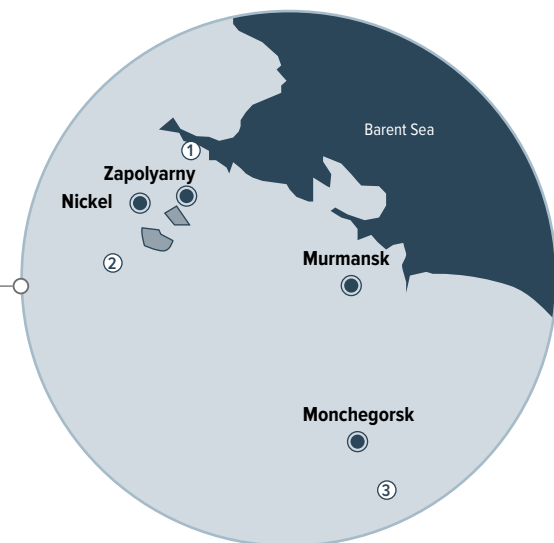


KOLA PENINSULA

(Kola MMC)

Located on the Kola Peninsula, Kola MMC is fully integrated into the transport infrastructure of the Northwestern Federal District as the leading industrial facility of the Murmansk Region.

-  Residential Area
-  Kaula-Kotselvaara Mine
-  ① Zapolyarny Concentrator
-  ② Refining Plant
-  ③ Severonickel Plant, Smelting Shop, Refining Shop, Nickel Electrolysis Shop



Mining

Kola MMC is currently developing Zhdanovskoye, Zapolyarnoye, Kotselvaara and Semiletka Fields. Severny Mine (including Kaula-Kotselvaara mine) produces disseminated sulphide ores containing nickel, copper and other commercial components. Severny Mine leverages various ore mining methods as follows:

- Zhdanovskoye Field uses sublevel longwall caving with front ore passes, block caving (limited scope of application), and open-pit mining (at the open pit sections, for example, at Yuzhny Open Pit) methods.
- At Zapolyarnoye Field, in 1H 2016, ores were extracted through chamber mining with deep-hole stoping from sublevel drifts and flowable and dry backfilling.
- Kotselvaara and Semiletka Fields primarily use stoping from sublevel drifts and sublevel caving, as well as room-and-pillar short-hole and long-hole stoping (limited scope of application).

Kola MMC is the Company's second largest production asset.

Kola MMC mining assets

Field / mine (section)	Mine type	Ores
Zhdanovskoye Field		Copper-nickel sulphide ores
Severny open pit section	Open pit	Disseminated
Severny underground section	Underground	Disseminated
Zapolyarnoye Field		Copper-nickel sulphide ores
Severny underground section	Underground	Disseminated
Kotselvaara and Semiletka Fields		Copper-nickel sulphide ores
Kaula-Kotselvaara mine ¹	Underground	Disseminated

Ore output, mln t

Field	2014	2015	2016
Zhdanovskoye Field			
Severny open pit section	476,833	558,418	459,707
Severny underground section	6,081,295	6,181,010	6,309,574
Zapolyarnoye Field			
Severny underground section	695,101	489,308	138,967
Kotselvaara and Semiletka Fields			
Kaula-Kotselvaara mine	787,935	733,490	707,270
Total	8,041,164	7,962,226	7,615,518

¹ In December 2013, Kaula-Kotselvaara Mine was merged with Severny Mine and incorporated therein as Kaula-Kotselvaara mine.

/ Business Overview / Production

In 2016, Kola MMC's total ore output amounted to 7.6 mln t, down 347 kt, or 4% y-o-y.

The comparison of actual ore outputs in 2016 and 2015 shows:

- a 72% decline in Severny Mine's output at Zapolyarnoye Field due to additional development of the Field's balance ore reserves;
- a 4% decline in Kaula-Kotselvaara mine's output due to the five-day working week;
- the decline in output at Zapolyarnoye Field and Kaula-Kotselvaara mine in line with the mining plan for 2016.

Average metal content in ore

Metal	2014	2015	2016
Nickel, %	0.65	0.62	0.53
Copper, %	0.27	0.25	0.22
PGM, g/t	0.08	0.07	0.08

In 2016, Kola MMC's total ore output amounted to

7.6 mln t

Ore production breakdown by metal content, %

Mines	Ore output	Metal content in ore		
		Nickel	Copper	PGM
Severny Mine	100	100	100	100
Severny open pit section	6.0	4.0	4.5	2.7
Severny underground section (Zhdanovskoye Field)	82.9	80.9	78.0	67.8
Severny underground section (Zapolyarnoye Field)	1.8	4.6	4.8	9.2
Kaula-Kotselvaara mine	9.3	10.5	12.7	20.3

Concentration

Concentration facilities:

- Zapolyarny Concentrator

The Concentrator produces briquetted copper-nickel concentrate. Nkomati concentrate also undergoes briquetting. Briquettes are delivered to Smelting to produce converter matte.

In 2016, Kola MMC's Concentrator processed 7.568 mln t of ore, down 282 kt y-o-y as a result of lower mining volumes.

In 2016, the rate of metals recovery in collective concentrate was below the 2015 level due to a higher content of hard-to-process finely disseminated and talcose ores in the ore mixture.

Metals recovery in concentration (ore to concentrate), %

Metal	2014	2015	2016
Nickel	72.4	72.7	69.0
Copper	75.2	76.0	73.6

In 2016, Kola MMC's Concentrator processed

7.6 mln t

Smelting

The refining facilities of Kola MMC in Monchegorsk process converter matte from Smelting Shop and Polar Division, and copper cake from Norilsk Nickel Harjavalta.

Precious metals produced by Kola MMC are refined at Krasnoyarsk Gulidov Non-Ferrous Metals Plant under a tolling agreement.

In 2016, Kola MMC produced more metals as compared to 2015. The main driver behind this growth was the increased converter matte supply from Polar Division owing to reconfiguration of the production facilities.

Smelting facilities:

- Smelting Shop (Nickel)
- Metallurgical Shop (Nickel)
- Refining Shop (Monchegorsk)
- Nickel Electrolysis Shop (Monchegorsk)

Metals recovery in refining, %

Metal	2014	2015	2016
Nickel	97.8	97.8	98.0
Copper	97.2	97.3	97.1
PGM	95.2	97.1	96.3

Metals output

Metal	2014	2015	2016
Nickel, t	106,048	125,100	131,235
including the Company's Russian feedstock	100,834	123,335	126,937
Copper, t	57,392	63,075	70,272
including the Company's Russian feedstock	48,345	60,134	63,542
Palladium, koz	595	671	851
including the Company's Russian feedstock	517	640	815
Platinum, koz	127	134	173
including the Company's Russian feedstock	95	122	159

FINLAND

(Norilsk Nickel Harjavalta)

Harjavalta processes the Company's Russian feedstock and nickel-containing raw materials sourced from third-party suppliers.

Norilsk Nickel Harjavalta has a total nickel processing capacity of 66 ktpa. The plant uses sulphuric acid leaching, the best-in-industry solution for nickel semi-products with the metal recovery rates of over 98%.

Norilsk Nickel Harjavalta's commercial products include nickel cathodes, briquettes and salts, and cobalt sulphates. The plant also manufactures semi-products, including PGM-bearing copper cake and cobalt solution for further processing by third parties.

