. The construction of a new storage yard for coal and coke is also planned.

The investment projects carried out in Koksownia Częstochowa Nowa are amongst the largest in the Polish coking market.

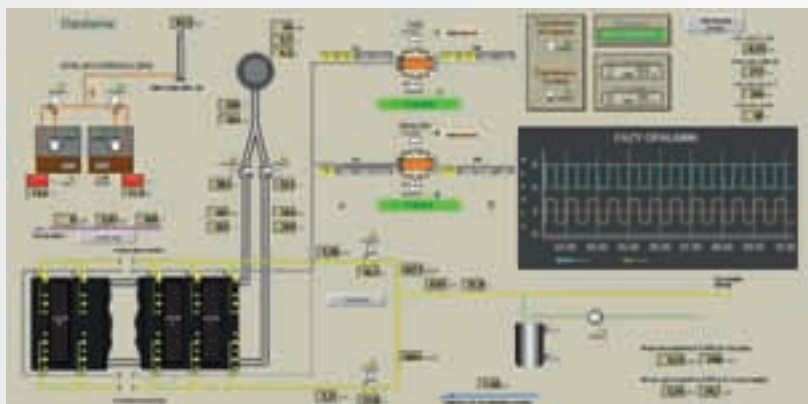


PARAMETERS	DATA
Coal unloading	60 000 Mg/mth
Milling – stabilized coke	93% < 3 mm
Milling – foundry coke	95% < 3 mm
Number of silos	12
Number of sectors in the coal tower	4
Coal tower capacity	2 400 Mg





PARAMETERS	COKING BATTERY NO. 1	COKING BATTERY NO. 2
Year of construction / major overhaul	2011	1960 / 1987 / 2009
Coal charge system	stamp-charging system	stamp-charging system
Number of ovens	57	57
Oven dimensions (hot) (mm)		
- length	13 350	13 350
- height	4 360	3 708
- width	450	450
Projected production capacity	400 000 t per annum	355 000 t per annum
COG production	18 265 m ³ /h	15 525 m ³ /h
Heating system	lateral gas feed	lateral gas feed





PARAMETERS	DATA
Coke Sorting Shop capacity	200 Mg/h
Coarse sorting – obtained grades:	25 – 80 mm +80 mm +100 mm
Fine sorting – obtained grades:	20 – 40 mm 10 – 25 mm 0 – 10 mm

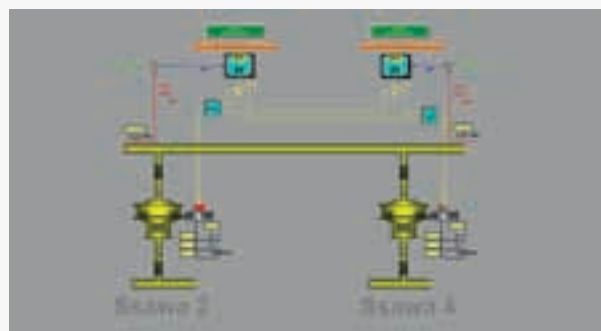




PARAMETER	DATA
Flow capacity	46 000 m ³ /h

PURIFIED COG PARAMETERS

PARAMETER	UNIT	DATA
H ₂	% vol.	57
CO	% vol.	7,2
CO ₂	% vol.	2,8
O ₂	% vol.	1,0
CH ₄	% vol.	24,7
N ₂	% vol.	4,8
C _n H _m	% vol.	2,5
PARAMETER	UNIT	DATA
H ₂ S	mg/Nm ³	200
NH ₃	mg/Nm ³	25
Naphthalene	g/Nm ³	0,3
Tar	g/Nm ³	0,02
Benzole	g/Nm ³	2

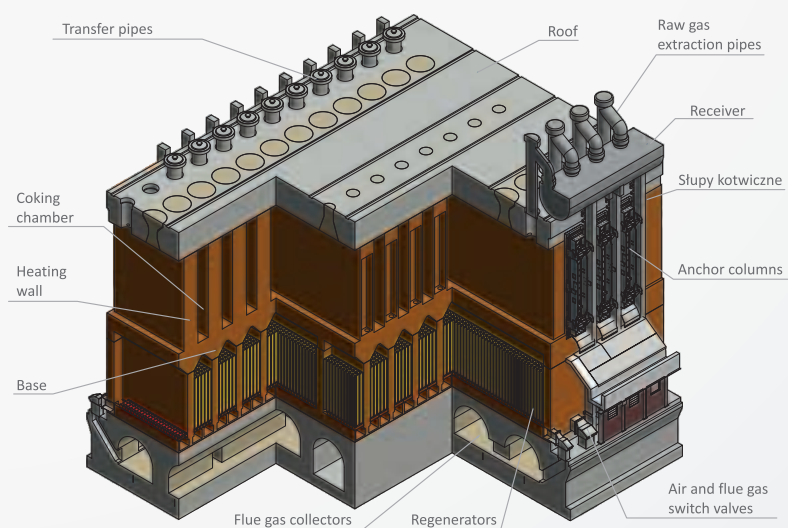


BIOLOGICAL PROCESS WATER TREATMENT PLANT

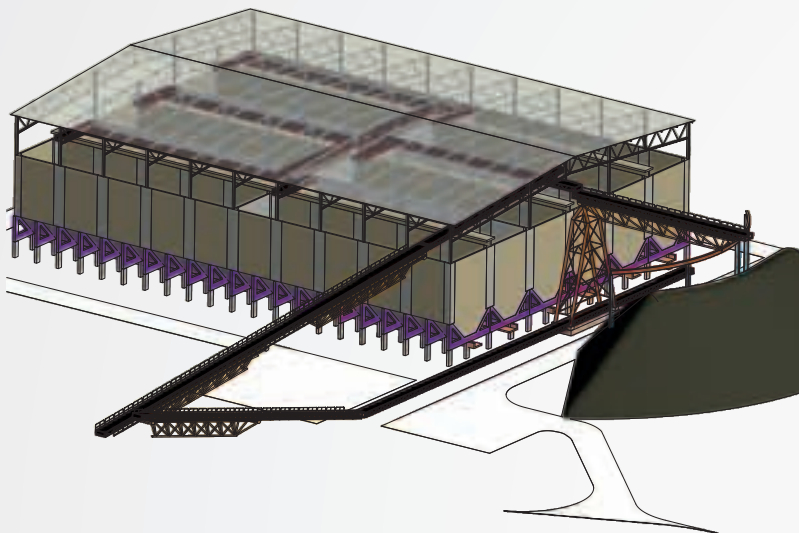
PARAMETRY	DANE
Flow capacity	25 m ³ /h
Operating time	8 760 h/year
Parameters of purified process water:	
Ammonia nitrogen	< 10 mg/l
Volatile phenols	< 5 mg/l
Sulfides	0,2 mg/l
Free cyanides	0,1 mg/l



PARAMETERS	COKING BATTERY NO. 4BIS
Construction period	2016 - 2017
Coal charging system	stamp-charging system
Number of ovens	50
Oven dimensions (hot) (mm)	
- length	13 350
- height	4 360
- width	550
Projected production capacity	225 000 t per annum
COG production	11 320 m ³ /h
Heating system	lateral gas feed



PARAMETERS	DATA
Cubic capacity of a single silo	4 300 m ³
Number of storage silos	12
Total cubic capacity	51 600 m ³

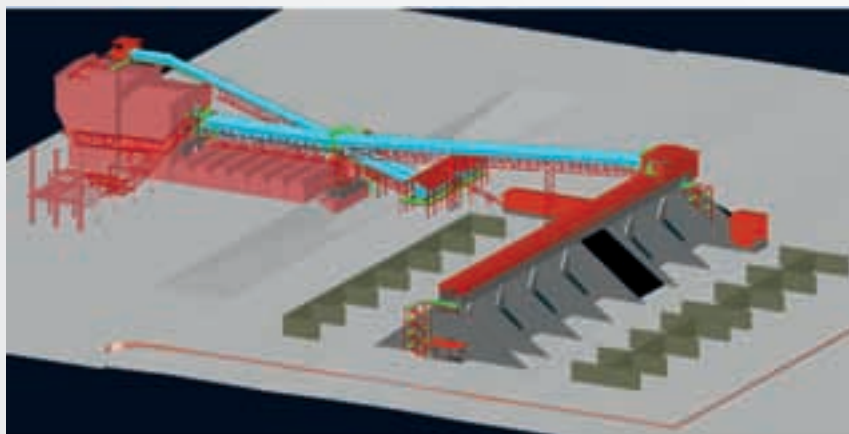


As part of the new coal storage yard construction the following elements will be built:

- Coal storage silos
- Technological trestle bridges
- Sub-station
- Road infrastructure
- Sewage network
- Low voltage network

The technological capacity of the machine system allows loading and simultaneous unloading of the coal assortment with the capacity of 625 Mg/h (ca 500 m³/h).

PARAMETERS	DATA
Number of storage segments	6 segments of 3000 m ³ 1 segment – 1 980 m ³
Total cubic capacity	19 980 m ³



As part of the new coke storage yard construction the following elements will be built:

- Coke storage yard
- Technological trestle bridges
- Control screening station
- Road infrastructure
- Sewage system
- Low voltage system

The system of technological devices allows loading and simultaneous unloading of the coke assortment with the capacity of 200 Mg/h.

The Quality Section of the plant is responsible for taking and preparing the samples and performing tests to determine the quality parameters of the produced coke as well as the parameters of the coals delivered, which are used to prepare coal blends for charging.

Below is a list of tests performed by the Quality Section:

PARAMETERS	TESTING PROCEDURE
Mechanical strength index	ISO 556:1980
Moisture content	PN-ISO 579: 2002
Ash content	PN-ISO 1171:2002
Volatile parts content	ISO 562:2010
Sulphur content	ISO 19579:2006
Carbon fix	Procedure ICR 0810 published in 2010
Phosphorus content	Procedure ICR 0892 published in 2014
Calorific value	PN-ISO 1928:2002
Undersize	PN-ISO 728:1999
Oversize	
Coke Reactivity Index	ISO 18894:2006
Coke Strength after Reaction	



The Coking Plant operates based on the Integrated Management System compliant with the ISO 9001:2009 standard - Quality Management; ISO 14001:2005 standard – Environmental Protection Management and the PN – N 18001: 2004 standard – Occupational Health and Safety Management certified by Bureau Veritas. As a result of implementing

the Integrated Management System and employing personnel with many years' experience, the Coking Plant is able to deliver goods which fulfill the requirements and needs of its clients. The Integrated Policy is an integral part of the company management and a document whose provisions are accepted by the entire staff.

The goods produced by the Coking Plant constitute an ecological fuel which has a beneficial influence upon the natural environment. Formulating and implementing the Policy reflects the company's involvement in the fulfillment of the clients' expectations as well as in reducing its negative influence on the natural environment.



NOWA **PRODUCT DESCRIPTIONS** KOKSOWNIA CZĘSTOCHOWA

The Coking Plant produces high-quality metallurgical and foundry coke, specifically to our clients' needs.

Basic products:

- metallurgical coke (25-80 mm)
- foundry coke (+100 mm)
- other

Coal derivatives:

- coke oven gas
- tar
- liquid sulphur
- benzole

FOUNDRY COKE (+100mm)

QUALITY PARAMETERS	VALUE
Total moisture content, W_t^r	max 2,0 %
Ash content, A^d	max 10,5 %
Volatile parts content, V^{daf}	max 0,8 %
Total sulphur content, S_t^d	max 0,6 %
Calorific value, Q_i^r	min 29 500 kJ/kg
Mechanical strength, M_{80}	min 80,0 %
Mechanical strength, M_{40}	min 88,0 %
Mechanical strength, M_{10}	max 10,0 %
Undersize	max 10,0 %
CRI	typically 40-45
CSR	typically 20-25



METALLURGICAL COKE FOR THE STEELWORKS INDUSTRY (25-80mm)

QUALITY PARAMETERS	VALUE
Total moisture content, W_t^r	max 6,0 %
Ash content, A^d	max 10,5 %
Volatile parts content, V^{daf}	max 0,7 %
Total sulphur content, S_t^d	max 0,6 %
Calorific value, Q_i^r	min 27 500 kJ/kg
Mechanical strength, M_{40}	min 76,0 %
Mechanical strength, M_{10}	max 6,0 %
Undersize	max 6,0 %
Oversize	max 8,0 %
CRI	max 30,0 %
CSR	min 60,0%



The Commerce and Logistics Office is divided into 4 sub-divisions:

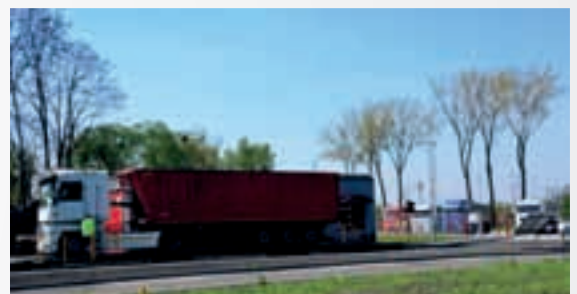
- the procurement office
- the commerce office
- the logistics office
- the maneuvering team – locomotive drivers and rail switch operators

The Office deals with processing orders, organizing shipments and providing safe and timely deliveries of KCN goods to the end users as well as makes sure that raw products needed for the production process are delivered safely on time.

The basic raw material, which is coking coal, is delivered 100% by rail transport.

Shipments of products such as coke, tar and benzole are made ca. 60% by rail transport and ca. 40% by road.

Shipments are made round the clock. A team of experienced employees equipped with certified weighing devices and 2 diesel locomotives makes sure the shipments are made correctly and efficiently.





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