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**GEOMETRIC  
SOLUTIONS**

# Robcad

## Robotic and automated workcell simulation, validation and offline programming

### Benefits

- Increase manufacturing quality, accuracy and profitability
- Reduce labor hours and process engineering lead time
- Enable better use of production equipment
- Reduce production costs
- Shorten production ramp-up time through validated processes

### Features

- Interoperability with major MCAD systems
- Extensive robot libraries
- Component and complex kinematics modeling
- 3D workcell layout definition
- Robotic path definition with reachability check, collision detection and cycle time optimization
- Motion simulation and synchronization of multiple robots and devices
- Download/upload optimized programs to/from the shop floor

### Summary

Tecnomatix® Robcad software enables the design, simulation, optimization, analysis and offline programming of multi-device robotic and automated manufacturing processes in the context of product and production resources. It provides a concurrent engineering platform to optimize processes and calculate cycle times. With Robcad, you can design life-like, full-action mockups of complete manufacturing cells and

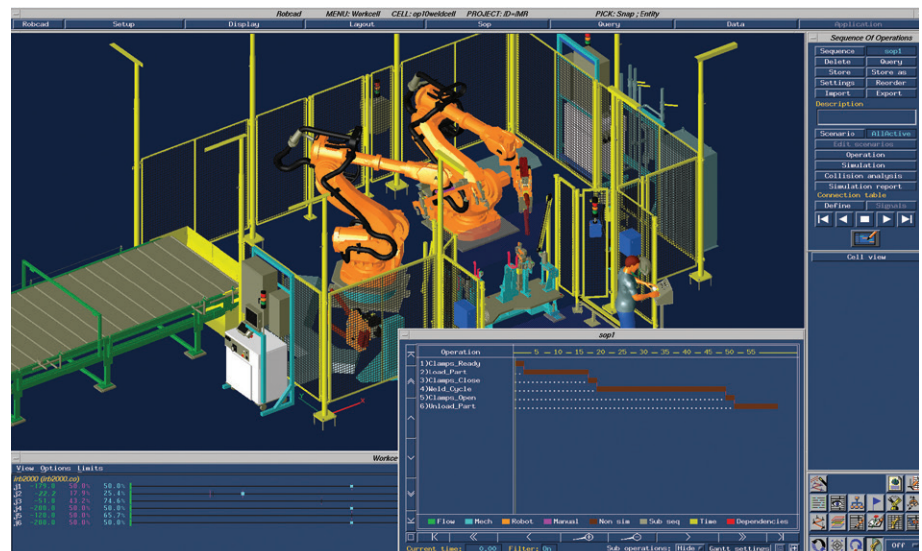
systems. Robcad enables manufacturers to flawlessly introduce automated processes by allowing manufacturing engineers to virtually validate automation concepts upfront.

### The business value of Robcad

Robcad fully integrates core technologies with a powerful set of process-specific applications for a wide range of manufacturing disciplines, including spot welding, arc welding, painting and spraying laser- and water-jet cutting, drilling and riveting, and human operations.

Robcad is an industry standard, with thousands of seats in production use, helping users improve manufacturing processes by cutting costs, increasing quality and accelerating time-to-market.

Robcad serves manufacturing process design teams, including contractors and their supply chain, as well as service



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companies (system integrators and design houses) within automotive, aerospace, utilities and heavy equipment industries.

## Graphic environment for analyzing, optimizing and verifying manufacturing automation

Robcad allows manufacturing engineers to graphically study and manipulate workcells that can then be analyzed, optimized and verified before investment in costly production equipment.

Robcad simultaneously models all physical characteristics of robots and other automated devices, enabling users to verify accessibility limits while developing a planning concept.

Preliminary setups of automated production can therefore be designed before launching the manufacturing process.

## Interoperability with CAD systems

Robcad fully integrates with major industry MCAD systems, including native data from Siemens PLM Software's NX™ solution and supports direct CAD interfaces or neutral formats such as JT™, IGES, DXF, STL and STEP.

## Workcell layout design and modeling

In addition to providing the most comprehensive library of robots available, Robcad facilitates easy modeling of additional robots and automation.

Robcad layout features enable the design and construction of 3D environments, while its robotics capabilities enable robot reachability checks.

## Motion simulation for robots and mechanisms

Robcad generates configurable motion plans based on the controller features. It allows calculation of cycle times, analysis of real-time performance and saves testing time.

The RRS (realistic robot simulation), which is based on using the real controller motion planning software, offers extremely accurate cycle time calculation.

## Collision detection

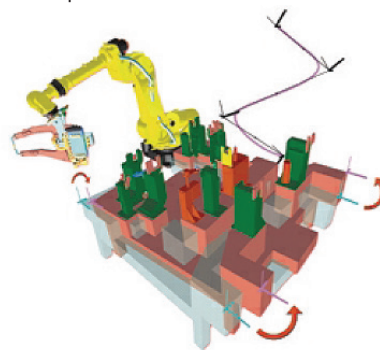
Robcad can dynamically detect collisions during robot simulation and motion, preventing costly damages to equipment.

## Offline programming (OLP)

Robcad OLP enables accurate simulations of robot motion sequences and the delivery of machine programs to the shop floor. Robcad interfaces to most robots (50+ standard interfaces representing over 200 controller configurations), adjusting the program to all specifications of the controllers. Controller-specific information, including motion and process attributes, can be added to the generated robot paths. Robcad OLP then generates the program, which is downloaded to the real controller. Programs can also be uploaded for re-use and optimization.

## Robot calibration improves positioning accuracy

Robcad provides calibration functionalities and interfaces to accurately align digital cell models with actual layouts. After downloading the program, the robot will accurately move to defined locations in the cell without need for touchups.



Robot calibration: aligning digital and real worlds.

## Open system environment for customized program functions

The Rose Development Kit offers an open system environment for developing customized features, macros and applications. It enables easy, fast and efficient programming and provides

high-level access to all Robcad proprietary core technologies and algorithms, including geometry, kinematics, motion planning and graphics.

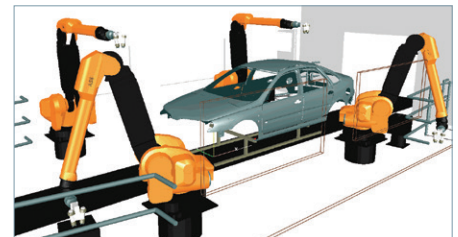
## Automatic path planning

Robcad generates collision-free robot and part assembly paths by using automatic path planning technology.

In a populated environment, the trajectories can be found easily and automatically, helping to increase planning productivity.

## Documentation

Editable HTML reports containing images and data extracted from the workcells, with subreports for all included resources and manufacturing features graphical views and animations are generated automatically. Robcad can also generate drawings of cell layouts and output movies.



Robcad provides tools for dedicated processes, such as welding, cutting and spraying.

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