Automation™

One step ahead on the future

Short Catalog 2019
Our Mission

is to provide high-tech solutions tailored to the applications, built with quality and respecting the environment. Our solutions accelerate innovation on your products or manufacturing process.
Was born as a producer of fully electrical actuators. Our electric solutions have always been a suitable alternative to hydraulic and pneumatic systems to offer energy saving, cleanliness, precision, reliability and safety of the working environment.

Since then the commitment, determination and a constant research activity have led the company to establish itself as a worldwide leader in electrical actuation.

We believe in talent. This is why we strive to ensure our employees a constant growth.

Competence, passion, collaboration, motivation guide us daily in our work.

We research and innovate. We are constantly informed on latest technologies and market trends to offer our customers a full range of mechatronic and robotic solutions, widely used in several industrial sectors.

We develop ROS (Robot Operating System) based solutions and control diagnostics to prevent standstills in production (AwareVu™).

Cast your product or process into the future!

Join our community!

AutomationWare
One step ahead on the future
The R&D department, enhanced in staff and technologies, uses innovative tools to develop current and future product families:

- **ROS platform** ([Robot Operating System](https://en.wikipedia.org/wiki/Robot_Operating_System)) we develop our robotic system on ROS basis. Next generation robotics will be integrated and evolved on open source platforms to grant state-of-the-art complex kinematics or advanced motion planning. Robotic coordination will be a key issue in the coming years.

- **CAD SolidWorks** for a quick and accurate design even of complex systems. The opportunity to carry out virtual tests ([FEM analysis](https://en.wikipedia.org/wiki/Finite_element_method)) guarantees constant quality improvement of the project. We use CAD to build motion platforms for ROS, applications, streamlining the configuration and potentially engineering customized robots.

- **Testing systems to give the highest quality to our customers**
- **Qualified components**
- We always keep up to date on the latest technological innovations
- We strive for continuous improvement to offer quality to our customers
- We produce according to **Lean manufacturing method and use Toyota Like processes**

Our company has adopted a **lean manufacturing programme**, following the philosophy “the complete elimination of all waste” for a real efficiency and a daily improvement of every working aspect.

**Automationware** employs consolidated and great design quality platforms and technologically advanced components to produce customized solutions for every application. Some of our products are labelled **NSK Inside**.
AutomationWare

Headquarter is based in Venice (Italy)
Our production plant

The new Ind. 4.0 factory is a centre of excellence for mechatronic and robotics.

All production cycles are networked thanks to a last generation fiber optic connectivity. State-of-the-art Solidworks technologies integrate the CAD/CAM technology in the process guaranteeing executive quality in the evolution of the project. Our CNC technology is based on last generation equipment to produce high quality and precision on semi-finished products. (machining centres 5-Axes Mazak)

Modern automatic warehouses ensure an efficient items storage and protection, in order to maintain the components integrity and accelerate delivery times; the last step in a production process so designed to drastically lower time to market (just in time system).

A live demo area enables our customers to find the best solution for their production needs.

Plan to visit our factory, meet our designers to define your next Robotic solutions
Several reasons to accelerate innovation from pneumatic or hydraulic technology to Ind 4.0 E-actuation

The ideal solution for an efficient and safe production

- **High repeatability:**
electrical actuators are accurate, reliable, do not pollute, reduce power consumption and are reprogrammable.
Pneumatic systems need constant maintenance, have a low repeatability over time and require compressed air that could lead to pollution.

- **Low noise:**
only electronically controlled electrical systems can ensure compliance with safety directives in the work place requiring less than 85dbA@1m noisiness.

- **Productivity and Ind. 4.0 controllability:**
all electrical actuators parameters can be measured and monitored in real time. AutomationWare offers Ind 4.0 solutions with vibration and temperature control system (AwareVu™), for predictive maintenance.

- **Initial cost or Return on Investment?:**
Large Corporation are very careful in choosing future solutions for their production process. They normally opt for low environmental impact and limited power consumption systems.

The answer is in electrical actuation: accurate and energy efficient (up to 90% energy saving).

Production with hydraulic systems or polluted air (banned in Pharma and Food & Beverage Industry) will be a key issue in the coming years.
Many multinational companies of different industries such as Automotive, Food&Beverage, Pharma have moved to electric and require Ind 4.0 electrical actuators for their new projects.

Looking forward to expand your business?

Choose electric solutions.

Design and develop your products with us. Take advantage of our competence to evolve your product or process towards Ind 4.0.
Experience and passion: the expertise achieved in years of field work and a young and dynamic team are our milestone to offer innovative turnkey solutions.

Partnership is key for best ideas: Each component we produce, is tailored on your needs, guiding your R&D in choosing the best solution for your industry. We cooperate with you from the planning stage to aftersales and assistance.

Many companies from all over the world have already adopted AW products for their machines.

Flexible solutions: a wide range of customized solutions to upgrade, integrate and revamp your project. Chance of complete solutions easy to set up, also with hardware and firmware. Let’s find out the best solution together!

Direct relation with end users

Quick service

360 degrees worldwide assistance
### Actuators

<table>
<thead>
<tr>
<th>Models</th>
<th>Description</th>
<th>Technology</th>
<th>Limits specs</th>
<th>Sizes</th>
<th>Accuracy</th>
<th>Repeatability</th>
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<tbody>
<tr>
<td><strong>L-Actuators</strong></td>
<td>ML Linear axis</td>
<td>Belt, Ball Screw, Roller, Rack</td>
<td>up to 5 m/s</td>
<td>45-60-80-90-120-135-160</td>
<td>± 0,01(S) - 0,05 mm (B)</td>
<td>± 0,01 mm</td>
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<tr>
<td><strong>E-Actuators</strong></td>
<td>Mech Value</td>
<td>Ball Screw</td>
<td>up to 1,5 m/s - up to 1700 N</td>
<td>16-25-32</td>
<td>± 0,02 mm</td>
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<td><strong>E-Actuators</strong></td>
<td>Mech Line</td>
<td>Ball Screw</td>
<td>up to 1,5 m/s - up to 2900 N</td>
<td>32-50-63</td>
<td>± 0,02 mm</td>
<td>± 0,01 mm</td>
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<tr>
<td><strong>E-Actuators</strong></td>
<td>Mech Force</td>
<td>HT Ball Screw</td>
<td>up to 1,5 m/s - up to 190 kN</td>
<td>50-63-80-100-125-150</td>
<td>± 0,02 mm</td>
<td>± 0,01 mm</td>
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<tr>
<td><strong>E-Actuators</strong></td>
<td>Mech Plus</td>
<td>HT compact Ball Screw</td>
<td>up to 1,5 m/s - up to 213 kN</td>
<td>50-63-80-100-125-160</td>
<td>± 0,01 mm</td>
<td>± 0,01 mm</td>
</tr>
<tr>
<td><strong>X-Actuators</strong></td>
<td>Mech Extreme</td>
<td>NSK Ball Screw caged</td>
<td>up to 1,5 m/s - up to 700 kN</td>
<td></td>
<td>± 0,01 mm</td>
<td>± 0,01 mm</td>
</tr>
<tr>
<td><strong>J-Actuators</strong></td>
<td>Robotic Joint</td>
<td>EtherCAT Planetary torque system</td>
<td>torque up to 300 Nm</td>
<td>14-17-20-25-32</td>
<td>± 0,05 *</td>
<td>± 0,01 *</td>
</tr>
<tr>
<td><strong>SM-Actuators</strong></td>
<td>SM-Series</td>
<td>Electrical sliders systems</td>
<td>up to 2 m/s (3G) - up to 1 kN</td>
<td>25-32-50</td>
<td>± 0,01 mm</td>
<td>± 0,01 mm</td>
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<tr>
<td><strong>T-Actuators</strong></td>
<td>Rotac Plus</td>
<td>Rotary tables</td>
<td>torque up to 10 Nm</td>
<td>48-65-85-100-130-200</td>
<td>±0.012 *</td>
<td>±0.06 *</td>
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### Robotics

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<td>Radar Diagnostic</td>
<td>EtherCAT</td>
<td>Axis and Robot</td>
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<td>RoboVu™</td>
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### Modeling & Diagnostic

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Disruptive innovation
A key factor to define organic growth

Our 20 years history attests a constant growth of company, products and technologies, often disruptive in the mechatronic market. We are forerunners in using ROS (Robotic Operating System) and patent technologies that change factories for the better (AwareVU™ for process control).

We constantly invest in R&D to obtain technologically advanced and disruptive solutions.

All our devices are high-quality, made to provide high performance and last over time.

Some of our products are labelled “NSK inside”.

Key features:
• Programmability and control of parameters such as acceleration, speed, repeatability
• Easy to maintain
• Real time control of the work cycle thanks to our diagnostic solutions

Innovation is the basis of our daily business, we create mechatronic and robotic solutions that address and anticipate market demands.

The use of ROS platforms and motion robotics tools, will permit a simplified integration into factories already prepared for these new technologies.

Thanks to the modularity approach of AutomationWare, our future cobots may be used in the most varied industrial activities, from small to heavy payloads in variety of areas of work. (ex: Large operating area for small payloads)

Not only innovative products, but future oriented solutions.
Actuators: 4.0 technology for top performances

L-Actuators

Actuators or linear axes of different sizes and for different loads

- **Sizes**: from 45 mm up to 160 mm
- **Translation**: screw axes, with ball screws, caged for fast applications, performing maximum speed and acceleration. Belt axes with mobile or fixed belt used as a rack.
- **Linear guide rails or rollers**
  for high payloads
- **Speed**: 2 m/sec (screw), 5 m/s (belt)
- **Positioning accuracy**: ± 0.05 mm (belt), ± 0.01 mm (screw)
- **Opportunity of getting significant lengths axes** for logistic applications

The right solution? Let’s find it together!

It is possible to put more axes together or combine them with other AutomationWare products, such as SM Actuators. The maximum flexibility to give you several configuration options, from XYZ Cartesian systems, for light or high payloads to solutions, for a fast and accurate Pick&Place solution. *(linear axes + SM-actuators)*.

A wide range of accessories enables the creation of single or multi axes solutions for a customized engineering.

L-Actuators, may support the integration of one or more robots on the same Linear Axis *(Robo-Line series)*
X-Actuators

Force and technology without compromises

New Extreme version for dynamic loads up to 700kN.

The ideal answer to extreme applications, where high thrust and/or long term activities are required (e.g. press type operations or plastic blowing).

The thrust technology is made with in cage NSK recirculating ball screws, to withstand the toughest working conditions. (www.nsk.com)

E-Actuators

The best portfolio of fully electric cylinders

Sizes from 16 mm up to 200 mm and different load capacities for tailored solutions according to the application:

- Mech Value
  16, 25 or 32 mm. Loads up to 1700 N
- Mech Line
  32, 50 or 63 mm. Loads up to 2900 N
- Mech Force
  50, 63, 80, 100, 125 or 150 mm. Loads up to 190 kN
- Mech Plus
  compact version for loads up to 213 kN
- All E-Actuators are ISO 15552 compatible
New robotic solutions:
Modularity and Technology at the customer’s service

**J-Actuators**

- 5 robot joints of different sizes according to the output exerted torque (14-17-20-25 or 32). Maximum torque up to 500 Nm.
- Possibility of controlling torque variations for possible impact up to single Nm (Cobotics Applications).
- Embedded 3D accelerometer to detect anomalous vibrations.
- Availability of sensors for many applications (Atex, CO₂, ...).
- High efficiency Torque Motor axially connected with a 0 backlash gearbox. Variable reduction ratio (up to 1/125).
- Breaking system and double encoder for an accurate position readout.
- EtherCAT-based management of sensors and motor, with drivers that can be controlled directly even on the ROS platform (Robot Operating System).
T-Actuators

New range of joint actuators for a **direct drive** high speed and precision robotics.

- Sizes: 14-17-20-25-32
- Through hole
- Controllable via bus EtherCAT
- Collaborative Diagnostic sensors
- Ideal for high productivity light weight robotic configurations

SM-Actuators

Sliders and rotary tables for fast **Pick&Place** applications, with a high operational reliability over time. Ideal for high intensity work cycles and for small works.

Choose AW robotic solutions for minimum response times, lower programming need, more safety.

- **SCARA** configuration for high positioning accuracy
- In combination with other AW products (e.g. axes or rotary actuators) for vertical and horizontal **Pick&Place** cartesian configurations (see general catalogue for more info)
- Availability of accessories such as cameras, grippers, …
SOFTWARE AND DIAGNOSTIC

AwareVu™

Ind 4.0 real time diagnostic system to detect vibration and temperature of each AW component installed in the system or in the production line.

Using an FFT algorithm, AwareVu™ analyses the vibration profile in normal operation and warns the controller of possible deviations or malfunction due to internal (Actuator) and external events (Machines).

The AwareVu™ box can be connected via Wi-Fi or USB. Parametric data transfer, also in the cloud, enables to analyse trends over time.

A sophisticated yet easy to use analysis platform

essential to avoid production standstills
New AutomationWare radar-based technology for dangerous contacts prevention (available from 2020). The on axial carriage a new radar technology will be installed (ML 135 RoboLine), this technology enables to detect people or things in the robots operational area, in order to avoid dangerous impacts.

The real time scanning of working area, compare the static profile zone, with the dynamic situation in operation. If the sensor detects people or things beyond of the programmed safe threshold, SafeVu™ slows down and/or stops the working axis to avoid accidents.

The ideal solution for collaborative robots on carriage, e.g. in automatic warehouses.

It is a software application based on ROS platform (Robot Operating System), to control 6 or more J-Actuators joints on a modular cobot configuration.

RoboVu™ forecasts the kinematics of modular and collaborative AutomationWare robotics configuration, drives electronics and safety devices to specifics tasks. (Available from 2020)
Our Partner

A widespread sales and distribution network enables us to support our customers all over the world.

We work with our business partners to offer increasingly innovative and high performance solutions, to best meet our customers’ need.

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