# CORPORATE PROFILE

NITTETSU MINING

# Yama (Mine)

**With a familiar feeling, the employees of Nittetsu Mining Co., Ltd. call the business establishments "yama" (mine).**

This unique name of "yama" originated years ago when there were many coal and metal mines operating in Japan. The mines were opened deep in the mountains in many cases; accordingly mine communities consisting of production facilities, offices, and company houses for workers were built around the mines. The communities were called "yama" in general. In the past, from these special geographical conditions and the type of industry, a unique lifestyle in a close-knit community, like a "family by every yama," was formed. Consequently, people living there felt they were a community sharing the same fortunes.

Eventually, transportation became more effective and moving to other districts became easier, resulting in a change of consciousness. However, the idea of a "yama" is in the minds of Nittetsu Mining employees – even today.

**Reiichi Morikawa**

Representative Director and President

Nittetsu Mining Co., Ltd. (“our company”) was established after separating from the mining division of the former Japan Iron & Steel Co., Ltd. (Today's Nippon Steel Corporation) in 1939. The intention was to develop and steadily supply raw materials, such as coal, iron ore, and limestone, for steel making.

Since then, our company has prospered and expanded while bearing a heavy burden of responsibility for supplying raw materials to basic industries in Japan through the development of underground resources. In the midst of a revolution of resources and energy situations in the course of economic growth, our main operations have changed from coal to metal, further changing to nonferrous metals such as limestone and the like. Today, our company has established a unique position in the industry as a comprehensive resources corporation engaged in mine development at home and abroad.

From now on, responding to social demands, we are making every effort to steadily supply these resources. At the same time that we are using the traditions and technologies accumulated over a long time, we will tackle the development of other technologies around mines, such as security and the development of new resources both at home and abroad, adding value to mineral resources, and consulting on mining and geology, among other activities. We will take further action to strengthen our business base as a comprehensive resources corporation in order to achieve further growth.

Furthermore, we will contribute to our shareholders, customers and community by demonstrating all of the strengths of our group through the development of such businesses as machinery and other products centered on environment-related products, real estate, renewable energy business, etc.

Limestone is the main product of the Resources Division of our company. Limestone is sedimentary rock that is formed by deposits of the bones and shells of sea creatures, such as coral, that has accumulated on the bottom of the sea for hundreds of millions of years, then upheaved to the surface by crustal movements.

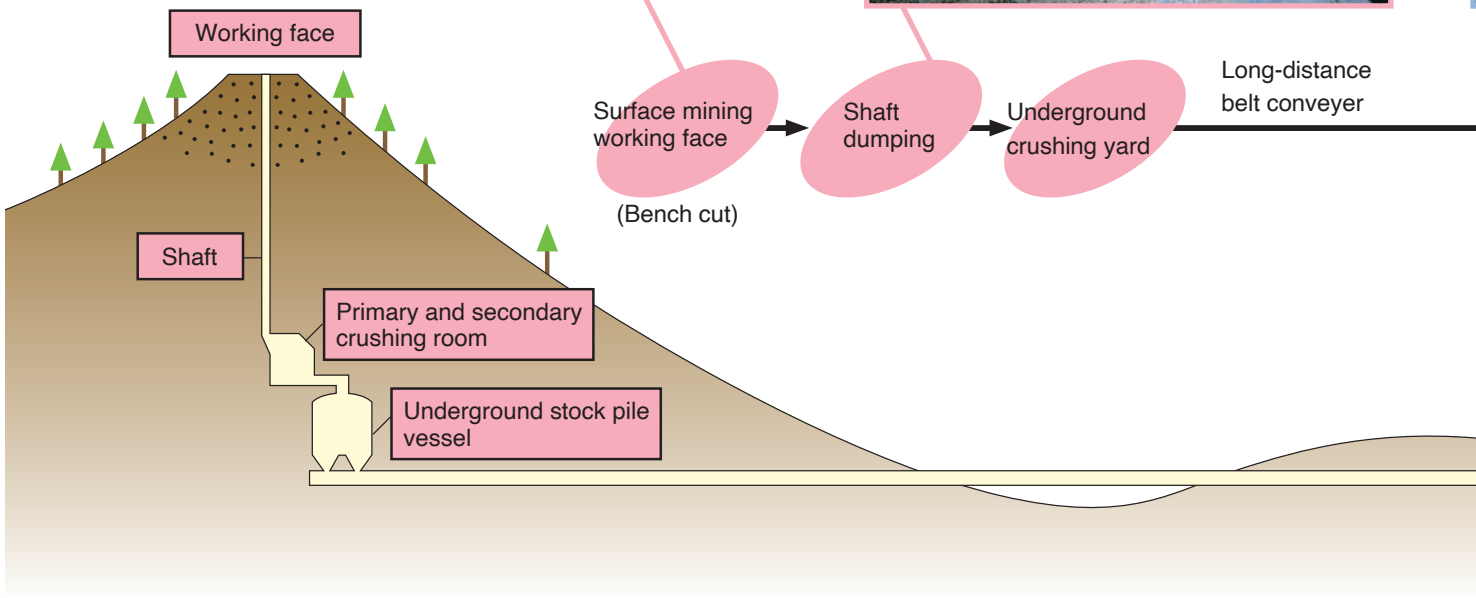
Though our country is said to have few natural resources, limestone is an underground resource enabling us to boast a self-sufficiency of 100% and domestic annual production is 140 million tonnes.

Our company has limestone mines in various places in Japan, such as the Torigatayama Quarry Complex in Kochi Prefecture—the largest mine in the country—the Shiriya Quarry Complex in Aomori Prefecture, and the Oita Quarry Complex in Oita Prefecture, among others. Our annual production, placing us among the top class in the domestic business world, is about 25 million tonnes. We supply domestic steel and cement manufacturers, and a portion is exported abroad to such countries as Australia and Taiwan.

*Torigatayama working face*

*Torigatayama coastal facilities*

## Limestone production process of Torigatayama Quarry Complex

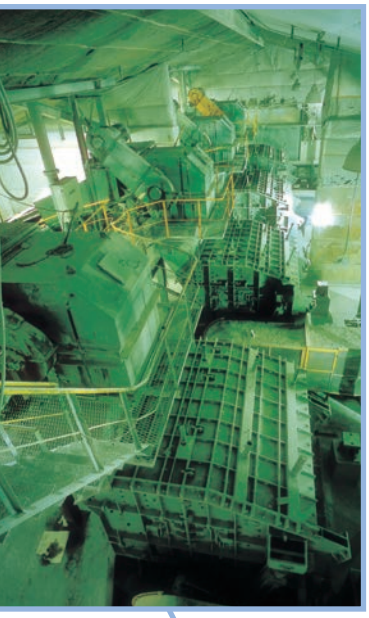


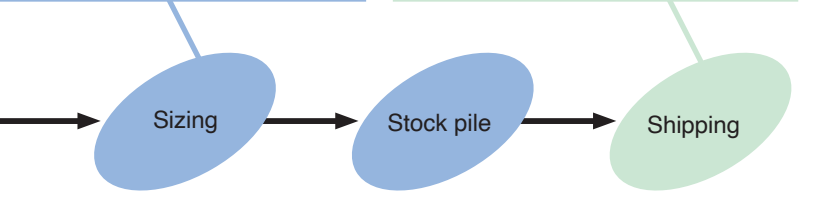
The main component of limestone is calcium carbonate, and from its characteristic, it is used as the main and sub-materials that are indispensable for raw material industry representing the country, such as steel and cement.

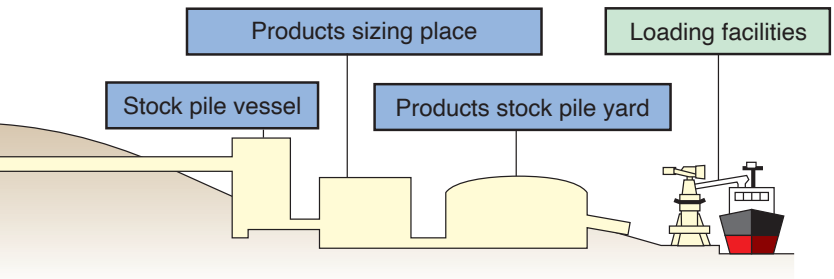
The applications are varied, including aggregates for civil engineering/construction, desulfurizing agents used at power plants and waste treatment facilities, asphalt fillers, fertilizer, feed, glass, paper making, sugar making, drugs and food; Limestone is a mineral resource closely connected with daily living.

Furthermore, our company has opened quarries in many places in Japan and has supplied many types of aggregate to users throughout Japan.

Our company is responding to a variety of extensive needs as well as opening up new avenues of use with thorough quality control and full use of technologies accumulated over a long time.






## ■ Main application of limestone

*for steel & iron-making (Blast Furnace)*

*for cement (cement kiln)*

*for aggregate (ready-mixed concrete plant)*

*for flue gas desulfurization (thermal power station)*

*for road paving(asphalt pavement works)*

# Resources Division

*The Kosho Maru*

The Resources Division of our company is also tackling product development that uses mineral resources by exhibiting the technical capability cultivated over a long time as a resources company.

The main products include inorganic paper (flameproof paper and calcium carbonate paper) used as materials for inorganic powders such as aluminum hydroxide and calcium carbonate. This inorganic paper is widely used in flameproof building materials and thermal insulation boards. We also sell white limestone, quicklime, high-purity silica, and "Asheet" paper shoe insoles. As well, we are developing businesses for various other types of powder.

As a special agency of ENEOS Corporation, we sell A/C heavy oil for ship fuel and lubricants that take advantage of our long business relationships. We also sell petroleum products and imported coal and coke and LPG as well as fuel oil for various industries.

From now on, our company, as a comprehensive resources company, will be concerned with every resource that supports industries in Japan.

*The Nissho Maru*

*White limestone (left: quicklime, right: white limestone)*

*Tree planting at sedimentary space*

Considering that coexistence and co-prosperity with the natural environment and the community are indispensable for continuing our business in the mining industry, our company is proactively tackling environmental preservation on a global scale by preventing environmental mine pollution and by reducing the environmental load, while cooperating with the community.

*Watering for control of dust*

*Company-owned Shiraoi Forest*

Starting in fiscal 1998, we began to acquire ISO 14001 certifications for international environmental management, as a part of our global environmental conservation activities. We have now acquired this certification for all our mines and we are working daily to promote environment-friendly activities.

In December 2013, we acquired a Forest Management Certificate from the Sustainable Green Ecosystem Council (SGEC) for the Shiraoi Forest (Shiraoi-cho, Shiraoi-gun, Hokkaido) owned by our company. In this way, we are pursuing effective maintenance/management of company-owned forests aiming at the preservation of the global environment and coexistence with the community.

Every business unit has set up energy-saving targets to reduce the environmental load and to promote countermeasures against global warming aiming to be an environment-friendly enterprise. As well, we are implementing environmental management activities, thus promoting fuel and electricity saving. Each business unit strives to reduce waste through careful use of materials, water, electricity and fuel for changing to a more recycling-based society.

Further, as a mining company which has been working with the underground materials for a long time, our company has started geo-scientific research for technical developments by using our knowledge and experiences. This research covers geology, geophysics, rock mechanics, hydraulics and hydrology. For our corporate activities from now on, it will be necessary to take care for not only the regional environment but also the global environment. Every business establishment will promote activities considering environmental issues such as energy saving, resource saving and the like.

# Metal Division

*Hibi Kyodo Smelting Co., Ltd. Tamano Refinery*

The Metal Division of our company originated in the development and operation of the Kamaishi Mine and many other metal mines. Domestic metal mines discontinued operation one after another because of adverse change of business environment caused by the exhaustion of ore reserves, a rise in the exchange rate of the Yen and so forth. To cope with these circumstances, our company, using our own exploration and development technologies for metal mines, has developed overseas copper mines in a search to secure resources. The development of overseas copper mines carried out by our company has progressed steadily and has demonstrated success.

Our overseas copper mine development business started in 1975 by developing the Qaleh-Zari Mine in the Islamic Republic of Iran, followed by the development of the El Roble Mine in the Republic of Colombia of South America, then, at present, the development and operation of the Atacama Mine in the Republic of Chile of South America.

Furthermore, in 1968, our company participated in the Hibi Kyodo Smelting Co., Ltd. and entered into the copper smelting and refining industry. The copper refined by that joint-venture for this company is about 50,000 tons per year for our portion which is mainly supplied to domestic electric wire&cable mills,copper fabricator such as rod and plate, and partially exported to overseas markets.

*Electrolytic copper*

*Copper concentrate*

*Atacama Mine*

*Landscape of test boring survey in Chile (sampling of underground rocks)*

The Resources Development Division of our company has consistently dealt with exploration and development of natural resources in Japan, a country known to be poor in natural resources. Its activities cover not only domestic mineral resources but also overseas mineral resources such as materials for steel manufacturing, copper ore and so forth in South East Asia, South America, and Middle East.

In the northern part of the Republic of Chile in South America, we are vigorously exploring mantle-type copper deposits around the Atacama Mine. We are analyzing satellite images to find promising mining sites where minerals can be efficiently extracted. This includes the application for and acquisition of mining concessions, and subsequent exploration work is being conducted. In Southeast Asia, we are acquiring mining sites in various countries. In Fiji in the South Pacific, we confirmed a promising porphyry copper mineralization and have started a precise exploration including an economic evaluation through joint exploration with three companies including overseas enterprises, thus promoting exploration activities throughout the world.

In the future, to establish a stable supply system of resources in the 21st century, we aim to have global exploration/development activities that pay close attention to nonmetal resources including limestone throughout Asia and copper resources in the Asia-Pacific region including South America, Australia and Southeast Asia.

Even though exploration and development of a new mineral deposit will not be achieved in a day, our company will take every effort to secure the stable supply of natural resources.

*Observation of rocks sampled from test boring survey (Philippines)*

*Landscape of geological survey (collection of rocks sampled from a surface outcrop)(Philippines)*

# Environment Division


*Effect of coagulant "Polytetsu®"*

The Environmental Division of our company supplies wastewater treatment chemicals, with special emphasis on Polytetsu®, an internally developed inorganic poly-ferric flocculant.

Polytetsu® is mainly used for city sewage and industry effluent treatment. By comparison with the existing aluminum coagulants, it is used for not only water treatment agent – superior for coagulating sedimentation and sludge dehydration – but also as a deodorant effective against offensive odor substance such as hydrogen sulfide. Furthermore, application as a soil reclamation to remove heavy metal has recently increased. Additional sales products include a metallic deodorant Dashace®, an organic high molecular coagulant Tetsuflock®-a superior dehydrating agent and others.

Our marketing policies are to provide chemicals to any customers all over Japan safely and steady, to provide careful technical service how to operate water treatment systems by our sales engineering stuff, and also to provide new chemicals and new applications by cooperating with the Research and Development Division according to the environmental needs of customers and society such as hazardous soil, sewage pipeline decay, fly ash containing heavy metal, etc.


*Packaged Polytetsu®*


*Packaged Polytetsu®*



*Sinter Plate filter® (element)*



*Sinter Plate filter®*

Our Machinery Division is developing operations to cope with a wide range of needs from earth-friendly environmental products to industrial machines.

For environmental products, we manufacture and sell a dust collector incorporating the Sinter-Lamellar-Filter®, a sintered plastic resin element with high collection efficiency, and the "Plasma Dash®" cigarette smoke eliminator for smoking rooms. In addition, for the industrial machinery market, we are manufacturing/selling Elbow Jet, an ultra-fine particle classifier capable of sorting to the submicron level as well as automatic inspection machines used in the food/pharmaceutical field.

The machinery division is also aiming to provide products and services for customer satisfaction from now on.

*"Plasma Dash® Sigma" cigarette smoke eliminator for smoking*

*"Geo-sinter®" dust collector for tunnels*

*Automatic culture media equipment*

# Real Estate Division


*Honami Park-city*

Since 1978, when the first office building Nittetsuko Morioka Building was completed, the Real Estate Division of our company has carried out business activities to effectively use company-owned real estate.

According to the needs of the market, this division is also managing company-owned office and apartment buildings etc., in urban areas, and is leasing restaurants, stores, factories, warehouses, parking lots and other properties at disused mines and idle land over the whole country.

The main properties are Honami Park-city centering on a shopping center (Iizuka, Fukuoka: the former Futase Mining Works), Mitaka Nisshin Intelligent Building (Mitaka, Tokyo: the old Research and Development Center), City Shopping Avenue Yamine, road-side stores complex (Sasebo, Nagasaki: the former Hokusho Mining Works), and the Stores & Apartment Complex in Setagaya-ku, Tokyo and hotel-condominium-store complex building (Shinjuku-ku, Tokyo).

From now on, forming a clear view of market trends, we will take effort to develop the real estate business by efficiently using company-owned estates to contribute to the revitalization of regional economies.

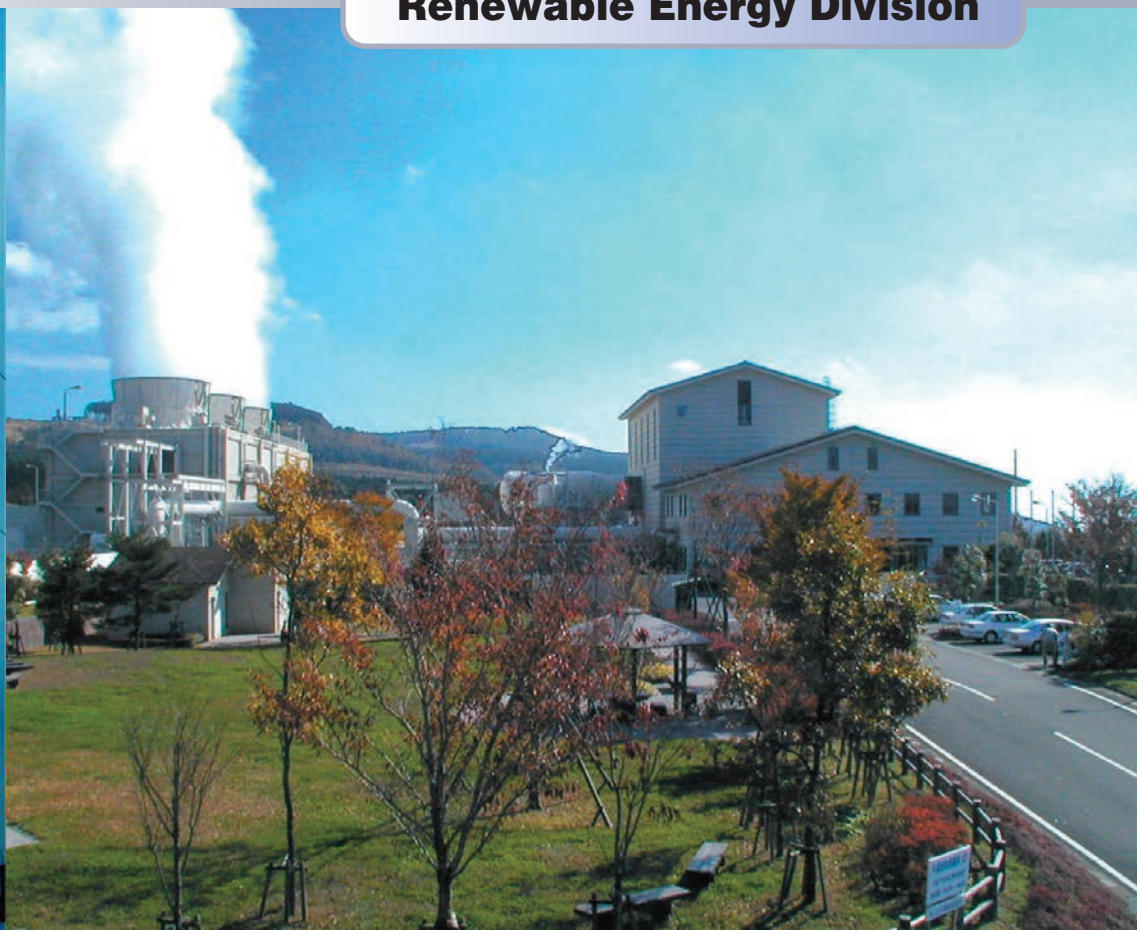
*Rokakoen stores and apartment complex*

*Nishi-Shinjuku 5-chome Building*


*Mitaka Nisshin Building*

# Renewable Energy Division

*Drilling for geothermal production well*



*Ogiri Power Station*

Our Renewable Energy Division is developing earth- or environment-friendly natural energies including geothermal, hydro, and solar.

The Geothermal Division began geothermal surveys in Kirisima-shi, Kagoshima Prefecture in 1973. From March 1996, this division began supplying steam to the 30,000-kW Ogiri Geothermal Power Station of Kyushu Electric Power Company Inc. More than two decades have passed since then, and the division still maintains a steady supply of steam to the power station. We will also continue with geothermal development in the nearby Shiramizugoe district and other areas, always mindful of the environment.

For hydroelectric power generation, we are generating electric power using space in the gallery or old mining site and spring water in the mine cavity in the Kamaishi Mine (Kamaishi Kozan Co., Ltd.: a subsidiary) in Iwate Prefecture where iron ore and copper had been mined for over 150 years.

We also produce solar energy by making use of company-owned land such as inactive mines throughout Japan to generate electricity at eight mega solar power stations (total rated power output of 13,000kW).

*Toyako Mega-Solar Power Plant*

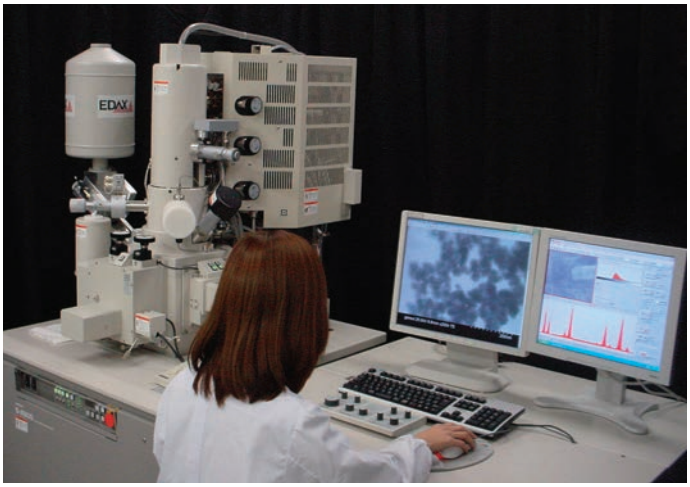
*Yunoki Mega-Solar Power Plant*

# Research & Development Center


*Research & Development Center*

The Research & Development Division is investigating and developing, as well as engineering, new products and materials which will become principal pillars of new businesses that strengthen the corporate base, by freely using our rich technical background and experiences cultivated over a long period.

Our mineral resource divisions support new mining development projects and develop new technologies to deal with refractory ores through researching beneficiation technologies such as flotation and electromagnetic separation, which are processes to separate and collect valuable minerals during mine operation. Furthermore, we also perform analysis tasks such as measurement of the physical properties of various minerals and component measurement of environmental samples.




*Scanning electron microscope*

Our material resource divisions develop and commercialize new materials and technologies (balloon structured silica "SiliNax®" and nano-film coating technology "Nanostrata®") through the application of particle synthesis technology and inorganic oxide coating on powder technology. These technologies are developed for the purposes of adding value to mineral resources such as our flagship mineral product, limestone, which benefits from our innovations in particle synthesis technology.

Our environmental divisions devote themselves to the research and development of new methods of manufacturing and improved function for water processing agent such as "Polytetsu®," an inorganic poly-ferric flocculant. Our machinery divisions make improvements to products such as the "Sinter-Lamellar-Filter®" dust collector and "Plasma Dash®" cigarette smoke eliminator for the purposes of expanding their areas of application as well as development of new products.

*"Polytetsu®" inorganic poly-ferric flocculant*

## Affiliated Companies Related to Resources Business

Our subsidiary companies dealing with resource development produce and sell limestone as well as quartzite, which is necessary for the production of steel.

*Funao Mining Co., Ltd.*

Kamaishi Kozan Co., Ltd. in Iwate Prefecture is selling a natural mineral water called Sennin-Hisui (legendary miraculous water) from mineral water springs 600m underground.


*Sennin-Hisui*

Furthermore, Nittetsukoukenzai Co., Ltd. having a special ship, plays a role in limestone transportation.

*Limestone carrier "Ryusho-maru"*

*Hachinohe Mining Co., Ltd.*

## Subsidiary companies dealing with industrial machinery

Our subsidiary companies dealing with industrial machinery provide individual and unique products for a wide range of markets. Kobukuro Techno Co., Ltd. designs, manufactures and installs crushing and grinding plants and recycling plants for waste concrete and soil.

*Drumrod Screen*

Kaho Manufacturing Co., Ltd. produces monorails and slope car for resort facilities, parks and dam sites. Nippon Ball Valve Co., Ltd. produces high-performance valves and associated mechanical products for various industrial plants.

*Slope car*

NITTETSU MINING

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2021.4