ZAO “Mekhanobr Engineering” was established on the basis of design and research divisions of the “Mekhanobr” Institute in December of 1990, and now successfully employs the experience gained over 90 years of activities that resulted in development of processing technologies and designs for more than 250 mining-and-ore-dressing operations constructed in the territory of the CIS and other countries (China, Mongolia, India, Iran, Algeria, Congo, Cuba, Yugoslavia, Bulgaria).

At present, ZAO “Mekhanobr Engineering” is engaged in design and research activities in the following areas of the mining-and-ore-processing sector:

| Areas of activity | Main customers (2000 – 2012) | | | Type of work | Accomplished results |
|---|---|---|---|---|---|
| | Managing company | Facility | Capacity, million tons/year | | |
| 1 | 2 | 3 | 4 | 5 | 6 |
| **1. Ore-dressing plants and tailings disposal facilities** | | | | | |
| | | | | | |
| **1.1. IRON-CONTAINING ORES** | “Metalloinvest MC” OOO | – “Lebedinsky MCC” OAO | 55.0 | TCO | Technology was proposed for the 22nd Section with capacity of 6.5 million tons of ore per year. |
| | “Metinvest-Holding” OOO | – “Severny MCC” OAO | 44.0 | Pre-Design Proposals | Ore-dressing operation development concept was proposed with application of domestically and foreign-produced equipment. |
| | “ENRC” PLC | – Sokolovsko-Sarbaiskoye Mining & Industrial Amalgamation AO | 38.0 | Concept | The technology was proposed, providing for ore-processing capacity increase to 40 million t/year, concentrate grade increase to 70% Fe, reduction of processing sections, decreasing energy intensity by 25%. |
| | “Evraz Group” SA | – “Vanady” OAO | 50.0 | | The technology of waste tailings thickening was proposed. |
| | Vietnam Steel Corporation | – “Thakhe” Deposit | 10.0 | Feasibility Study | Project engineering concepts related to ore-preparation and processing stages, as well as tailings disposal system were implemented. |
| | Myanmar Economic Corporation | – “Pang-Pet” Deposit | 0.5 | FS, DD | Project engineering concepts related to ore-preparation complex and fine tailings storage facility were implemented, and facilities were constructed. |
| | “Severstal-group” ZAO | – “Karelsky Okatysh” OAO | 22.0 | Design | Concentrating plant expansion project to 33 mil t/year was implemented. |
| | | – “Karelsky Okatysh” OAO | 22.0 | DD | Construction of dry magnetic separation complex was implemented. |
| **1.2. BASE METALS ORES** | | | | | |
| **1.2.1. Copper-zinc ores** | «Ural Mining & Metallurgical Company – Holding» OOO | – “Uchalinskiy MCC” OAO | 4.5 | Detailed Design | As a result of upgrade, Cu and Zn recovery was significantly increased, processing capacity was increased by more than 1.2 million t/year. |
| | | – “Gaiskiy MCC” OAO | 8.0 | Detailed Design | Concentrating plant expansion project to 8 million tons of ore year, based on ore semi-autogenous grinding and rational flotation technology with application of the latest equipment, has been implemented, Concentrating plant has been constructed. |
| | “Russian Copper company” ZAO | – “Karabashmed” ZAO | 0.6 | Detailed Design | Concentrating plant Project engineering concepts were realized. Favorable decision of the Expert Examination was obtained. Concentrating plant has been constructed and is operating with Design performance figures. |
| **1.2.2. Copper-nickel ores** | «MMC Norilsk Nickel» OAO | – “Pechenganickel MMC” OAO, Concentrating Plant No. 1 | 7.4 | Detailed Design | As a result of Project engineering concepts implementation, Ni recovery into concentrate was increased by 2%, power consumption in flotation was decreased to 9.5 kWh/ton of ore. |
| | | – Talnakh Concentrating Plant | 10.0 | Detailed Design | As a result of project concepts implementation, providing mills feed size decrease, mills’ throughput was increased by 10-15%. |
| | | – Talnakh Concentrating Plant | 16.0 | Detailed Design | Concentrating plant expansion Project Alternatives to 10, 12 and 16 million t/year were implemented. |
| | | – “Norilskaya” Concentrating Plant | 7.5 | Detailed Design | A new 7.5 million t/year Concentrating plant construction Project was implemented. |
| **1.2.3. Copper ores** | “Kazakhmys Corporation” TOO | – “Balkhash MMC” OAO | 6.5 | Pre-Design Proposals | Modern efficient ore semi-autogenous grinding technology was introduced and separate flotation of sands and fines based on the latest equipment application was implemented. |
| | The government of Uzbekistan Republic | – “Almalyk MMC” OAO | 12.0 | Detailed Design | Upgrade project of Sections 6-9 was implemented. Construction was completed. Design performance figures were achieved. |

| 1 | 2 | 3 | 4 | 5 | 6 |
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| **1.2.4. Polymetallic ores** | “Kazzinc” OAO | – “Zyrianovskaya” Concentrating Plant | 1.8 | Detailed Design | Maleevskoye deposit ores Concentrating plant Upgrade Project was implemented. Design performance figures were achieved. |
| | “Kazakhmys Corporation” TOO | – “Zhezkentsky MCC” OAO | 1.5 | Detailed Design | Polymetallic Concentrating plant project was implemented with application of complete autogenous ore grinding flow sheet. All Design performance figures were achieved. |
| | The government of Uzbekistan Republic | – “Almalyk MMC” OAO, Khandiza operation | 0.65 | Detailed Design | Detailed design and documentation were developed. A new concentrating plant was constructed. |
| | | – “ShalkiyaZinc LTD” TOO | 4.0 | Pre-Design Proposals | Main Design-engineering concepts were developed with regard to Concentrating plant and Tailings disposal facilities. |
| **1.2.5. Tungsten-molybdenum ores** | The government of Kabardino-Balkaria | – “Tyrnyauzsky MCC” OAO | 1.0 | Design | Design proposals for re-commissioning of a closed-down concentrating plant with capacity of 1 million t/year were developed. |
| **1.2.6. Copper-molybdenum ores** | The government of Mongolia | – “Erdenet” JV | 26.0 | Lab. & Full-scale Testing | Non-steaming technology with $Na_2S$ or NaHS application in nitrogen medium was developed. |
| | «Cronimet Mining» GmbH | – “Zangezur Copper and Molybdenum Combine” ZAO | 12.0 | Detailed Design | Concentrating plant expansion project to 12 million t/year capacity is at implementation phase, based on state-of-the-art ore-preparation and ore-dressing equipment. |
| | «GeoProMining» Ltd. | – “Agaraksky Copper and Molybdenum Combine” ZAO | 2.0 | Detailed Design | Detailed design and documentation were developed for the Concentrating plant rebuilding. Construction was implemented. |
| **1.2.7. Медно-порфировые руды** | “Russian Copper Company” ZAO | – “Mikheevsky MCC” ZAO | 18.0 | Detailed Design | Detailed design and documentation were developed for construction of the Concentrating Plant with Tailings Disposal and Return Water systems. The documentation was submitted to GlavGosExpertise (RF State Expert Evaluation Department). |
| **1.3. RARE-METAL ORES** | | | | | |
| **1.3.1. Titanium-zirconium ores** | “Itera OGC” OOO | – “Tekhnotsentr” OOO, Beshpagirskoye Deposit | 1.7 | Feasibility Study of conditions | Feasibility Study of conditions / final mining parameters was completed. |
| **1.4. PRECIOUS METALS ORES** | | | | | |
| **1.4.1. Gold ores** | “Polyus Zoloto” OAO | – “Kazakhaltyn Mining Company” AO | 1.3 (3 plants) | Technical-and-economic calculations | Two Alternatives were elaborated: – Upgrade of the existing Gold Recovery plants; – construction of new Gold Recovery plants. |
| | “Rusdragmet” OOO | – Taseevskoye Deposit | 2.0 | Detailed Design | Detailed Design documentation for Gold Recovery plant and hydrometallurgical plant with tailings disposal facilities is under development. |
| | The government of Uzbekistan Republic | – “Navoi MMC” | 30.0 | Design | Upgrade project of Ore-preparation complex was implemented with change-over to semi-autogenous grinding technology. |
| **1.5. DIAMONDS** | “Alrosa” ZAO | – “Severalmaz” OAO | 4.0 | Detailed Design | Detailed Design documentation for Diamond Recovery plant with capacity of 4 million ton/ year was developed. |
| | | – “Severalmaz” OAO | 1.0 | Detailed Design | Pilot plant Detailed design and documentation were developed, construction was completed, with commissioning in 2005. Design performance figures were achieved. |
| | | – “Catoca LTD”, module 1 | 4.8 | Detailed Design | Economically efficient project of Diamond Recovery facility was implemented. |
| | | – “Catoca LTD”, module 2 | 6.0 | Detailed Design | Economically efficient project of Diamond Recovery facility was implemented. |
| | “Lukoil” OAO | – Deposit named after V.Grib | 4.5 | Design | Design documentation for Diamond Recovery plant with tailings disposal facilities was developed. The documentation was submitted to GlavGosExpertise (RF State Expert Evaluation Department). |
| **1.6. COAL** | | | | | |
| **1.6.1. Power-generating coal** | | – “Elgaugol” OAO | 15.0 | Pre-Design Proposals | A modular design concept was proposed for a large coal-preparation plant with a view to produce concentrate with 15.6% coal ash content. |
| **1.6.2. Coking coal** | | – “Elgaugol” OAO | 15.0 | Pre-Design Proposals | A modular design concept was proposed for a large coal-preparation plant with a view to produce concentrate with 9% coal ash content. |

| 1 | 2 | 3 | 4 | 5 | 6 |
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| **1.7. INDUSTRIAL MINERALS** | | | | | |
| **1.7.1. Apatite-nepheline ores** | “PhosAgro AG” ZAO | – “Apatit” OAO | 6.0 | Detailed Design | Upgrade project of flotation operations was implemented. Column flotation machines were applied, number of concentrate cleaning operations was reduced. |
| | “Acron” OAO | – “North-Western Phosphorous Company” ZAO | 6.0 | Design | A new Concentrating plant and Tailings disposal facilities construction Project was implemented. Favorable decision of the Expert Examination was obtained. |
| **1.7.2. Phosphorite ores** | “UCC “Uralchem”” OAO | – “Kamskiye Phosphority” OAO | 9.0 | Design | Main Design-engineering concepts were proposed for the new Concentrating plant and Tailings disposal facilities construction. |
| **2. Sinter plants** | | | | | |
| | | | | | |
| | “Severstal-group” ZAO | – “Severstal” OAO | 10.0 | Detailed Design | Detailed Design for modernization of existing and construction of new conveyer routes was developed. |
| | “Industrial Metallurgical Holding MC”” OOO | – “Tulachermet” OAO | 5.7 | JFE | JFE was performed for construction of Sinter plant 2 with capacity 5.7 million tons per year including two sintering machines of 280 $m^2$ with sinter mix preparation plant and modern blending stock-piles; high-layer single-component burden sintering technology was applied. |
| | OOO MC «Mechel» | – OAO «Chelyabinsky Steel Plant» | 4.5 | Detailed Design | Coke and limestone crushing-and-sizing plants reconstruction Project was realized, including construction of new conveyer routes. |
| | | – OAO «Chelyabinsky Steel Plant» | 6.5 | JFE | JFE was performed with regard to reconstruction and modernization of sinter production with a view to increase final sinter output from 4.5 to 6.5 million tons per year, including construction of modern raw-material blending stock-piles. |
| **3. Pelletizing plants** | | | | | |
| | | | | | |
| | “Metalloinvest MC” OOO | – “Lebedinsky MCC” OAO | 5.0 | Pre-Design Proposals | Design Proposals were developed for construction of new Pellet plant complex with production rate of 5 million tons per year of indurated pellets. |
| | | – “Mikhailovsky MCC” OAO | 5.0 | Design | Design was developed for construction of complex of pellet indurating machine 3 of 592 $m^2$. Favorable decision of the Expert Examination was obtained. |
| | ZAO «Severstal-Group» | – OAO «Karelian Okatysh» | 11.0 | Detailed Design | Design was developed for reconstruction and modernization of existing Pellet plant with indurated pellets output increase from 9.0 to 11.0 million tons per year. |
| | OAO «Novolipetsky Steel Plant» | – OAO «Stoilensky Mining Complex» | 5.0 | Pre-Design Proposals | Pre-Design Proposals were developed for construction of new Pellet plant complex with production rate of 5 million tons per year of indurated pellets. |