The Robot Award of the Year given to robots for their outstanding services!

GUIDE BOOK for The Robot Award of the Year

Introduction of robots that have won The Robot Award of the Year

Introduction of all robots that received awards in FY2006-2008!

What is The Robot Award of the Year?
Robots, parts, software, and more are eligible. What kind of robots can be entered?

Thorough analysis!

Hosted by Ministry of Economy, Trade and Industry & The Japan Machinery Federation
What is The Robot Award of the Year?

The Robot Award of the Year (hosted by Ministry of Economy, Trade and Industry & The Japan Machinery Federation) is a program that selects and recognizes robots which provided outstanding services in the year and showed strong contributions to and have a high potential for creating future markets, in order to promote robotic technology innovations, expand the use of robots and stimulate demand for robots in Japan. This award program was established in fiscal 2006 aiming at further developing the robot industry and spreading the use of robots in daily life.

Outline of The Robot Award of the Year

*Guidelines for applications for fiscal 2008

**Hosted by**  
Ministry of Economy, Trade and Industry & The Japan Machinery Federation

**Details of commendation**

| Grand Prize (Economy, Trade and Industry Minister Award) | Given to a robot, part, or software that won First Prize and is judged as the most excellent based on the screening criteria. |
| SME Venture Prize (Small and Medium Enterprise Agency Director-General Award) | Given to a robot, part, or software that won First Prize and is judged to be the most excellent for its use of flexible ideas specific to small and medium sized firms. |
| Japan Machinery Federation President Award | Given to a robot, part, or software that won the First Prize and is judged to be particularly excellent in terms of robot industry development. |
| Organization for Small & Medium Enterprises and Regional Innovation Award | Given to a robot, part, or software that won the First Prize and is judged to be excellent in terms of robot industry development in the field of small and medium firms. |

**First Prize**  
Given by category to a robot, part, or software that is judged to be excellent based on the screening criteria.

**Jury's Choice Prize**  
Given by the Screening Committee, as appropriate, to a robot, part, or software that is judged as particularly excellent based on the screening criteria.

**Items screened**  
Robots, parts, or software that provided outstanding services in Japan during the fiscal year when applications for the award are accepted.

**Category**

- Service Robot category
- Industrial Robot category
- Public and Frontier Robot category
- Parts and Software category

**Screening criteria**

The evaluation standards in screening are a robot’s contribution to and potential for creating a market (the following 1. and 2.) and technological innovativeness (the following 3.)

1. Social needs  
Results of introduction and sales, potential for future creation of robot markets, degree of merit, public interest, and degree of need

2. Value from the user’s point of view  
Convenience, practicality, economy, design, maintenance costs, etc.

3. Technological innovativeness  
Safety, novelty, technical stability, multiplicity of operating environment, operability, etc.

* In the screening process, the Screening Committee may select excellent robots, parts, or software by comprehensively evaluating 1. to 3. above, or may select excellent robots, parts, or software by focusing on either 1., 2., or 3. above.
Introduction of the Robot Award FY2006-2008

Omnibot17μ i-SOBOT (Omnibot One-Seven Mu i-Sobot)
Tomy Company, Ltd.

The world’s smallest bipedal humanoid robot in mass production, as certified by Guinness World Records. With 17 proprietarily-developed ultra-small servo-motors, the product has about 200 action patterns. The company managed to make the robot very safe and durable so that it can be used at home, yet remains at an affordable price. Coming with highly-safe AAA NiMH batteries, this robot can operate for more than one hour between battery recharges, providing excellent energy efficiency.

A robot which can conduct various actions with excellent balance, speak, play instrument, and even perform music while moving

The i-SOBOT uses a gyro-sensor that automatically adjusts balance while walking. It provides more than 200 actions and speaks about 180 words and 90 kinds of sound effects, each of which matches the respective action, plays musical instruments, dances, and can impersonate people.

A robot which is friendly to people and the earth and stands firmly without batteries

Considering its use at home, the i-SOBOT is designed with a focus on safety and durability. If excessive force is applied, it absorbs the shock so that it is not easily broken. Powered by highly-safe AAA NiMH batteries “eneloop” available on the market, it is capable of action for 60 minutes or more on one charge as it is very energy efficient, which enables it stand without being powered on. This means it uses the least energy compared with any other mass-produced bipedal robots in the world. The i-SOBOT has been chosen as the mascot for an energy-saving contest, and is playing a key role in education programs held in Japan and abroad to teach the importance of the global environment and energy-saving.

A robot that has been in the limelight thanks to various TV programs, newspapers, magazines, and other mass media

We have been invited to join various robot shows in Japan and abroad, and are sure that we succeeded in make known the uniqueness of robot technologies in Japan. Furthermore, staff in-house were also able to further their understanding of robots and we are stepping our efforts in facilitating the development of new robots.

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The i-SOBOT has been chosen as the world’s smallest humanoid robot in mass production in 2006 and listed in the 2007 Guinness Book of World Records.

The i-SOBOT is designed to be easy to control and fun to use. With 17 joint parts, the i-SOBOT has successfully been put to practical use, as it is only 16.5 cm tall, weighs 350g, is easily carried in one hand, and is inexpensive at 29,800 yen (excluding consumption tax).

Simple operability pleases all users.

The i-SOBOT comes fully assembled and the user can enjoy operating it immediately after purchase. Easy controlling allows everyone to handle it. In programming mode, the user can make original programs as he/she likes, for a maximum of 240 actions. The robot is equipped with the function to recognize sounds, also enabling the user to operate the robot by oral instructions as if he/she talks to the robot, without using a controller. In terms of design, the i-SOBOT won the gold award of the 2008 Good Design Award, and was displayed in the exhibition “WA: The Spirit of Harmony and Japanese Design Today,” which was held for two years around the world. The robot was chosen as one of Japan’s representative designs. The i-SOBOT has been chosen as the mascot for an energy-saving contest, and is playing a key role in education programs to teach the importance of the global environment and energy-saving. The company has received a lot of comments from many of the people who actually operated the robot in the events, to the effect that they have become interested in studying robotics and science.
Pair of M-430iA Robots, enabling high-speed handling using visual tracking functions

The articulated-type robot M-430iA can pick up a large amount of items accurately in a moment as they roll down a conveyor belt at high speed. The pair of M-430iA Robots is capable of handling more than 200 items per minute and operating 24 hours a day. The robot adopts a wrist structure made of combined resin gears to prevent articles from being contaminated with oil, and a highly chemical-proof arm that can be cleaned with acid and alkaline cleaners to increase cleanliness and cleaning capability. Thanks to these features, it is used at many food and pharmaceutical distribution sites worldwide. Since its launch in October 2006, the number of inquiries and orders has continued to smoothly increase.

The robot picks up items not only by using its hands but also by looking them with its eyes and thinking about them. It also beautifully packs randomly-oriented items that come down on a conveyor in boxes!

The robot, which has a high degree of intelligence, can visually confirm products which are randomly rolling down a conveyor belt at high speed identifying images and through its eyes, instantly thinking about the situation and picking up the objects in a proper manner.

The robot picks up many items on a conveyor quickly and puts them down on another conveyor belt or in boxes while accurately placing them in a known position and orientation.

Consisting of two M-430iA industrial-use arm robots, this robot can perform two robots’ work. The two robot arms, or robot “hands,” precisely pick up as many as 200 items per minute conveyed from a conveyor randomly, at a speed faster than the eye can follow, and then put them swiftly down on another conveyor or in boxes while accurately placing them in a known position and orientation.

A market cultivated for new clean robots!

In addition to being able to transport a large amount of products, robots in the food and pharmaceutical sectors are required to be clean and have capability and chemical resistance, which are all particular to the food and pharmaceutical sectors. With the functionality to satisfy these requirements, the M-430iA Robots have cultivated an active role for themselves in sectors that go beyond the food and pharmaceutical sectors – markets that had been the main ones for industrial robots. Previously, industrial robots worked mainly at automobile, electric and electronic parts manufacturing sites. The robot picks up items in a proper manner.

Development of new markets by handling issues in the food and pharmaceutical sectors

Up till now, industrial robots have played active roles mainly in the automobile, electric and electronic parts manufacturing sites. In addition, in general industry – in particular in manufacturing sites such as the food and pharmaceutical sectors – there are moves to make use of robots. In these kinds of manufacturing sites, robots need not only to have the processing capability of industrial robots but must also provide the functions of cleanliness, safety, and reliability. However, single conventional robots did not have sufficient processing power, and several were needed to be set in line. Under such circumstances, it was difficult to spread the use of industrial robots as additional expenses and installation spaces were needed.

By achieving characteristics such as cleanliness, cleaning capability, and chemical resistance in addition to the sought-after advanced processing power, the M-430iA Robot has made the food and pharmaceutical sectors into its new markets.

Handling work in high-speed and continuous operations

This robot’s high-speed processing is realized by optimally controlling two motors mounted on each basic axis, or in a manner combining two robots into one. In addition, it has a vision tracking function that combines intelligent image recognition and tracking functions. With the vision tracking function, two robots can accurately pick up products which are randomly rolling down a conveyor belt at a speed of 200 units per minute, faster than the eye can follow, and then put them down on another conveyor or in boxes while placing them in a known position and orientation.

This low-priced, flexible robot system conducts high-quality operations continuously 24 hours a day in place of conventional handling systems that rely on manual work and special machines.
This system is a cleaning robot that cleans an office building while moving between floors by operating the elevator system itself. After finishing cleaning, the robot returns itself to the place of storage where it started from. It has been already introduced to about 20 high-rise buildings in Harumi Triton Square, Roppongi Hills and Central Japan International Airport Co., Ltd as of October 2009.

Cost reduction realized and operational efficiency improved through the robot’s movement between floors.

Building cleaning hours are usually limited to about two hours from midnight or 8:00 a.m. As the robot cleans in nights and needs no lighting even nor air-conditioning, it contributes to improving operational efficiency and saving energy.

As the robot can move between the office building’s floors using the elevator, even a small number of robots can clean a wide area, thereby reducing cleaning costs. Monthly cleaning cost for 1 square meter of carpet is about 100 yen per person, compared with about 50 yen per robot (when cleaning a building of 20 floors with a total space of 5,000 square meter or more).

Sure elevator control and stable travelling movement

The cleaning robot features a simple mechanism by having a travelling method based on straight forward movement and spin turn; compact size; moving without requiring positional data; and the characteristics long-term stable travelling achieved by means of gyro angle error correction. Additionally, in introducing this robot, there were three specifications that needed to be met: a cleaning robot, a system linking the cleaning robot and the elevator, and an elevator operating system. Consequently, we collaborated with the party purchasing the robot in a scrupulous manner and introduced it.

In a new building, the clean robot gets in and out of the elevator using communications between optical transmission devices which are installed in the elevator. The entering/exiting and control methods seen here are very similar to those for people in which they enter the elevator (while the robot uses communications) to ride on and get out the elevator. The cleaning robot is able to confirm its current location, call the elevator, move between floors in the building, and move along and clean each floor in an autonomous manner.
List of All Prize-Winning Robots for FY2006-2008

Here is the introduction of 31 robots, parts, and software that won The Robot Award of the Year between fiscal 2006-2008. For more details, please refer to the Prize Winners Library on The Robot Award of the Year website.

**The Robot Award 2008**

**Grand Prize (Economy, Trade and Industry Minister Award)**

**Omnibot17μ i-SOBOT**

TOMY COMPANY LTD.

**Japan Machinery Federation President Award**

**MOTOMAN-CDL3000D**

YASKAWA Electric Corporation

**Jury’s Choice Prize**

**Rice Transplanting Robot**

National Agriculture and Food Research Organization/
National Agricultural Research Center

**First Prize - Public and Frontier Robot category**

**Active Scope Camera**

Tohoku University/
International Rescue System Institute

**First Prize - Industrial Robot category**

**Integrated Compact Robot XR-G Series**

DENSO WAVE INCORPORATED

**Organization for Small & Medium Enterprises and Regional Innovation Award**

**ZMP e-nuvo**

ZMP INC.

**First Prize - Parts and Software category**

**MEMS tactile sensor**

University of Tokyo/
Panasonic Corporation

**First Prize - Service Robot category**

**LEGO MINDSTORM Education**

Lego Japan Co., Ltd. (Lego Education)

**SME Venture Prize (Small and Medium Enterprise Agency Director-General Award)**

**Booktime**

Nishizawa Electric Meters Manufacturing Co., Ltd.

**Organization for Small & Medium Enterprises and Regional Innovation Award**

**AC servo actuator**

Harmonic Drive Systems Inc.

**The Robot Award 2007**

**Grand Prize (Economy, Trade and Industry Minister Award)**

**M-430iA**

FANUC LTD.

**Japan Machinery Federation President Award**

**Autonomous Mobile Courier Robot System for Blood Samples**

Panasonic Electric Works Co., Ltd.

**Jury’s Choice Prize**

**MR-image-guided Compact Surgical Robotic System**

Kyushu University/ Hitachi Ltd./ Hitachi Medical Corp./ Mizuho Co., Ltd./ University of Tokyo/ Waseda University

**First Prize - Industrial Robot category**

**Active Scope Camera**

Tohoku University/
International Rescue System Institute

**First Prize - Parts and Software category**

**MEMS tactile sensor**

University of Tokyo/
Panasonic Corporation

**First Prize - Service Robot category**

**LEGO MINDSTORM Education**

Lego Japan Co., Ltd. (Lego Education)
The Robot Award of the Year 2006

First Prize - Service Robot category
**Humanoid Robot, HOAP**
Fujitsu Limited/ Fujitsu Laboratories Ltd./
Fujitsu Automation Limited

First Prize - Industrial Robot category
**Conveying of Medicine Container Robot**
YASKAWA Electric Corporation

First Prize - Public and Frontier Robot category
**Endovascular Surgery Training -Evaluation-Simulation EVE EndoVascular Evaluator**
FAIN-Biomedical Inc./ Nagoya University

First Prize - SME Special Prize
**Kondo Kagaku Co.,Ltd.**

First Prize - Public and Frontier Robot category
**Fire-fighting Robot**
Komatsu Ltd./AVS CO., LTD./
Cyverse Corporation/ I−DEN Videotronics Inc./
MURUMA TECHNICA CO.,LTD.

First Prize - Parts and Software category
**OpenRTM-aist-0.4.0**
New Energy and Industrial Technology Development Organization/ Advanced Industrial Science and Technology/ Japan Robot Association

First Prize - Industrial Robot category
**MOTOMAN-DIA10/ MOTOMAN-IA20**
YASKAWA Electric Corporation

First Prize - Industrial Robot category
**Vision Inspection Robot**
DENSO WAVE INCORPORATED

First Prize - Public and Frontier Robot category
**Remote control construction robot**
Ministry of Land, Infrastructure, Transport and Tourism/
Fujita Holdings Co., Ltd.

First Prize - SME Venture category
**Scanning laser range finder (SOKUKI sensor)**
HOKUYO AUTOMATIC CO.,LTD.

First Prize - SME Venture category
**HAMADE Squid Fishing Machine**
Towa Denki Seisakusho.,Inc.
Details are announced through The Robot Award of the Year website.

The Robot Award of the Year official website  http://www.robotaward.jp/
The Robot Award of the Year PR Secretariat  E-mail : info@robotaward.jp