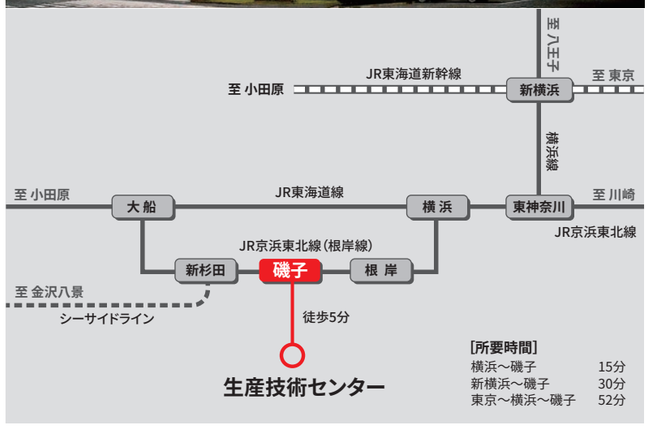

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https://www.global.toshiba/jp/technology/corporate/cmc.html

Toshiba Corporation

Corporate Manufacturing Engineering Center

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https://www.global.toshiba/ww/technology/corporate/cmc.html

2403（TBEX）

TOSHIBA

Corporate Manufacturing Engineering Center

Toward Innovation in Manufacturing

We innovate and advance our manufacturing technologies and create new value by deploying them to Toshiba products and services not only to support the Toshiba Group today but also to open its way to the future.

Director

Yasuhiro Akiyama

Enhancement of the Toshiba Group's manufacturing capabilities with innovative manufacturing technologies

◆ Mission of the Corporate Manufacturing Engineering Center to support manufacturing

For over 50 years, the Corporate Manufacturing Engineering Center has been engaged in the research and development of technologies, methods, mechanisms, and systems that enable the Toshiba Group to produce and deliver high-quality products and services at low cost and high efficiency. We will continue to research and develop fundamental manufacturing technologies that serve as a basis for different manufacturing processes and deliver them with appropriate customization according to the individual products and services.

◆ Business processes re-engineering and manufacturing/service operations re-engineering

We have recently strengthened our efforts for promoting business processes re-engineering and manufacturing/service operations re-engineering by leveraging digital manufacturing technologies. We are optimizing the entire value chain, from sales and product planning to maintenance, by digitizing events and phenomena related to manufacturing and services, collecting and analyzing digital data in real time, and feeding the results back to the field workers. We create new value by fully unlocking the power of data.

◆ Toward sustainable value creation

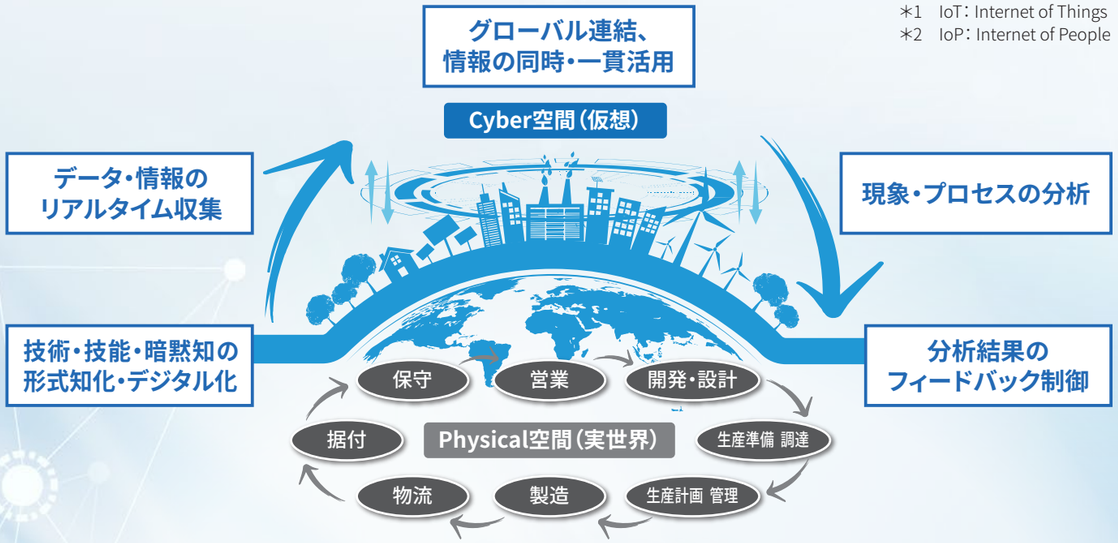
To make both people and our planet sustainable, we are committed to developing innovative manufacturing technologies that contribute to a carbon neutral society, circular economy and other environmental initiatives.

Featured Measure

Digital manufacturing technologies

Digital manufacturing technologies control and optimize manufacturing by digitizing events and phenomena related to manufacturing and services and collecting and analyzing digital data in real time.
They analyze such data in cyber (virtual) space and feed the results back to the events and phenomena in physical (real) space for optimization. We achieve leading-edge manufacturing and services by employing and mastering IoT*1 /IoP*2 and AI technologies, which are undergoing rapid innovation.

*1 IoT: Internet of Things
*2 IoP: Internet of People



Business processes re-engineering

By deploying digital manufacturing technologies throughout the entire value chain, from sales to installation and maintenance, we promote the transformation of our business processes. In addition to optimizing each business process individually, we also optimize the entire value chain by connecting the processes to achieve an environment where we can create products and services more efficiently and effectively.

Sales processes

- Visualize operation information
- Build process models
- Automate quotations

Design processes

- Modular designs
- Build design rules
- Automate designs

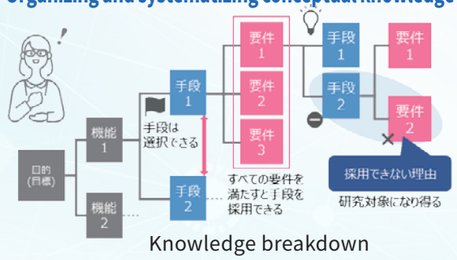
Procurement processes

- Analyze costs
- Evaluate and educate suppliers
- Systematize

Production planning processes

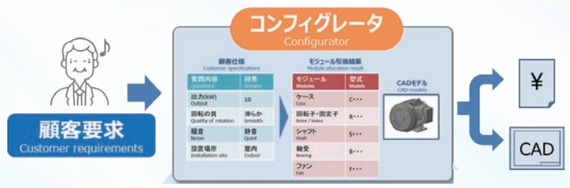
- Use IE improvement tools
- Create production plans
- Build production lines

Organizing and systematizing conceptual knowledge



Knowledge breakdown

Technologies for linking information



Automatic estimation with configurator

Smart manufacturing

Based on the insights we have accumulated from our manufacturing sites, we deploy various new technologies, such as AI image inspection, sensing/measuring technologies, production simulation, and conveying/intelligent robots, to visualize production results and the status of manufacturing line operations while achieving automation and manpower reductions. We use these smart factory technologies to achieve IoT/IoP-based operations and maintenance (O&M) to enable the centralized control of operations while offering services, such as remote operation assistance and automatic inspections by robots. We promote smart manufacturing, which helps the transformation into smart factories, while optimizing O&M.

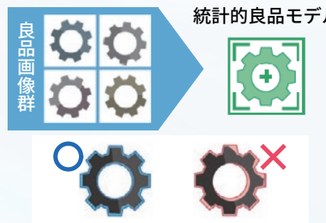
● Voice assistance tool

作業の音声アシスト・記録

● Reading meters

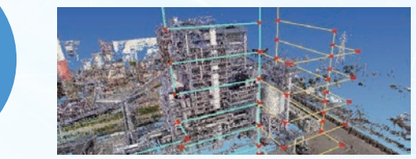
アナログ計器の値をデジタル化

● AI image inspection by learning good product images



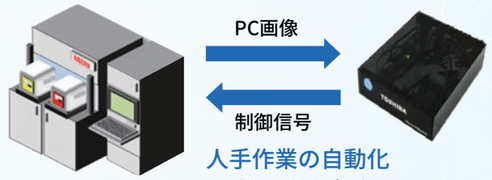
良品画像から不良を検出

● Field measurement technologies



プラントを
3Dデータ化

● Factory RPA*2 manipulating control technology



人手作業の自動化

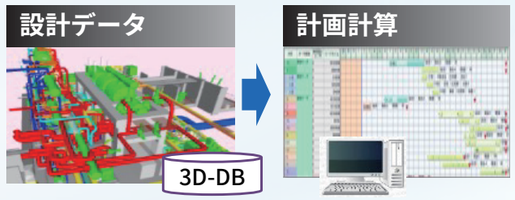
*2 RPA: Robotic Process Automation

● Production simulation

レイアウトの仮想評価

● Scheduler

スケジューリング技術の活用

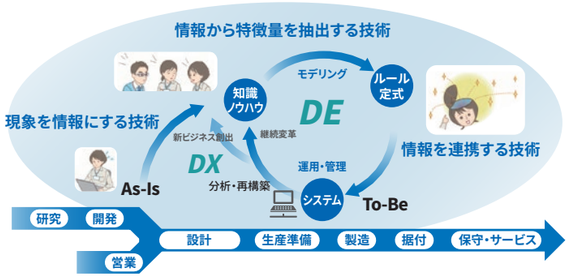


据付・保守計画の適正化

Knowledge and information system technology

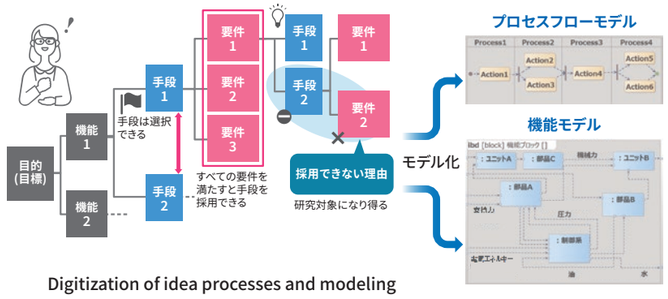
We research and develop practical methodology and information system technology to make effective use of business knowledge and information. Appling the results to business systems, we contribute to improving the productivity of the entire business. We are also working on development of technologies necessary for business transformation by DE*1/ DX*2 and creating new businesses.

*1 DE : Digital Evolution
*2 DX : Digital Transformation



Technologies for translating phenomena into information

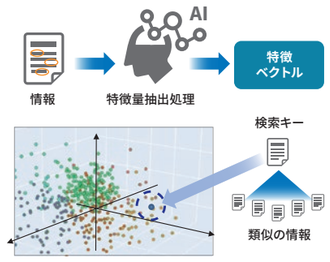
We research and develop methodologies and methods related to idea processes and business processes based on systems engineering, business process management, development methodologies, and more.
We are also focusing practical data models and quantification algorithms based on initiatives such as MBSE, BPMN, and MBD.
These technologies are used to convert phenomena into explicit knowledge.



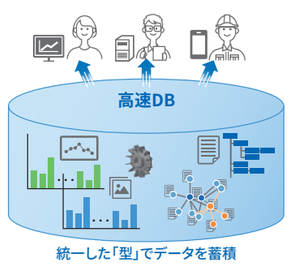
Digitization of idea processes and modeling

Technologies for extracting feature quantities from data

By using mathematical analysis technology and AI, we are researching and developing algorithms for extracting features from formalized information, technologies for searching similar events, and technologies for speeding up execution within a realistic time frame. Our research covers a wide range of data, including time series data, text, images, and 3D data.



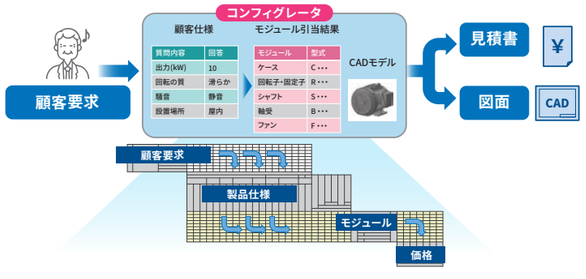
Feature extraction from data



High-speed computation

Technologies for linking information

We are developing technologies to link a wide range of information and data produced in various ways across the engineering chain, encompassing all stages from design, development, procurement, and production through to logistics, maintenance, and sales in order to realize multi-faceted analysis and visual representations.
We are also working on development of systems and solutions such as configurators to flexibly and quickly implement customer requests .



Automatic estimation with configurator

Production system engineering technology

To improve global manufacturing capabilities, we are developing tools and methods based on industrial engineering (IE) and enhancing production control systems and manufacturing simulators.

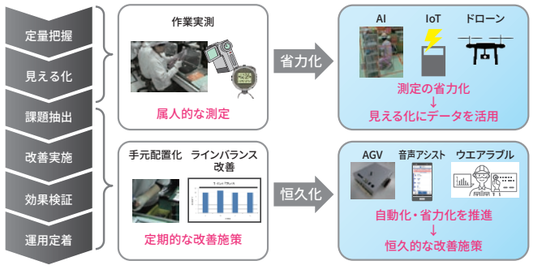
Enhancement of on-site management capabilities

We are engaged in problem-solving initiatives through locally-based activities, from production bases to product installation and maintenance at field sites, based on industrial engineering (IE).
We are also engaged in the technological development and implementation of tools and methods that utilize the application of AI and IoT for problem-solving.

活動領域

Expanding of IE application areas

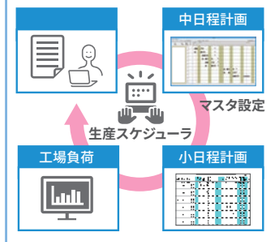
Optimizing improvement activities



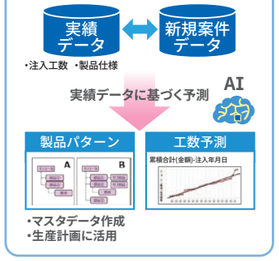
Strengthening of production control

We are engaged in the advancement of production planning and on-site construction planning through ICT/IoT-based production control systems, and development of algorithms for improving efficiency of production control work through AI and other technology.

Realization of production and sales cooperation



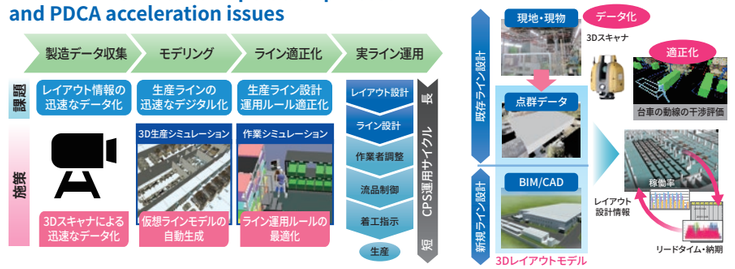
Manufacturing capacity prediction by AI



Layout design and process design

Utilizing virtual 3D digital models of production lines, we are engaged in the short-term startup of high-efficiency production lines through simultaneous optimization of layout design and process design.
We are also engaged in the development of rapid 3D modeling of existing building interiors using 3D scanners and the development of parameter-searching methods that combine optimization methods and production simulation.

Production simulation operation process and PDCA acceleration issues



Mechatronics technology

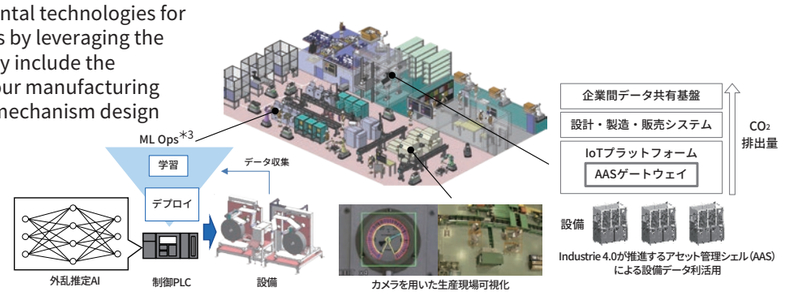
Materialize the Toshiba Group's strategic products and new products by utilizing mechatronics technologies so that they can be deployed globally. Leveraging AI*1, IoT*2, simulations, and other leading-edge technologies, we are working consistently on different processes, from the upstream to the downstream of manufacturing, that are necessary for products, including prototyping, developing manufacturing verification equipment, manufacturing equipment, and building production lines.

*1 AI : Artificial Intelligence
*2 IoT : Internet of Things

Development of advanced elemental technology

We are developing advanced fundamental technologies for automation and manpower reductions by leveraging the latest mechatronics technologies. They include the promotion of DE/DX*1 and CN/CE*2 in our manufacturing sites by combining simulation-based mechanism design technologies, AI-based high-speed and high-precision facility control technologies, and IoT technologies for digitizing information obtained from manufacturing floors.

*1 DE/DX : Digital Evolution / Digital Transformation
*2 CN/CE : Carbon Neutrality / Circular Economy
*3 ML Ops : Machine learning operations

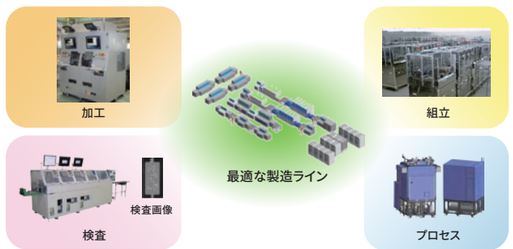


AI-based facility control technologies

IoT technologies for digitizing manufacturing information

Development of manufacturing lines and equipment

We provide automation solutions related to transportation, machining, assembly, inspection, and other processes in factories. Around our core mechatronics technologies, we are developing new differentiating manufacturing facilities by leveraging 3D-CAD and simulation technologies as well as the latest AI and IoT technologies. We integrate optimum manufacturing lines by matching the production capacity, cost, and quality of manufacturing facilities with business and product requirements.



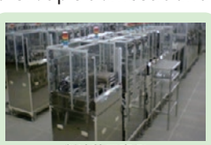
Development of optimum manufacturing lines and machines for various business units

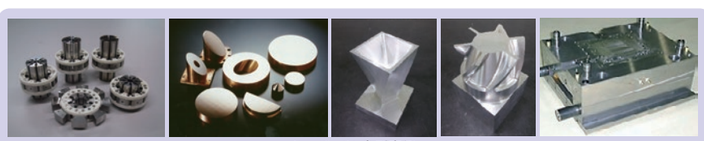
Manufacturing of machinery, parts, and dies

We materialize manufacturing machinery, parts, and dies that are designed using the process and mechatronics technologies of the Corporate Manufacturing Engineering Center, with its experience in machining, assembly, and wiring skills, and we deliver them to the Toshiba Group's domestic and overseas manufacturing sites.


加工ショップ

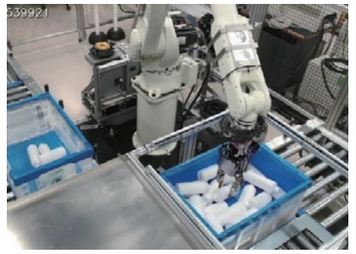

組立配線ショップ

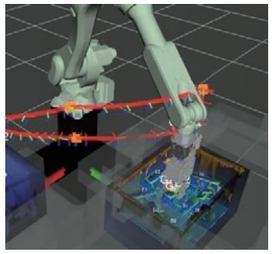

製造装置事例


キーパーツ、金型事例

Intelligent robot technology

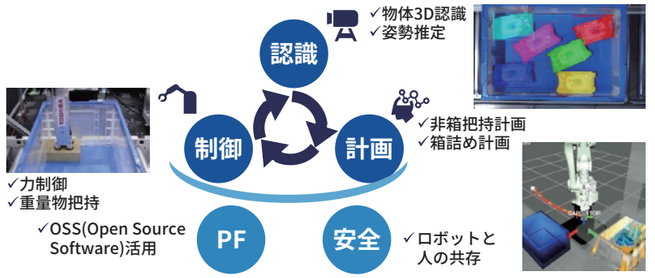
Factories and warehouses have increased demand for automation because of the worsening labor shortages, which are caused by declines in the working population. Furthermore, types of work are becoming more and more diverse, requiring robots that can not only repeat routine tasks but also work autonomously by understanding where they are working and what they should do.
We develop these new intelligent robots, which help automate non-routine operations.





Core technologies for intelligent robots

Just as people "look," "think," and "move" when doing something, we need technologies to enable robots to recognize, plan, and control things as core technologies for these intelligent robots.
In addition, we are developing safety and platform (PF) technologies. By integrating these fundamental technologies, we aim to further enhance the sophistication of robots.



Connecting to cyber-physical systems (CPS)

In addition to making individual robots more intelligent and sophisticated, utilizing robots as edge computing terminals for a cyber-physical system (CPS) enables us to create new value that would be unachievable with robots alone. This means, we can provide them as automation solutions to a wide range of customers.

Intelligent robots working in the edge layer of a cyber-physical system

Building and utilizing a robot platform

We are building a Toshiba robot platform utilizing open-source software called Robot Operating System (ROS). By adding fundamental technologies that we have developed to this platform, we can efficiently develop different intelligent robots, accelerating their deployment to Toshiba's business areas.

*1 ROS : Robot Operating System

Building and using a Toshiba robot platform with a mixture of proprietary and open technologies

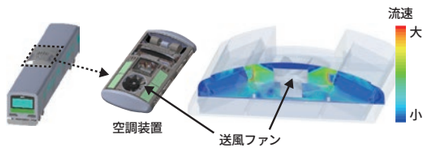
Mechanical design and manufacturing technology

We are developing structural design technologies considering manufacturability and innovative manufacturing technologies to enhance design flexibility, both of which are being applied to advanced products.
We are also conducting R&D in various design and manufacturing technologies, including numerical analysis, reliability, 3D printing, high-precision machining, and mold and die technologies.

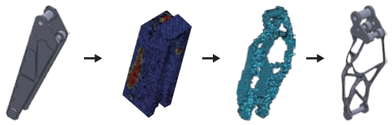
Mechanical design technology

To achieve optimum product structures and manufacturing processes, we develop leading-edge simulation technologies for structure, thermofluids, vibration/noise, and other characteristics and topology optimization technologies for optimizing the shapes of structures.
For railroad vehicles air-conditioning units, we have achieved a design that provides sufficient flow rate despite many restrictions, including the fan size, fan speed, and the cross-sectional area of the flow path.
For topology optimization, we have achieved a 40% lighter design while maintaining robot arm strength, and we manufactured actual products with a metal 3D printer.

Fluid analysis of railroad car air-conditioning units



Structure topology optimization

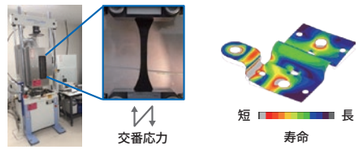


Additive manufacturing optimized geometry achieving 40% weight reduction

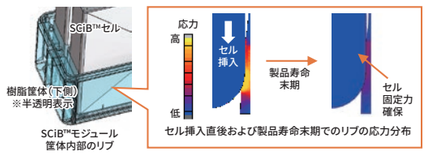
Product reliability technology

We develop long-term reliability evaluation technologies for fatigue, creep, and other symptoms to extend product life and prevent failures and faults while reducing costs and environmental impacts.
When using any new materials, we collect data using a fatigue-testing machine to improve the accuracy of life prediction simulations.
In the case of an SCiB™ module, we have developed a technology for fixing the module for a long time with plastic ribs without using adhesives while taking into account the fatigue life of the plastic.

Fatigue test and fatigue life prediction

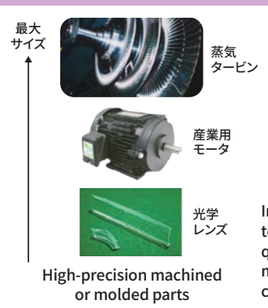


Prediction of fixing strength for SCiB™ cell



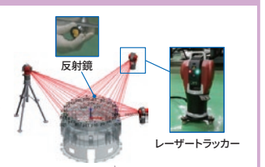
Component manufacturing process technology

Machining, molding, and measurement technologies are essential for the manufacturing of high-precision parts, whether they are large components for energy or infrastructure systems or the parts for small data devices. We also use contactless 3D measurement technologies for large structure assembly processes.
In addition, we develop IoT-based quality monitoring and automatic control technologies to consistently manufacture plastic molded parts.
We also develop molding technologies using bioplastic materials.

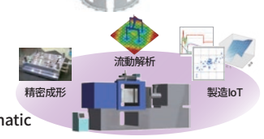


High-precision machined or molded parts

3D measurement technology for large structure

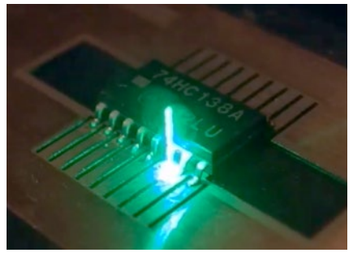


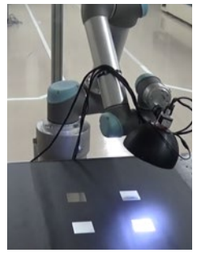
Injection molding technology and quality monitoring/automatic control



Optical applications and visual inspection technology

We use optical technology for R&D of new products.
We do research and development of advanced sensing technology and laser processing technology to add value to products, and automatic visual inspection technology to guarantee product quality.

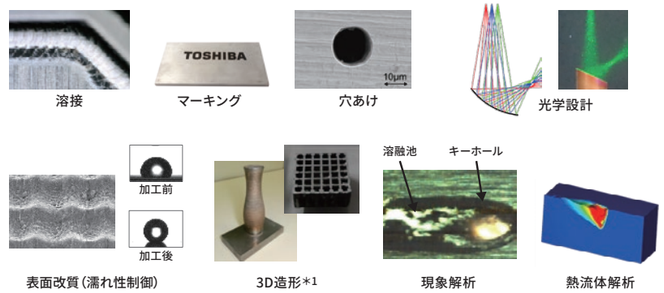




Laser processing

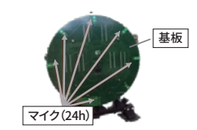
We develop laser-machining technologies that are critical to product manufacturing, such as welding, fine machining, and additive manufacturing, using optical design, symptom analysis, and thermal fluid analysis. We are also working on technologies that use AI to automatically control machining processes.

＊1　本技術開発は経済産業省委託事業「次世代型産業用3Dプリンタ技術開発及び超精密三次元造形システム技術開発」によるものです。



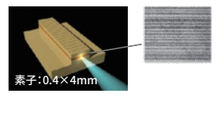
Sensing technology

Using signal and data processing technologies, we develop sensing technologies for abnormality detection, such as sound source visualization using a microphone array sensor and gas analysis using an odor sensor.
We are also engaged in developing a quantum cascade laser, which is effective for sensing gas in a remote environment.



Visualization of sound sources using a microphone array sensor

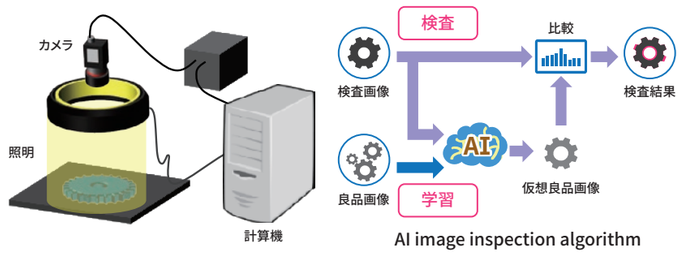
Gas concentration analysis using odor sensor data



Remote gas sensing technology using Quantum Cascade Laser

Inspection and Image processing technology

We are developing automatic inspection technology that enables more stable visual inspection of products and abnormality detection of equipment than human operator.
We are also developing technologies to make their installation and operation at manufacturing sites more easier.



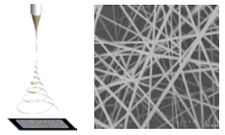
AI image inspection algorithm

Material and device process technology

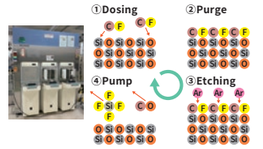
We are committed to the R&D of processing, reaction control, and analysis technologies, aiming to improve production efficiency and develop new technologies for nanoscale to meter-sized structures, devices, and systems, based on the understanding of mechanisms.

Process, analysis and simulation

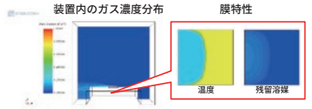
We are promoting the R&D of various processes, materials, analysis, and simulation technologies, in order to early mass production and productivity improvement of products such as manufacture energy, infrastructure, and electronic systems and devices. Our R&D efforts also include unique process technologies such as for the fabrication of multifunctional nanofiber films and their application to products and digitization of manufacturing processes.



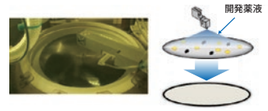
Multifunctional nanofiber membrane formed by electrospinning



Microfabrication by atomic layer etching



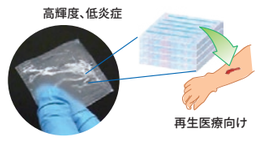
Simulation of drying phenomena



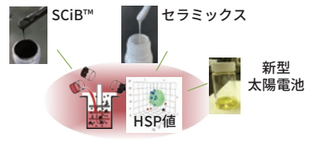
Surface preparation by development chemical

New devices and process applications

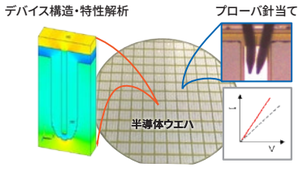
We design and prototype experimental equipment based on many technologies and insights, including those related to coating, vacuums, and chemical processes and fluid control. We also perform analyses and evaluations by applying the latest measurement and simulation technologies to improve performance and reduce costs. We are also engaged in the research and development of technologies that contribute to the streamlining and optimization of design and development by using informatics technologies that are supported by information science, such as statistics and machine learning.
In addition, we are promoting the launch of new products through concept presentations of new devices, creating basic designs, and giving demonstrations of prototypes.



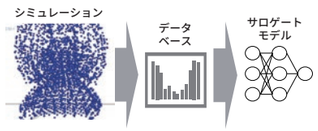
3D-oriented collagen nanofiber sheets



Material mixing and particle dispersion technologies



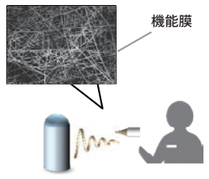
Simulation and measurement of power semiconductor device characteristics



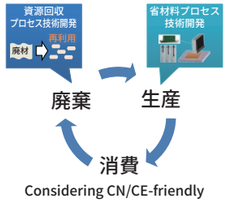
Characteristics prediction with machine learning

Eco-friendly technologies

We are working on the research and development of eco-friendly technologies, where coating, chemical, and other process-related technologies are converted or replaced after considering environmental mitigation measures. We are engaged in research on reducing CO_2 emissions and are promoting recycling with the aim of achieving carbon neutral (CN) and circular economy (CE) societies.



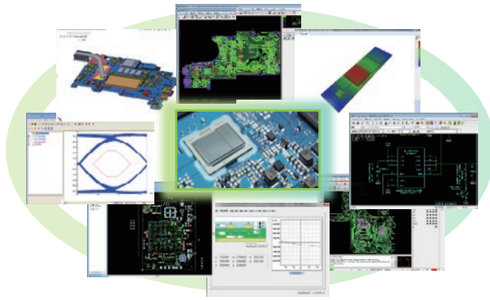
Considering the addition of CO_2 absorption capabilities using a functional membrane



Considering CN/CE-friendly manufacturing processes

Electronic device packaging technology

The Toshiba Group is developing a wide variety of electronic equipment, including social infrastructure components and storage devices. Every electronic device contains a circuit board. To ensure that the required product performance is obtained at the appropriate cost, we are developing printed circuit board technologies that are directly associated with product development by integrating CAD/CAE simulation technologies and evaluation technologies for leading-edge electronic components and developing printed wiring boards and technologies for surface-mount processes and physicochemical analysis.



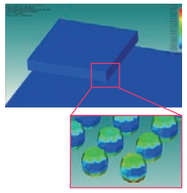
Printed circuit board design technology

To streamline design tasks for printed circuit boards, we are developing proprietary review tools that feature a CAD data viewer and various check functions. These tools are now widely used for product development in different divisions of the Toshiba Group. In order to further streamline design tasks and improve product quality, we are using CAE to improve the precision of virtual design technologies and AI to innovate design methods.

Review tool for visualizing setting data (Toshiba)

レイアウト図

トポロジーモデル
Automatic generation of signal analysis models from layout drawings (Toshiba)



Printed circuit board life prediction technology (CAE and Toshiba tool)

Surface-mount processes technology

Assembling electronic components is getting more difficult as higher density and thinner packages are required. Therefore, we are developing surface-mount processes technologies so we can apply them to products precisely and at low cost. We develop component technologies for selecting and evaluating next-generation packages and printed wiring boards, and we also develop mounting technologies by finding the optimum manufacturing conditions using our own SMT mounting lines while deploying developed technologies for the manufacture of Toshiba products. In addition, we are also engaged in quality and efficiency improvements by implementing smarter processes that use assembling equipment and inspection data.

Development of SMT*1 mounting technologies

先端実装技術
はんだ開発
実装ライン

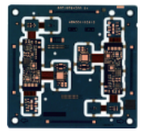
実装ライン

実装基板

Development of component technologies

プリント配線板、受動部品、
機構部品(コネクタ、ハーネス)、半導体、
低コスト・小型部品、ベンダ開発、品質対応

半導体パッケージ



プリント配線板

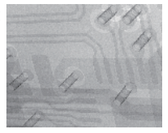
*1 SMT：Surface Mount Technology

Mounted circuit board evaluation technology

Electronic components mounted on printed wiring boards may be damaged due to thermal or vibration effects as they are used for a long time. To reduce such quality risks, we develop products using electronic component analysis, reliability evaluations, and physicochemical analysis technologies. To promote further sustainable product development, we need to develop technologies for extending the life of circuit boards or reusing them while developing low-carbon materials. We are now working on the creation of more sophisticated evaluation and analysis technologies to meet these requirements.

Development of electronic component technologies

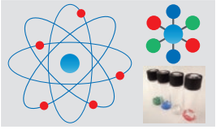
良品解析
非破壊観察
ユーザーテスト



プリント配線板のX線観察

Physicochemical analysis

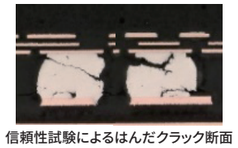
環境対応
材料物性調査
品質問題対応



物理化学分析技術の開発(イメージ)

Electronic component analysis technology

機械的評価(荷重試験、歪測定等)
温湿度劣化評価(温度サイクル等)
複合評価(HALT*1)



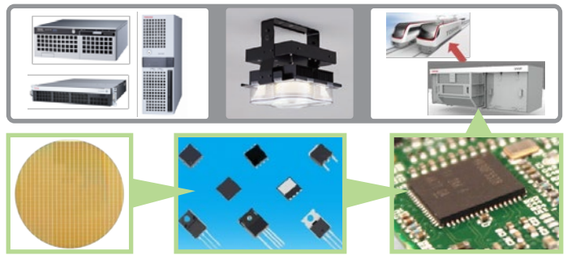
信頼性試験によるはんだクラック断面

HALT試験機

*1 HALT：Highly Accelerated Limit Test

Electronics parts assembly technology

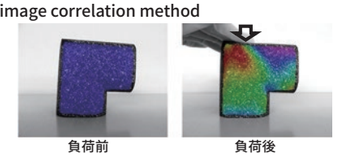
We are endeavoring to enhance the performance and reduce the cost of products and systems while developing production engineering technologies
for new products for Toshiba's core businesses, including electronic devices, social infrastructure systems, and energy systems by leveraging silicon
processing, bonding, and adhesion techniques.



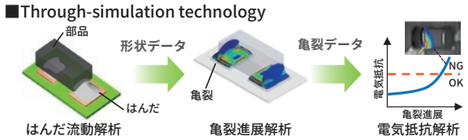
Design for assembly, visualization and simulation technologies

We are building simulation technologies that visualize actual phenomena and provide predictions, from the manufacturing of a product all the way to its reliability in actual use. Featured technologies include a digital image correlation method, which visualizes distortions in a contactless manner and which is already being applied to product development. We are also committed to front-loading product development by using advanced design and analysis technologies to achieve high performance and quality at the design stage.

■Digital image correlation method



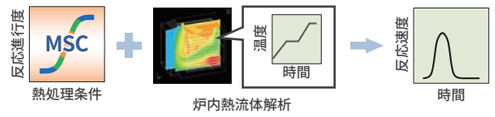
■Through-simulation technology



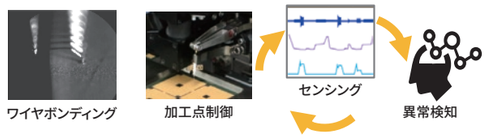
Bonding, adhesion and assembly technologies

By identifying sintering, hardening, and other thermal symptoms and modeling their reaction to optimize heat treatment processes, we contribute to improving product functions and performance while reducing energy consumption. Specifically, by combining a master curve that formalizes reactions with thermal fluid analysis, we visualize concerns about heat treatment processes during production and deploy optimized processing conditions. We are also utilizing IoT to enhance joining and assembly processes and make factories smarter. In this segment, we are developing a technology for sensing the states of machined points and analyzing the results with AI to detect any failures.

■Master curve technology



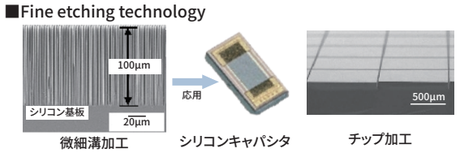
■Manufacturing IoT with machined points sensed



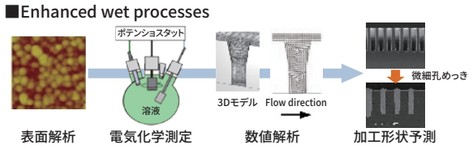
Innovative wet process and Si fabrication technologies

We enhance wet technologies using electrochemistry, such as plating and etching, and we apply them to wafer processing to promote the creation of new devices and improve productivity. In addition, we are engaged in detailed analysis of the interfacial reaction to achieve sophisticated processes and the prediction of reactions.

■Fine etching technology



■Enhanced wet processes

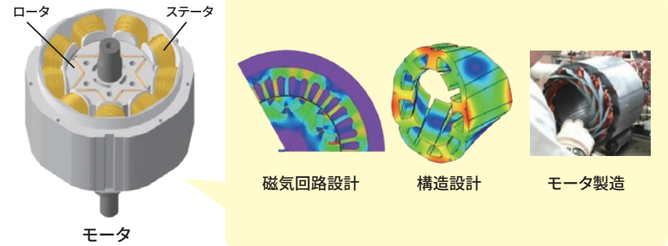


Control technology

We aim to contribute to Toshiba Group's power electronics products, such as social infrastructure and electronic devices. In order to achieve carbon neutrality and a circular economy, we utilize our design, manufacturing, and evaluation technologies to optimize the entire system of power electronics products.
As fundamental technologies, we are engaged in research and development of motor/magnetic application technology, motor/power conversion control technology, and EMC/circuit technology.

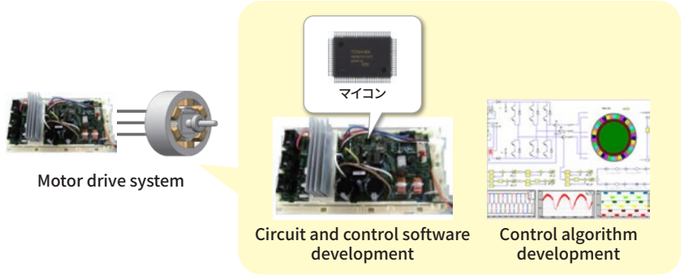
Motor design

By designing a magnetic circuit that utilizes magnetic field analysis, thermal analysis, and structural analysis, we develop high-performance motors that achieve both high efficiency and miniaturization to meet the concerns about the supply of motor materials due to the rapid increase in demand, in order to achieve carbon neutrality. Based on our extensive knowledge, we are also developing manufacturing technology that realizes early implementation and high efficiency of motors.



Motor control

To add greater value to products, we develop new circuits, control software, and control algorithms to improve the performance (including higher efficiency and smaller sizes) of motor drive and power conversion systems while also reducing their costs. We use model-based development (MBD), hardware-in-the-loop simulations (HILS), and other techniques to shorten development time.



Electromagnetic compatibility design

As demand for power electronics products is increasing to meet the carbon neutral goals, we need to prevent returning to a previous development stage that was caused by an electromagnetic noise issue. Therefore, we are developing electromagnetic noise measurement technologies that can identify the root cause of noise generation and propagation and circuit/electromagnetic field simulation technologies so that we can predict electromagnetic noise and plan a suppression method during the design phase.

Environments and Initiatives for Promoting Research and Development

Research environments

Offices and laboratories

Various working environments and experiment facilities provided for different research targets and purposes.




Other facilities

Libraries, electronic libraries supporting online searches, and plenty of communication spaces.


View from the workplace

You have an unbroken view of Tokyo Bay and can also see the Yokohama Landmark Tower.


Opportunities for free discussions that nurture both people and technologies

Future idea discussion meeting for young employees

Workshop-style discussion meetings are held regularly,
where young employees join to create the seeds of advanced technology ideas.

Research review day and various report sessions

There are regular in-house events in the form of lectures and panels,
where attendants can suggest research themes or introduce their conference presentations.






The Essence of Toshiba

Basic Commitment of the Toshiba Group

Committed to People, Committed to the Future.

At Toshiba, we commit to raising the quality of life for people around the world, ensuring progress that is in harmony with our planet.

Our Purpose

We are Toshiba. We have an unwavering drive **to** make and do things that lead to a better world.

A planet that's safer and cleaner.
A society that's both sustainable and dynamic.
A life as comfortable as it is exciting.

That's the future we believe in.
We see its possibilities, and work every day to deliver answers that will bring on a brilliant new day.

By combining the power of invention with our expertise and desire for a better world, we imagine things that have never been – and make them a reality.

That is our potential. Working together, we inspire a belief in each other and our customers that no challenge is too great, and there's no promise we can't fulfill.

We turn on the promise of a new day.

Our Values

Do the right thing

We act with integrity, honesty and openness, doing what's right—not what's easy.

Look for a better way

We continually strive to find new and better ways, embracing change as a means for progress.

Always consider the impact

We think about how what we do will change the world for the better, both today and for generations to come.

Create together

We collaborate with each other and our customers, so that we can grow together.

Note

1994年頃の生産技術センター全景

生産技術センターのDNA

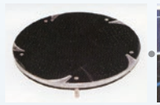
DNA of the Corporate Manufacturing Engineering Center

1970

▲1970年
生産技術研究所発足

1972

高精度球面軸受

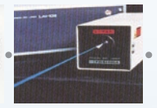
1974

シリコンウエハ
ラッピング

1978

VTRシリンダー貫加工ライン

1979

高速全自動
ワイヤボンダ

1979

大出力CO_2
レーザ発振器

1982

扇風機組立FAPSライン

1980

▲1983年
新杉田地区（横浜事業所内）に集結

1984

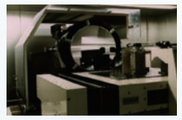
レーザプリンタ用
ポリゴンスキャナ

1987

次世代
組立ロボット

1988

非球面プラスチックレンズ
の金型・成形

1990

分解能2.5nm
超精密CNC加工装置

1990

▲1992年
「新研究棟」を磁子地区に設立

1992

TFT-LCD用小型枚葉
アレイ洗浄装置

1994

カラー液晶
OLBライン

1997

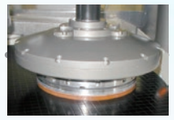
ノートPC用0.8mm厚
マグネシウム合金筐体成形

1998

半導体パッケージ用
フリップチップボンダ

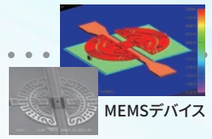
2000

▲1999年
生産技術センターに改称

2004

シリコーンウエハの
研磨技術

2007

HDD組立
自動化ライン

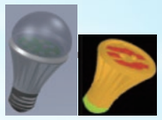
2008

MEMSデバイス

2010

液滴塗布装置

2010

▲2010年
横浜事業所に統合

2010

光・熱設計

2011

高スループット
枚葉洗浄装置

2013

車載用IGBT
モジュール

2016

SCiB™注液・
封口装置

2020

▲2020年
創立50周年

2018

鉄道用All-SiC
モジュール

2020

荷降ろしロボット

2018

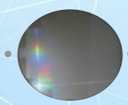
He充填HDD用
レーザー溶接封止
自動化ライン

2021

IH方式焼嵌め装置

2022

スポット溶接検査ロボット

2022

Siパワーデバイス
300mmウエハプロセス

2023

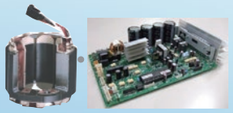
半導体ウエハ
加工装置

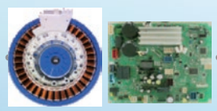
1993

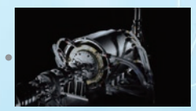
空調機用 永久磁石
モータとセンサレス制御

1998

分割ステータコア
洗濯機DDモータ

2000

空調機用 集中巻モータと
ベクトル制御

2009

ランドリー用可変磁力
モータとインバータ

2022

モビリティ向け出力2MW
超電導モータ試作機

世の中の出来事　Events in the world

1970年：日本万国博覧会（大阪万博）開催
1983年：東京ディズニーランドが開園

1990年：東西ドイツ統一

1992年：東海道新幹線「のぞみ」が運転開始

1999年：欧州に新通貨ユーロ誕生

2001年：米国で同時多発テロ発生
2010年：小惑星探査機「はやぶさ」が帰還
2019年：天皇陛下が即位し「令和」に改元
2020年：新型コロナ猛威、初の緊急事態宣言

生産技術センターの沿革　History of the Corporate Manufacturing Engineering Center

1970年：生産技術研究所 発足
1983年：新杉田地区（横浜事業所内）に集結し、
　　クリーンルーム、精密機器関連設備を強化
1990年：工機センター（現：メカトロソリューション推進部）を
　　磁子地区に設立
1992年：新研究棟を磁子地区に設立し、
　　事業所名を生産技術研究所に変更
1999年：名称を生産技術センターに変更し、東芝グループの
　　生産技術センターとしてスタート
2001年：子会社（株）マニュファクチャリングソリューション設立
2010年：横浜事業所に統合
2019年：子会社（株）マニュファクチャリングソリューション分離
2020年：創立50周年

外部団体からの表彰一覧　History of awards won by the Corporate Manufacturing Engineering Center

1972年：大越記念賞：人工衛星の開発に使用された「高精度球面軸受」
1980年：日刊工業新聞10大新製品賞：「金属ミラー加工装置」
1982年：大河内記念生産賞
　　「レーザ溶接を主体とするカラーブラウン管用小型電子銃の量産技術」
1988年：精密工学会賞：「ステップ溝動圧空気軸受の特性と応用」
1996年：大河内記念賞：「ニッケル水素二次電池の開発」
1998年：大河内記念生産特賞
　　「ノート型パソコンの生産技術開発とその応用」
1999年：大河内記念技術賞
　　「薄型・大トルク・低騒音ブラシレスDCモータの製造技術開発」
2000年：電気科学技術奨励賞（オーム技術賞）
　　「高速ワイヤボンディング装置の開発と実用化」
2002年：黄綬褒章受章：「金型手仕上工」
2003年：レーザー学会進歩賞：「10kW級ロッド型LD励起レーザ」
2010年：精密工学会高城賞
　　「液滴塗布ヘッド内におけるレーザ生成気泡の挙動観測」
2012年：黄綬褒章受章：「金属手仕上工」
2015年：市村産業賞貢献賞受賞：「可変磁力モータの開発」
2018年：厚生労働大臣表彰：卓越した技能者(現代の名工)
2019年：日本光学会 第22回光設計賞 光設計優秀賞
　　「薄型透明殻の内部全反射を利用した導光・放熱技術」
2019年：IVIつながるものづくりアワード2019　優秀賞
　　「ロボット設備の運用フェーズでの簡易化・効率化」
2019年：黄綬褒章受章：「機械器具組立工」
2020年：文部科学省ナノテクノロジープラットフォーム「秀でた利用成果」優秀賞
　　「InP:Si 埋め込みの試作　半導体再成長埋め込みを用いた面発光型QCL の開発」
2020年：日本データベース学会　業績賞
　　「スケールアウト型データベース「GridDB®」の開発、製品化」
2021年：黄綬褒章受章：「旋盤工・卓越技能」
2021年：精密工学会技術奨励賞
　　「発電機点検の合理化に向けた力センサレス打振検査デバイスの開発」
2022年：溶接学会 シンポジウム賞　Mate2022奨励賞
　　「高分子添加剤で加工性を改善した金属援用エッチングによるSiの微細加工」
2022年：日本非破壊検査協会　睦賞
　　「タービン発電機の非破壊検査を実現するロボット検査技術」
2023年：日本ロボット学会第27回実用化技術賞
　　「ティーチレス方式の物流向け直行型荷降ろしロボット」
2023年：大河内記念技術賞
　　「複雑な磁場分布を実現した超電導磁石の3次元自動巻線技術」
2023年：電気学会 電気学術振興賞 進歩賞
　　「空調機におけるオープン巻線モータ駆動用デュアルインバータの開発と実用化」
2023年：日本機械学会 日本機械学会奨励賞(技術)
　　「ピッキングロボットの階層型動作制御技術の開発」
2023年：日本IE協会 日本IE 文献賞
　　「人（匠の技、知）とデジタル技術をつなぐIoP」
2023年：半導体・オブ・ザ・イヤー2023　半導体製造部門グランプリ
　　「BAA実装基板搭載のマルチ電子ビームマスク描画装置MBM-2000PLUS」