Automation Technology for Robotics (ATRO):
The perfect robot for every application

Compact multi-axis system: Modular, flexible and integrated

With ATRO, Beckhoff is presenting a new concept for robotics applications. This is a modular system from which the right robot kinematics can be put together extremely flexibly for any application. A highlight of the system is the internal media feed for data, power and fluids. This has been implemented in such a way that all axes are designed to rotate endlessly.

With ATRO, users can create almost any robot design for their application from the modules provided – from a simple 1-axis rotary indexing table application and delta kinematics, through to multi-axis articulated robots. Beckhoff's holistic perspective is decisive for simple commissioning and handling, because only the direct integration of the robot system into PC-based control enables a truly optimized complete solution for the machine or plant. This reduces the number of controls needed on one industrial PC, even with multiple robots.

ATRO kinematics are made up of active joints – the motor modules. The motor modules are available in different designs: straight modules in I-shape or angled modules in L-shape, which are designed in five power sizes. Each motor module forms a complete drive system for one axis of the robot. The only external components required are a power supply and a control, which significantly reduces the space required in the control cabinet. In addition to the active modules, there are connection modules without their own drive:

– base modules as a base including the media feed,

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– link modules with I, L and Y-shapes for implementing individual robot configurations,
– system modules that can be used to integrate additional functions such as a camera.

Advantages through internal media feed

All modules are interconnected via the ATRO interface, which guarantees a rigid connection and also passes through the media that is fed in. Data, power and fluids (compressed air, vacuum or water) are thus guided internally through the modules in the ATRO kinematics. Conventional robotic solutions, on the other hand, route them externally and are therefore limited in rotation and use of the workspace.
This limitation is completely eliminated with the Beckhoff solution – each axis can be rotated endlessly, which enables better Cartesian accessibility as well as short positioning paths. Furthermore, interfering contours, e.g. due to externally located cables and, especially in the case of cobots, interfering torques, are avoided by means of external media feed. In addition, the media are supplied again for a customer application via the ATRO interfaces, and almost any robotic tools can be easily integrated, such as sophisticated gripper systems.

System integration without limits

With ATRO, Beckhoff offers a highly flexible robot system that has all essential machine functionalities due to its deep integration into the TwinCAT automation software. These include, for example, image processing for sophisticated applications ("bin picking"), improvement of motion performance through machine learning or direct cloud integration for analysis and maintenance. The use of open interfaces and universal standards enables plug-and-play of the created robot configuration as well as simple engineering. This variety of functions concentrated in one control minimizes hardware costs and also ensures maximum synchronization of all components as well as low delays in

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data communication. This also includes the direct combination with intelligent transport solutions such as XTS and XPlanar. Other areas such as communication, functional safety and the actual application can be created with little effort. This not only enables the configuration of an extremely powerful overall solution with maximized system output, but also a previously unattainable reduction in machine footprint.

➔ **www.beckhoff.com/atro**

Press picture:

Picture caption:
With ATRO, a robot solution can be adapted precisely to the task with any number of axes, and is freely scalable, modifiable, and expandable.

Press kit:
www.beckhoff.com/media/downloads/press/pr102022_beckhoff.zip

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