International Robot Exhibition 2017

**Dates:** November 29 (Wed.) - December 2 (Sat.)
10:00 ~ 17:00

**Venue:** Tokyo Big Sight
East Hall 2 IR2-41

Bringing you new visions of production facilities

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<tr>
<th>No.</th>
<th>Topic</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3D Vision System</td>
<td>Developed at an affordable price (standard price: 700,000 yen). A Cartesian robot and the newly developed Wrist Unit can be used to pick up workpieces with complex shapes.</td>
</tr>
<tr>
<td>2</td>
<td>ELECYLINDER®</td>
<td>From selection to operation and maintenance, all its aspects are exquisitely simple. The exhibit will introduce a diversely varied lineup, including new products like the mini type, dust-proof/splash-proof specifications, and the Radial Cylinder with a built-in ball circulating linear guide.</td>
</tr>
<tr>
<td>3</td>
<td>Wireless I/O Controller</td>
<td>The exhibition will include a wireless control device for an actuator with a 1/6 control panel. View the applications in comparison with wired equipment.</td>
</tr>
<tr>
<td>4</td>
<td>ROBO Cylinder®</td>
<td>The exhibition features an exciting assembly of equipment, including a device for arranging lunchbox ingredients and a ROBO Cylinder lineup totaling 75 axes. As well, there will be live demonstrations of positioning repeatability and power consumption calculation software. The exhibition includes FCON (a compact flexible controller: maximum 16 axes connectable), which can reduce control panel installation space by 70%.</td>
</tr>
<tr>
<td>5</td>
<td>IA Motion Controller</td>
<td>Don’t miss this chance to see the applications of 256-axis simultaneous actuator control, from ball movement to text and waves in 3-D.</td>
</tr>
<tr>
<td>6</td>
<td>SCARA Robot</td>
<td>The exhibit includes the all-new SCARA Robot IXA, with world-beating speed performance and sharply reduced price. Also introducing the PowerCON SCARA IXP which further reduces initial costs.</td>
</tr>
<tr>
<td>7</td>
<td>Cartesian 6-Axis Robot</td>
<td>We have developed the world’s first Cartesian robot with wrist unit attached. Movement from various directions is possible, including ingress into tight spaces, swing motion, and orthogonal wrist bending. View the motion with the actual applications.</td>
</tr>
<tr>
<td>8</td>
<td>Gripper</td>
<td>The exhibition will feature multiple demo units making the most of the unique advantages of electric grippers. Applications introduced include functions like gripping/measurement/judgment, centering, and Battery-less Absolute Encoder mounted.</td>
</tr>
<tr>
<td>9</td>
<td>Servo Press</td>
<td>First in the industry! Introducing servo presses with loading repeatability of ±0.5%, available in an extensive lineup supporting 20N to 50,000N. Experience the press-fit hands-on section, based on examples in actual use.</td>
</tr>
<tr>
<td>10</td>
<td>Tabletop Robot</td>
<td>The exhibition will include all Tabletop Robot models with Battery-less Absolute Encoder. Easy program creation will be demonstrated with a SEL generator, and models with special specifications will be on view.</td>
</tr>
</tbody>
</table>
1 3D Vision System

POINT 1

3D Vision System developed independently by IAI
Much more affordable than other 3D Vision Systems

POINT 2

Picks up workpieces with complex shapes

POINT 3

Advantages of 3D Vision System

- When handling multiple part models, there is no need to prepare part feeders for each part type. Parts supply equipment can also be eliminated, saving facility space.

- Since there is no need to arrange the supplied parts on pallets or the like, dedicated equipment and labor costs can be reduced.
POINT 1

It's all so simple

AVD can be adjusted individually

With the ELECYLINDER, acceleration (A), velocity (V) and deceleration (D) can be entered in percentages to apply adjustments.

Operating conditions (Pressing forward: Backward end ➔ Forward end)

Operating conditions abbreviation: AVD

- Acceleration
- Velocity
- Deceleration

PLC control is the same as with air cylinders

ELECYLINDER control is the same as that of air cylinders. There is no need to create a complicated ladder program.

Few maintenance parts

Since the ball screw and guide hardly ever break down, the only maintenance parts are

1. Motor cover assembly (including controller circuit board)
2. Motor unit

* Rear cover is not included in the motor cover assembly.
* Bolts are not included in the motor cover assembly and motor unit.
**High performance**

Data can be entered by wireless connection.

Wireless connection from outside the facility enables confirmation of the operating status as well as changing the position and operating status inputs. There is no need to reach into the unit or open the control panel door.

The radial cylinder is equipped with a built-in guide.

The built-in controller type is no bigger than this.
No more I/O wiring!

New technology! Actuator can be wirelessly controlled! PLC, controller and wireless communication unit are mounted on a single circuit board!

With the circuit board above... There is no need for I/O wiring as the communication between actuators and control devices is wireless. Since the controller function is mounted on the actuator too, there is no need to install a controller in the control panel.

The control panel can be miniaturized

Compared to the wired type, the control panel size is 1/6.

Only 24 V power supply and breaker are stored in the control panel.

View the actual control panel sizes (wireless and wired) at the venue.

Wiring (1) and wiring process (2) can be reduced

When [Wired]

I/O wiring (sensors)
Actuator cable (including power supply)

When [Wireless]

Power supply cable

Reduced to 1/30

Power cable management, terminal crimping & connection
A byword for electric cylinders: ROBO Cylinder® 75 axes all on exhibit

Exhibited actuators (among others)

- ROBO Cylinder with AC servo motor (RCS4 Series) [New]
- Low-priced ROBO Cylinder equipped with high-output stepper motor (RCP6 Series)
- Mini Cylinder / Mini ROBO Cylinder
- Solenoid gripper / Hollow rotary [New]

18 years of service. Thanks to you, we have shipped a total of 1.6 million axes. A wide variety of diverse industries are putting them to use.

Supporting radial loads without a guide: Radial Cylinder®

External guide is not required!
A high-rigidity rod type actuator that has a built-in ball circulation type guide. The built-in guide supports radial loads.

Max. stroke 800 mm
The 800 mm rod can be extended and also stored in the main unit. Use as a vertical axis simplifies the device configuration.

Coming next spring: Compact Controller RCON

Features of RCON
- Controller unit (2 axes connectable)
- High-output stepper motor 16 axes
- Approx. 15% more compact! (Installation surface area comparison)
- Communication cycle time 1-3 ms (Controller internal communication speed: 3 Mbps)
- Supports 9 types
- Battery-less Absolute Encoder
- No Battery, No Maintenance, No Homing, and No Price Increase.
- All ROBO Cylinders can be controlled.
- Drive source shutoff connector (per axis x 2 places)
- Switch for JOG operation (per axis x 2 places)
- Brake release switch (per axis x 2 places)
- minUSB port USB driver installation not required (for Windows 10)
5

IA Motion Controller

Reference Exhibit

One controller provides collective control of all IAI actuators

Advantage 1: Ultra-multi-axis synchronous control
   Capable of synchronous control of 1,000 axes with 1ms position command.

Advantage 2: Expanded freedom of selection
   Capable of collective control of systems mixing 200 V AC servo and 24 V stepper motor.

Advantage 3: Programmable with simple language
   Capable of programming with a simple language (SEL language) unique to IAI.

POINT 1

Synchronous control of 256 axes with IA motion

Configuration

32 units × 8 axes = 256 axes
Capable of synchronous control

<table>
<thead>
<tr>
<th>Master unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCON-8-20WAI-20WAI-20WAI-20WAI-20WAI-20WAI-20WAI-0</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>RCA-RA4C-I-20-15-300-A3</td>
</tr>
<tr>
<td>256-axes</td>
</tr>
</tbody>
</table>

8 axes of actuators can be connected to a single MCON
32 MCON units can be connected to the master unit

Image

This demonstration is using IA Motion Controller’s synchronous control of 256 axes.
Four soccer balls are being manipulated in a mesmerizing display of graceful synchronous control.
**POINT 1**

IXA Series providing world-beating speed and cost performance is now available!

<table>
<thead>
<tr>
<th>Model (Arm length)</th>
<th>IXA-NSN30 (300mm)</th>
<th>IXA-NSN45 (450mm)</th>
<th>IXA-NSN60 (600mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard cycle time</strong></td>
<td>0.26s</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Continuous cycle time</strong></td>
<td>0.45s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. payload</td>
<td>8kg</td>
<td>10kg</td>
<td>12kg</td>
</tr>
<tr>
<td>Positioning repeatability</td>
<td></td>
<td>±0.010mm</td>
<td>±0.010mm</td>
</tr>
<tr>
<td></td>
<td>1st/2nd arm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vertical axis</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rotational axis</td>
<td>±0.005°</td>
<td></td>
</tr>
</tbody>
</table>

**POINT 2**

Further reduce initial costs with IXP Series!

- Achieves lower prices using a stepper motor
- The industry’s lightest model
- Can be combined with ROBO Cylinder to further extend the functions

**POINT 3**

Simulation software for IXA series

Easy confirmation with simulation software!

Display via 3D animation even if there is no SCARA robot at hand.

The cycle time can also be checked with the software.

*4-axis standard specification, arm length of 350 mm, controller included, Battery-less Absolute Encoder equipped.*
**Single Axis/Cartesian Robot**

**Point 1**

- Single axis robot, high precision / high rigidity / high payload / high speed
- High-precision positioning repeatability (ISPBI/ISPDB)
- High rigidity and long service life thanks to the guide integrated with base (ISBLXL)
- High payload thanks to off-board tuning (ISBLXMX/LXL)
- Ball screws and guides are now manufactured in-house, supporting a wide stroke range (ISBXLXMX/LXUXM)
- High lead ball screw achieves high speed and high acceleration/deceleration (ISBXMX/MXL)

**Positioning repeatability ±0.003 mm**

**Point 2**

- Compact Cartesian 3-axis/2-axis robot - Simple and low-cost
- Assembled Cartesian robot, with cable management and controller built in, available with the remarkable price and service life below.

**Cartesian 6-Axis Robot**

**Point 1**

- Capable of ingress into tight spaces and swing motion possible
- The 6-axis Cartesian type can move with great freedom even in tight spaces, thanks to orthogonal + swivel/oscillation motion.

**Point 2**

- Capable of operation in linear direction + diagonal direction within a square area
- The Cartesian 6-axis type has a square operation range and can be operated throughout the area, helping save space. As it can operate from a horizontal posture, equipment height can be reduced.

**Reference Exhibit**

- Battery-less Absolute Encoder
- No Battery, No Maintenance, No Homing, and No Price Increase.
- No Going Back to Incremental.

**Stroke**

- XYZ: 200mm x 300mm x 190mm
- In this example, only the X axis stroke is changed from 200mm to 800mm.

**Stroke**

- XYZ: 800mm x 300mm x 190mm
- In this example, the stepper motor actuator is changed to the AC servo motor actuator for faster speed.

**Speed**

- XYZ: 1200mm/s x 1200mm/s x 1256mm/s
Supports Battery-less Absolute Encoder

The slim gripper RCP6-GRT series is the first gripper to be equipped with a Battery-less Absolute Encoder. Home return is no longer required when restarting the equipment; you can move to the next operation while gripping the workpiece.

Adjustment of gripping force
Since it can be adjusted to the optimum gripping force using numerical values, it will not scratch the workpiece.

Centering mechanism
Capable of space saving centering without extra steps.

Grip, measure, and judge
Capable of "measuring" and "judging" the length of the workpiece as it "grips" it.

Faster cycle time
Since the gripping operation distance can be minimized, cycle time is quicker.
Servo Press

**POINT 1**
An extensive product line is available at low prices
Push force **Min. 20 N to max. 50,000 N**

<table>
<thead>
<tr>
<th>Model</th>
<th>Push force</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCS3-RA20R</td>
<td>5,000 – 50,000 N</td>
</tr>
<tr>
<td>RCS3-RA15R</td>
<td>5,000 – 30,000 N</td>
</tr>
<tr>
<td>RCS2-RA13R</td>
<td>2,000 – 19,600 N</td>
</tr>
<tr>
<td>RCS3-RA10R</td>
<td>600 – 6,000 N</td>
</tr>
<tr>
<td>RCS3-RA8R</td>
<td>200 – 2,000 N</td>
</tr>
<tr>
<td>RCS3-RA7R</td>
<td>200 – 1,200 N</td>
</tr>
<tr>
<td>RCS3-RA6R</td>
<td>60 – 600 N</td>
</tr>
<tr>
<td>RCS3-RA4R</td>
<td>20 – 200 N</td>
</tr>
</tbody>
</table>

**POINT 2**
High precision load control
Loading repeatability is **± 0.5 %**

**POINT 3**
Easy setup
Press program setting in **4 easy steps**

1. **STEP 1** Select operation mode
2. **STEP 2** Input home position
3. **STEP 3** Position, load, speed input
4. **STEP 4** Input pressurization determination condition

**POINT 4**
Battery replacement not required
Equipped with a Battery-less Absolute Encoder as standard

**POINT 5**
Supports traceability
Sends the data necessary for traceability to the host system through the extensive output interfaces.

### Extensive interfaces and outputtable data
- **Analog output**
  - Position data
- **Pulse-train output**
  - Load data
- **Serial communication**
  - Load data
  - Position data
- **Field network**
  - Judgment results
  - Judgment position
  - Judgment load
  - Position data
  - Load data, etc.
- **PIO**
  - Judgment results
  - Pass
  - Fail

### Host system
- Load indicator
- PC
- PLC
- Corresponding field network (load/position outputtable)
- PLC

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Battery-less Absolute Encoder
No Battery, No Maintenance, No Homing, and No Price Increase.
No Going Back to Incremental.
## Tabletop Robot

### POINT 1

**The optimum model can be selected according to the customer's convenience (168 types in total)**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of axes</td>
<td>4 types: 2-axis/3-axis/4-axis (ZR axis)</td>
</tr>
<tr>
<td>Stroke</td>
<td>4 types: 200mm/300mm/400mm/500mm</td>
</tr>
<tr>
<td>Configuration direction</td>
<td>2 types: Gate type/cantilever</td>
</tr>
<tr>
<td>Equipped motor</td>
<td>2 types: Stepper motor/AC servo motor</td>
</tr>
</tbody>
</table>

**Workpiece gantry type**

<table>
<thead>
<tr>
<th>Type</th>
<th>Image</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-axis</td>
<td><img src="image1.png" alt="Image" /></td>
<td>TTA-A2</td>
</tr>
<tr>
<td>3-axis</td>
<td><img src="image2.png" alt="Image" /></td>
<td>TTA-A3</td>
</tr>
<tr>
<td>4-axis</td>
<td><img src="image3.png" alt="Image" /></td>
<td>TTA-A4</td>
</tr>
</tbody>
</table>

**Workpiece mount type**

<table>
<thead>
<tr>
<th>Type</th>
<th>Image</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-axis</td>
<td><img src="image4.png" alt="Image" /></td>
<td>TTA-C2</td>
</tr>
<tr>
<td>3-axis</td>
<td><img src="image5.png" alt="Image" /></td>
<td>TTA-C3</td>
</tr>
<tr>
<td>4-axis</td>
<td><img src="image6.png" alt="Image" /></td>
<td>TTA-C4</td>
</tr>
</tbody>
</table>

**Max. payload** 30 kg (horizontal)

**Max speed** 1200 mm/s

**Positioning repeatability** ±0.005 mm (Stepper motor: ±0.01mm excluding Z axis)

**Stroke variation**

- 200×200
- 300×300
- 400×400
- 500×500 (mm)

**Field networks supported**

- PROFIBUS
- CC-Link
- DeviceNet
- EtherCAT
- CompoNet

**Program automatic generation software** SEL Program Generator

The SEL Program Generator is a PC tool that generates a SEL program and positioning data simply by drawing the motion path on the screen or importing CAD data.

- **Automatic creation**
- **Position data**
- **Program data**

**Example: Track data for coating**

- Drawings generated by SEL program generator
- CAD drawings (DXF data) imported

**Operation program creation time is reduced to just 1/3 or so!**

Three types are available for different purposes.

1. For coating
2. For screw tightening
3. For soldering
IAI offers a variety of industrial robots according to the customer's applications

**Extensive lineup**

You are sure to find a product that meets your specifications among over 700,000 product types.

**Custom specifications supported**

We also offer custom specifications tailored to your requests.

**Major custom specification examples**

- **Double slider**
  - When the overhang load length is large and the allowable moment exceeds the specification

- **Special stroke**
  - When the stroke is insufficient with the model of choice

- **Surface treatment**
  - When the operating environment requires a change in actuator surface treatment or parts used

- **Grease**
  - When there is a change in the customer's specified grease

**Free trial of product demo units**

Please contact your nearest IAI group office listed on the back for more information.
IAI offers a complete national and international support network

**National Network**

**25 domestic sales bases**
Technicians at each site provide thorough service and support. Various seminars are also held free of charge. Please feel free to join us.

- Niigata Sales Office
- Nagano Sales Office
- Kanazawa Sales Office
- Kyoto Sales Office
- Osaka Sales Office
- Hyogo Sales Office
- Okayama Sales Office
- Hiroshima Sales Office
- Matsuyama Sales Office
- Fukuoka Sales Office
- Kumamoto Sales Office
- Oita Sales Office

**International Network**

**7 overseas sales bases and support**
We provide support overseas equivalent to the domestic support.

- Morioka Sales Office
- Sendai Sales Office
- Utsunomiya Sales Office
- Kumagaya Sales Office
- Tama Sales Office
- Ibaraki Sales Office
- Tokyo Sales Office
- Atsugi Sales Office
- Kofu Sales Office
- Haramatsu Sales Office
- Toyota Sales Office
- Nagoya Sales Office

**IAI Sales offices**

- **Europe**
  - IAI Industriroboter GmbH
    - 1 Group Location / 22 Sales Offices
  - IAI Robot (Thailand) Co., Ltd.
    - 1 Group Location / 8 Sales Offices
  - IAI (Shanghai) Co., Ltd.
    - 3 Group Locations / 34 Sales Offices
  - IAI America, Inc.
    - 3 Group Locations / 48 Sales Offices
  - Singapore
    - One Distributor
  - Korea
    - One Distributor in 2 Locations
  - Brazil
    - One Distributor
  - Vietnam
    - One Distributor
  - Philippines
    - One Distributor
  - Indonesia
    - 1 Sales Office
  - Taiwan
    - 3 Sales Offices
  - India
    - One Distributor

**Support Services**

- Startup support at the customer’s site
- After-sales service after purchasing the product
- Support for SEL program creation

**Technical Support**

- Japanese Language Support
- Technical Support
- Product Stock
- Simple Repair

**Global Support**

- Japanese Language Support
- Technical Support
- Product Stock
- Simple Repair

**Simple Repair**

- Japanese Language Support
- Technical Support
- Product Stock
- Simple Repair
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