



KOLMAR
COAL MINING COMPANY

SOUTH YAKUTIA COAL

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KOLMAR GROUP

Kolmar is one of the largest coal-mining holdings, uniting industrial plants for the production and processing of coking coals located in the Neryungri District of the Republic of Sakha [Yakutia].

A coal preparation plant was inaugurated in 2016. Today, it is the most modern and advanced plant in Russia. The production capacity of the plant is 2 Mta of coal with extension potential.

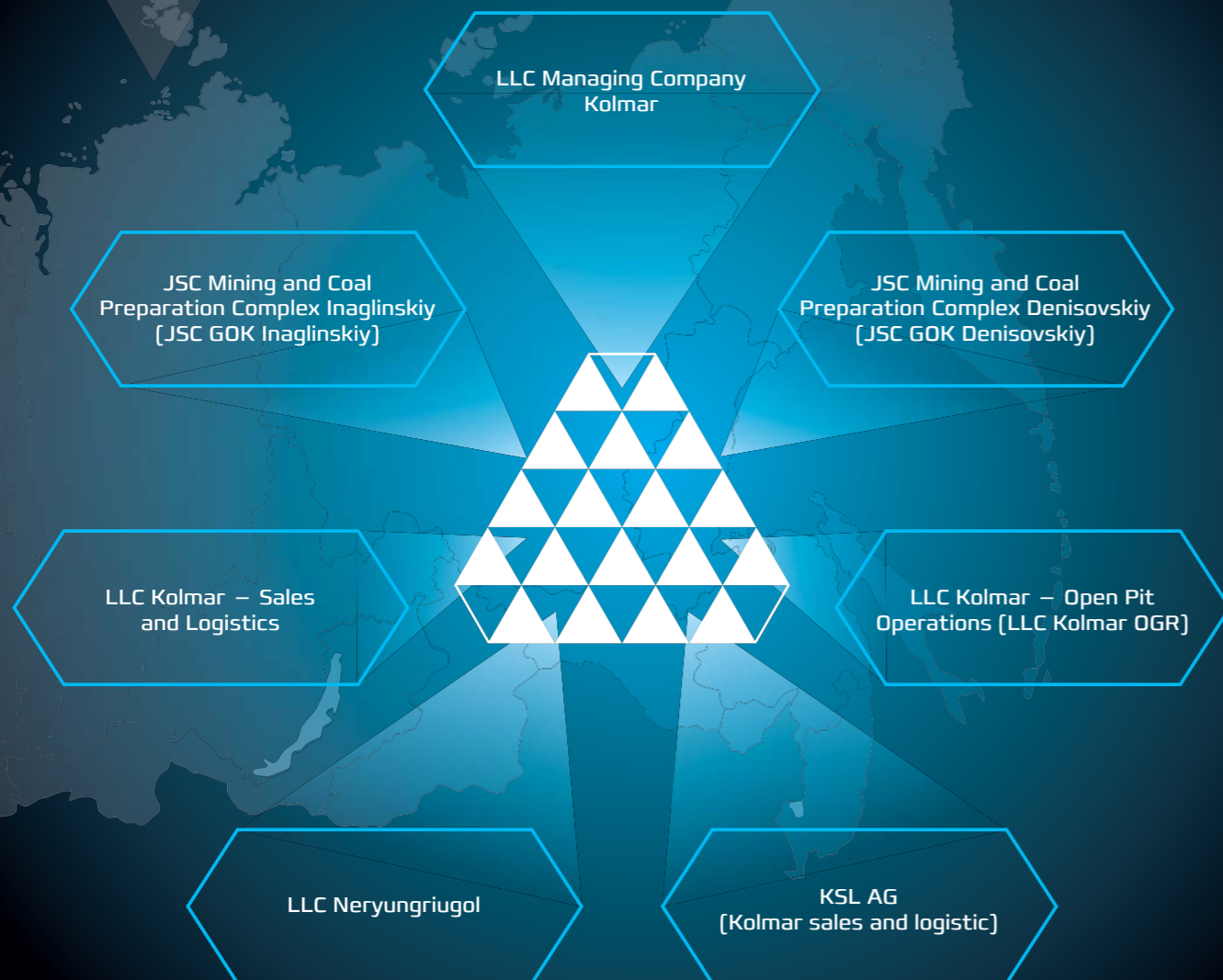
The balance reserves of Kolmar exceed 1 Bln of coal, the vast majority of which are represented by premium quality coking coals possessing a unique set of physical and mechanical properties, particularly precious for metallurgical and coke and by-product processing.



The company sells its products in the internal market as well as exporting it to Japan, Korea, India, China, Vietnam, Taiwan, Indonesia, etc.

Kolmar is a strategic enterprise in South Yakutia engaged in large-scale, social respectability projects, builds infrastructure facilities, and supporting youth sports.

Today, Kolmar is involved in two major projects which rank among the top-priority projects in the Far East. GOK Denisovskiy and GOK Inaglinskiy Kolmar include underground and open-pit operations, processing capacities, as well as sales and logistical divisions.



LLC Managing Company Kolmar

The company exercises the functions of the sole executive body of Kolmar Group (corporate director); responsible for management, general coordination of the activities of all group operations, accumulates a significant portion of administrative and managerial functions.

JSC Mining and Coal Preparation Complex Inaglinskiy (JSC GOK Inaglinskiy)

Develops the reserves of Chulmakan stone coal deposit (Central, Eastern, Northern and Western areas) within the boundaries of the allotted licenses.

GOK Inaglinskiy includes:

- Inaglinskiy open-pit coal mine with the production capacity of 2 Mta (in operation)
- Inaglinskaya-1 mine with the production capacity of 4 Mta (under construction)
- Inaglinskaya-2 mine with the production capacity of 8 Mta (under design)
- Inaglinskaya-1 coal preparation plant with the production capacity of 2 Mta (in operation)
- Inaglinskaya-2 coal preparation plant with the production capacity of 4 Mta (under construction)
- Inaglinskaya-3 coal preparation plant with the production capacity of 8 Mta (under design)

LLC Kolmar – Open-Pit Operations (LLC Kolmar OGR)

Is an operation of Kolmar Group developing coal reserves using open-pit mining. The core business of the company is rendering services to Kolmar Group operations for drill and blast, stripping and mining operations using open pit machinery.

LLC Kolmar – Sales and Logistics

The company works with Russian partners, participates in public tenders for the procurement of coal for the needs of local power plants in the region, and provides full logistical support during coal sales on the Russian market.

JSC Mining and Coal Preparation Complex Denisovski (JSC GOK Denisovski)

Develops the reserves of Denisovski stone coal deposits (Central and Eastern part) within the license areas.

GOK Denisovski includes:

- Denisovskaya Central mine with the production capacity of 2 Mta (in operation)
- Denisovskaya Eastern mine with the production capacity of 4 Mta (under design)
- Denisovski open-pit coal mine with the production capacity of 0.9 Mta (in operation)
- Denisovskaya coal preparation plant with the production capacity of 6 Mta (under construction)

LLC Neryunriugol

A company of Kolmar Group specializing in building underground and surface facilities as part of the mining complex. The company has all necessary licenses, permits and approvals and is a member of self-regulated organizations. Today, Neryunriugol is a leading mine-building company in the region.

KSL AG (Kolmar sales and logistic)

The company is registered in Zug (Switzerland), deals with marketing, logistics and coal sales on behalf of Kolmar Group as well as trading of third party coals in export markets.

KEY PERFORMANCE INDICATORS

Key performance indicators

Indicator/Project	Denisovskiy	Inaglinskiy
Project lifetime	2016-2035	2016-2035
Annual average production	6 Mt	6 Mt
Annual average volume of sales (coking concentrate)	3,7 Mt	4 Mt
Key assets (commissioning)	1. Denisovskaya Eastern mine 2. Denisovskaya coal preparation plant 3. Podrucheyny open-pit coal mine	1. Inaglinskiy open-pit coal mine (commissioned) 2. Inaglinskaya -1 coal preparation plant (commissioned) 3. Inaglinskaya mine 4. Inaglinskaya-2 coal preparation plant
Investment phase completion	3Q 2017	3Q 2017
EBITDA [2016-2035]	208 991 mln rubles [\$3215 mln]	118 087 mln rubles [\$1815 mln]
Investment phase CAPEX	12 898 mln rubles [\$198 mln]	12 109 mln rubles [\$185 mln]
FCF [2016-2035]	114 344 mln rubles [\$1759 mln]	73 858 mln rubles [\$1136 mln]
NPV [12%]	30 618 mln rubles [\$471 mln]	25 808 mln rubles [\$397 mln]
IRR	41,46%	49,53%
Project Pay Back period (undiscounted)	~ 3 years	~ 3 years

Kolmar licenses

Area	Balance sheet reserves	Area	Balance sheet reserves
Denisovskiy	62.1 Mt	Inaglinskiy Eastern	19.3 Mt
Denisovskiy Eastern	174.1 Mt	Inaglinskiy Northern	50.1 Mt
Central	71.3 Mt	Inaglinskiy Western	648.3 Mt

The total balance sheet reserves of Kolmar are equal to

1.026 Bln. tons of coal

DEVELOPMENT STRATEGY: «6+», «12+», «20+»

«6+»

ROM coal mining:
4 Mta
Volume of washed coal:
1.2 Mta

«12+»

ROM coal mining:
12 Mta
Volume of washed coal:
8 Mta

«20+»

ROM coal mining:
20 Mta
Volume of washed coal:
14.4 Mta

The development strategy of Kolmar group includes three stages: «6+», «12+», «20+».

Key parameters have been identified for each of the stages; the most important of which is the mining and production volume of coal concentrate. In order to achieve its target indicators, Kolmar puts into operation new facilities and builds new mining and coal preparation complexes.

Stage «6+» is expected to complete in 2016. As part of this stage, Inaglinskaya-1 coal preparation plant and Inaglinskiy open-pit coal mine will be put into operation.

The second stage, «12+», will be completed by 3Q 2017. By this time, GOK Inaglinskiy will comprise an open-pit, underground mine and

two coal preparation plants. Denisovskaya-Eastern mine, with a production capacity of 4 Mta, and a coal preparation plant with the production capacity of 6 Mta of coal will be built at GOK Denisovskiy.

The third stage, «20+», will be implemented at GOK Inaglinskiy, which has license coal reserves in excess of 670 Mt. Another mine and Inaglinskay-3 coal preparation plant will be built in 2017 – 2018.

Implementation of this strategy will allow Kolmar to increase the total volume of coal mined and processed to 20 Mt across all its operations, which will help Kolmar become one of the five largest coal-mining companies in Russia by 2019.

Development strategy of the company

	«6+»	«12+»	«20+»
	May 2016	3Q 2017	4Q 2010
Inaglinskiy project	Mta	Mta	Mta
ROM coal production	2.0	6.0	14.0
Volume of washed coal	1.2	4.4	8.8
Mid-coal yield	0.5	0.5	0.5
Denisovskiy project	Mta	Mta	Mta
ROM coal production	2.0	6.0	6.0
Volume of washed coal	0	3.6	3.6
Mid-coal yield	0.5	0.5	0.5



EXTENSIVE SUPPORT



Ministry for the development of the Russian Far East
Special subsidies (power transmission lines to Inaglinskiy project)



Ministry of Railways of the Russian Federation
Design and construction of a railway spur and a railway station at Inaglinskiy project (special subsidies)
Reconstruction of the Baikal-Amur Mainline and Trans-Siberian Railway



Ministry of Energy of the Russian Federation
Design and construction of a high-voltage power transmission line and a substation at Inaglinskiy project



Foundation for the development of the Far East and Baikar Region
Project financing



JSC Russian Railways
Reconstruction of the Baikal-Amur Mainline and Trans-Siberian Railway, Agreement on guaranteed freight railway transportations



Government of the Republic of Sakha (Yakutia)
Development of local infrastructure and tax privileges



Government of the Khabarovsk Region
Support for Kolmar's terminal construction project



PJSC RAO Energy Systems of the East
Long-term agreement on coal supplies to regional power plants



REGION OF PRESENCE: STRATEGIC SUPERIORITY

Kolmar operations are located in the Far Eastern Federal District in the Neryungri Region, Republic of Sakha (Yakutia). The company holds coal mining licenses within the ancient geological formation – Aldano-Chulman Plateau, in which the South Yakutia coal basin is located. The official data published by the Federal Agency for Subsoil Use of the Russian Federation suggest that the region has 25 separate coal deposits with 24-37 coal beds, the average thickness of which ranges from 2 to 6 meters.

The thickness of the beds developed by Kolmar operations varies from 0.8 to 6 meters, the stratification depth is 140-200 meters. An important feature of South Yakutia coals is extremely low methane content, which is beneficial to production safety.



The geographical location of South Yakutia gives a strategical superiority to Kolmar operations. Developed infrastructure in the region, good transport access and proximity to the federal highways, railway lines and sea ports allow optimum logistical schemes to be developed both for the domestic market and export trade. The population of the regional center – Neryungri city – amounts to more than 50,000 people. There are two power plants in the region – Chulman Power Plant and Neryungri State District Power Plant. There is an airport in Chulman settlement capable of receiving large-tonnage and jumbo jets. Transport access is via Amur-Yakutskaya Highway. The railway connects Kolmar operations with the Baikal-Amur and Trans-Siberian Mainline. The transport terminal in Muchke Bay allows coal to be shipped by sea to the Asian-Pacific region countries.



COAL PREPARATION PLANT

Inaglinskaya-1 coal preparation plant was commissioned in May 2016. The production capacity of the plant is 2 Mta of coal with extension potential. The company takes special pride in the technologically advanced equipment of the plant. Russian equipment accounts for 85% of the plant.

The design solutions of the plant are developed so that the plant can be upgraded as new standards and technologies emerge. Even today, designers and civil engineers have solutions to increase the capacity of the new plant, which will be retooled to operate in fully closed cycle conditions.

The staff numbers 120 people. Our personnel have undergone special training to work at the plant. Practical training has been provided for key personnel at the best world plants.



Kolmar started construction of Inaglinskaya-2 coal preparation plant and designed Inaglinskaya-3 coal preparation plant. The design capacity of each of the plants is equal to 6 Mta of coal. Commissioning is scheduled for 3Q 2017. Once additional capacities have been launched, the company will be able to transition to producing and selling coking coals in the form of concentrate.

«We are convinced that despite all economic challenges and crises, there always exist points of growth. We not only want to develop our enterprise, but set an example for everyone that they can and must grow, The more points of grow exist, the faster our economy will recover from the crisis».

S.E. Tsvilev



COAL MINING METHODS



Coal mining by open-pit and underground method. The company pioneered unique mining technologies in Russia.

Denisovskaya Central mine is the only mine in Russia using room-and-pillar mining. Kolmar has been the first company in Russia to receive permission to use this method at a depth below 200 meters.

This technology offers new opportunities for mining coal at deposits where, due to geological conditions, other mining methods are not applicable.


The second mine, Denisovskaya Eastern, will become another unique project. It will be locat-

ed in the license area adjacent to the Central mine area.

The mines will be interconnected, and the new mine will use the existing infrastructure. Even the exit of Denisovskaya Eastern to the surface will be provided from the Central mine.

Denisovskaya Eastern mine will use stoping method (longwall mining).

The prime cost of production using mechanized longwall equipment is twice less than with the room-and-pillar method. This technology will significantly reduce the costs associated with the production of run-of-mine coal and will minimize coal losses during mining.



As far as coking fat coal production is concerned, there are not any competitors in Russia. Supplies of coking fat coals from abroad is not feasible in most cases. At the present moment, Kolmar is the sole suppliers of such coals to meet the internal demand. When the production is rumped up to design capacity, Kolmar will be able to replace imports and fully satisfy the demand for coking fat coals in the internal market.

HIGH VALUE COALS AND COALS IN HIGH DEMAND

The industrial coal-bearing capacity of the Jurassic in the Aldano-Chulman District is represented by 25-34 beds, with the total thickness of 74 m. There are 25 deposits in the district with varying degrees of exploration, three of which (Neryungri, Chulmakan and Denisovskoye) are explored. Balance reserves of category B+C₁ amount to 2.8 Bln. tons, C₂ – 2.5 Bln. tons, predicted resources of category P₁+P₂+P₃ – 19 Bln. tons.

The coal beds at the Neryungri deposit (up to 60m), Denisovskiy and Chulmakan (up to 5 m) deposits are the thickest.

The coals at these deposits are represented by average or high ash coals (A^d = 13-40 %), difficult or, less frequently, medium coal with low sulphur content (average value of S_{dt} = 0.3 %). Caking capacity is very high (Y = 15-40 mm). These are most precious coals: fat, coking fat and coking coals. The coals in the ore mix help obtain high-strength coke.

Extremely high caking and coking properties of the coals are confirmed by international classification methods as well. Free swelling is characterized by an index of 8-9. Roga index has the following values by coal types: thin

coking fat from 70 to 85, 2 coking fat from 60 to 80, and coking from 50 to 70. Gray-King coke type is, respectively: G10-G13, G9-G12, G5-G11. Odiber-Arm expansion often reaches 200-250 % and above. According to these indicators, the coals occupy the topmost line in the international classification (code numbers 535, 435, 434, 334).

Kolmar produces coking coals that are in high demand. Even today, there is a perceptible lack of coking coals. A unique combination of caking and coking properties, as well as reduced swelling pressure of coking fat coal, make it suitable for the old coker fleet prevailing in Russia. An increasing shortage of coking coal (up to 3.5Mta) is expected by 2019-2020.

The potential of the coal market for washed coal supplies from Kolmar in 2016-2020 is estimated in a range of 1.0 to 3.5 Mta of washed coals (concentrate). This entire potential volume falls on coking fat coals, corresponding to the process and marketing and general raw materials requirements of potential customers.



INDEPENDENT QUALITY ASSESSMENT OF KOLMAR COALS

Joint-Stock Company Eastern Scientific and Research Coal Chemistry Institute (JSC VUHIN) has studied the beneficiation ability, qualitative characteristics and coking ability of the coals extracted by open-pit (Western area of Chulmakan deposit) and underground mining (Denisovskaya mine and Inaglinskaya mine).

For the coals of each bed, LLC Sibniugleobogascheniye carried out an in-depth study with particle size and fractional analyses on the basis of which potential (theoretical) and expected actual indicators of beneficiation prod-

ucts of the run-of-mine coals of the studied coal beds. Besides, a range of lab tests were carried out for the coals, including technical, element and petrographical analysis, determination of caking and coking indicators by Russian and foreign techniques, as well as determination of the chemical composition of the ash of the concentrates and their melting temperature.

Quality of ROM coals

Quality indicators	Mine Denisovskaya Bed K ₄	Western area Bed Д ₁₉	Mine Inaglinskaya Bed Д ₁₉	Mine Inaglinskaya Bed Д ₁₅
Analytical moisture [W ³], %	0.5	0.8	1.0	0.9
Ash [A ^d], %	26.6	32.8	38.3	25.1
Volatile yield [V ^{dat}], %	25.4	31.1	33.1	38.1
General sulphur [S ^d], %	0.29	0.30	0.20	0.24
Calorific value [Q ^{dat}], ккал/кг	8793	8677	7519	8100
Hardgrove Grindability Index, unit	77	72	60	65

It is seen from the table that the coals are characterized by ash content (Denisovskaya mine, 26.6 %, Western area, 32.8 %, and Inaglinskaya mine, 25.1–38.3 %) and low sulphur content (0.20–0.30 %). Actual coal density (ddr) is directly dependent on their ash content and ranging from 1.48 to 1.64 g/cm³.

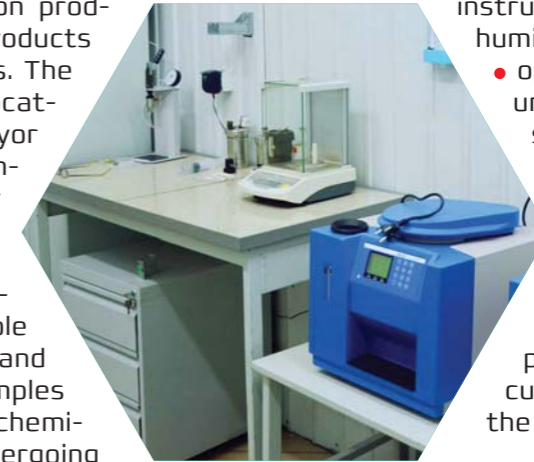
The coals of all beds are characterized by high calorific value (Q^{Sdaf}>31.5–36.8 MJ/kg), even run-of-mine coals.

In terms of Hardgrove Grindability Index (HGI) the coals are characterized by medium and low strength categories.

QA/QC AT THE COAL PREPARATION PLANT

In order to control coal quality at the coal preparation plant, the following measures are taken:

- collection, preparation of samples and determination of RoM coal quality indicators, beneficiation products and saleable products by laboratory methods. The sampling points are located at RoM coal conveyor belts and at the concentrate supply conveyor to the finished product stockpile. Each sampling point a cross-belt sampler and sample splitters MPL-150 and MPL-300. The lab samples are delivered to the chemical laboratory for undergoing quality analysis;
- operating quality control of RoM coal and beneficiation products by imported instruments (ash analyzers and humidity analyzers);
- operating quality control by undertaking express analyses. Control is conducted during the shift on a regular basis, samples are collected manually. The necessary quality indicators of RoM coal, concentrates and saleable products for commercial calculations are determined by the coal chemistry laboratory.



The chemical laboratory includes a room for receiving delivered coal samples, sample splitting room, analytical sample splitting rooms, storeroom for samples and chemical reagents.



COAL CHEMICAL LABORATORY

The coal chemical laboratory of LLC Kolmar was set up in 2013. In July the same year, the coal chemical laboratory started research to determine coal qualitative characteristics on new upgraded equipment.

Laboratory research is carried out in strict compliance with interstate standards, which govern analysis and testing procedures.

The principal qualitative characteristics of the coal are regulated by:

- humidity – GOST 52911 «Solid fossil fuel. Total moisture determination methods» and GOST 11014 «Brown, stone coals, antracite and shale coal. Express methods of moisture determination»;
- ash content – ГOCT 11022 «Solid fossil fuel. Ash content determination method»;
- volatile yield – GOST 6382 «Solid fossil fuel. Volatile matter determination methods»;



- total sulphur content – GOST 11022 «Solid fossil fuel. Total sulphur determination. Eshka method»;
- calorific value – GOST 147 [ISO 1928-76] «Solid fossil fuel. Determination of higher calorific value and calculation of lower calorific value»;
- plastimetry indicators – GOST 1186 «Stone coals. Determination method for plastometric indicators».

On September 26, 2013, the coal chemical laboratory obtained certificate №198 on the condition of the measurements and the laboratory.

Moreover, the laboratory carries out petrographic studies of different coal brands and the products of their mixture based on the developed program on the photometer created by CJSC Izhitza. Such studies are not carried out in any of the city laboratories.



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