Automotive

Working to become a mega-supplier with the wiring harness business at the core

Overview of business

The automotive industry is undergoing a period of drastic changes, with the increasingly rapid adoption of CASE* and the entry of companies from other industries into the market. We are leveraging our global presence in 33 countries around the world and bringing together our global resources to contribute to advancement in mobility.

Our main product, wire harnesses, are laid throughout an automobile. Advanced technology is required to produce harnesses that can transmit power and information reliably while withstanding extreme vibration and heat. The Sumitomo Electric Group leads the world by a mile in harness development, with a whopping one in four cars around the world using our harnesses.

We are steadily promoting the use of aluminum harnesses, which contribute to weight reduction in vehicles, and our connecting technologies are essential for realizing connected cars and autonomous driving, which must handle a huge amount of information, as well as for achieving widespread use of hybrid and electric vehicles. We will continue to contribute to the next generation, where automobiles are connected with people and society.

* A term for the trends in the automotive industry; an acronym for Connected, Autonomous, Shared and Electric

Initiatives to carry out our mid-term management plan

In response to the current decline in global automobile demand due to COVID-19, we will flexibly adjust production capacity in anticipation of future economic recovery, and focus on further cost reduction activities to rebuild a stronger and leaner business structure. In our business plan, we have pledged to work toward becoming a mega-supplier with the wiring harness business at the core. We will achieve this by creating products for electric vehicles, such as high-voltage wiring harnesses; electrical products for electronic control systems used in automobiles; and new CASE products such as high-speed communication connectors. We will also work to grow our market share overseas. Sumitomo Riko Company Limited will work to become profitable again by expanding sales, improving productivity and reducing costs for products such as automotive anti-vibration rubber products and hoses around the world, and by developing new products for the next generation of automobiles.

Key products and services

Under-floor pipe harnesses for HVs

We supply pipe harnesses that use aluminum pipes to protect electric wires, providing outstanding impact resistance and shielding from electromagnetic poise

Power cables for terminal blocks

These connectors are waterproof and ompatible with electromagnetic shields, making them well suited to the higholtage wires used in the next generation of vehicles (HEV, EV, FCV). They are used for electrical connections between inverters



Anti-vibration rubber products

These crucial functional parts absorb and inhibit vibration from the engine and road for safer driving. We have also developed an increasing number of high-functionality products using electronic control in recent years.



These systems collect and analyze a wide range of

lights and provide transport information, enabling

transport information and use it to control traffic

Traffic control systems

a safe and smooth flow of traffic

nectors are used to connect EVs and plug-in hybrid vehicles with the power source when charging at home or at a charging spot. Extensive safety features have been designed with outdoor use in mind, and the connectors are designed to handle around double the insertions required by standards, ensuring reliable connectivity

VISION 2022 Mid-term Management Plan: Segment Strategy

Ideal Future State

for Customers"

Strengthen collaborative

relationships with third parties

Become a mega-supplier with the wiring harnesses business at the core.

VISION 2022 Growth Strategy Promote "Concept-in Activities

Strengthen our business base through the consolidation of Sumitomo Electric Group resources. (OEMs, the public sector, service providers, etc.)

Expand sales targeting global customers Generate new business for CASE-related products

State of the Market

- Continuous automotive sales growth globally
- Growth in eco-friendly vehicles in line with tightening environmental regulation (ZEV, Co2 regulation, diesel bans)
- Accelerating improvement delivered by CASE, an industry revolution
- Vendors from other industries entering market, changing the supplier vantage-point

Our Strengths

- Comprehensive and dominant market presence in the wiring harnesses business via the trinity system, comprising Sumitomo Electric, Sumitomo Wiring Systems, and AutoNetworks Technologies Global business deployment (33 nations)
- Our business in power systems, telecommunications, and industrial materials enables shared expertise benefiting the development of applicable products for the auto industry

High-strength aluminum wiring harness

We were the first in the world to make engine harnesses from high strength aluminum alloy wires. This material has reduced the weigh and cost of wiring harnesse

Examples of our initiatives to solve social issues

High-strength aluminum wiring harness

We developed aluminum alloy electric wires that conduct electricity as effectively as copper while being around half as heavy. We began selling our aluminum harnesses in 2010. After further discussion with automotive manufacturers, we began working to develop high-strength aluminum to meet a variety of needs. In 2015, we succeeded in developing high-strength aluminum alloy electric wires, which are stronger than copper and flexible and heat-resistant enough to meet manufacturers' needs. Releasing high-strength aluminum wiring harnesses has made it possible to use aluminum wiring harnesses in areas with extreme vibration, such as around the engine. Our high-strength aluminum wiring harnesses are now used in many automobiles both in Japan and overseas. In addition to further contributing to improving fuel efficiency and reducing CO₂ emissions by making automobiles lighter, they are helping to conserve rare resources as aluminum reserves are more abundant than copper.

Charging connectors for EVs

Infocommunications

Leading the global market with some of the world's best optical fiber, production technology, transmission devices, compound semiconductors, access devices, and more

Overview of business

Recent advances in the infocommunications field, such as more widespread use of cloud services and the arrival of 5G, have dramatically increased data traffic. The Sumitomo Electric Group is responding to these changes by making use of our extensive base of technology, including transmission devices, compound semiconductors, access devices and some of the world's best optical fiber production technology, to achieve high-capacity, high-speed communication. In the 1970s, we began producing optical fibers, which are now an essential component of the communication infrastructure our society relies on. Among them, those for ultra-long distance submarine systems with a transmission distance of over 10,000 km are required to exhibit high quality and high reliability. We have built a presence in the industry with our high technical expertise as represented by the Z fiber, which is an optical fiber developed for ultra -long distance submarine system applications. The Z fiber broke the world record for low -loss optical fiber.

Other strengths of ours include production technology for ultrahigh-fiber-count optical cables and software development for video and optical access devices. We lead the global market with initiatives such as collaborative vertical integration from raw materials to finished devices to develop compound semiconductors for optical and wireless applications.

Initiatives to carry out our mid-term management plan

As part of our mid-term management plan, we will take measures to ensure that we are able to keep with demand for optical and electronic devices and optical fiber cables as communication data volumes increase and the 5G market gains a foothold. We are developing and promoting a variety of highperformance products to meet diversifying market needs, including ultra-low-loss optical fibers for submarine cables, ultrahigh-fibercount optical cables, data center products such as optical interconnection devices and access network devices for 4K video distribution and 10G-EPON (a 10-gigabit shared optical fiber network).

Key products and services

Compound semiconductors (GaAs, InP, GaN)

Our compound semiconductors are used in technologies such as laser oscillators and photosensitive elements of optical fiber communication systems: various types of transistors for mobile phones and other wireless communication systems light sources of CD. DVD and Blu ray disc devices; and white LEDs for lighting.

Optical fibers

Optical fiber is made of glass as as a human hair with an optical inside, and is a high-performanc tens of kilometers away. Other transmission, and highly reliable electromagnetic induction noise

Optical fiber cables

Installation efficiency of optical cables in urban area is a growing concern in worldwide. Our high density small diameter optical cable is laid and solving space issues Furthermore, data centers boomingly constructed globally demand high density optical networking. Our ultra-high fiber-count cables and variety of related networking products support to meet such demand

Electronic devices

Electronic devices are important components for realizing wireless nmunications. They are used in radars for air traffic control. vehicle collision avoidance and meteorological observation, as well as for fifth generation (5G) mobile communications base stations that are required to realize power saving and size reduction and llite communications that are required to offer high reliability



BS4K set-top boxes

Set-top boxes convert cable TV signals to a signal that can be received by your TV. In addition to watching BS4K TV, you can watch one show while recording two others. These boxes also feature Android TV®, allowing you to download movies, music games, lifestyle information and a wide range of othe content from the Internet and view them on your TV.

Optical devices

These are essential components for optical communication transmitting video, voice and other information by means of light. Fast, power-saving and compact optical transmitter/ receiver devices themselves, or such devices integrated into optical transceivers, enable long-distance high-capacity data communications between homes and stations between cities and between continents.

VISION 2022 Mid-term Management Plan: Segment Strategy

Ideal Future State

Become a leading supplier in high-capacity network and interconnection markets centering on high-end fiber-optics, connection technologies, transmission devices, compound semiconductors, and access-device technologies.

VISION 2022 Growth Strategy

Consolidate our core technology to support IoT-based societies.

Pursue development of innovative new products and proposals that are one step ahead of and exceed customer expectations while improving global market presence.

Continuous enhancement of our business base; innovate IoTrelated production technologies and facilitate expansion of our global business base.

State of the Market

- Increase in the amount of data traffic due to development of high-capacity mobile networks (4G to 5G); spread of video services; and transition to cloud computing
- Expansion of infocommunication network market. Rising demand for optical-fiber connectivity and high-capacity submarine/onshore cables or cables for data centers. Growth in high-speed, high-capacity fiber/electronic devices. Demand for data security
- Increasing demand for sensors for use in facial recognition applications and for driver-assisted and driverless vehicle technologies

Our Strengths

- Superior manufacturing technology for low-loss optical-fiber cable enabling high-speed, high-capacity telecommunication
- Established manufacturing technology for super-multicore optical cable Leveraging optical precision-molding and mechatronics technologies
- Software development capability for visual- and optical-access devices
- Compound semiconductors for optical/wireless applications developed via collaborative vertical integration from raw materials to finished device

thin signal nofits include a high speed, long distance transmission which is unaffected by



Examples of our initiatives to solve social issues Z-PLUS Fiber® 150 ULL

With the rapid evolution and popularization of smart phones and video streaming services, there is a demand for higher performance optical fibers that can transmit more information at once. There is a particularly strong demand for lower transmission loss in optical fibers for long-haul transmission systems connecting continents. Our Z-PLUS Fiber 150 ULL is an ultra-low-loss products that have been realized by combining our world leading mass production technologies and newly developed low-loss technologies. We have also expanded the effective core area (cross-sectional area of the part where signal is transmitted) to achieve optimal transmission performance in high-capacity digital coherent communication technology, which is rapidly becoming more widely used. In particularly submarine cable system, the product is expected as contributing not only to an increase in transmission capacity and an extension of transmission distance, but also to a reduction in the total cost of the system by reducing the number of expensive equipment such as optical amplifiers.

Electronics

We aim to become one of the world's top suppliers of high-functionality wires and components

Overview of business

The dramatic increase in volumes of data being transmitted to and from mobile devices has accelerated development to handle new functions and standards. There is also a growing need for car electronics products and aviation equipment as the world turns to EVs and self-driving cars. The Sumitomo Electric Group is an indispensable part of these markets' growth. We develop a wide range of materials, wires and parts to be used in various electronic devices. Flexible printed circuits (FPCs) are one of the main products of the group. Their versatility in forming high-density circuits in a small area makes them a wiring material adaptable to all kinds of increasingly complex equipment. We have electron beam irradiation technology used to produce electric wire products and heat-shrinkable tube, and fluorine resin processing technology such as Poreflon™ Module. We draw on strengths such as our proprietary material development, design and processing technologies and high-speed data transmission technology to make our supply chain more competitive on a global stage and serve as a global supplier of high-performance wiring and high-functionality materials.

Initiatives to carry out our mid-term management plan

We are optimizing our global production system for flexible printed circuits (FPCs) and improving productivity to raise profit. We are also expanding the sales of FPCs for the in-vehicle market and developing new products with properties such as super fine pitch circuits and lower transmission loss for use in high frequency bands, etc.

We are global sales and improving our product performance for tab leads, the leads used for battery terminals in EVs, and working to meet a variety of needs for irradiation tubes. We also acquired Techno Associe Co., Ltd. as a subsidiary through tender offer in September 2019, and are working to achieve a synergy between our respective business activities as soon as possible.

Strengthen manufacturing

capabilities and business base

to become more agile and

responsive to client demands

within a shorter business cycle.

VISION 2022 Mid-term Management Plan: Segment Strategy

Ideal Future State

Become a top global supplier of unique highperformance cables, components, and materials with a focus on mobile devices and mobile electronics.



proposition system to meet market demands

for new functions and more innovative. light.

tough, and precise products that facilitate

high-speed data transmission.

Strengthen global sales and manufacturing assets primarily in North America. China. and other Asian nations.

State of the Market

- Adapting to the introduction of new functionalities and new standards that help drive growth in the mobile device market; respond to the associated exponential increase in data transmission volumes
- Shifting demand from traditional electronics sector to the auto industry as demand for greater sophistication in hybrid, electric, driver-assisted, and driverless vehicles continues to rise
- Continuing demand to reduce aircraft and vehicle bodyweight and increase their level of computerization

Our Strengths

- Solid partnerships with clients who lead growing markets
- Unique materials development, design, and processing expertise including high-speed transmission, heatresistant, high-precision, porous-membrane, and
- electric-beam irradiation technologies Providing clients around the world with highfunction wiring, protective-layer wiring, and other highfunctionality products via our global supply chain

Key products and services

exible printed circuits (EPC) are a wiring aterial used to hold electrical circuits in place on an ultra-thin insulating film. Their extremely light weight and superior heat resistance and flexibility enab a high degree of freedom and density in the design of electrical circuits. For this reason, they are used to contribute to smaller sizes and greater functionality in many electronic devices, including smartphones, tablets, game devices and hard drives.

Thunderbolt[™] 4 cables

Thunderbolt™ 4 is a high-speed data transmission standard supporting 40 Gbps bidirectional transmission, which achieves double the transmission speed of convent cables. Our proprietary ultra-fine highperformance coaxial wires achieve superior flexibility and durability in cables. Thunderbolt 4 is applied to a variety of data devices, such as 8K displays and gaming computers.

Poreflon[™] Module

connectors-optimal for purposes where cables need to be densely

mounted. They are used in all kinds of electronic devices in our daily

lives, including TVs, office automation devices and game devices. Our

SUMI-CARD® cables now support high-speed data transfer standards

such as USB31 and V-by-One® US and can withstand high temperatures of over 125°C. They have been part of advances in the functionality of products and the building of systems for self-driving cars.

Flexible flat cables (SUMI-CARD*)

se flat cables enable one-touch con

eflon™ Modules are hollow-fiber modules developed for water treatment using our proprietary PTFE (polytetrafluoroethylene) hollow-fiber membrane technology. Strong and not easily soiled by contaminants such as oil, using these membrane modules in wastewat treatment equipment enables reuse of wastewater conservation of space and less maintenance work, which has seen it adopted in over 650 places, both in Jar and overseas, to treat drainwater and various forms of industrial wastewater

tion and disconnection fror

Tab leads

Tab leads are used to draw power from the lithium ion pouch cells used in smartphones and EVs. Our tab leads have an insulating layer created by direct surface treatment of the conductor to inhibit heat deformation, achieving superior durability and more reliable sealing that has contributed to greater performance and a longer service life for batteries.

Heat shrink tubing (SUMITUBE®)

SUMITUBE® is shrunk inward by heating. It is used in areas such as home appliances, electro devices, automobiles and aircraft, for purposes. such as protecting electric wires and harnesses, keeping out water and bundling of wires

Flexible printed circuits (FPC)

Examples of our initiatives to solve social issues

Thunderbolt[™] 4 Cables

Thunderbolt is a high-speed transmission standard between computers and peripheral devices such as displays. As the top vendor, we acquired the certification for Thunderbolt[™] 4 cables, the latest Thunderbolt standard, and started mass production in November 2020. Thunderbolt[™] 4 cables are available to connect 8K displays to computers. Our Thunderbolt cables use our original highperformance extra-fine coaxial lines to achieve superior flexibility and flex resistance. The increased demand for remote work these days has called for more sophisticated home office requirements. Our Thunderbolt[™] 4 cables provide more options for connecting peripheral devices, such as a docking station and 4K or 8K display, saving even more space. We are working to meet more and more of customers' needs and contribute to further advancement of information technology.

Environment & Energy

Energy systems that keep us connected, now and in the future

Overview of business

The Sumitomo Electric Group began producing electric cables in 1908. We started with copper wires and have steadily progressed from low voltage to ultra-high voltage in our electric wire and cable business. A particularly foundational area of our copper wire business has been our high-voltage electric wire business, where we have built a business base and track record that leads Japan's industry through the completion of a series of major projects such as the production and laying of the world's first longdistance main line with 500 kV CV cables and the world's first submarine power line with a 500 kV DC OF cable. We have continued to build a stronger global presence, drawing on our strengths such as diverse high-value product families and associated services, project-planning expertise, overall capabilities involving affiliate companies in the heavy electrical machinery and engineering fields (Nissin Electric Co., Ltd. and Sumitomo Dentsu Co., Ltd.) and end-to-end system development from raw material to finished product. Currently, the technical expertise of our group is essential for the construction of new energy systems in line with trends such as international grid interconnection projects, primarily in Europe, infrastructure development in emerging countries, increasing use of renewable energy and widespread use of electric vehicles. We will continue to use this technology as a base as the building of energy infrastructure progresses.

Initiatives to carry out our mid-term management plan

In our mid-term management plan, we have pledged to accurately assess demand for new large-scale projects involving electric cables overseas and for renewable energy and upgrading of facilities in Japan, and to further reduce costs to improve profitability. We will also strengthen our global production performance for rectangular winding wires for the motors in EVs to handle the growing demand, and will draw on the strengths of the whole group, including Nissin Electric Co., Ltd. and Sumitomo Dentsu Co., Ltd. to get more orders in the global market.

Key products and services

Magnet wires

Our magnet wires are used to convert electrical energy into magnetic energy. They are widely used in parts such as motors and coils for hybrid vehicles, EVs, home appliances and electrical devices.

Electric wires and cables for power transmission and distribution

We supply various electric wires and cables for power transmission and distribution networks that get power from the power plants to their users. In particular, we are working to meet growing demand for ultrahigh-voltage DC submarine cables for power companies, power connections between countries and large-scale offshore wind farms. We help to provide a steady supply of power, including laying the cables.

Overhead conductors

These deliver power across long distances from the power plants to substations and then the areas where the power is needed. Our range includes wires that inhibit power loss during transmission and long-life wires that are resistant to rusting.

VISION 2022 Mid-term Management Plan: Segment Strategy

Ideal Future State Become a holistic end-to-end supplier of environmental and energy products and systems to clients globally.



renewable energy and growth in EVs.

Meet demand for new products supporting EV development (rectangular wire for drive motor, etc.) and become more responsive to environmental issues.

State of the Market

- Unveiling of major international grid-interconnection projects, primarily in Europe
- Growth in infrastructure demand in emerging nations

distance submarine cables, etc.

- Expansion of the energy-system market in response to upgraded electric power infrastructure and increasing use of renewable energy
- New business opportunities for eco-friendly vehicles and related infrastructure as market continues to embrace high-efficiency transport

Our Strengths

- Among Japan's top-tier businesses with an impressive record of achievements
- Innovate technologies that enable creation of new high-value products
- Diverse product family with associated services relating to infrastructure
- Extensive project-planning experience in the energy-system field
 Strength as SEI Group member with powerful affiliate companies in the heavy electrical machinery and
- engineering fields • End-to-end system development from raw material to finished product

Porous metal (CELMET[™])

CELMET[™] is a porous metal material with a threedimensional mesh structure. Our product range includes nickel (Ni), Ni-Cr and Ni-Sn alloys. CELMET[™] is being used as a positive electrode current collector in NiMH batteries for hybrid electrical vehicles, as a component in fuel cells and as an electrode material in hydrogen power equipment. This is significantly contributing to conservation of energy and a smaller environmental footprint.

Redox flow batteries

These battery energy storage systems use the oxidation and reduction (redox) of ions to charge and discharge. Safe with a long service life, industries are looking to these batteries to enable more widespread adoption of renewable energy such as solar and wind energy.





Photo courtesy of Green Power Investment Corporation

Examples of our initiatives to solve social issues

Wind Farm Tsugaru

Located in Tsugaru City, Aomori Prefecture, Wind Farm Tsugaru is Japan's largest wind farm, with 38 turbines generating 121,600 kW of energy on a large site on land. This is enough for around 90,000 average households, and is expected to reduce CO₂ emissions by around 180,000 t each year. The Sumitomo Electric Group has worked together with Kajima Corporation, which was contracted to build the wind farm, since 2017, providing a total service including design, production and installation of electrical facilities such as underground transmission and distribution cables, receivers and transformers. 41 km of cables collecting power from the turbines, 34 km of cables to transmit the power, three receivers and transformers and a monitoring and control system were completed in only around two years. Our next endeavor is a total solution for

Our next endeavor is a total solution for renewable energy that will see us working on design support and construction preparations for many large-scale wind power projects, including offshore wind farms, for which there is a growing demand.

Industrial Materials

We aim to be a global supplier of high-performance, highfunctionality products with some of the world's top materials

Overview of business

Copper wires are drawn with wire drawing dies. In our research and development work, we have taken the wiredrawing processes we have used for our copper wires and the powder alloys we use to develop our materials and applied them to other metals to create special steel wires. We have also applied the powder metallurgy technology we use to produce powder alloys and used it to develop sintered powder metal products. Our cutting and grinding tools are made using the material technology we have developed based on our technology for making fine copper wires. We began with cemented carbide alloys and expanded our range to include other ultra-hard materials such as diamond and cubic boron nitride. Our tools are now used in all kinds of manufacturing around the world. Additionally, special steel wires that reinforce concrete structures and tires and sintered powder metal parts used primarily in automobiles are essential for the growth of society and industries. In response to the growing demand for lightweight automotive materials and the growth in the medical and aviation industries, the Sumitomo Electric Group will offer tangible forms of innovative solutions for customer and social challenges, drawing on our world-class materials development capabilities and production technologies.

Initiatives to carry out our mid-term management plan

We will strengthen the selling power of our cemented carbide tools on the global stage, including construction machinery, industrial machinery and electronics in addition to our core automotive business, and expand our sales by introducing new products such as tools for cutting hard materials in the aviation and medical fields. For our sintered powder metal parts, we will make use of our global manufacturing sites to expand our sales and become more cost-competitive. We will also continue to focus on strengthening our production structure and expand our sales for PC steel wires and steel wire for springs.

Key products and services



Cutting tools (IGETALLOY[™], SUMIBORON[™], SUMIDIA[™])

Our cutting tools are used for a variety of cutting work such as cutting, planing and drilling of metal. These include IGETALLOV™, a cemented carbide alloy tool that is almost as hard as cubic boron nitride and has the toughness of steel, and SUMIBORON™ and SUMIDIA™, tools with cubic boron nitride and ultrafine diamond particle blades These are helping to increase productivity and decrease costs in machining.

VISION 2022 Mid-term Management Plan: Segment Strategy

Ideal Future Become a leading global supplier of high-performance, high-functionality products by leveraging world-class materials and process technology. State

VISION 2022 Growth Strategy Strengthen Proposal Capability

for Clients

Pitch our products with a full understanding of

client needs to emphasize differentiation from

our competitors

Innovation and Enhancement of **Core Technologies** Deepen our advanced high-efficiency lines and develop new products in preparation for motorization

Accelerating Overseas Businesses intain consistency of quality regardless gion and provide services in a context that's sensitive to local issues.

State of the Market

- Increasing demand for lightweight materials for EV development
- Growth in the medical and aviation industries.
- Intensification of competition in the global marketplace
- Accelerating cobalt procurement to meet demand for battery applications

Our strengths

- Excellent materials development capabilities with strong differentiation from competitors through the application of our unique materials and recycling technologies
- Unique manufacturing capabilities that leverage our production and product-evaluation technologies to improve our clients' production lines
- Global supply system supporting the globalization of our clients' business

Heatspreader materials

High-performance heatspreade materials, such as copper-molybdenum alloy, copper-tungsten alloy, ceramics and diamond, are used to lease heat in highpower semiconductor devices used in electrified vehicles (HEVs and EVs), the electrical field, communications device and LED lighting.

Sintered parts

We produce parts by compacting metal powder and molding it by heat (sintering). This process is advantageous for settings such as mass production of parts with complex shapes that require a high degree of precision. Our sintered powder metal products are used for parts such as engine parts and drive system parts in automobiles, as well as air conditioner parts. Also, powder molding realize high performance and complex shapes such as for reactors cores and axial gap motors magnetic cores. This sintered process is advantageous for recycling and energy-saving compared to other n

Special steel wires

Steel cords are used to reinforce radial tires and springs used for purposes such as otive engine valve springs. Our special steel wires meet industry needs such as energy saving, stability, safety and comfort, and make driving more comfortable. Our Prestressing steel wire is used widely throughout society to make structures such as concrete structures, LNG tanks and sleepers stronger and more durable.

Used cemented carbide tools



Examples of our initiatives to solve social issues

ngsten powde

A

Establishment of a system to recycle tungsten

A.L.M.T. Corp. in the Sumitomo Electric Group deals in tungsten/molybdenum products and heat spreaders. Tungsten in particular is designated as one of the five priority rare metals to be recycled. As China supplies about 80% of Japan's tungsten, Chinese policies affect market prices. We therefore began research on the recycling of tungsten in 2007. We developed innovative technology for molten salt smelting and successfully turned this into a business in 2011. We have also reduced energy consumption in the process to produce tungsten powder by recycling. In 2014, Sumitomo Electric and a Japanese automobile manufacturer jointly received a Rare Metal Recycling Award at the Resource-Recycling Technologies and Systems Award 2013 Ceremony, which was organized by the Japan Environmental Management Association for Industry, in recognition of this initiative and the system we established to recycle scrap cemented carbide materials. We will continue to research tungsten recycling technologies so that we can contribute to the market by achieving a more stable supply.



Our world leading ultra low loss optical fibers

long-distance transmission systems.

will contribute to highly efficient intercontinental

by using the arc discharge

lowest loss.

physically to achieve nearly the

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