HIROSE ELECTRIC CO.,LTD.

Integrated Report

2021

HIROSE ELECTRIC CO.,LTD.

Hirose Electric Co., Ltd.

Connecting the World, Connecting the Future

Connectors are small and inconspicuous parts of electronic devices.
They might not stand out, but they are still an essential component of the device.
By performing their connecting function within electronic components and devices, they make it possible to greatly enhance the functionality and convenience of sets and applications.
We believe that we can realize a more prosperous future and connected world through Hirose's connectors.
The Hirose Group continues to propose solutions to various issues by creating "NEW" connectors that have been realized through the collective wisdom of the Group and the world at large.

Contents

Editorial Policy

This report has been compiled to allow all stakeholders to gain a well-balanced understanding of the various aspects of the Group including not only financial information such as business performance and strategies, but also non-financial information concerning the Group's policies toward the environment, society and corporate governance. When editing this report, the Company referenced the International Integrated Reporting Framework published by the International Integrated Reporting Council (IIRC).
In addition to this report, the Company prepares an Annual Securities Report, and a Newsletter to Shareholders (both in Japanese only) along with various other communication tools.
Please visit the Group's website to peruse the detailed information we post there.

* Note that in this report, the terms the Hirose Electric Group, the Hirose Group, the Group, and HIROSE refer to the entire HIROSE ELECTRIC Group, while Hirose Electric is used to refer to Hirose Electric Co., Ltd. on a non-consolidated basis.

This report has been translated from the Japanese original for reference purposes only. In the event of any discrepancy between this translated version and the Japanese original, the original shall prevail.

Applicable Period

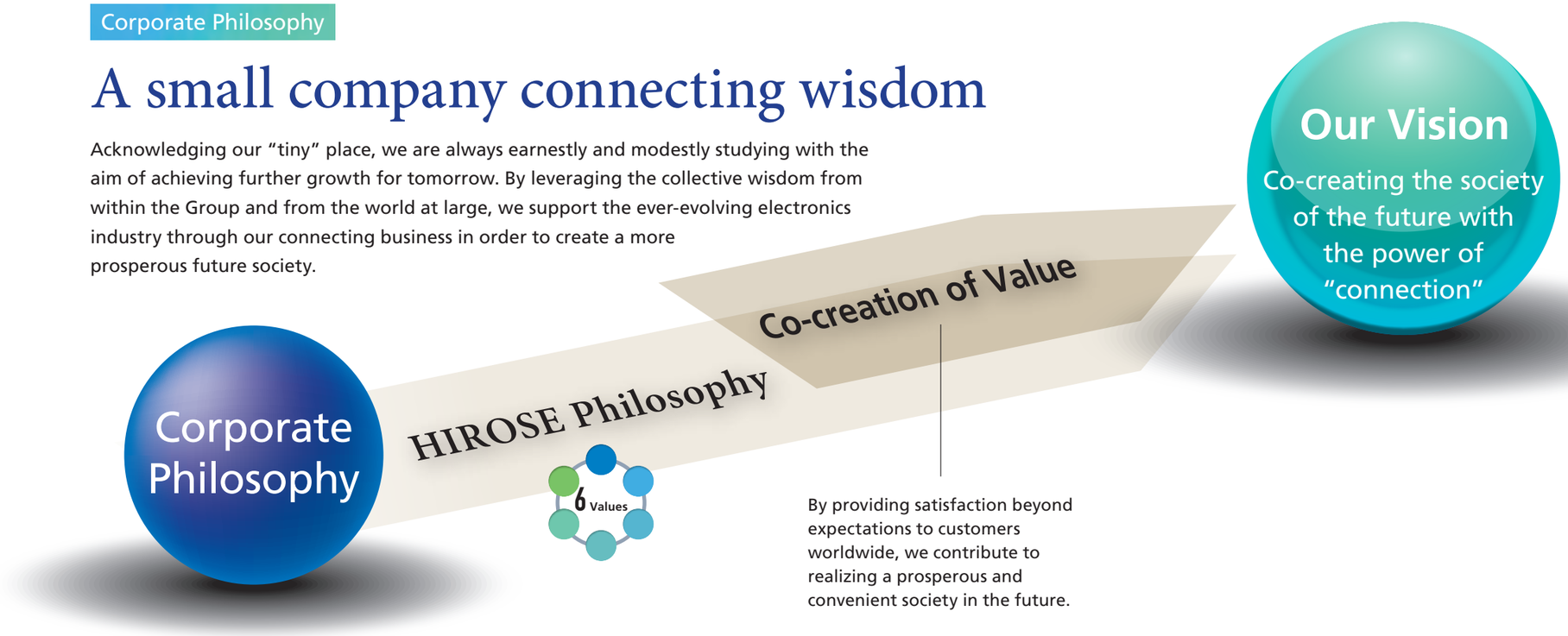
The applicable period of this report is from April 1, 2020 to March 31, 2021.
(Portions of this report contain information about activities and initiatives from April 1, 2021 onward.)

Philosophy and Raison d'Etre of the Hirose Group

Corporate Philosophy

A small company connecting wisdom

Acknowledging our "tiny" place, we are always earnestly and modestly studying with the aim of achieving further growth for tomorrow. By leveraging the collective wisdom from within the Group and from the world at large, we support the ever-evolving electronics industry through our connecting business in order to create a more prosperous future society.



By providing satisfaction beyond expectations to customers worldwide, we contribute to realizing a prosperous and convenient society in the future.

Passing down the "fulcrum for reasoning" and the "fulcrum for action"

HIROSE Philosophy

The HIROSE Philosophy consists of six values that construct our vision for the future, give shape to our corporate philosophy, and lead us to action. The HIROSE Philosophy serves as a "fulcrum for reasoning" and a "fulcrum for action" for all employees and supports the management of the entire Hirose Group. Hideki Sakai, the de facto founder of Hirose Electric, built the foundations required for a manufacturer specializing in connectors, and guided the Company's growth into a global corporation. Because of the smallness of the Company, Sakai devised various schemes, collecting and connecting wisdom. It is Sakai's management philosophy that has been systematized into the HIROSE Philosophy to provide the common values for the Hirose Group. Discussions, judgments and communication are all carried out based on the HIROSE Philosophy. All employees of the Hirose Group partake in shared activities designed to practice and perpetuate these values. The HIROSE Philosophy serves as a unifying force for this age of globalization, diversification and change. It exists as a grounding "compass" for the Hirose Group to guide it toward the right path amid change.

Implementation of the corporate philosophy

Co-creation

"Co-creation" is a foundational principle for putting into practice the Hirose Group's unchanging philosophy of being a "small company connecting wisdom." Through developing new technologies and products by integrating in-house and external wisdoms, we will contribute to the realization of a more prosperous, more convenient society. The Hirose Group considers corporate value to be tied to the realization of a sustainable company and society through not only reaping benefits for our own company but also raising social value as well. Going forward, the Group aims to increase corporate value by deepening co-creation with all stakeholders.

Connect all stakeholders with a common wisdom to co-create value

Hirose Co-creation

Customers
- Be a solution-solving partner
- Reliably provide high-value-added products, proposals and services
- Deliver satisfaction beyond expectations

Employees
- Environment where each employee can demonstrate their fullest capabilities and take on challenges while experiencing growth and fulfillment in work
- Building a workplace where employees and the Company can grow together
- Respect for diversity

Partners
- Growing together while connecting wisdom and sharing technology
- Improving corporate value through robust supply chains
- Cooperating to launch production of new products and establish mass production

Communities
- Realizing sustainable growth of Hirose and society surrounding it as a member of the society
- Addressing social issues through business activities
- Promoting eco-friendly business activities

Shareholders
- Medium- to long-term growth of corporate value
- Providing stable shareholder returns through highly profitable business and improved capital efficiency
- Ensuring business transparency through a solid corporate governance structure

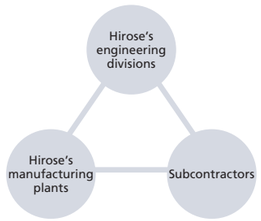
HIROSE Philosophy —6 Values—

Connecting wisdom

Constantly learning from in-house and external knowledge, absorbing wisdom and generating new value through co-creation by connecting our knowledge and know-how.

"There are two types of smart people in the world: our customers and our competitors."
In order to produce excellent original products and services, we must continue to actively seek knowledge, know-how, and wisdom from inside and outside the Company.

Hirose's Production System



Hirose develops its core production and manufacturing technologies in-house, and works jointly with manufacturing plants and subcontractors to incorporate manufacturing expertise from outside the Company. We bring together these various wisdoms to pursue manufacturing excellence.

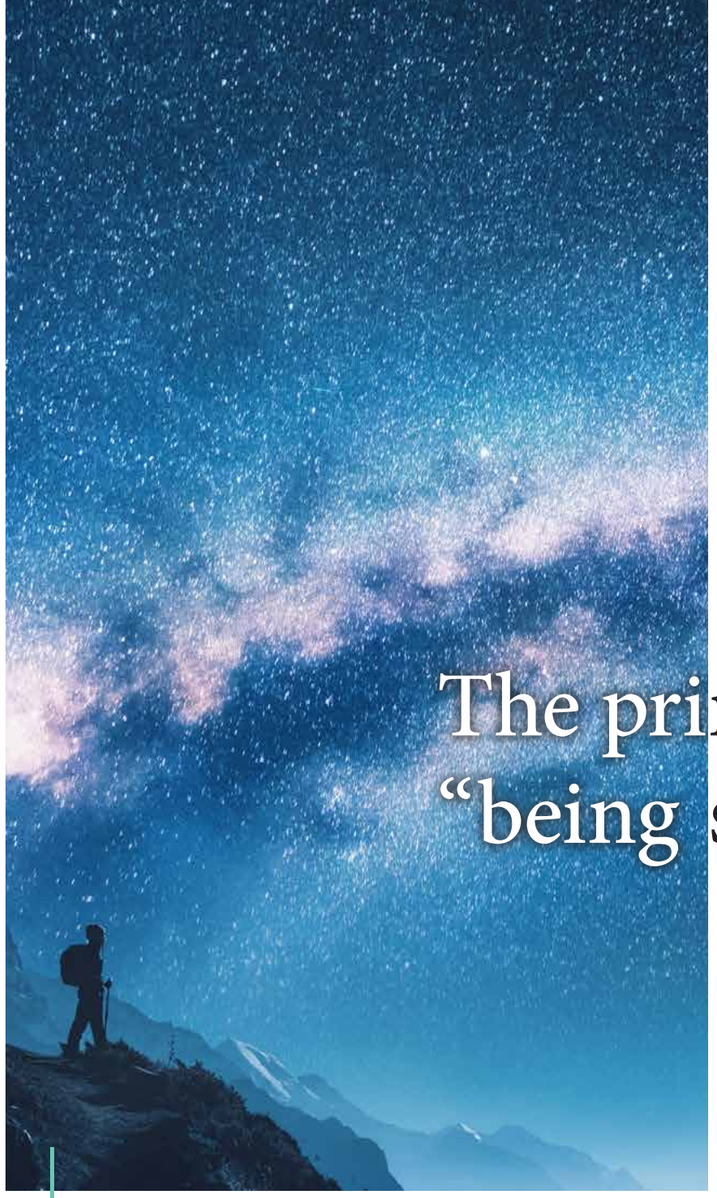
1 HIROSE Philosophy

High added value

2 HIROSE Philosophy

By identifying the needs of our customers and the markets, the Group harnesses wisdom and pursues high added value recognized by our customers.

The "pursuit of high added value" is a core concept of the Hirose Group.
Earning recognition from our customers for the added value in our products will lead to high profitability.
Constantly considering how to differentiate ourselves, we dedicate our full effort to adding higher value to our work.
With high-value-added products, proposals and services, as a partner of our customers, we strive for the co-creation of value.



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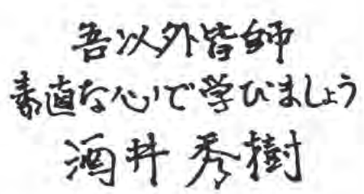
HIROSE Philosophy

The principle of "being small"

Recognizing our smallness, we are always earnestly and modestly studying with the spirit of getting bigger tomorrow than today, with the aim of achieving unlimited growth.

By acknowledging our "tiny" place, we are able to continue to earnestly and modestly learn from outside experts.
Moreover, as the possibilities for the future are boundless, our opportunities for growth are limitless.
Through ongoing learning, we pursue valuable and continual growth.



The de facto founder of Hirose Electric, Hideki Sakai, gave great credence to these words.
Through its constant journey of growth that has brought it from a small urban workshop to a listed company, and to further growth in the future, Hirose has been, and will continue to be, always modestly learning.
With a spirit to learn and a spirit to improve, Hirose will continue to evolve together with its employees.

By making the first step or even first half step forward to take the lead, the Group is developing new technology in the pursuit of original products.

The Hirose Group puts a high value on the development of original products. Deeply committed to unearthing unrealized needs of customers and the markets, the Group provides high value to customers through products that lead at the forefront of the age.
As electronics products evolve, the possibilities are endless regarding the needs for connectors, and the Group is constantly called on to further push the limits. The Hirose Group continues to promote the future advancement of society through the world's first and world's most cutting-edge products.

* New product period: By the Hirose Group's standards

New product ratio is an important management indicator for the Group.
In our new product development, we preempt our customers' needs, and the desire to take the lead and pursue the cutting edge also works as a driving force for maintaining our technological capabilities.

Always taking the lead, pursuing the cutting edge and achieving differentiation

4

HIROSE Philosophy

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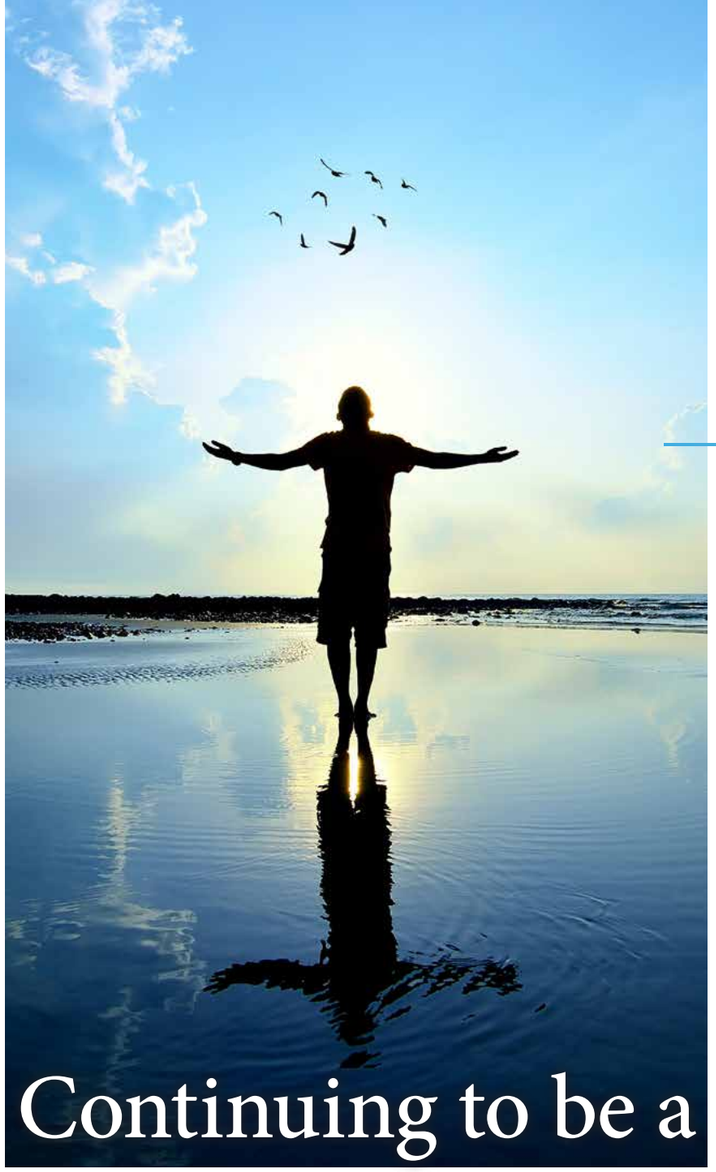
HIROSE Philosophy

A small company of smart people

Each individual attains a sense of achievement and growth through accomplishing their "own work" with a mindset of achieving maximum results.

They also attain growth and job satisfaction by improving productivity and maximizing results.
If each individual is able to treat their work as their "own," we too can grow tremendously as a company.
We will continue as a company that expects each and every employee to display their strengths to the utmost and provides opportunities.



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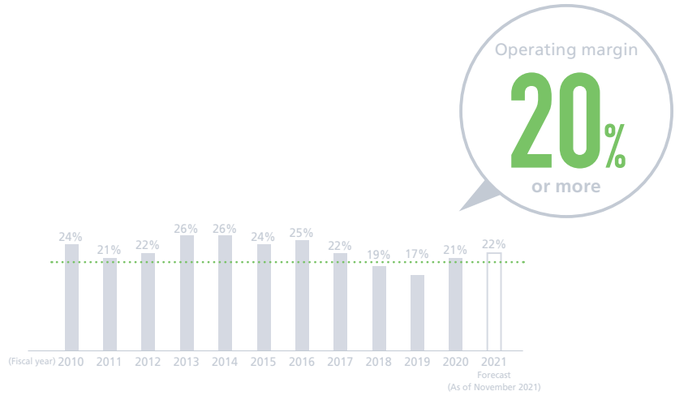
HIROSE Philosophy

Each individual sets high goals and continues to take on new challenges with tenacity and drive. One strong sense of purpose of HIROSE is to continue to be a "high flier."

Continuing to be a "high flier"

To be a high flier is a management concept of Hirose that "a corporation must continue to soar high." Through each individual continually taking on challenges, we earn the recognition that our products and services have added value, enabling us to achieve high profitability.
The Hirose Group has constantly taken on the challenge of achieving differentiation in its products and maintaining high profitability.
In order to maintain high profitability, we must create a corporate climate that allows challenges to be taken, which will lead to the pursuit of profits for all stakeholders.



History of the Hirose Group's Challenges

Evolving our business while responding to the expectations of society with technological capabilities

From 1937

Hirose Group's Foundation

The challenge to develop original connectors

"The source of value creation lies in new products." This idea formed the basis for our dedication to developing high-value-added original products. At the time when it was normal practice to be emulating overseas products, we were the first in Japan to be developing original products. Hirose Group's foundation can be seen as the "pursuit of the original," and we continue to carry on this spirit today.

From 1970

To become a small company connecting wisdom

Pursuing technology

"Even as a small company, we can compete in the global market if we use our ingenuity." With this in mind, we established the "Hirose's Production System," under which we outsource production and focus our company's resources on marketing and new product development. By playing our role as product engineers through connecting with the wisdom of exceptionally skilled subcontractors, we have grown our sales based on the strategies of a small company developing original products.

From 1998

The pursuit of 100% non-defective products

Further advancement through production technology

Through our involvement in the mobile phone market, the majority of our sales has been in mass production of multiple product lines. Although we have maximized the value by enhancing the function of products, we established a policy of also pursuing value in the processes for making the products. Our efforts to improve the quality of our connectors while increasing their production capacity, enabled us to secure stable profits and enhance corporate value.

From 2009

Connecting the world, connecting the future

Aiming for taking a leap forward with G-WING

New technology is born as the market evolves, which leads to changing needs for connectors. Seize the points of change as chances for growth, and decide on investment for new business. We are aiming for taking a leap forward in the medium to long term by building three pillars of Consumer Equipment, General Industrial Equipment and Automotive. We are connecting to the world and the future through cutting-edge connectors.

(Sales)

Foundation

Growth through the general industrial equipment market

Entry into the consumer equipment market

FY1990 ¥50.0 billion

Entry into the mobile phone market

FY2005 ¥100.0 billion

Strengthened initiatives for the general industrial equipment market

Full-fledged entry into the automotive market

FY2021 ¥156.0 billion or more (Forecast)

Launch of Japan's first tape recorder

Launch of Japan's first transistor radio

Launch of home video camera

Expansion in demand for compact devices

Popularization of laptop PCs

Launch of mobile phone with camera

Start of terrestrial digital broadcasting

Popularization of smartphones

Expanding demand for smartphone peripheral devices

Launch of 5G smartphone

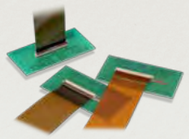
1962

Developed Japan's first domestically manufactured connectors: Rectangular 1300 (Minicon V) series / Coaxial MSS (Mamicon) series / Circular RM (Ramicon) series. Ramicon became the international standard connector for VTR connection because it was half the size of its overseas competitors.

1977

Developed high-performance, small circular connector "HR10" Series. It was adopted in surveillance cameras of a major manufacturer, becoming the de facto standard and a best-selling product.

1994



Developed "FH12" Series, flip-lock connectors for connecting FPC/FFC. Developed and proposed a flip-lock design and improved on-site operability. This simple and reliable connection method has become an industry-standard design.

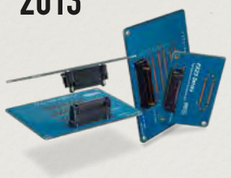
1997

Developed lightweight micro SMT coaxial connectors U.FL series. Both miniaturization and cost reduction of the large, high-priced coaxial connector for antennas were achieved. It has been continually widely adopted as a connector for mobile phone antennas.

2005

The Micro-USB connectors "ZX" Series become widely used as an I/O connector worldwide. By unifying the various I/O connectors existing at the time, Hirose's proposal forms the basis for an international standard.

2013



Developed floating board-to-board connectors for high-speed transmission "FX23" Series. It grew into a major series among board-to-board connectors for general industrial equipment and automotive use.

2017

Developed the ix Industrial™, miniaturized Ethernet connectors for general industrial equipment that conform to IEC standards. While having a robust construction suitable for the operation environment of general industrial equipment, the size has been miniaturized.

Top Message

In an age of dramatic change, the Hirose Electric Group will grow and develop its "connecting business" towards the future through co-creation.

From fiscal 2021, the Hirose Electric Group has produced an integrated report as a new communication tool for drawing even more support from all of its stakeholders. Through this report, the Hirose Electric Group hopes to promote even deeper understanding of its corporate philosophy, strengths, growth direction, and other aspects. The Group aims to become a company that meets and exceeds everyone's expectations. Lastly, through this report, we aim to give shape to our vision for the Company as we strive to evolve and realize it.

Kazunori Ishii, President

The Unchanging Philosophy of the Hirose Group: a "Small Company Connecting Wisdom"

The Hirose Group is founded on its corporate philosophy of being a "small company connecting wisdom." By "wisdom," we refer to knowledge and teaching both inside and outside the Company, while "connecting" means linking what we learn to what we know and making it our strength. By "small company," we express our goal of being a company that can learn with an honest and humble attitude, with a view to taking a leap toward tomorrow. This philosophy encapsulates the ideas of our de facto founder, Hideki Sakai, and it is the unchanging philosophy of the Hirose Group. I joined the Company in 1982, and my strong desire to work here was also inspired by a deep empathy with this corporate philosophy. Furthermore, the Hirose Group's most fundamental values have been simplified into six values and systematized to form what we refer to as the HIROSE Philosophy. These six values are "connecting wisdom," "high added value," "the principle of being small," "always taking the lead, pursuing the cutting edge and achieving differentiation," "a small company of smart people," and "continuing to be a high flier." They will underpin our approach for the future and our actions. Corporate culture is said to be more influential than any strategy, and to provide the driving power for success. The Hirose Group aims to realize a state where employees subconsciously practice this corporate philosophy and the HIROSE Philosophy, operating together with a sense of unity.

Connectors can do nothing on their own as components, it is only when they connect electronic components and devices that they have a purpose. In the same way, the Hirose Group has always created new value by connecting customers, subcontractors, different industries, and our in-house wisdom, and implementing the corporate philosophy. Looking ahead, as global-scale competition intensifies, it is clear that we are approaching a period of low growth and selection. To maintain growth in such times, I think it is important for us to return to the HIROSE Philosophy and the model of value creation based on co-creation. I would like us to share these fundamental values throughout the entire Group and move forward as "team HIROSE," accepting our diverse differences, to develop into a company that embodies our vision, to "co-create the society of the future with the power of connection."

It Is the Ability to Consolidate Knowledge as a Team That Drives the Growth of the Hirose Group

Looking ahead to the society and environment of the next generation, IoT is advancing, connecting all things and services. In addition, various fields are incorporating digital technology and ICT at an accelerating pace. Given this backdrop, the number of new change points for the "connecting business" of connectors and electronic components is increasing, and the marketing potential is expanding. The greatest strength of the Hirose Group is in co-creation carried out by a team. In addition, cross-field activities are our specialty and our strength. By gathering wisdom from inside and outside the Company and

New technology presents opportunities for the connector and connecting business to grow and develop.
Our mission for the global market is to observe changes and propose products that meet the needs of the next generation.

leveraging synergies across various fields, we will solve the issues facing markets and customers, meet societal needs, and in this way, I hope that we can position change as a major opportunity.

Furthermore, how will the Hirose Group win out amid increasing competition? In our business, the factor that continues to be important is "trust." In the age to come, we expect the world to become even more turbulent, and for this reason, the foundation of "trust" upon which business is built is certain to become the key to succeeding in competition. I feel that it will be important to continue to be recognized for understanding the needs of customers and the market, drawing on our wisdom to create products and services of consistent quality in order to provide high value. Through this approach, the Hirose Group aims to achieve sustainable growth. "Trust" should also be the core offering of the Hirose Group.

Identifying Customer Needs From the 3C + 1C Perspectives With a View to Future Sustainable Growth

Given changes in lifestyles and values, future high-value-added products will be required to offer not only performance and quality, but also to address social issues and adapt to changes. Based on the Medium-Term Business Plan: G-Wing, the Hirose Group is working to establish a global corporate structure for sustainable growth and taking steps to continue being a "high-performance & high flier." To implement this, an important role is to be played by marketing activities that are responsive to the needs identified from the "3C" (Customer, Company, Competitor) and "1C" (Co-operator) perspectives. Among these, it is "co-operator" that holds the key to a big leap forward by strengthening relationships with subcontractors and other industries. We aim to be a partner developing products that solve customers' problems and exceed their expectations, by drawing together wisdom from inside and outside the Company, leveraging our high-level proposal capabilities as a specialist connector manufacturer.

Strengthening Our Sensitivity and Responsiveness to Realize Full-Scale Growth From Fiscal 2021 Onward

From smartphones to social infrastructure, the market is expanding, not only for connectors, but as a market where a "connecting business" can play an active role. New technologies are born every day around the world. The ability to discern the technologies that will drive the next generation is extremely important. The Hirose Group has identified "sensitivity and responsiveness" as key attributes in its management direction for fiscal 2021. Specifically, we will strengthen "technology development capabilities," the engine that supports the Hirose Group's competitive advantage, and respond swiftly to customers' expectations. We must strengthen and put into practice our "manufacturing expertise" based on on-site adaptivity, the ability to improve, and thorough implementation capabilities that we use to compete globally. Moreover, we must promote systematic human capital development and increase our organizational ability. In fiscal 2021, there have been changes in market conditions, and we are continuing to receive more orders than we had projected. We will firmly grasp this opportunity for real growth and work together as a united group to address it.

The Hirose Group is stepping up its initiatives for SDGs and ESG as it aims to achieve sustainable corporate growth. Through approaches such as downsizing, space-saving, improved operability, as well as resource-saving by product development that considers the product lifecycle, we will respond to demands for environmental consideration from customers and society. All of us at the Hirose Group will march forward to make the Hirose Electric Group a corporate group we can be even more proud of.

Value Co-creation Model of the Hirose Group

Corporate Philosophy

A small company connecting wisdom

HIROSE Philosophy

Unwavering philosophy

Fulcrum for action

Source for achieving the value co-creation model

- Broad customer base
- Strong relationship with stakeholders
- Spirit to develop original products
- Wide variety of products
- Knowledge as a specialist connector manufacturer
- Teamwork
- Highly profitable business model with robust financial fundamentals

Platform supporting the value co-creation model

- Environment
- Human capital
- Corporate governance

Obtaining further business opportunities and strengthening framework for supporting the value co-creation model by gaining trust from our customers, market and society

Competitive Advantages 1 Technological Capabilities

Source of technological capabilities

The value of the Hirose Group has been recognized as it has constantly provided products that take the lead, pursue the cutting edge, and achieve differentiation to customers. Hirose has achieved this through our strengths in advanced technological capabilities. Technological capabilities are a priority to Hirose. That source has remained in our philosophy since its founding: "Pursue the original." Having developed the first original connector as a Japanese company in 1962, Hirose's high-value-added original products have been recognized. Since then, engineers have passed down part of the HIROSE Philosophy of "always taking the lead, pursuing the cutting edge and achieving differentiation" as well as a mindset of constantly developing new products. We believe that the added value in our products will increase by developing new and unique products before anyone else. The motto of Hirose's engineers is to "create that which doesn't exist in the world yet." By thinking from a customer perspective and proposing products that are a step (or even half a step) ahead of others, we aim to deliver satisfaction beyond customer expectations. A company culture that pursues originality is connected with high technological capabilities that realize a 30% new product ratio.

"Hirose Technology Exhibition" - Collective creativity designing the future

The Hirose Group periodically holds technology exhibitions. At these exhibitions, the Group not only displays products, but also focuses on concept exhibitions for future needs. We exhibit products at the concept stage that give shape to future connector needs. Here, connector engineers listen to the real voices of customers and develop them into future products. Customers have highly rated these technology exhibitions that show our initiatives for the future. We have held such exhibitions since 1979, and they are the source of the Hirose Group's technological capabilities.

Downsizing Capabilities

Challenge for downsizing

As a result of pursuing the development of leading and cutting-edge products, Hirose has realized downsizing of connectors to prepare for the downsizing of telecommunication equipment. Micro-connectors used in familiar wearable devices are extremely small, yet maintain high performance and quality. Downsizing is a major theme for the Hirose Group. Each day, we strive for smaller manufacturing. Demand for small-sized and lightweight connectors has risen in various fields. There are many opportunities for the Hirose Group's small connectors to play an important role. As long as the needs for downsizing exist, we will continue to take on this challenge.

Technology that supports downsizing

Integral molding

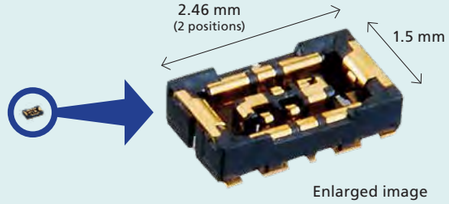
Connectors are assembled by inserting metal terminals into plastic component parts. For micro-connectors, mechanical stress is applied by inserting terminals into small cavities in the plastic component parts. Therefore, this can deteriorate the precision of the connector. Integral molding is manufactured by placing the terminals into the molding die and injecting resin into it in order to form the product. Therefore, the quality of the product is determined by the precision of the molding die. Integral molding is a highly difficult method of manufacturing. However, Hirose has steadily compiled technology and has realized manufacturing for micro-connectors with integral molding ahead of other suppliers. Integral molding is the Hirose Group's technology for realizing precision small connectors that can maintain a stable quality even with the small size.

Precision molding dies

Micro-connectors consist of extremely small plastic component parts and metal terminals. These precision parts are formed using molding dies. It is important to manufacture component parts according to the drawings with high precision molding dies. High precision is required for micro-connector molding dies. The Hirose Group continues to pursue design, development, and processing technology of precision molding dies and possesses high precision technology. We are proceeding with research and development to create even more precise molding dies, including processing of a few microns and measurement devices that measure even smaller units than microns. The Hirose Group aims to stabilize quality by precision molding dies. By further pursuing precision molding die technology, we support the evolution of downsizing in the future.

"BM29" Series, the smallest connector in the world

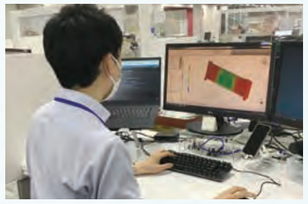
In 2015, Hirose developed the BM29 connector, the smallest board-to-board connector in the world. At an extremely small size of 2.46 mm in width (2 positions) and 1.5 mm in depth, the precision of this connector is on the micro level that humans cannot see. The small-sized manufacturing that the Hirose Group strove for realized this achievement of both small size and high quality. The BM29 connector is used in small devices, including wearable devices. These needs are growing.



Analysis/simulation technology that supports downsizing

Before manufacturing connector assembly equipment and molding dies, analysis enables us to solve underlying issues at the design stage and improve the design quality through various simulations, such as contact reliability and mechanical strength. In particular, using simulations to visualize manufacturing processes and product characteristics that cannot be seen by the human eye, such as plastic component part injection molding and temperature rise tests, is an important step in increasing the reliability of the structural designs. Small connectors are very precise components where even a difference of 0.01 mm can alter performance. By repeating analyses and fine-tuning the design, we are able to create products with high precision and quality. Analysis is an important technology that supports small connectors.

The need for the downsizing of connectors is continuing to grow. However, you cannot make a small connector available simply by making a regular connector smaller. We optimize the product design to form a structure that can maintain small size and quality through 3D model simulations. Design verification through analysis prevents backtracking in product design and realizes significant reduction in development lead time. As the product life cycle gets shorter, raising analysis precision and accelerating development speed greatly improve competitiveness.

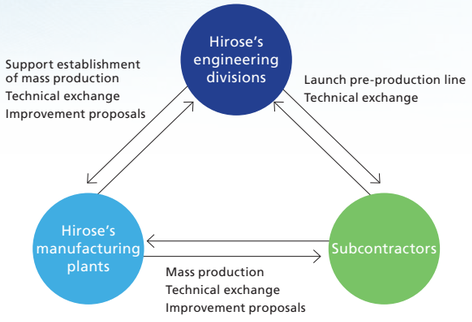


Competitive Advantages 2 Manufacturing Expertise

Co-creation manufacturing

Hirose's Production System is Hirose's unique manufacturing system in which products are designed in engineering divisions up to the production equipment and mass production is performed in the manufacturing plants and subcontractors of the Hirose Group. Since the engineering divisions and manufacturing plants work together so closely, it is possible to strengthen production capabilities that support advanced new product development. We are also performing improvement activities and efficient production by collaborating and sharing information with subcontractors that have knowledge. Feedback from mass production is given to the engineering divisions and utilized in new product development. The engineering divisions, manufacturing plants, and subcontractors link together and polish their approach to manufacturing.

Hirose's Production System



Hirose's engineering divisions
The engineering divisions do everything from product design to development of production equipment and quality assurance. By working with the manufacturing plants and sharing issues during mass production, engineering divisions aim for design that achieves simple manufacturing from the product design stage. New manufacturing know-how is amassed in the company. The engineering divisions work with the manufacturing plants and subcontractors to improve mass production.

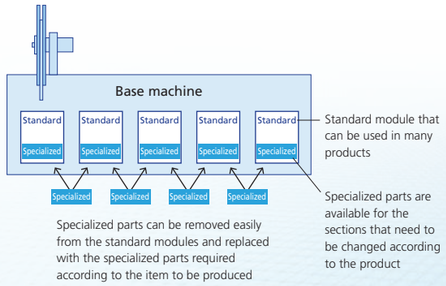
Hirose's manufacturing plants
Issues and improvements from the mass production plants are shared with the engineering divisions. Not only does each side check on the status during production, but they also accumulate examples to realize a co-existence of easier manufacturing and advanced performance while also shortening development lead time. Subcontractors also align with this framework to share insights.

Subcontractors
Mass production is performed through working with the subcontractors around our manufacturing plants in and outside Japan. Both sides improve each other's technology as subcontractors share the knowledge, technology, and know-how that Hirose lacks. By creating an opportunity to share quality and improvement examples, we are constructing a network with engineering divisions and manufacturing plants of the Hirose Group.

Modularization of production equipment

We are proceeding with the modularization of production equipment in order to shorten lead times in manufacturing. We have developed modules that can be applied as a common part even if the connector specifications are different. By splitting components that must be changed by product into specialized parts, we were able to attach and detach them with one touch. By doing this, Hirose aims to significantly reduce parts switching times for products, flexibly and quickly respond to multi-product small-lot production, and improve investment efficiency. Also, by keeping a base machine at each production base, convenience improves even if mass production is moved between plants. We are balancing optimization and universalization of production, strengthening new product development capabilities, and realizing manufacturing that fits an era that demands speed.

Image of modularization



Molding technology that realizes high quality and stable mass production systems

Molding dies are used to shape the component parts that comprise connectors. The manufacturing of connectors begins from the design of the molding dies. Connectors are extremely precise components. Even the slightest size difference makes a great impact on the quality. It is important to create components with a high degree of precision in order to improve the quality of the connector. Therefore, precision molding dies are an essential technology. The Hirose Group has divisions for the design, engineering, and manufacturing of molding dies within the company. By developing cutting-edge molding technology that supports precise connectors, we maintain quality and realize stable mass production.

Competitive Advantages 3 Sales and Marketing

Advanced marketing that takes the lead and pursues the cutting edge

All of the products of the Hirose Group are born from a development policy of "marketing and technological innovation." Hirose's marketing strategy inspects unrealized needs, forecasts set changes, and quickly proposes products with new concepts. By forecasting future needs, we are able to bring the most cutting-edge connectors for various fields into the world. Hirose possesses a strength in thinking from a customer perspective and making proposals.

Forecasting the future

The Hirose Group forecasts future products of customers, market trends, and the key electronic devices and develops connectors that respond to future needs before others. Sales staff and engineers visit customers together and search for not only current needs, but unrealized needs, in order to pursue connectors customers really want.

Forecasting newly born markets

The demand for connectors has risen with the emergence of new electronic devices from technological advancements. As such, we are focused not only on existing customers, but also strengthening marketing activities for our customers' future and startup companies. We are refining our senses to discover growth markets while staying aware of the cutting edge. We are actively forecasting new markets.

Connector consulting

Utilizing strengths and knowledge as a manufacturer specializing in connectors, the Hirose Group provides consulting proposals. The Hirose Group develops connectors in wide-ranging markets and possesses an expansive product lineup of 50,000 products. Not only do we flexibly and promptly respond to customer needs, we can also propose better solutions to customer issues based on our achievements in other markets. Utilizing our expertise, we also provide in-depth follow-up. As a connector expert, Hirose supports product development for customers.

Proposals connected to solving customers' issues

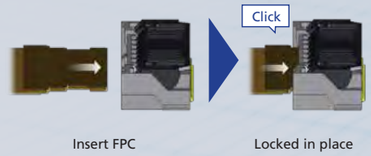
We propose products that solve the issues of our customers by utilizing the high technological capabilities of the Hirose Group. We constantly think of customers' processes, develop connectors that improve work efficiency in the assembly process and prevent mating mistakes, and improve added value of products. The sales side discovers issues and problems related to connectors and shares them with the engineering side to improve the quality of connectors. We must not only provide products, but also make proposals that address customers' future problems. We are doing this by utilizing both our high sales capabilities and technological capabilities.

One Action FH™—One Action, Simple and Easy

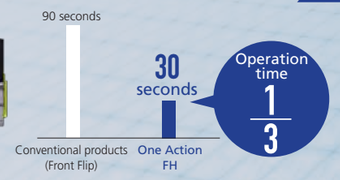
Customers' issues
One of the difficulties in assembling sets is to mate connectors by hand when connecting different components. The more the steps in a process, the higher potential for mistakes. There are also cases when the quality declines, such as if the connector breaks, if too much or little pressure is applied.

Solutions
It is possible to significantly reduce operation time and prevent damage by simply inserting, not touching a connector, when inserting an FPC. Also, the connector can be mated by robots, demonstrating a great potential for automation in the future.

Feature 1 Easy and simple connection just by inserting



Assembly time comparison*
* Time required for assembling 30 pieces



Feature 2 The connector can be mated by robots

Building Global Production Framework

The Hirose Group has established a system as a global supplier by expanding manufacturing plants overseas. Each manufacturing plant is strengthening engineering capabilities and constructing a production structure that utilizes characteristics of each plant. Our plants can guarantee high-level, stable quality while meeting customer demands for stable production and deliveries.

General Industrial Equipment

For general industrial equipment, there are many models and the production volume varies depending on the connector. We have built main factories globally suited for the optimized production method. Each factory pursues efficient production that presumes high quality.

Malaysian factory — Operating as a manufacturing plant of high-value-added products

The Malaysian factory was built in 1989 and began full operation from 1991. Celebrating its 30th anniversary this year, the factory primarily manufactures products with high added value. The "FX23" Series started production from 2014, is widely used for general industrial equipment, communication equipment, and automobiles, and has grown into a mainstay product. Also, high manufacturing technological capabilities and quality of the "IT8" and "IT9" Series have been widely acknowledged as high-speed transmission connectors. They are being used in various types of general industrial equipment.


Factory manager Ganes

Dongguan factory — Aiming for a factory with overwhelming QCD in the China region

The Dongguan factory was built in 2000. In recent years, it has shifted toward automated manufacturing to address rising labor expenses and strengthen on-site capabilities. We have strengthened on-site engineering capabilities and it has grown into a factory that can design and build production equipment locally. The China market is expected to continue to grow, so speed and flexible adaptability is demanded. We will continue to strive to further enhance the engineering capabilities of the Dongguan factory.


Factory manager Xiang

Indonesian factory — Aiming to be a core factory for manufacturing a wide variety of products

The Indonesian factory was built in 1995 and began operation in 1996, making its 25th anniversary this year. At first, it was simply an assembly factory. However, it has currently grown into a factory that can also process component parts by press working, molding, and plating. In the future, it will strengthen its quality capabilities and engineering capabilities and aim to become a core factory for manufacturing a wide variety of products for general industrial equipment.


Factory manager Chiba

Smartphone and Consumer Equipment

Many micro-connectors developed by small precision technology are used for smartphones and consumer equipment. For personal equipment, advancements have been made in making products more compact and higher performance as there have been new multi-function equipment, such as smart consumer electronics and AI consumer electronics. High quality and efficient production capabilities are in demand as we pursue high speed, high performance, and high quality.

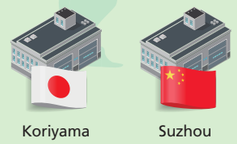
HIROSE KOREA CO., LTD. — Expanding to the global market by strengthening speed capabilities for mass production and reliability

HIROSE KOREA CO., LTD. develops and manufactures micro-connectors for smartphones and consumer equipment as its main product. Based on an information sharing structure with the Miyako factory, it aims to build a world-class manufacturing line. It is strengthening technology development capabilities to expand sales of its pioneering and cutting-edge original products globally. It is proceeding with innovative and highly reliable product development so that not only can it address customer needs, but also propose even more advanced connectors. It will continue to strengthen adaptability with a sense of speediness and achieve medium- to long-term sustainable growth not only by improving productivity, but also by strengthening element technology.


President Lee

Automotive and Mobility

In the fields of automotive and mobility, there is a need to respond to new needs for autonomous driving and EVs. In particular, we need to work together to design, sell, and manufacture new products based on a quality assurance structure. In recent years, the level of demand for mass production sites has become higher and we have striven to improve our adaptability.



Suzhou factory — Aiming to be a main manufacturing plant for the automobile market in China

The Suzhou factory was built in 2007 and it is a relatively new manufacturing plant of the Hirose Group. In 2019 an addition was built and it began efforts to become a cutting-edge factory that utilizes IoT. The major products from the Suzhou factory are connectors for the automobile market in China. As a manufacturing plant of connectors that respond to customer needs for technical changes that correspond to the acceleration of electrification and advancements in autonomous driving, this factory strives to achieve high-level QCD, improve its engineering capabilities, and contribute to the growth of both the company and workers.


Factory manager Shiina

Feature 1

Technological Breakthroughs Through Skillful Talent

High-value-added connectors for E-Bikes made by connecting wisdom of each person

Hirose Group is founded on the concept of connecting wisdom.
Excellent products cannot be created alone.
It is only possible to deliver products customers will recognize by working together as a team of sales, engineering, and manufacturing assembling various knowledge and wisdom and forming synergies.
The hybrid waterproof connector "BH12" Series released in June 2021 is a recent example of this.

Introduction of this project

Born from responding to customer needs, the "BH12" Series captures the changes of the battery connection of E-Bikes (electrically assisted bicycles). Utilizing the many years of experience in E-Bikes, we developed a hybrid connector that achieved ultra-small size and light weight while supporting high current. We have achieved the capability to catch the needs of the expanding E-Bike market, such as improving the efficiency of wiring work through lever locks and creating high-level sealing in their assembled form. In the future, we expect these connectors to contribute to mobility robots, such as electric wheelchairs and AGVs.

Challenging development of "BH12"

1 See change as an opportunity

In recent years, the E-Bike market has sharply expanded. As various models have been announced, the method of connecting connectors has also changed. In particular, the method of connecting the drive unit has shifted from a method in which cables are taken out of the case and connected using an in-line connector to a method of connecting inside the set using a connector, which is easier to attach. Seeing this market change as an opportunity, based on the needs and information gathered by product engineers and sales staff from various customers, the Group aimed to develop a small, circular waterproof connector that supports high current and demonstrates high performance.

2 Equipment design

Because waterproof performance is needed for E-Bike connectors, it was designed with a sealing rubber O-ring in and outside the plastic component parts. Until now, inserting the sealing rubber ring inside was done manually. However, expecting mass production, we took on the challenge of developing an assembly jig to insert the sealing rubber ring inside the unit, a first for Hirose. It was not easy to insert the flexible and easily deformable rubber ring into the plastic component part without any gaps on a consistent basis using a jig. However, product engineers, equipment engineers, and factories worked together to complete the jig that recreates the same action as the manual work.

3 Molding die design

Medium-sized connectors like the BH12 Series that have a large amount of resin can easily malfunction, shrink, or become deformed because of the characteristics of the resin. Therefore, we must design precise molding dies by calculating and forecasting the degree of shrinkage. However, it was difficult to forecast the flow and shrinkage rate of the resin because this was the first time using this resin. In order to succeed in such difficult development, product engineers, die & mold engineers, development purchasing staff, and the Indonesian factory worked together, adjusted the design of molding dies while repeating prototypes, and overcame issues in design.

4 Establishment of production

Looking toward the expansion of the global E-Bike market, development purchasing staff deliberated with product engineers and the factory and decided to start production at the Indonesian factory. Since this production was started overseas, we held weekly meetings with the factory to confirm progress. They shared the intention behind the design and the background on the important parts of the design. As traveling to the site is not possible due to the COVID-19 pandemic, all parties discussed issues online, established an environment to mutually follow up in the case difficulties emerge, and proceeded with establishing production through careful communication.

5 Realize successes

Being able to realize the specifications and price that will make customers satisfied with the BH12 is thanks to the cooperation of all departments. From the beginning, sales staff and engineers discussed various market demands. Production Engineering took on the challenge of developing an automated assembly jig for mass production, and overcame the molding technology issues caused by new resin. Development purchasing staff decided to establish production at an overseas factory in order to reduce costs. This success was born of each department taking on new challenges and overcoming various difficulties while working together.

Source of co-creation

Hirose create products with an "All-Hirose" approach that includes engineering divisions, manufacturing divisions, sales, and overseas sales companies. All departments are working hard to provide better products to customers at a better price. The source of this is the teamwork born from a value of "connecting wisdom." We will connect this asset to the future and continue to take on challenges to realize manufacturing that makes customers happy. By each employee taking on repeated challenges and connecting wisdom, the Hirose Group aims to realize development that only we can do.

Feature 1 Technological Breakthroughs Through Skillful Talent

Value of "co-creation" through cooperation that crosses departments is the driving force for success

BH12 project members

Shifts in E-Bikes towards assist units with a directly installed receptacle are a business chance for Hirose that connects to new connector needs. However, there were a mountain of issues until actually producing the product. This is an introduction of how Hirose took on challenges and how employees took efforts to develop the "BH12" Series.

Product Design | Engineering Group Industry Division | S.K

Realize the best design by concentrating knowledge from multiple angles

Because the BH12 Series had an unprecedented design, we concentrated the knowledge and know-how of other products and aimed for the best design. The Hirose Group develops connectors for a wide array of fields and specific technology for each product. From the early stages of design, we received advice from the engineers of other products and proceeded with design. In the design of the jig that would insert the sealing rubber ring inside the unit, we worked with the Ichinoseki factory, that wanted to take this one someday, and produced the design of the equipment. Pre-production tools were manufactured by the Indonesian factory. Once the general design was clear, we repeated deliberations with equipment engineers until the jig was completed. The BH12 is a product born of co-creation as many departments worked together on it.

Equipment Design | Engineering Group Equipment Engineering Department | M.A

Realize automation in fitting sealing rubber rings inside units and contribute to results

Equipment engineers support design of assembly equipment and the establishment of production. The BH12 is a product of reviewing equipment designs with the factory while including factory demands. We pursue the best equipment by collecting the opinions of those involved in product design and production. The hardest issue was automation of inserting the sealing rubber ring into the unit. This was a first attempt for Hirose, which was realized by compressing the rubber, inserting it into the plastic component part, and expanding it. This led to a significant reduction in cost and significantly impacted results. This development led to other orders to develop rubber insertion equipment on other products. We will continue to take on challenges and contribute to enhance our manufacturing expertise.

Molding die Development | Engineering Group Die & Mold Engineering Department | G.K

Struggles with molding technology issues caused by new resin overcome through teamwork

Molding dies are extremely important in creating high precision connectors. Because the development of small molding dies for cutting-edge products has been our focus, we did not have much experience with medium-sized connectors like the BH12. Furthermore, we faced many problems because we were using a resin that we had never handled before and lacked knowledge of. After molding die design, the manufactured molding die was sent to the Indonesian factory for mass production. However, the dimensions were not stable due to the changes in the resin flow depending on the materials lot. We worked together to test it many times at the factory and fine-tune the molding die. We regularly organized issues between Product Design and the factory to overcome these issues through teamwork. In the future, we will compile knowledge, experience, and data from various products to be used in molding die development.

Development Purchasing | Engineering Group Development Purchasing Department | T.F

Establish production remotely at overseas factory during COVID-19 pandemic

Development purchasing staff support the establishment of mass production to achieve smooth manufacturing. From before deciding the product concept of the BH12, the Production Group, product engineers, equipment engineers, and die & mold engineers exchanged opinions about manufacturing method and production area based on information such as manufacturing difficulty, assembly style, and suppliers. Together, we decided to produce the product at the Indonesian factory. At first, there were plans to support the establishment at the site, but this was changed to remote handling, including the trial manufacturing, due to the COVID-19 pandemic. Despite this, the facility was completed smoothly due to the close communication with the factory and the proactive response of factory members. In these efforts, we received much advice from many people in and outside the company. We will continue to connect the wisdom inside and outside the company and pursue the optimized means of production.

Sales | Sales & Marketing Group Industrial Equipment Sales Department | K.O

Resolve difficult issues by all departments working together

The work of sales is to properly understand the quality, price, and delivery that customers demand of Hirose connectors, and to move projects toward that realization while solving issues. In the case of the BH12, we could not directly visit customers due to the COVID-19 pandemic. However, we held meetings with overseas sales companies using online conferences in order to express the passion of engineers. We explain the specifications, price, and schedule logically to customers, and internally, we tell other employees about the demands of customers and that background. In order to balance many difficult demands, all departments didn't give up, but instead came together and took on this challenge. We believe this approach will be helpful in future projects as well.

Medium-Term Business Plan

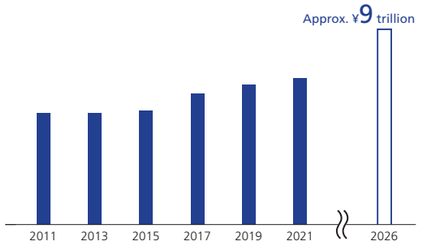
Concept of Hirose Group's Medium-Term Business Plan

The concept of the Hirose Group's Medium-Term Business Plan is that sustained growth is achieved through execution of initiatives that bring the Company closer to its vision rather than by simply focusing on numerical targets. Connectors are electronic components, not entire units on their own. Demand greatly fluctuates depending on the environment surrounding Hirose. As such, the Hirose Group does not focus on numbers, but rather aims for growth and quality by executing medium-term initiatives toward achieving its vision rather than simply seeking to scale. By updating the Medium-Term Business Plan every year, the Group can respond flexibly to the latest market conditions.

Recognize market environment

The electronic equipment market is at a major turning point. The number of new electronic devices continues to grow, from IT devices like smartphones and wearables, and smart consumer electronics to the adoption of ICT in social infrastructure, hospitals and factories. As a result, we are entering an era where all things are connected, and digitization has been accelerating with the evolution of technology, such as 5G and IoT. We expect that demand for connectors will rise as these new connections produce big opportunities for connectors.

Connector market scale (Company estimates)



Future outlook

We can create a more convenient and pleasant society through connecting more things and the developments in IoT. Connectors are needed when connecting electronic components like antennas inside for products with communication functions. We believe that connectors have a large role to play in the coming "era of connection." Seeing this change as an opportunity, the Group will contribute to downsizing and high-speed transmission to maintain a pleasant society and healthy development of industry.

Industrial

As labor shortages worsen, progress has been made in forming smart factories, such as automation of production lines and production management systems through AI, in order to increase productivity. Demand for connectors can also be expected to grow with the increase of robots and communication features.

Mobility

Major changes have come to mobility. A wide array of technology, including electrification and digitization, has been installed in automobiles. This is expected to significantly change our lifestyles. Corresponding to the development and expansion of mobility, the parts that are connected by connectors are also increasing.

Lifestyle

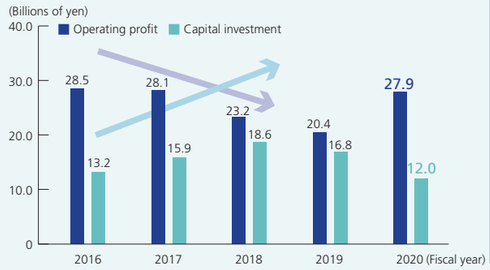
As our lifestyles change significantly, we enter an era when not only can we work from home, but also enjoy hobbies and recreation from our home networks. Electronic devices have increased in our day-to-day lives as communication functions are installed in many products and the demand for faster and higher capacity communications increases.

Medium-Term Business Plan roadmap

Initiative 1 Invest in automotive field

Looking toward major innovations, such as EVs and autonomous driving, the Group has proactively expanded into new product development that meets the needs of new automobile features. We have strengthened capital investment from fiscal 2016 and built a foundation for the automotive business, such as expanding testing centers and strengthening quality assurance structure to realize the plan to support continuous growth through the three pillars of consumer equipment, general industrial equipment, and automotive. This is a shift from the previous focus on the two strategic areas of consumer and general industrial equipment.

Capital investment and operating profit



Initiative 2 Expand business areas from smartphones to consumer market

We tapped into the consumer market as a market with future growth where we can leverage our strength in small connectors and our lineup for smartphones as information terminals are becoming more diverse. Expecting that demand will rise for smaller, high capacity, high speed connectors, Hirose continued technical development. As a result, from fiscal 2019 the sales of consumer devices such as wearables and smart speakers increased significantly.

Establish three pillars

In fiscal 2011, the sales mix was unbalanced with a strong reliance on general industrial equipment and smartphones. Demand for electronic components such as connectors fluctuates significantly depending on the market. In particular, smartphones are easily impacted. In order to create a stable foundation for continuous future growth, we established three pillars of consumer equipment, general industrial equipment, and automotive through new product development that considers changes to automobiles as an opportunity as well as tapping into and expanding the consumer market. We are constructing a system that is resilient against the influence of a specific field through three steady businesses that support the Company. The Group expects growth in sales in each field in fiscal 2021.

Sales in major industry segments (as of November 2021)