



Logistics & Automation

One Stop
Solution
MURATEC

MURATA MACHINERY, LTD.



Business deployment

The Muratec Group provides our customers around the world with a wide variety of products from industrial machinery to communication equipment. The customers create various values by using our products = machinery and solution. As an international manufacturer to support such production, we always create new technology, and achieve customer satisfaction and affluent society by providing better products.



Headquarters



Inuyama Plant



MURATA MACHINERY USA



MURATA MACHINERY EUROPE



MURATA MACHINERY SHANGHAI

Logistics & Automation

Total solutions for logistics and automation are offered.

Logistics (strategic distribution) is now the key element of corporate strategy. Murata Machinery promotes logistical solutions that are directly linked to corporate operations from the perspective of SCM (supply chain management), representing the optimization of a continuous flow from Purchase of raw material to Delivery of merchandise to final consumers.

We take various measures against aging and decrease of labor power such as laborsaving by automation and improvement of working environment, and provide efficient and user-friendly systems.



Textile Machinery

We support the ever-expanding textile industry with superior spinning machinery.

We offer superior spinning machines on a global scale as we continually pursue high quality yarn production.

We provide support for the development of a wide range of textiles, from standard clothing to industrial applications which require cutting edge technologies.

In addition, we also offer a wide range of other customer support utilizing ICT including connection of spinning machine management systems to networks, and more.



Machine Tools

Our high-performance mother machines change the efficiency and quality of production.

As a total production system, turning machinery, sheet metal machinery and other metal working machinery are organically combined with transport system, automated storage and retrieval system (AS/RS) and information system such as a control system. The rationalization of production is facilitated in a number of advanced factories.



Communication Equipment

We support office work with communications and network technologies.

We provide support for carrying out office work quickly and efficiently through our document management and other utilities, as well as digital MFP (multi function printer) which combine the functions of printers, copiers, scanners, FAX machines, and more in a single device. In addition, we also provide protection of office information and comfortable environments through our security appliance products which help protect information assets against the ever increasing number or ever-more advanced network threats facing offices in recent years.



Efforts to quality control and safety management

As an industrial manufacturer, Murata Machinery always aims to achieve our mission of delivering products that fit customers' needs with internationally-valued quality. We control all processes including development, manufacturing and customer service based on an international quality assurance system, and this has resulted in acquiring the "ISO 9001" accreditation for all our divisions.

Textile Machinery Division/
Machine Tools Division/
Logistics & Automation Division/
CleanFA Division

ISO 9001
BUREAU VERITAS
Certification



№4359106

Manufacturing by job-order production method

Delivery of the best products by the job-order production method can be achieved by managing product information for each customer. QCDE management system (Q: Quality, C: Cost, D: Delivery, E: Ecology) centered on a product information management system is built to manage specifications and product information for each customer.

Delivery

Delivery schedule management

Quality

Quality control



Cost

Cost management

Ecology

Environmental response

Logistics & Automation
Profile

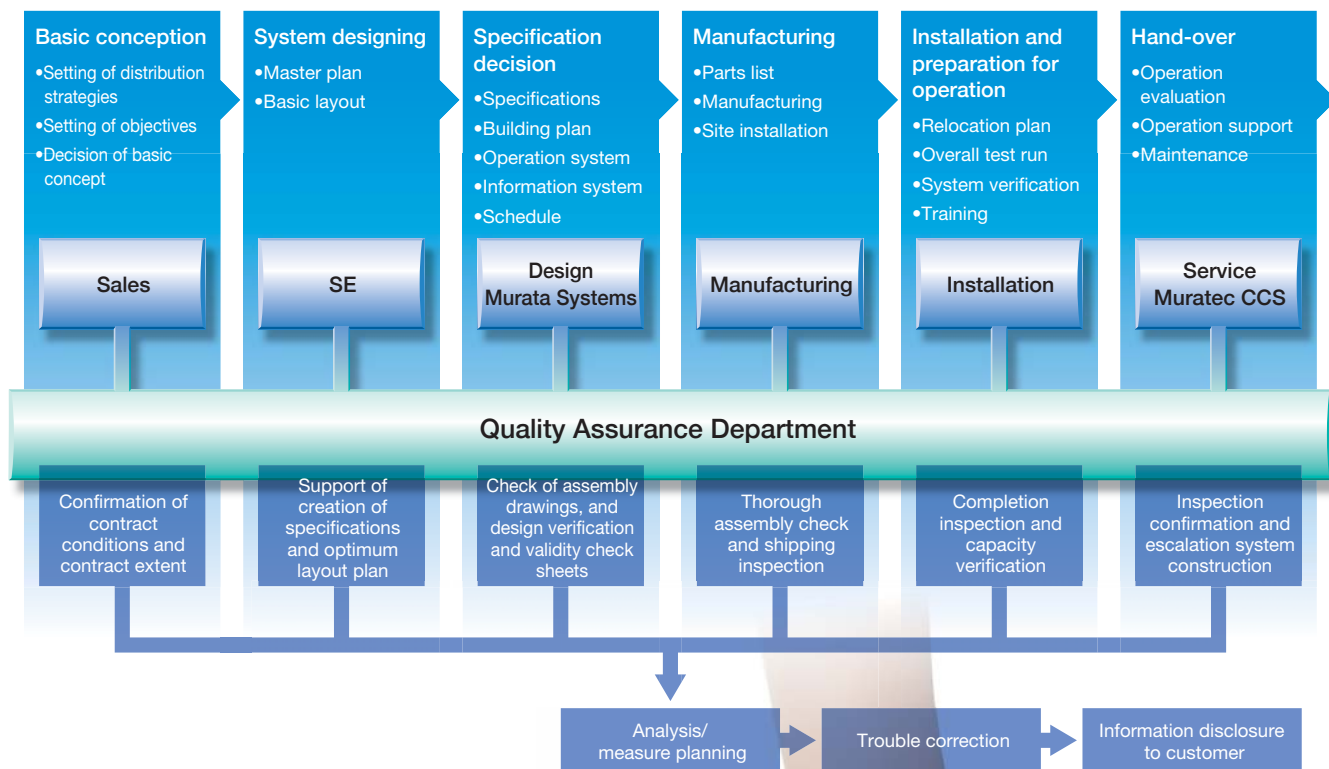
Provision of “security and safety” to support safe system operation

System shutdown caused by trouble results in “damage” to the customer such as production decrease and shipping delay. For immediate recovery in such shutdown case, risk hedge by double or triple backup and recovery escalation plan should be prepared. It is important to gather trouble information, confirm a background to trouble occurrence, solve the trouble immediately and prevent recurrence.

We consider that the construction and utilization of such escalation system and feedback system and the continuation of sincere efforts to quality improvement are the most effective means to gain the customer’s trust.

Relationship between Quality Assurance Department and other departments

In the Logistics & Automation Division, various departments from the Sales Department for the determination of contract conditions and contract extent to the service department for post-operation start maintenance work in cooperation with each other until our products are delivered. The Quality Assurance Department related to the work processes of all departments accurately grasps customer’s requirements, thoroughly checks the quality in the design process to the manufacturing process, and analyzes and corrects post-operation start trouble in order to provide our product with high quality.



Efforts in environmental activities

With the need for global environmental conservation, we at Murata Machinery have made consistent efforts to achieve a society that human beings can share with affluence of nature. Our whole company has conducted environmental conservation activities based on internally defined environmental aims and goals.

Some of our office's ongoing activities are the precise management of chemicals contained in products and waste, the environmental conservation around the offices, the reduction of environmental loads such as carbon dioxide emissions, and the saving and recycling of resources. The reduction of environmental loads is also aimed in product development, and the products which consume low power and can be easily recycled, and facilities to manufacture products from less raw materials with less environmental loads are developed and provided. We promote harmony with environment through such activities and aim to remain a manufacturer needed around the world.

ISO 14001
BUREAU VERITAS
Certification



Acquisition of ISO 14001 accreditation

"ISO 14001" accreditations as ISO's international standards regarding environmental management have been acquired in each business place*. Corporate activities such as electricity consumption reduction, waste reduction, effective resource utilization and beautification/ greening promotion are continued to promote the protection of the global environment.

* Headquarters, Kisshoin Plant, Inuyama Plant, Minokamo Plant, Ise Plant, Ryuo Factory, Oita Factory



Utilization of natural energy

In Inuyama plant, natural energy measures such as the parking lighting by using solar power generation are taken to reduce power consumption.

Introduction of powder coating system

The conventional solvent coating system involves solvents such as toluene xylene and ethylbenzene, and some coating materials and colorants contain harmful substances such as lead and chrome. The powder coating system is a user-and-environmentally-friendly coating solution as it contains none of these harmful substances.



Promotion of greening in plant

Greening activities are promoted in each plant with the aim of harmony with the regional environment and beautification.

Adoption of nonleaded coating

Powder coating is adopted and reduction of VOC (volatile organic compound) is contributed to. For large-size parts that powder coating is not available, measures such as the use of aqueous coating are taken to make efforts for nonleaded coating.

Prevention of harmful substance diffusion (compliance with RoHS regulations)

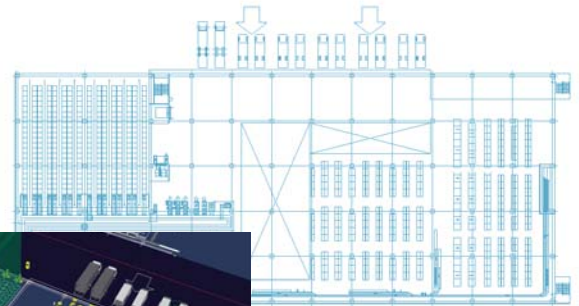
L&A's products contain many electric equipment and electronic equipment such as control circuit boards, computers and power supply units which are subject to the RoHS regulations. Measures are taken for the parts built into such products. In addition, design without any harmful substance is made during product development. In order to prevent harmful substance diffusion, regulated substances are restrained, used batteries are recycled and the proper processing route for waste is established.

Power regenerating converter as standard equipment

The power regenerating converter is used as standard equipment in order to contribute to energy saving and reduction of carbon dioxide emissions. Compared with the case where the power regenerating converter is not used, power consumption is reduced by up to 30% (estimated by us).

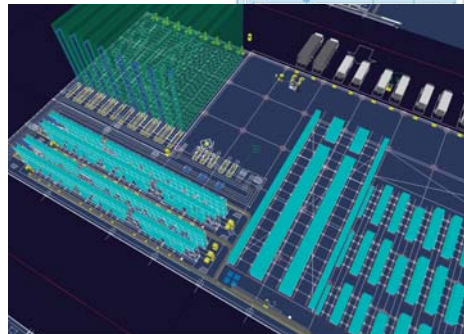
Optimization design by 3D CAD

Optimization design of equipment is made by stress analysis in order to achieve equipment weight reduction and reduce materials and operational consumption energy.



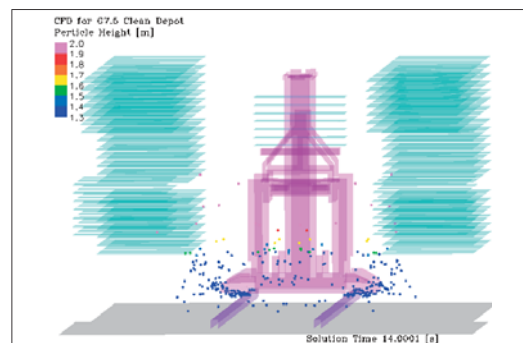
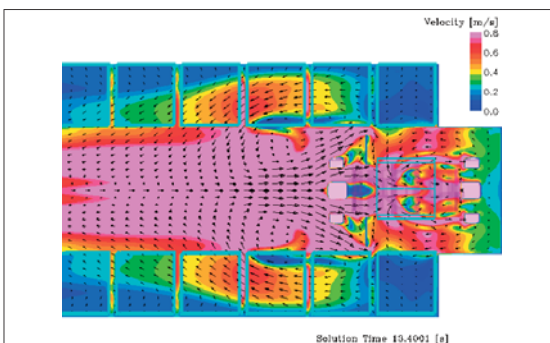
Capacity verification by simulation technologies

A model is created on a computer and capacity is verified by simulation. For a distribution center, not only AS/RS and transport equipment but also picking time and staff assignment are built in and the flow of goods receipt to shipping similar to the actual operation is verified. Throughput and shipping lead time in the whole center are verified to suggest the optimum and efficient operation.



Fluid analysis simulation

Airflow in the storage equipment and airflow generated by transport equipment movement are simulated in advance in order to ensure the cleanliness level in a clean room of a semiconductor or LCD manufacturing plant. Dust particle movement is predicted by numerical fluid analysis in order to avoid effects on customer's products.

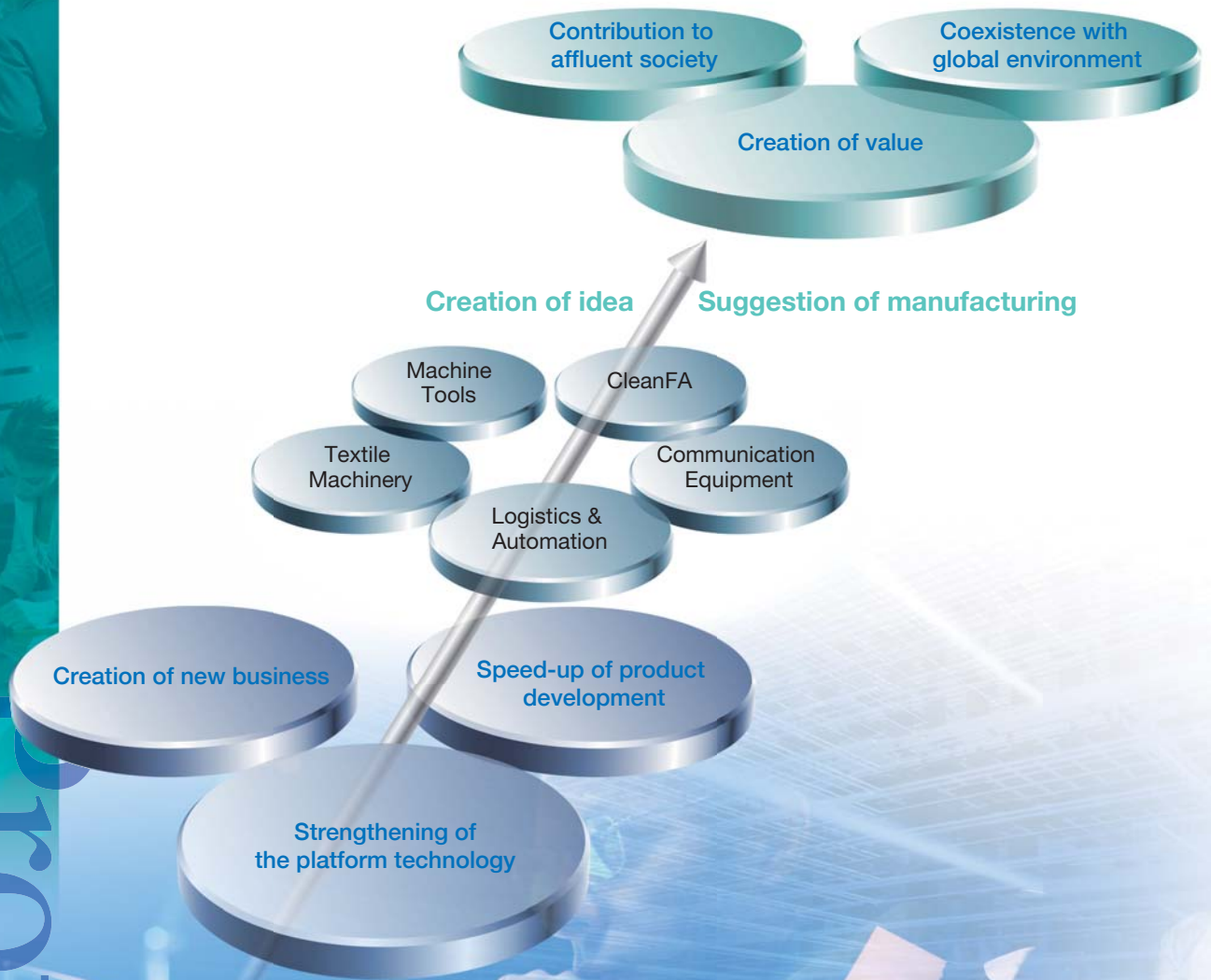


Efforts for transportation and packaging

Design guidelines are established in consideration of transportation and packaging, and the packaging and assembly procedures to increase the container filling rate are carried out for transportation.

Efforts for research and development

Murata Machinery has several business divisions such as textile machinery, machine tools, cleanFA and communication equipment. These divisions vary widely in terms of their market characteristics, their core technologies and product structures, but for technological development, all these divisions aim to leave possible jobs to machinery and do creative jobs by human beings. Various categories of elemental technology such as mechanics, electricity, electronics, control, robotics, sensing, materials, IT and quality engineering are deepened, and core technology is developed and cultivated to speed up division's product development and create new businesses.



Omni-directional Autonomous Transportation Robot “MKR-003”

Muratec has been working on a "robotic transport system" called the MKR-003. We are now enhancing our robotic transport technology and conducting demonstration experiments so that the robot can operate among humans in places such as hospitals and public facilities.

In hospitals and other health care facilities where hiring qualified staff and reducing the secondary duties of nursing staff are issues these days, the future is looking brighter for the automation of supply and equipment conveyance by employing autonomous mobile robots that do not require the installation of special equipment.

In addition to developing robot technology, our focus when creating the MKR-003 was on environmental considerations in order for it to coexist and operate in public spaces among humans. We are now collecting valuable data from demonstration experiments in medical facilities to evaluate its safety, usability and business practicality as a transport robot operating in such settings.

While making autonomous mobile robots commercially viable by developing the MKR-003, Muratec is also proceeding with application development as a transport module. We want to set the standard for autonomously moving modules that perceive the surrounding environment and set appropriate routes to their destinations while avoiding obstacles. We also aim to develop service robots that are safe to use in hospitals, commercial facilities, airports and other public spaces, as well as apply automation solutions for industry.

Muratec is building elemental technologies such as environment and situation recognition, traveling path planning and travel control used in Simultaneous Localization & Mapping (SLAM) to further enhance our capacity for technological development.



KYOTO SECOND RED CROSS HOSPITAL (Japan)

Parallel mechanism robot

The parallel mechanism is a machine which has some links in “parallel” . By controlling these links, the hands can be moved forward and backward, to the right and left, upward and downward, and rotated. Three direct driven axes are placed in parallel, so that the mechanism is simple and high-accuracy and high-speed operation with high strength is achieved. Works moving on the conveyor are detected by image processing, the high-speed processing to move about 120 works per minute to another conveyor is carried out. An RFID reader/writer is mounted on the arm and tags are affixed to the works, so that when the robot arm chucks the work, the RFID tag on the work can be read soon and the work can be inspected.



50-meter super-high-rise AS/RS and high-rise laboratory

A 50-meter super-high-rise AS/RS has been officially recognized as Japan’s first super-high-rise AS/RS, incorporates the technology of dynamic analysis to precisely reproduce the seismic behavior of stored goods and the developed damper mounted in the truss column, and achieves the building with high earthquake resistance and high safety. The system is offered as a key component of large-scale logistics centers.



Logistics/ FA solution

The roles of logistics centers are becoming greater and greater because of changes in the logistics environment such as the diversified and sophisticated consumer needs, the diversification of products and distribution channels, and the achievement of a recycling society. The manufacturing industry is significantly changing for reasons such as cost competition and globalization of production sites and procured parts.

Our tasks are to reliably provide desired products for desired times, desired quantities and desired locations, and to minimize in-process inventory and parts inventory, establish a production system for flexible response to demand fluctuation and enhance delivery readiness. Logistics & Automation Division of Murata Machinery addresses these tasks and supports the provision of safe and secure products. We provide the logistics/FA solution by coordinating the hardware, software and engineering capability, and supports various businesses by one-stop solution.



Basic conception

- Setting of distribution strategies
- Setting of objectives
- Decision of basic concept

Objectives and basic concept are decided with each customer.

System designing

- Master plan
- Basic layout

A master plan is made by data analysis and simulation.

Specification decision

- Specifications
- Building plan
- Operation system
- Information system
- Schedule

An information system is established according to an operation system.

Manufacturing

- Parts list
- Manufacturing
- Site installation

A parts list is issued according to design and machines are manufactured.

Installation and preparation for operation

- Relocation plan
- Overall test run
- System verification
- Training

System performance is verified for the final check.

Hand-over

- Operation evaluation
- Operation support
- Maintenance



Storage systems

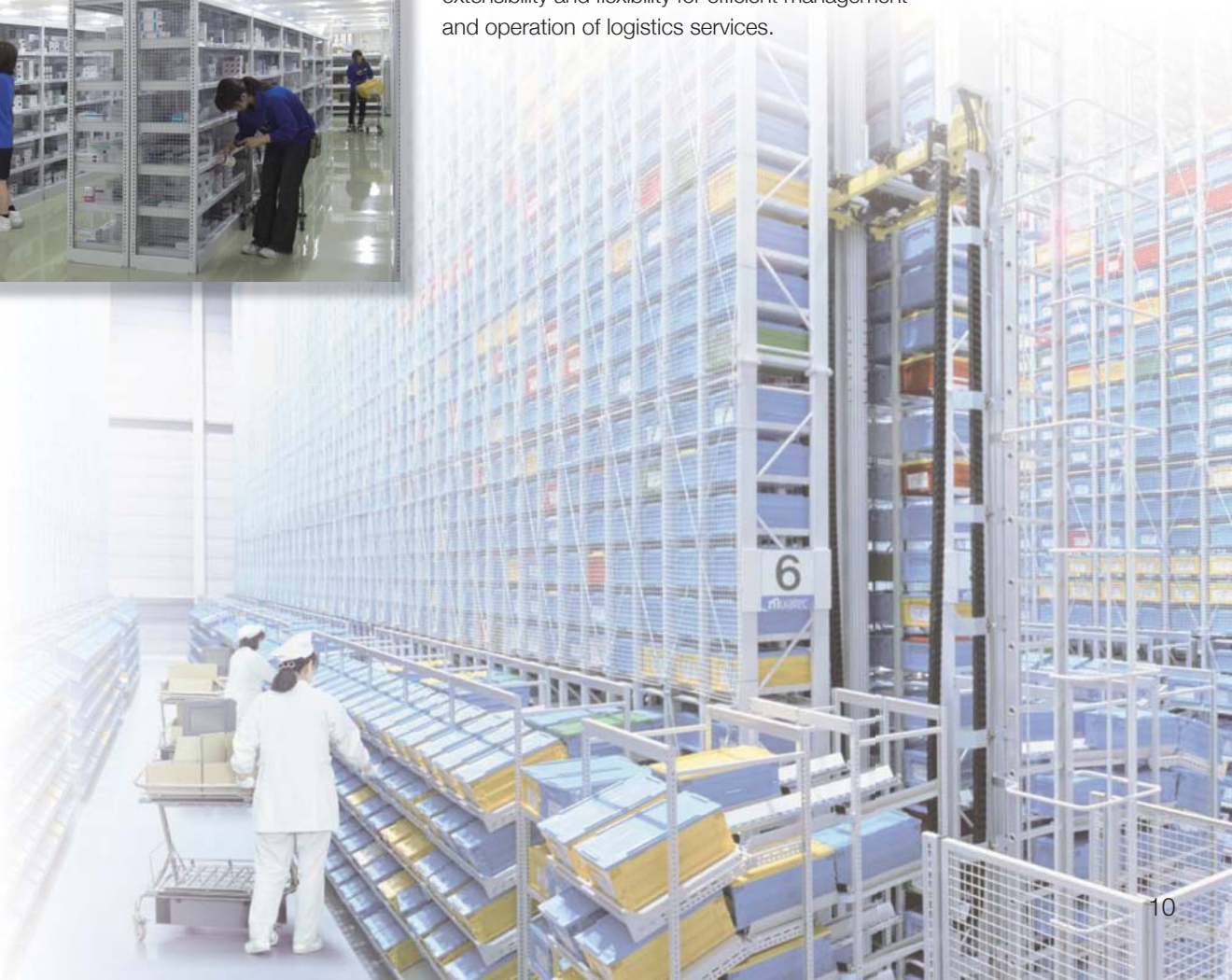
In 1962, Murata Machinery started the manufacturing of tool cabinets in cooperation with Vidmar. After that, the needs for not only the storage of goods but also the other functions such as the simplification of storage and retrieval, the automation of storage and retrieval, and the computer management of the number and status of stored goods have grown. For shorter goods cycle, and sophisticated and diversified consumer needs, we intend to devise effective systems beyond the region of storage.



WMS

(Warehouse Management System)

Because of diversified customer needs, the logistics centers for goods supply are required to provide various distribution services such as high-frequency/ small-lot delivery, lead time reduction, wrong goods delivery elimination and EDI transactions in order to improve the efficiency of work at destinations (shops, etc.). In order to promote SCM, it is essential to improve precision of goods delivery (inspection) data and construct a real-time information system connected to EDI. By incorporating information technology and logistics technology, our WMS provides high performance with great extensibility and flexibility for efficient management and operation of logistics services.



Picking systems

Product packaging & delivery by picking operation are required today for multi-item/ small lot/ high-frequency delivery. In order to support low-cost operation, we develop the fully automatic picking machine which ensures not only matching with shipping schedule information but also speedy picking, and constructs the picking system which does not need operation by experts and allows everybody to easily conduct picking work.



Picking systems using AS/RS

The picking systems as the pre-shipping arrangement devices have been applied in many sites by using the AS/RS function of automatic and precise retrieval of specified goods. AS/RS has characteristics of large-volume storage, inventory management and high-speed storage and retrieval capability, and is required to interlock with transport, sorting and picking functions.



Ubiquitous Solution

This unit is equipped with the smart glasses and microphone array, and the RFID/ bar code reader on the arm, and the wearable PC on the waist.

The smart glasses clearly indicates visual information about a work instruction (picture, name, number, quantity, location and notes of goods to be picked). According to the information, a worker picks the instructed goods, and the wearable RFID/ bar code reader automatically inspects the goods. Completion, next instruction and work switching can be also recognized by voice.

The system which does not need work instruction slips and lets worker hands free substantially increases the productivity of the picking and assorting work in a warehouse or distribution center.



Transportation systems

FA (Factory Automation) was at its peak in the 1970s when the automated traveling vehicles were created first. Since then, the automated traveling technology for goods transport without human intervention has ensured our brand image as “Top automation systems manufacturer”. The automated traveling vehicles such as interbay traveling vehicles, overhead traveling vehicles, and rail-guided high-speed sorting vehicles which form complex systems in combination with AS/RS have been used for various purposes in response to changes of the times.



Sorting systems

More efficient and systematic. Murata Machinery provides the total sorting system not only for sorting but also for goods pickup and drop-off. This system can sort a large volume of goods at high speed in many directions, and the best equipment type can be selected depending on the weight, shape, characteristics and use of goods. Various types of the equipment for quiet, gentle and precise sorting improve the logistics efficiency in various industries such as transportation, warehouse, distribution and manufacturing, reduces manual work, reduces personnel work and creates the better working environment.



Storage and transport systems for solar cell production line

For the solar power generation industry rapidly expanding by the increased necessity of measures against global warming, equipment for crystal silicon PV, equipment for thin silicon PV and equipment for compound PV are prepared by using technologies cultivated in the FPD and semiconductor industries, and various solutions are offered to improve the production efficiency in the entire plant.



Semiconductor

Clean FA Division

Our daily life is supported by various electronics such as PC, cell phones, cars and digital appliances. The material handling equipment in clean rooms at production sites for semiconductor which are key devices in the digital era increases the productivity and reliability of semiconductor products and contributes to the development of the IT technology.



OHT (Overhead Hoist Transport) SRC350

The belt-driven hoisting mechanism of OHT carries FOUP by using the top flange of FOUP and OHT transports FOUP directly from the manufacturing equipment to the next process equipment. SRC350 upgraded from the conventional OHT has the horizontal load transfer function in addition to the vertical load transfer. The overhead side buffers equipped on the OHT traveling route have resulted in the Stocker-less system and the substantial reduction of lead time.



Stocker

This is a temporary storage warehouse in a clean room and intended to provide functions such as absorption of gap between the processing completion timing of the manufacturing equipment and the processing start timing of the next-process manufacturing equipment. Various types of stockers such as carrier storage stockers for FOUP and RSP and reticle stockers for buffers in front of equipment, high-density storage and purge are provided.

AGV (Automated Guided Vehicle) RGV (Rail Guided Vehicle)

These vehicles have multiple joints, directly access the storage equipment and manufacturing equipment, and travel on the floor. By using a high-precision navigation system, AGV travels on a complicated route flexibly and transports load to the manufacturing equipment and other places. RGV is guided by rail, and it can stably travel and transfer load at high speed.



CIMCORP Robotics Systems

CIMCORP Robotics Systems are delivered over 6,000 robots in 2,000 automation systems for a wide variety of industries to 40 countries since 1978.

Cimcorp, Finnish Automated Material Handling System supplier and group company of Muratec since 2014, improves the profitability and competitiveness of its customers' operations through the solutions which are based on Cimcorp's own, advanced robotics and software technology, combined with defined service concepts.



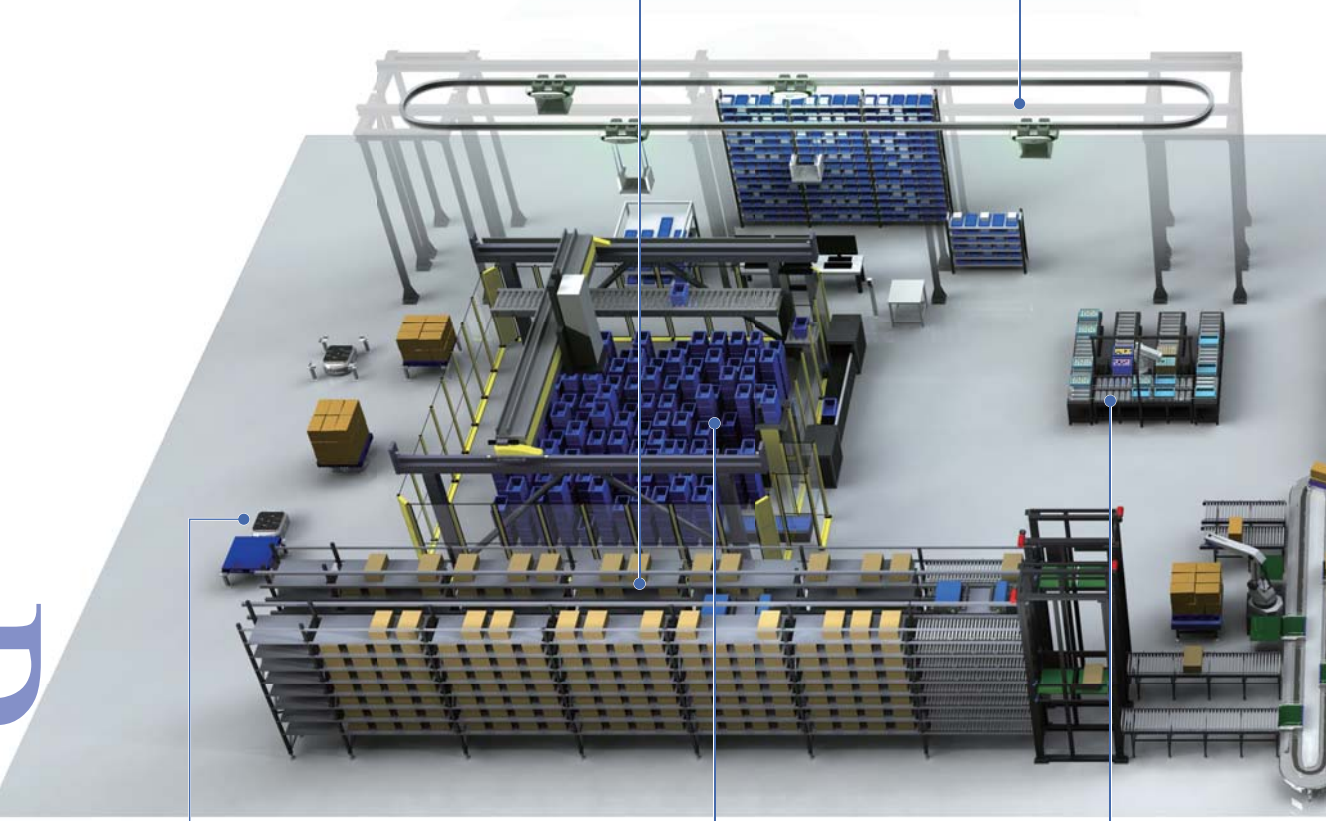
L&A solution center

The L&A solution center showcases Muratec's integrated solutions by combining the material handling systems and the software systems. The L&A solution center provides for solution of various tasks at the production sites and logistics center.

Shuttle System



OHT System



Compact Smart AGV



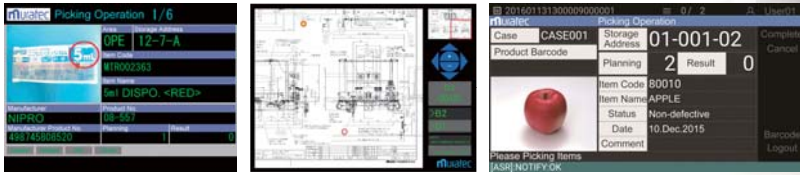
CIMCORP 3D Shuttle



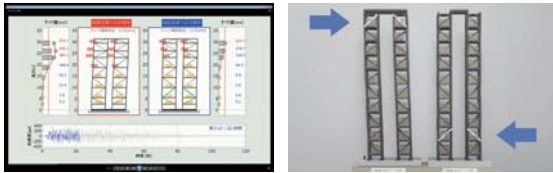
Piece Picking System



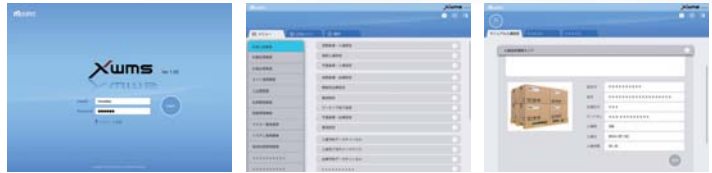
Logistics & Automation
Profile



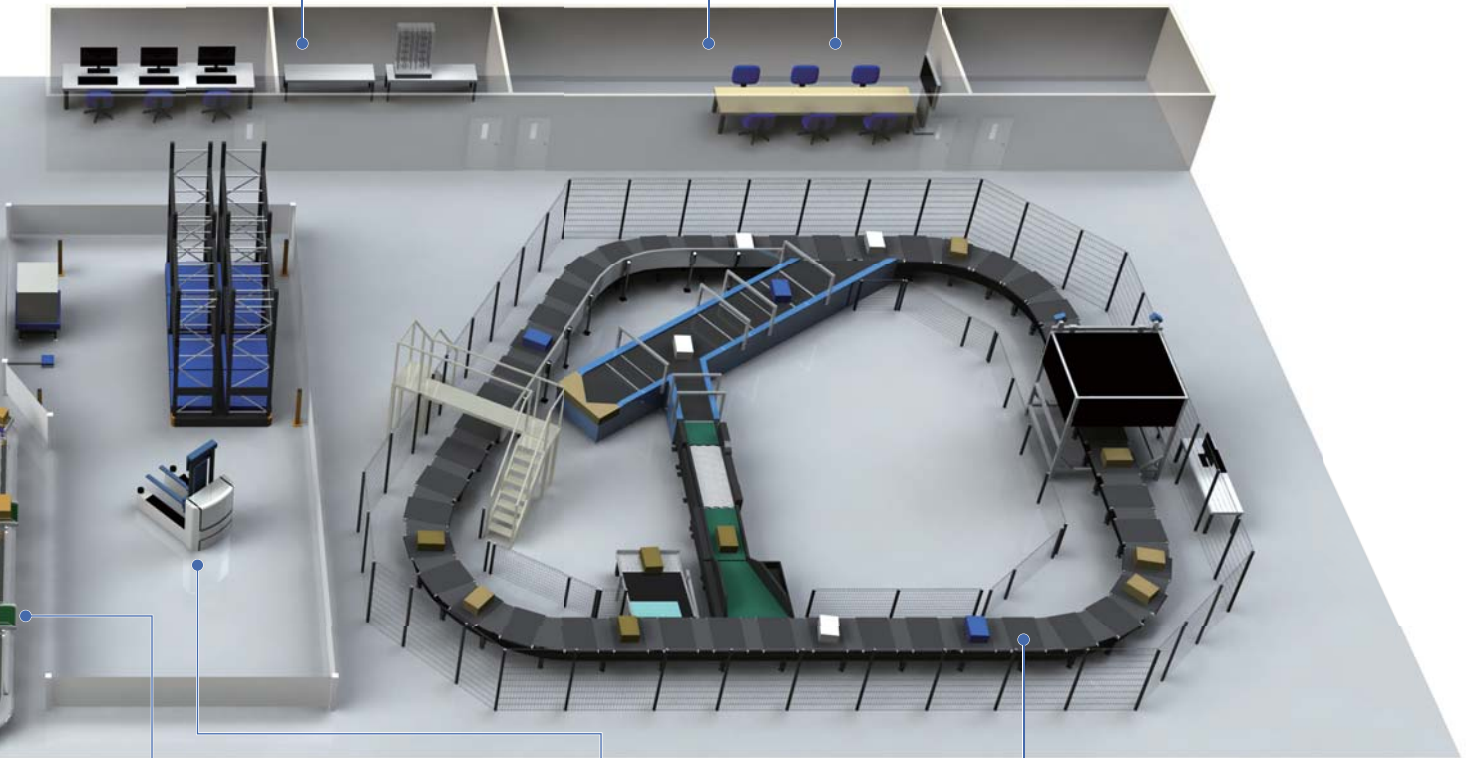
Ubiquitous Solution



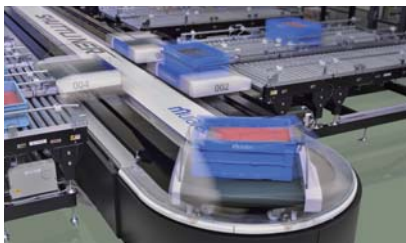
Earthquake damage assessment & Countermeasure Technologies



Warehouse Management System



Case Sorting Shuttle System



SLAM Navigation AGV



Sorting System



Customer support / Global network



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