

Value Creation at Hitachi Metals

The Hitachi Metals Group helps solve social issues through its business activities, which involve the development and supply of high-performance materials and products.

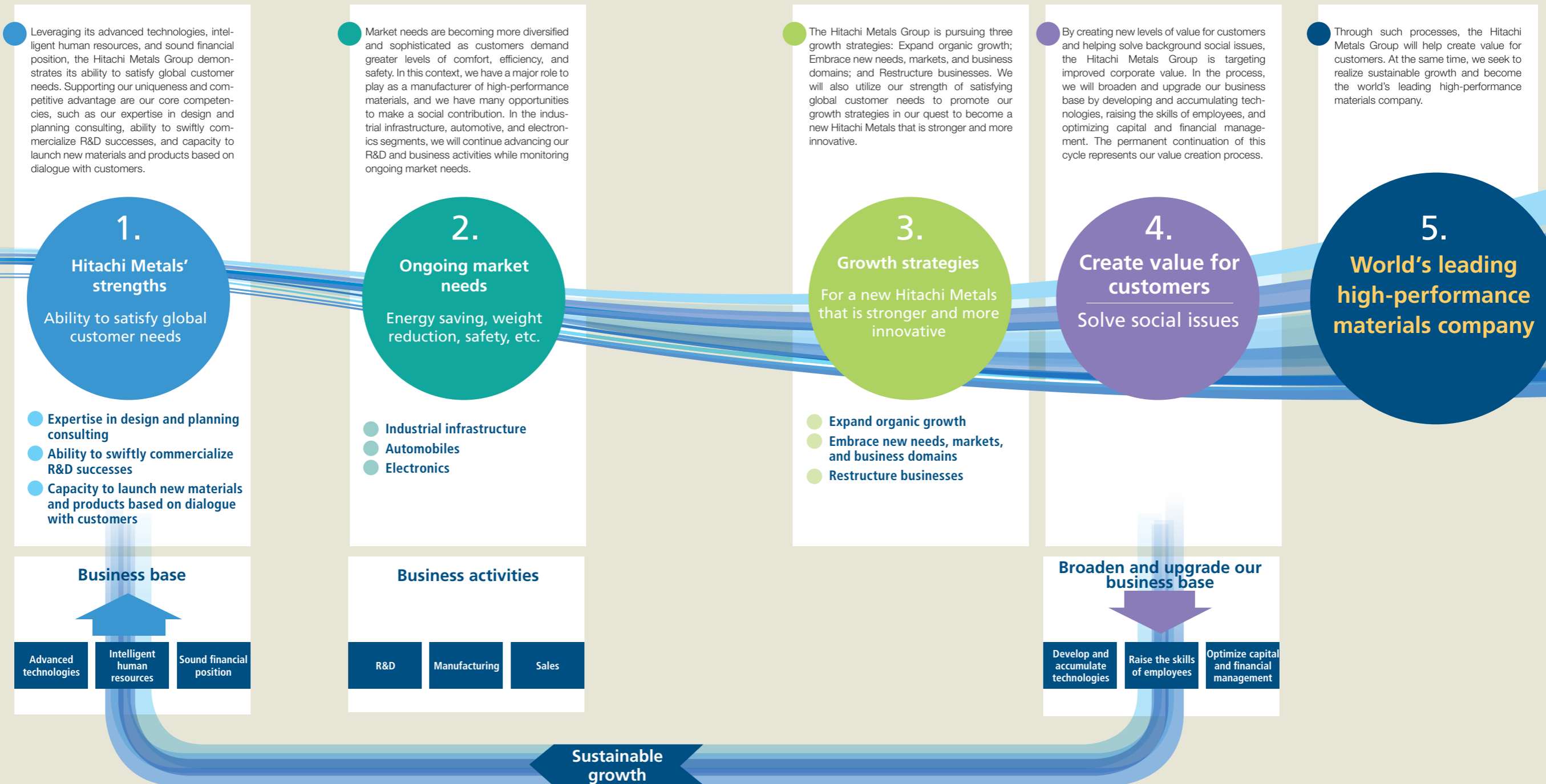
For us, “value creation” means creating value for customers and, in the process, increasing corporate value by helping solve background social issues.

In this section, we describe the overall process for value creation, and then give several specific examples of our strengths and successful products.

The Hitachi Metals Group’s Value Creation Process	14
The Hitachi Metals Group’s Strengths	16
Achievements of Value Creation	18

The Hitachi Metals Group's Value Creation Process

In these ever-changing times, the Hitachi Metals Group constantly monitors the requirements of customers and markets and supplies advanced new products and technologies that are at the forefront of their era. For us, creating value for our customers means providing help to solve social issues in various fields and leads to enhanced corporate value. Through this process of value creation, we embrace the challenge of becoming the world's leading high-performance materials company.



The Hitachi Metals Group's Strengths

Market needs are becoming more and more diversified and sophisticated as customers demand greater levels of comfort, efficiency, safety. In response, the Hitachi Metals Group unites with its customers to tackle problems and share results. In doing so, we consistently meet their expectations. Our capacity to launch new materials and products based on dialogue with customers is one of our competitive advantages, and also helps create value for our customers. In this section, we introduce our strengths, derived from our activities in the specialty steel business, that form the source of value creation.

Tackling challenges across customer-supplier lines

The Company's own specialty steel brand, Yasugi Specialty Steel (YSS),^{*1} is used in diverse markets, such as molds, automotive components, and aircraft and energy materials. It boasts a strong market share and has earned high acclaim.

Underpinning the strong market share and high acclaim of YSS are the Company's exceptional material technologies and product development capabilities, as well as its approach of addressing challenges together with customers based on two-way communication, akin to walking in a three-legged race.

A case in point is our Solution and Engineering Center (SEC), established in 2015.

The SEC is tasked with solving problems that customers face, including basic matters, in cooperation with those customers. In one project, for example, we established a system with participation from a customer's technicians, as well as our own. During the course of the project, we shared diverse information with the customer, including our metallurgical approach to improving metal structures—a Hitachi Metals strength—and the computer-aided engineering (CAE)^{*2} technologies of our Metallurgical Research Laboratory, which has extensive knowledge in high-grade specialty steel. In addition to simply solving customers' issues, we will promote research together with customers based on metallurgical principles and phenomena. By using this "three-legged race" approach to discover the essence of the problem, we provided added value to the customer by exceeding our responsibilities as a supplier.

Global advancement through three-pronged interaction

In the specialty steel business, in addition to the efforts of the SEC, which works in unison with customers, our technology division works jointly with our global sales division to target global expansion of the YSS brand.

Our technology division is tasked with establishing foundations for global expansion. Its duties include standardization of technical services at processing locations based overseas, training of national staff, reinforcement of branding, and production of sales tools that convey the brand's exceptional qualities. Meanwhile, our global sales division leverages these foundations to

expand and upgrade our service-related capabilities. At the same time, we make the SEC's leading-edge technologies available to customers. By promoting our business, these three entities, working as one, serve as the engine for our global expansion.

Looking at specific regions, we are already expanding our business in the priority North American and Asian markets while laying the groundwork in Europe.

In North America, we acquired Diehl Tool Steel Inc. in November 2015, and turned it into a consolidated subsidiary to serve as our distribution location there. Diehl Tool Steel will offer services such as cutting and processing, and solidify our tool steel sales network in the region. In April 2016, we started commercial production of SLD-i™, a new type of cold-rolled die steel with superior features—including reduced heat treatment dimensional change and improved abrasion resistance—while having a similar composition to Western standard steel.

In Asia, with the trend toward high-tensile automotive steel sheets, customers are demanding more functional dies, and we anticipate a heightened need for solution-based proposals covering not only materials but also processing and surface treatment. For this reason, in May 2016, we decided to install new cutting, processing, and surface treatment equipment at our sales locations throughout Asia, thus reinforcing our solutions business.

In Europe, the SEC and our sales division are teaming up in an effort to attract new customers by creating unique services, including mold deterioration diagnostics for local automakers using CAE technologies.

In these ways, the SEC, sales division, and technology division form one body tasked with strengthening our solutions business and expediting our global expansion by increasing sales of SLD-i™, a new type of cold-rolled die steel we recently developed.

*1 YSS is a registered trademark of Hitachi Metals, Ltd.

*2 A technique that uses computer-based simulations to determine whether or not a designed structure would meet its functional requirements prior to actually making it.

Globally Advancing Solution-Driven Proposals Based on Deep Customer Understanding

Isao Tamura
General Manager, Solution and Engineering Center
High-Grade Metals Company



At the SEC, I frequently witness discussions between engineers from Hitachi Metals and their customers. In a recent project with a domestic automaker customer, for example, the participants together conducted research into extending the longevity of molds. The initial plan was to double the lifespan of molds, which was thought to be difficult, but finally we succeeded in extending mold life by three times—well exceeding our expectations. Thanks to these success stories, customers are increasingly turning to the SEC as a matter of course. The SEC truly is a place where no boundaries exist between supplier and customer.

It is a win-win for customers. In addition to product improvement, the relationship with

SEC enables customers to foster young human resources who will reap major benefits for their companies in the future. Our joint projects receive high acclaim because they not only advance customers' own research but also provide a forum for personnel development.

In these ways, we share common ground with customers on the front lines in terms of our approach to problem solving and thought processes. This is a strength of Hitachi Metals that helps customers create new value. Going forward, I would like to globally advance these initiatives, which reflect a deep understanding of our customers.

Showing the World Our Strengths by Selling Things

Kenichi Inoue
General Manager, Technology Department
High-Grade Metals Company



In the Technology Department where I work, we engage in product sales promotion plans and marketing activities. We have many people with vast experience, which we can draw on to propose optimal combinations and innovative concepts. In one project, for example, we devised a lineup of molds based on the customer's viewpoint, and we are developing tools enabling the differences and strong points of each product to be clearly understood. We are also playing a role by sharing information that is beneficial to the customer between the Group's technology, manufacturing, and sales divisions.

The Technology Department also supports the establishment of infrastructure and personnel development required to increase global sales of specialty steel. For example, tool steel is

necessary to complete the final pre-delivery process in proximity to the customer, which requires infrastructure to cover distribution, as well as cutting, heat treatment, and other functions. The technical service level of employees is also extremely important. In these ways, we support both the "hard" (infrastructural) and "soft" (personnel development) aspects of the business.

For Hitachi Metals, selling things is synonymous with demonstrating our quality and strengths to the world. When our offerings contribute to customers' products in various parts of the world, our strengths will become more widely recognized, I believe.

YSS Also Highly Regarded in North America YASUGI SPECIALTY STEEL

Thomas Bell
Executive Director, Tool Steels
Hitachi Metals, America, LLC



Since joining Hitachi Metals in 2014, my impression of the Yasugi Specialty Steel products continue to be a quality advantage for our North American customers and their applications. Our product offering of DAC-types for die-casting and SLD-i™ for stamping dies are key to our growth plans. Together with our recent acquisition of Diehl Tool Steel Inc., specializing in machined tooling blanks 'Accu-Square™,' our sales team will pursue new customers with the Yasugi Specialty Steel brand name in Tool Steel market.

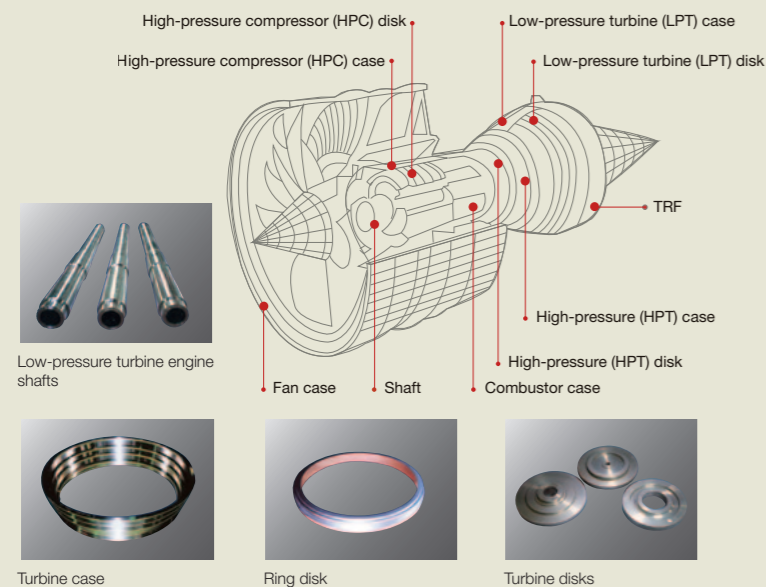
Achievements of Value Creation

Industrial infrastructure-related segment

Aircraft- and energy-related materials that exhibit high reliability and functionality in increasingly harsh operating environments amid further improvements in fuel efficiency and even higher output

Backed by our independently developed materials technologies and quality assurance and R&D systems, we have continued providing materials and services that are trusted by customers around the world. Through specialized melting technologies and advanced manufacturing processes, we will continue delivering valuable products while contributing to innovation in the world's aircraft and energy industries.

Aircraft jet engine



High-performance materials and products helping deliver excellent performance and reliability in harsh operating environments



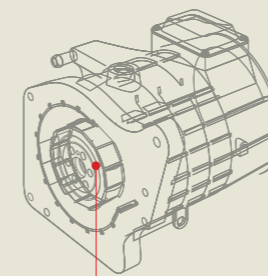
While the materials we make are rarely seen by end-users, they play a major role in the performance and quality of final products. The Hitachi Metals Group is constantly innovating its processes based on ideas and concepts that reflect customer needs. At the same time, we are refining the appeal of our products to help create value for the final products used by customers in wide-ranging segments.

Automotive-related segment

Magnetic materials with excellent magnetic properties that help realize highly energy-efficient automobiles

Our magnetic materials are used in drive motors and power generators that form the core of environment-friendly hybrid and electric vehicles. We led the world in launching mass production of NEOMAX® Nd-Fe-B sintered magnets that, despite being permanent magnets, display an unparalleled class of magnetic properties and contribute to advances in motor compactness and performance. Moreover, our use of DDMagic™ and other diffusion technologies for heavy rare earth metals helps reduce the volume of heavy rare earth metals used and facilitates the supply of magnets delivering even greater performance.

EV drive motor



NEOMAX®
Nd-Fe-B sintered magnets

Magnetic materials that contribute to advances in motor compactness and performance

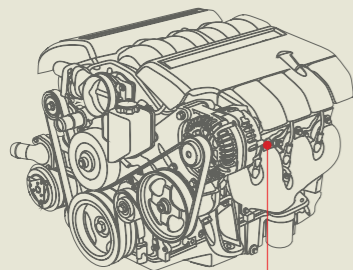


Automotive-related segment

Utilizing the Group's technological capabilities to supply high-performance components that are essential to the advancement of automobiles

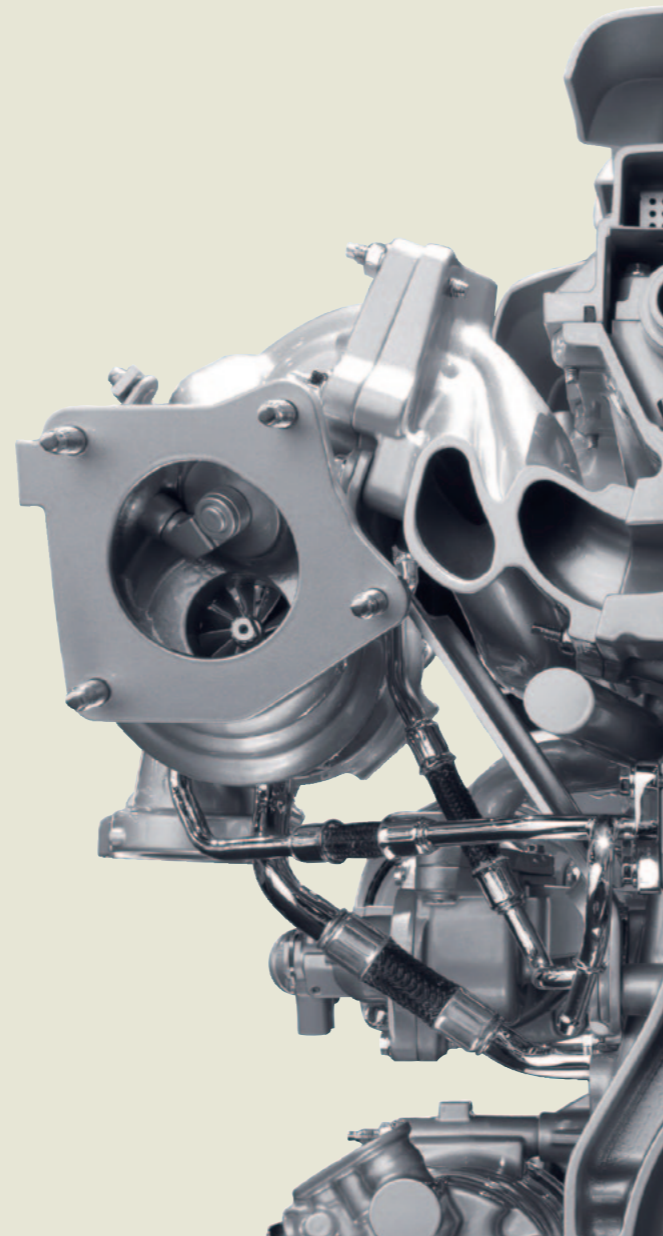
In terms of performance, automobiles are advancing with each passing day. For many years, the Hitachi Metals Group has developed automotive components for a broad range of applications—including for engines, exhaust systems, steering, chassis, and electronic equipment—thus contributing to automotive advances. Our HERCUNITE™ heat-resistant casting components are used in the turbo systems of downsized engines to improve environmental performance. Thanks to these products, which deliver outstanding heat resistance and can accommodate complex forms, we are able to meet the needs of customers.

Automobile engine



HERCUNITE™ heat-resistant casting components

Materials consulting expertise
Exceptional heat-resistance
Accommodate complex forms

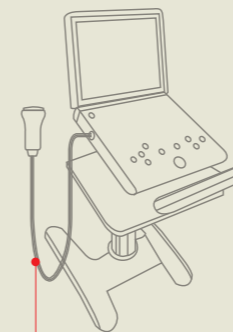


Electronics-related segment

Capitalizing on our technologies in cables and tubes to enter the segments of medical diagnostics, analysis, and treatment

The Hitachi Metals Group contributes to advances in medical technologies through its magnetic and electric cable materials technologies. Our probe cables for ultrasound medical diagnostic equipment used in echocardiography are light in weight and offer exceptional flexibility and durability. They also feature excellent electrical characteristics and operational ease, and deliver high-resolution images. In addition to medical diagnosis, we are active in medical treatment through our business in catheters and other medical tubing. In these ways, we contribute to improvements in medical technologies.

Ultrasound medical diagnostic equipment



Probe cables for ultrasound medical diagnostic equipment



Medical tubing

Excellent elasticity, flexibility, and electrical properties
Fine porous molding technology

