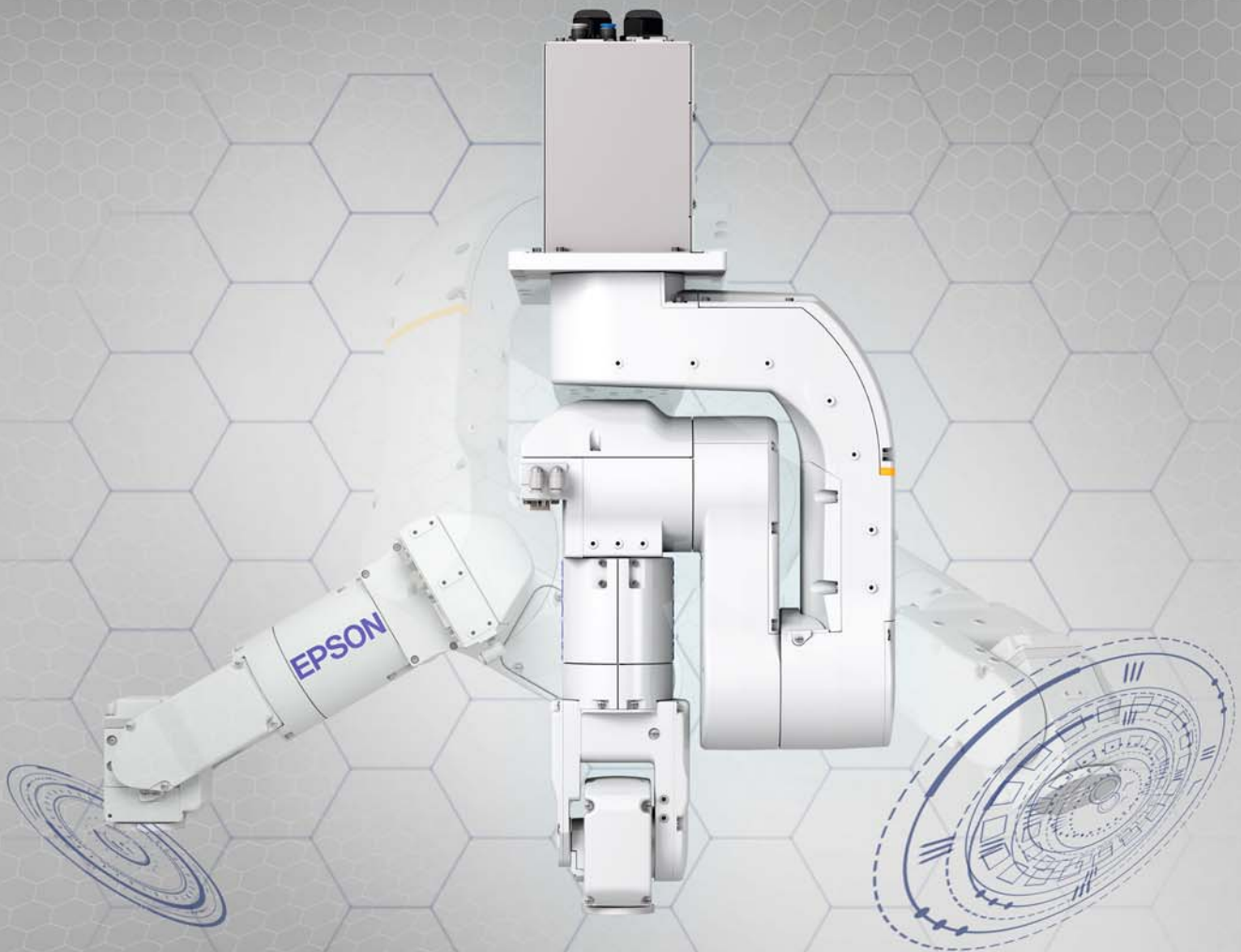
EPSON 6-AXIS ROBOT PROSIX N2

MAXIMUM EFFICIENCY
MINIMUM FOOTPRINT



EPSON®
EXCEED YOUR VISION

THE NEW N SERIES FROM EPSON

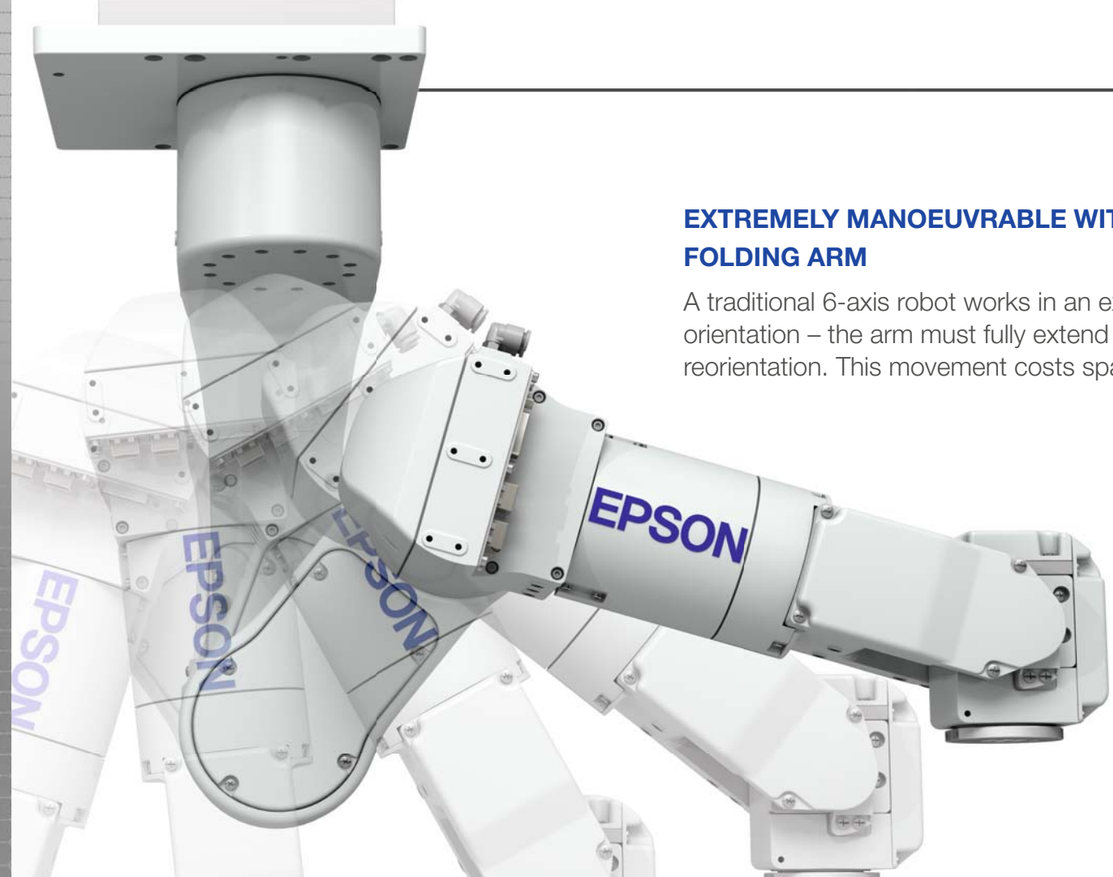
THE MOST COMPACT 6-AXIS ROBOT EVER BUILT

Space costs. Therefore robotics requires kinematics that enable increased productivity in even smaller work cells.

The revolutionary new robot from Epson – the extremely agile N2 – occupies less space than any other 6-axis robot ever built. Able to reach every point within its working area without wasteful extra movements, the new N series covers an action field which would normally require a 6-axis robot with a significantly longer arm.

QMEMS® Sensor-technology inside!

The reason for the unique flexibility and speed: a totally new joint geometry with a folding arm.



EXTREMELY MANOEUVRABLE WITH FOLDING ARM

A traditional 6-axis robot works in an external orientation – the arm must fully extend for reorientation. This movement costs space and time.

In the new Epson N2 series, the second axis is oriented inwards, thus moving the centre of rotation downwards. This means the second axle shaft can travel through the zero position.

This manoeuvrability over a very small footprint is unheard of until now, and leads to highly efficient work processes.

FACTS & BENEFITS:

- World's first 6-axis robot with folding arm – compact and space saving.
- Short cycle times via "short cut" movements.
- Needs a floor area of just 600mm, a savings of 40 % compared to conventional 6-axis robots.
- Virtually no risk of collision with other peripherals or the work cell thanks to optimum mobility and fewer interference contours.
- Maximum precision and consistently stable quality thanks to Epson QMEMS® sensor technology and Epson Smart Motion.

FOOTPRINT: MINIMAL
PRODUCTIVITY: MAXIMUM

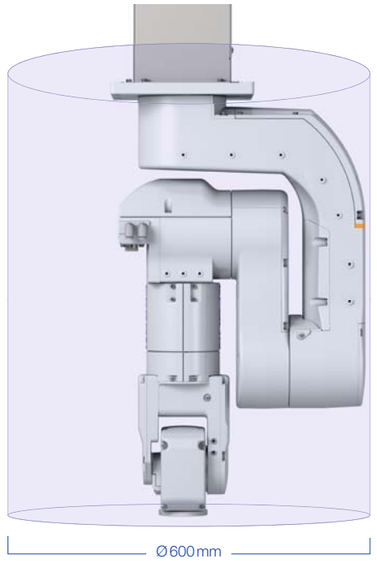
The Epson N2 provides four times more productivity per unit area than a conventional 6-axis robot.

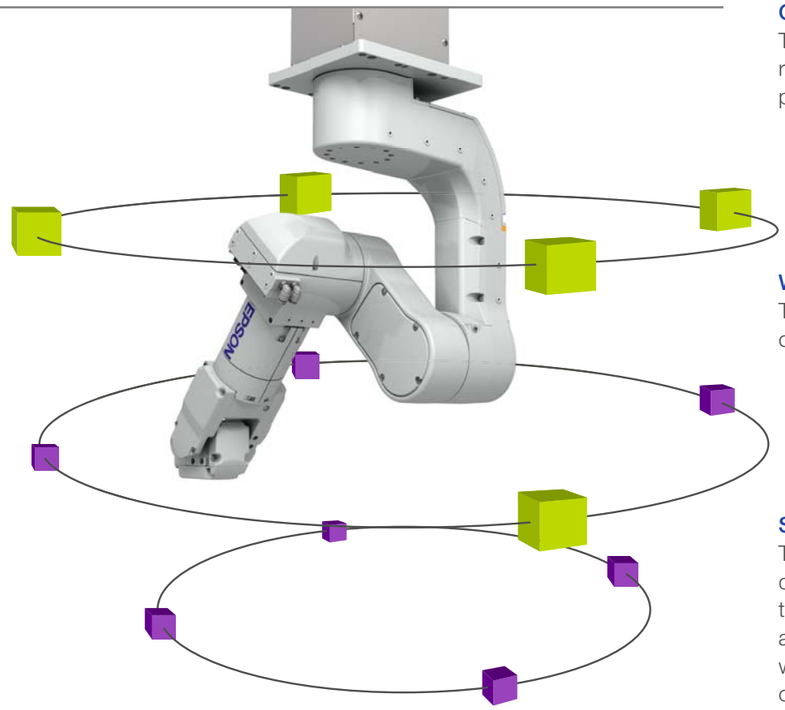
Epson ProSix N2-A450SR

Range: 450 mm
Payload: 2.5 kg
Applications include: machine loading and unloading, labelling, packaging and picking, assembly, soldering and welding, palletizing

Suitable for use in these sectors / industries (and more):

- Automotive
- Electronics
- Machine tools
- Medical devices
- Semiconductors
- Plastics & metal
- Foodstuffs





Overhead installation
The overhead installation means that the robot's own mounting base is no longer a problem.

Wiring inside the robot
The wiring is routed inside the robot – without obstacle contours.

Short travel distances
The Epson N2 brings workpieces to their destinations in the fastest possible way thanks to its short travel distances (shortcuts) and provides 100 % coverage of all positions within its action field. And with a repeatability of ± 20 microns.

NIMBLE, FLEXIBLE AND SENSITIVE

Highly manoeuvrable axis 5
The robot's compact "wrist" ensures smooth motion and enables a wide range of working angles.

Finesse in force-guided applications: Epson Force Sensing (optional)
The Epson Force Sensor is based on piezoelectric quartz crystals and is particularly shock and temperature resistant. It thus guarantees excellent force and torque absorption in all six degrees of freedom – with an extremely low interference signal.

Predetermined pressing forces and tolerances can always be reliably maintained, thus reducing elaborate quality control and readjustments to a minimum.

ONE FOR ALL: EPSON RC700-A CONTROLLER

Extremely compact, outstandingly economical and powerful: the Epson RC700-A controller can communicate with fieldbus systems, and is open for connection of additional robots sensors, actuators, and conveyors.

YOUR ROBOTS ARE ALWAYS IN THE PICTURE

INTEGRATED IMAGE PROCESSING WITH EPSON COMPACT VISION

Acceleration of production processes, reduction of errors to a minimum, lowering of costs – even the most demanding visions can become reality with integrated Epson image processing.

Single source kinematics, control and image processing

The Epson Vision Guide 7.0 software is integrated within the Epson RC+ development environment. This results not only in reduced set-up time, but vision sequences can also be created in just a few clicks. Programming uses simple drag & drop with no need for additional editors.

Robot control and test tasks/positioning are interlinked with no interface problems. Moreover, robots and image processing communicate in milliseconds. Epson image processing supports high-resolution cameras and colour cameras.

Compact Vision from Epson, ideal for:

- Measurement
- Quality inspection/error detection
- Parts positioning even for manufacturing variations and varying locations
- Complex product tracking on conveyors

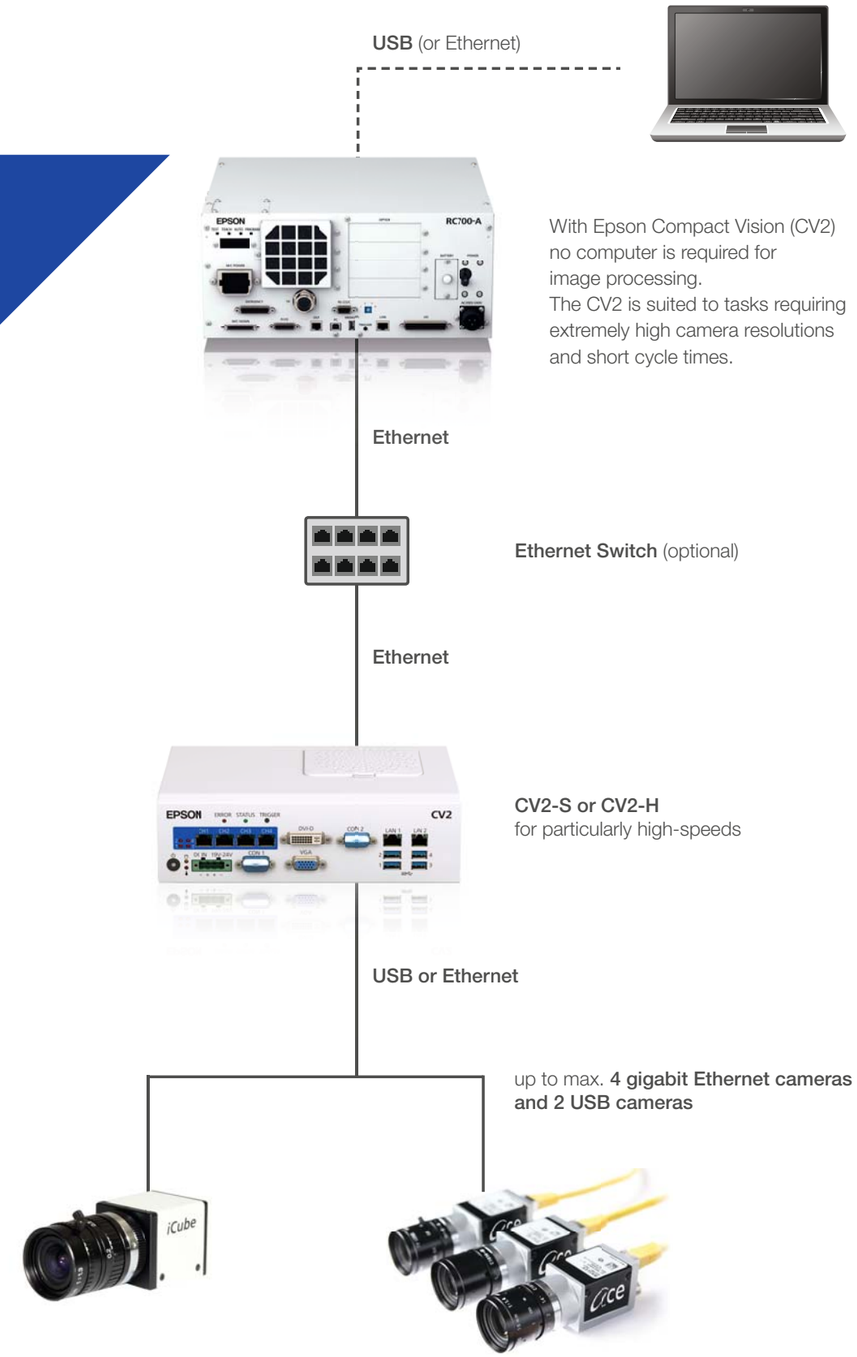
Epson image processing systems are available in **various versions.**

EVERYTHING IN RANGE, EVERYTHING IN VIEW:

convenient mobile control and display with the Teach Pendant **TP3**

This mobile terminal has an ergonomic, flat housing with a brilliant and high-contrast 10“ TFT LCD display. Fast processors enable sophisticated visualisation and operating applications.

EPSON COMPACT VISION CV2 DESIGN EXAMPLE



DESIGNS OF THE **EPSON PROSIX N2**

	N2-A450SR
Design	Vertical articulated arm
Load capacity	2.5 kg
Range	max. 450 mm
Repetition accuracy	+/−0.02 mm
Permissible moment of inertia	**J4** 0.20 kg*m² **J5** 0.20 kg*m² **J6** 0.08 kg*m²
User cabling	**Electrical** D-Sub connector for 1 x 15-pin plug RJ45 connector for 1 x 8-pin plug (Ethernet) Connector for 1 x 8-pin plug for force sensor **Pneumatic** Connectors for compressed air supply 2 x Ø 6 mm
Weight	19 kg
Controller	RC700-A, RC700DU-A*
Mounting	**Ceiling/floor** (optional)
Ambient condition	Protection class IP40 (standard)

J1 = Axis 1
J2 = Axis 2
J3 = Axis 3
J4 = Axis 4
J5 = Axis 5
J6 = Axis 6

*** Please check availability with Epson**

Package

– Epson robot and control
– Epson RC+ program DVD including simulation software
– Mounting bracket for the robot control
– 3-m motor and signal cable
– 3-m motor cable for the robot control
– Plug for emergency stop
– Plug for standard inputs and outputs
– Plug set for user cabling
– Air connections (both straight and 90° angled)
– Manuals on CD
– Installation/safety manual
– Bridging plug for the brake release unit

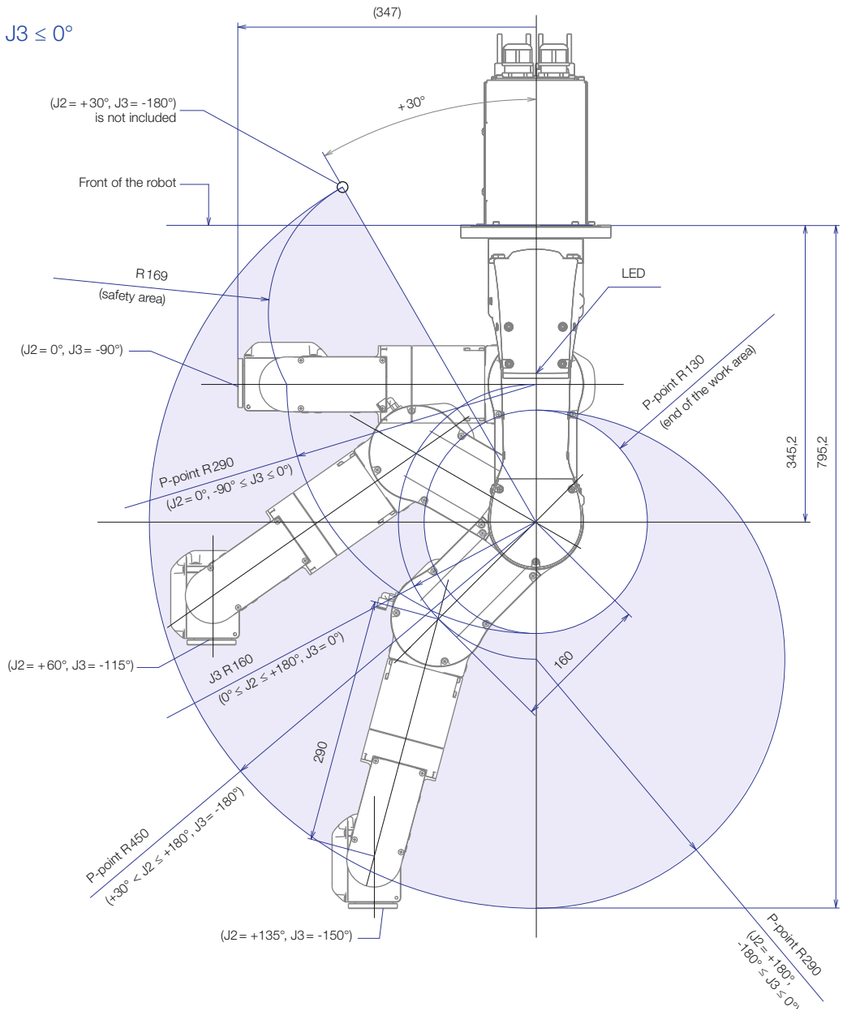
Manipulator options

– Longer power and signal cable (5 m/10 m)
– Brake release unit
– Mounting bracket (floor)

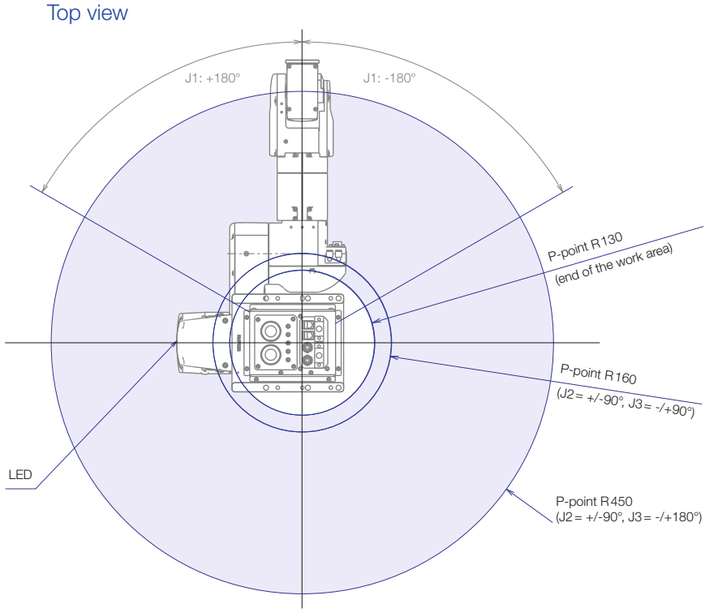
Installation

The Epson 6-axis robots of the N2 series are usually mounted on the ceiling to take full advantage of their unique mobility and very small footprint. Depending on the application, a flexible floor mounting solution is also possible.

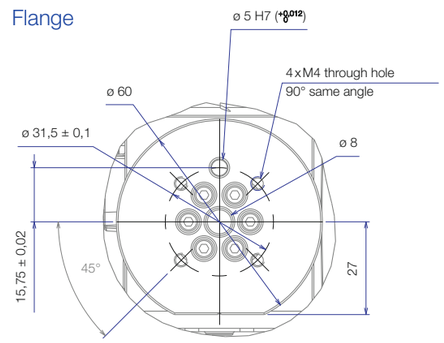
Side view
if 0° ≤ J2 ≤ +180°, -180° ≤ J3 ≤ 0°



Top view



Flange



SIMULATION
OF ROBOT CELLS

Good preparation is everything. Plan and visualise all procedures in your production process, validate your program offline initially and carry out troubleshooting and editing work without leaving your desk. With the Epson RC+ Simulator, which is included in the software package, you save time and money – throughout all phases.

PHASE 1
DESIGN

You can plan your robot cell in full size in advance and assess the expected cycle time for your application. This verifies feasibility before a single part for the system has been produced. System expansions can also be prepared in the simulation software to reduce down time.

PHASE 2
INTEGRATION

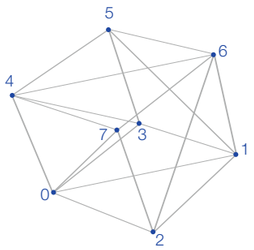
The program validation process is completed offline before the robots are delivered. This enables you to create programs in parallel – even complex motions can be displayed and evaluated. Collision risks are thus identified and equipment damage prevented.

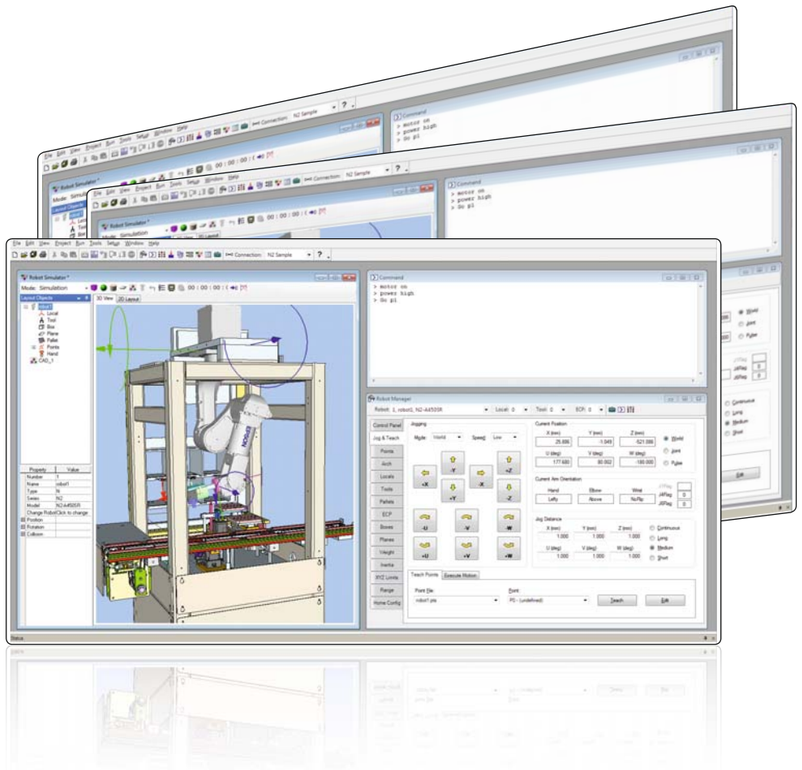
PHASE 3
OPERATION AND MAINTENANCE

Troubleshooting or program modifications can be carried out conveniently from your desk. Collision detection, reachability checks and robot motions can be visualised in a 3D layout.

EVEN SIMPLER DESIGNS:
USING THE **CAD-TO-POINT**-FUNCTION!

The CAD-to-Point function allows CAD data to be converted into robot points.





ABOUT EPSON

Epson Robotic Solutions is a leading supplier of high-tech robot systems that are renowned worldwide for their reliability. The product range includes, in addition to the Epson 6 axis robots, SCARA robots, the Epson-developed Spider, the Epson LS entry-level SCARA robots, as well as image processing and controls.

Technological pioneer

- In-house research and development department for automation processes
- One of the most comprehensive model ranges of high-precision industrial robots in the world
- **1982**
  Epson SCARA robots are freely available in Japan for the first time
- **1986**
  Epson launches the first class-1 clean-room robot
- **1997**
  Epson releases the first PC-based controller
- **2008**
  Epson invents the right or left arm-enhanced SCARA robot G3
- **2009**
  Epson invents the Spider – a unique SCARA robot with no dead zones
- **2013**
  First application of Epson QMEMS® sensors in robotics, thus reducing vibrations in 6-axis kinematics
- **2014**
  Epson Compact Vision CV2: Epson's own ultra-fast image processing computer
- **2016**
  Epson N2 series: extremely agile and space-saving 6-axis robot with folding arm

Pre and after-sales support

- Feasibility studies for maximum planning and project security
- Support for planning and implementation
- Introductory seminars, programming/maintenance courses, operator training
- Inspection and individual maintenance concepts
- Hotline service, on-site repair service
- Central spare part stocking

EPSON INDUSTRY SOLUTIONS CENTER – **WE'LL FIND YOUR SOLUTION!**

Epson
Industrial
Solutions
Center

Experience all our Epson robots in action. In a workshop cell you can build, simulate and improve your automation application with help from our experts. The cell can be controlled and networked using all conventional fieldbus systems. In addition we can supply you with modern peripherals such as a vision and conveyor tracking system.

WOULD YOU LIKE TO ARRANGE AN APPOINTMENT?

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OR SEND AN E-MAIL TO
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