

IHI Castings Co.,LTD.

URL:https://www.ihc.co.jp/icc/hp_eng/

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Akishima Head Office



Soma Plant



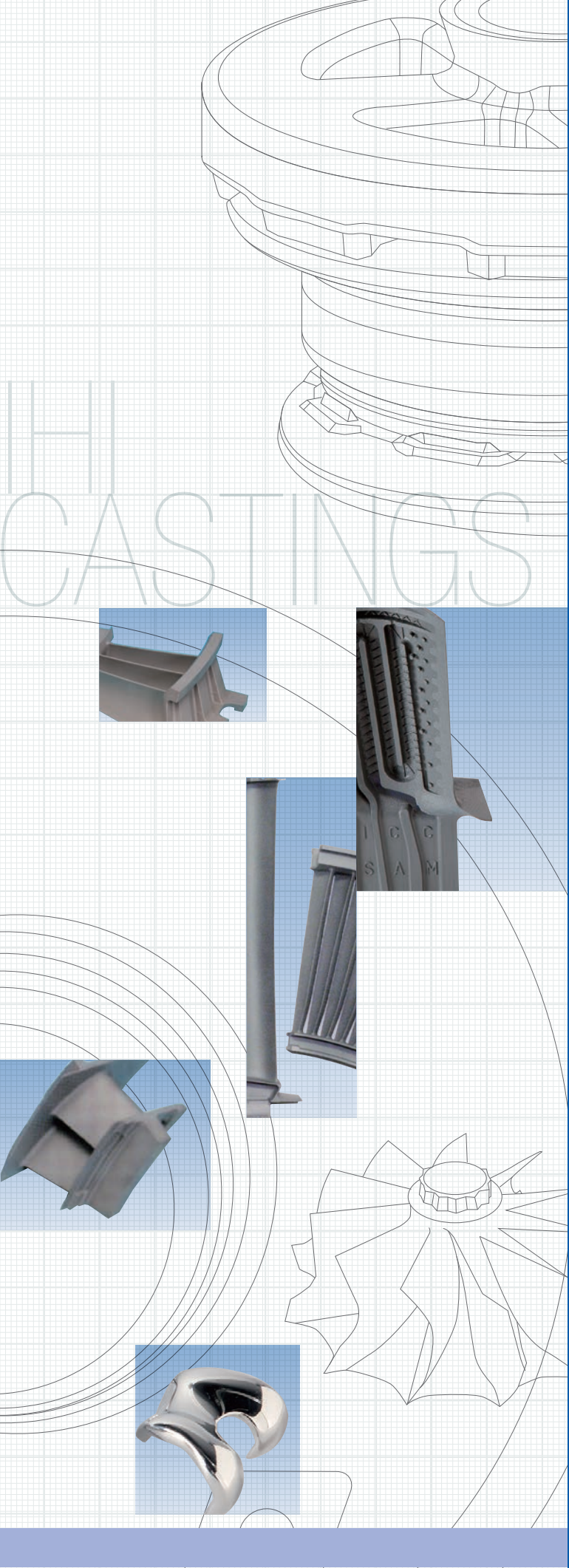
Matsumoto Plant



Soma Works, IHI Co.,LTD. (full view)



IHI Agri-Tech CO.,LTD. (full view)



Corporate Profile

IHI Castings Co.,LTD.

Corporate Message

Action Principles of IHI Group

We, collectively as IHI Group, make effort under the group's management principles: Contributing to the development of society through technology; Human resources are our only and largest asset. Conscious of global issues, we are devoted to fulfill our obligations and gain trust from all the stakeholders: our employees and members of local and global communities as well as customers, partners and shareholders. We strive to meet everyone's expectations and make ourselves more valuable as a business enterprise into the future.

Customer Satisfaction

Advanced Technology and efficient management

Truly rewarding workplace

IHI Castings Co., Ltd.(ICC) manufactures heat-resistant alloy precision castings used for aircraft jet engines, space equipment, industrial gas turbines and turbocharger for vehicles and ships.

IHI group marked its 160th anniversary in 2013.

Since its establishment as Ishikawajima Precision Casting Co., Ltd. in 1977, we have been manufacturing and providing precision casting materials used for a variety of purposes — aircraft jet engines, space equipment, industrial gas turbines, turbochargers for vehicles and ships, orthopedic implants, general industrial equipment and such.

Also, to address the growing demands for aircraft engines and other products, we have enhanced the production capacities of Soma and Matsumoto Plants by promoting efficiency of production lines. ICC has thrived as an integral member of IHI group.

We will put more effort into new techniques including powder metallurgy and additive manufacturing along with precision casting, and continue to offer excellent products of near-net-shape and net-shape materials. ICC will strive to secure the largest share in the domestic market, and further improve our technologies to penetrate global market as well.

IHI's corporate message "Realize your dreams" contains our earnest determination to realize the dreams of our customers and people worldwide, leveraging our strength of technology and manufacturing, which we have nurtured since IHI's establishment.

We, as a member of IHI group, are also realizing our dreams to enhance technology and create higher corporate value to benefit our customers, and to become a contributor to the society's development.

Precision Castings



the history of ICC

History of ICC

Since its establishment, ICC has made incessant efforts as a top manufacturer of precision castings without losing enthusiasm and commitment. We have accumulated knowledge and technique in precision casting in which we have specialized. The experience gained over a long history is our valuable asset, and with this asset we are determined to provide more products to meet our customer needs.

Leading company in casting

In 1951 Ishikawajima Heavy Industries (currently IHI) built a technical research laboratory to start research and development of gas turbines and precision casting products. On April 1st, 1997, Ishikawajima Precision Casting Co., Ltd. (ICC) was established. Since then, we have led the field of precision casting, including vacuum-cast aircraft engines and gas turbine parts, turbocharger wheels and other products.

Expansion into aircraft engines and space development business

Being a leading company in precision casting, ICC has recently been providing products in new fields, utilizing the accumulated know-how and proactively adopting new technologies: ICC has increased market share of aircraft engines, and started production of rocket engine parts. We aspire to keep providing new technology and products.

- 1951 • Research started at IHI Research Laboratory
- 1973 • Precision Casting Department set up in Aero-engine Division, IHI
- 1977 • Precision Casting Department spun off from IHI, Ishikawajima Precision Casting (ICC) established in Tanashi
- 1980 • Mizuho Plant established
- 1983 • Production of directional solidification turbin airfoils started
- 1985 • Production of ceramic cores started
- 1987 • Production of titanium cast structure started
- 1990 • Mass production of hollow single crystal (SC) turbin airfoils started
- 1998 • Soma Plant established
- 2000 • Acquired Matsumoto Ishikawajima Precision Casting Co., Ltd.
- 2004 • The second stage of Soma Plant construction completed
- 2007 • Tanashi and Mizuho Plants integrated into Soma Plant
- 2008 • Company name altered to IHI Casting Co., Ltd.
The third stage of Soma Plant construction completed
- 2009 • New titanium furnace installed to Soma Plant
- 2010 • Cumulative shipments of turbine wheel reached 10 million
General Bulk Export License under Security Trade Control granted by Ministry of Economy, Trade and Industry of Japan
- 2012 • Won Toyota Prize by the Japan Foundry Engineering Society
- 2014 • Production of Metal Injection Molding started



Tanashi



Mizuho



Soma

Company Outline

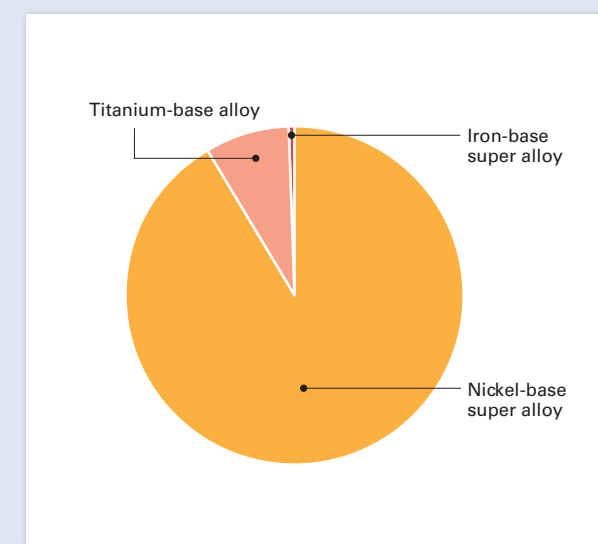
Outline of the Company

Outline of the Company

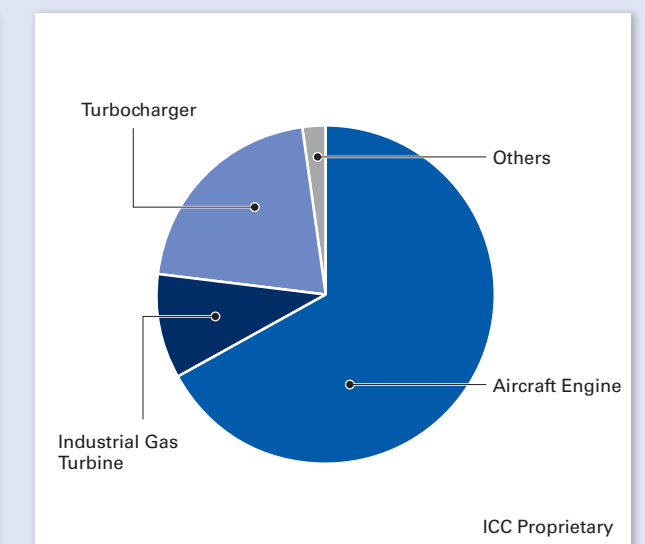
Established: 1st April, 1977
 Capital: 450 million yen
 Employee: 380
 Stockholder: IHI Corporation
 Bank: Mizuho Bank Ltd.
 THE TOHO Bank, Ltd.
 THE 77 Bank, Ltd.
 THE HACHIJUNI Bank, Ltd.
 Sumitomo Mitsui Banking Corporation
 Customer: IHI Corporation
 IHI Turbo Co.,Ltd.
 IHI Rotating Machinery Engineering Co.,Ltd.
 Mitsubishi Heavy Industries, Ltd.
 SIEMENS
 IHI Charging Systems International
 IHI AEROSPACE, Co., Ltd.
 Certificate: JIS Q 9100
 ISO14001
 NADCAP

Proportion of Sales

By material



By category

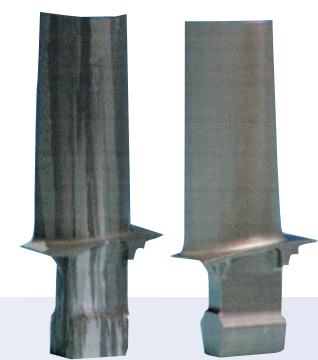


Technology

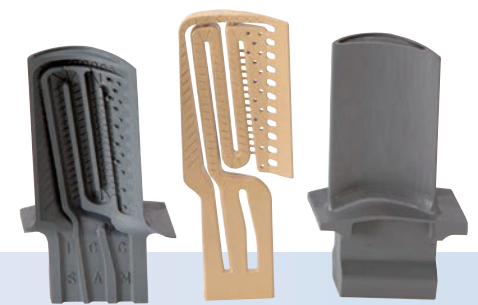
To improve performance of aircraft engines, highly heat-resistant and light-weight materials are required. We are collaborating with IHI to develop the production technique to put these materials into practical use.

Advanced Casting Technology

- DS & SC casting
- Complex hollow structures
- Ceramic Core
- Ti alloy & TiAl alloy casting
- Advanced mold material



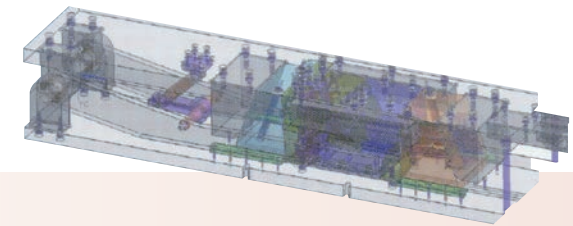
DS & SC casting



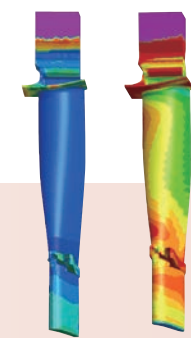
Ceramic Core

Three-dimensional Systems

- 3D-CAD
- Casting Simulation



3D-CAD



Casting Simulation

Additive Manufacturing

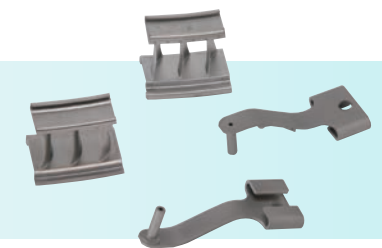
- Wax 3D printing
- Stereolithography (SLA)



Wax 3D printing

Advanced Process Technology

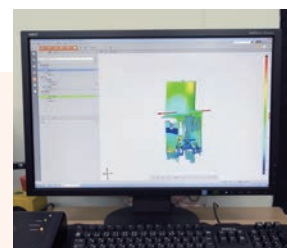
- Metal Injection Molding (MIM)
- New Casting Technology



Metal Injection Molding

Inspection & Measuring Technology

- Optical 3D scanning
- Nondestructive inspection
- Automatic dimensional Measurement



Optical 3D scanning



Nondestructive inspection
(Computed Radiography)



Ecological Technology

- Recycle and Reuse
- Reduce energy consumption



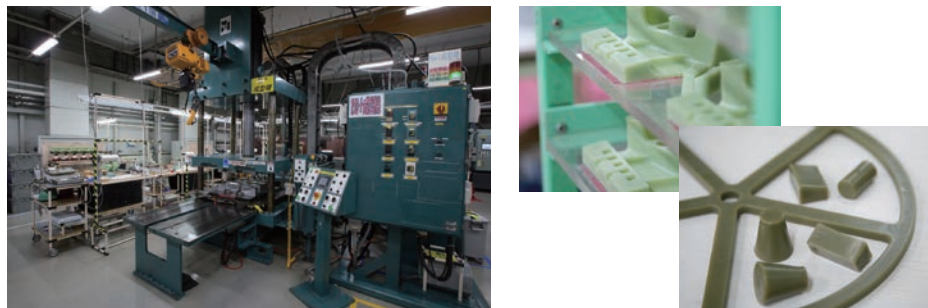
Reduce energy consumption
(High-efficiency Cooling
Water Pump)

Production Process

We have been producing a variety of precision casting products — mainly aircraft engine parts at Soma Plant, and turbocharger parts at Matsumoto Plants — to cater to demands in a wide range of fields.

Wax Injection & Assembling

Melted wax is injected into a wax die to make wax patterns, and the patterns are then assembled to be dipped and coated. Ceramics core is applied for hollow products.



Shell Molding

Assembled wax patterns are dipping into the slurry and formed ceramic shell on the surface of the wax. Finally, the wax inside is heated and melted out and create hollow ceramic shell mold.



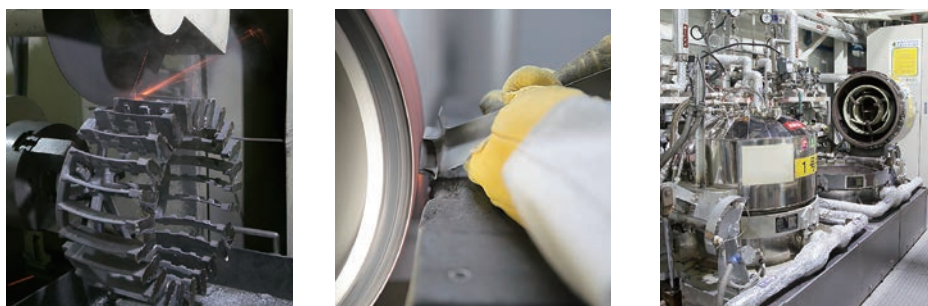
Melting / Casting

Molten metal is pouring into the pre-heated shell mold. Grain structure is controlled by advanced technology during solidification.



Finishing

After metal is completely solidified, ceramics shell is broken and each product is separated. Ceramic core for forming hollow product is dissolved chemically.



Heat Treatment

Mechanical properties of the product are controlled with heat treatment achieving required characteristics.



Surface Finishing

Reaction layer and/or burr remaining on surface of the products are removed.



Inspection/ Quality Assurance

Defects on the surface and inside of products are checked with fluorescent penetrant inspection and X-ray radiographic inspection. And the quality of products are assured by various inspection.

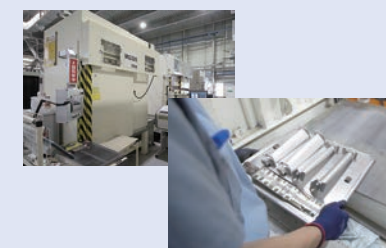
CMM



Crystallographic Orientation Inspection machine



Computed Radiographic Inspection System



Microstructure Inspection



Fluorescent Penetrant Inspection

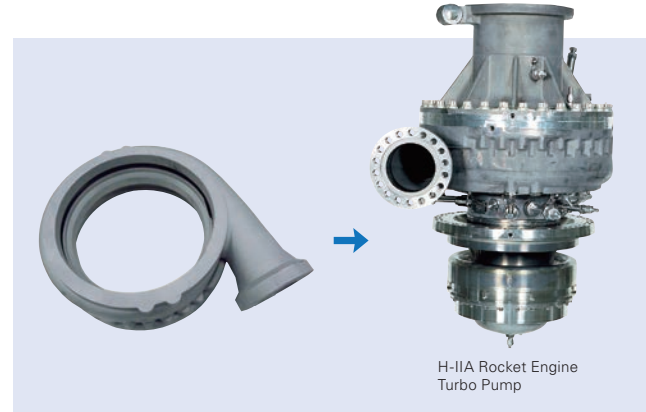


Precision Casting Products

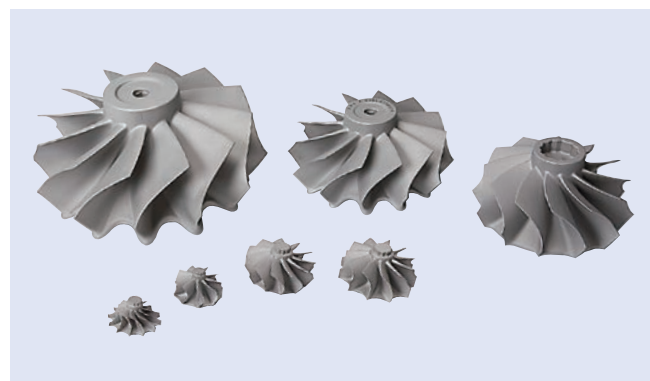
Our main product is turbine airfoil which requires especially high heat resistance among aircraft engine parts. We focus on directional solidification and single crystal airfoils, and hollow cooling airfoils using ceramic cores which have particularly great high-temperature properties. As for turbocharger parts, we produce turbine wheels for vehicle turbocharger in large volume. We are widening the application of products from land, sea, air to space. As a top manufacturer in this technical field, we are making strenuous efforts in collaboration with IHI on technology development.



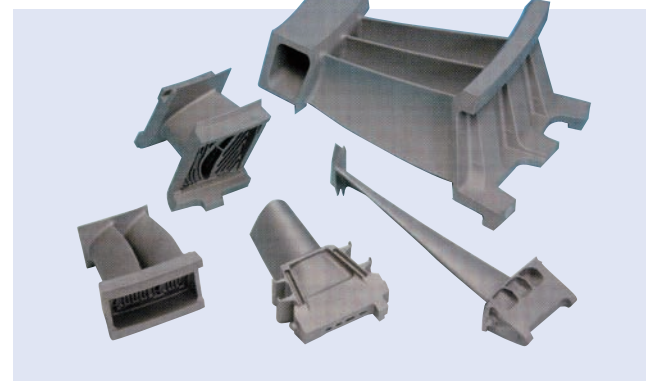
Aircraft Engine Turbine Airfoil



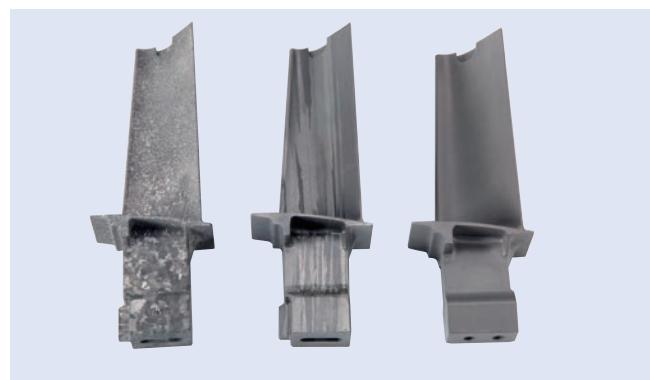
Aircraft Engine and Space Rocket Engine Structure



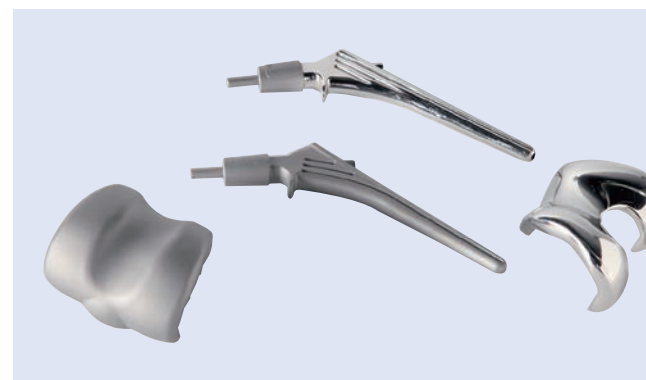
Turbocharger Turbine Wheel



Industrial Gas Turbine Airfoil



Equiax Directional Solidification Single Crystal



Orthopedic Implant

Corporate Social Responsibility

As a member of IHI group, we observe the environmental policy of Musashi and Soma Regions, environmental laws and regulations of Soma Region, and other requirements. To continuously improve the impact on the environment, Soma Plant obtained the ISO 14001/JIS Q 14001 (Environmental Management System Standard) in December 1999, and have maintained the license ever since. We have set up an environmental management committee to perform environment management systematically and effectively, and have been promoting environmental activities.

Effluent treatment by removing harmful substance

In the process of precision casting, wax patterns are dipped in slurry, liquid fire-resistant material, and stucco, arenaceous fire-resistant material, is applied to form layers. The slurry becomes muddy after repeated dipping. At our plants, we separate this muddy slurry into water and solid matter. The water's pH is lowered to the standard level and then drained. The pH value is strictly controlled and the water is harmless. The separated solid matter is recycled. We pay closest attention to minimize the impact on the environment.



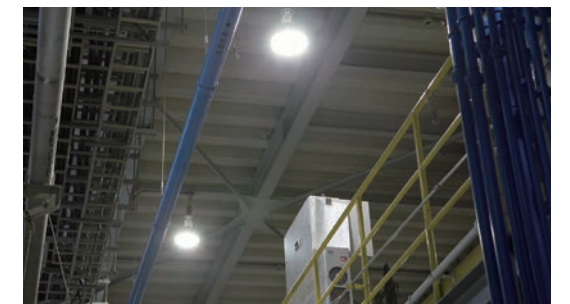
Recycling wax

Defective wax patterns and excess wax produced in the Wax Injection & Assembling process is called waste wax. The wax melted by steam out of molds in the Shell Molding process is also called waste wax. The waste wax is processed into pellets with a dedicated machine, and shipped to a specialized processor to be refined, and then shipped back to us. This refined wax is used as runner wax, which is 100% recycled.



Energy Saving

We formulate Energy Saving Plan every year and implement various measures to achieve our goals. Regarding electricity, which accounts for the majority of the energy consumption, air-conditioners have been replaced with latest models and highly-efficient cooling water pump has been introduced. We are working on energy reduction on the entire premises of our plants on top of the whole staff's awareness of energy saving. We are also replacing lightings with LED lights.



Relations with local communities

ICC is a locally based company, proactively hiring from the local areas. As a local enterprise, we take part in a variety of events and volunteer activities. Soma Plant sponsored sodding at a park and a recovery marathon event in the post-earthquake reconstruction period. We also attend annual Soma Nomaioi, which is a traditional festival designated as a significant intangible folk cultural asset of Japan.

