

AUTOMAPPPS Software

FASTER ROBOT PROGRAMMING *Offline/OLP*

C O N V E R G E N T

I N F O R M A T I O N

T E C H N O L O G I E S

AUTOMAPPPS SW fully- or semi-automatically programs robots for surface processes such as:

- painting / powder coating
- grinding, sanding, polishing
- cleaning with contact and remote

It simplifies or automates programming of robots

- offline applications of high complexity
- reactively in seconds
- 100% and spots (repair / MRO)
- in narrow cells and with multiple robots

Available software versions are:

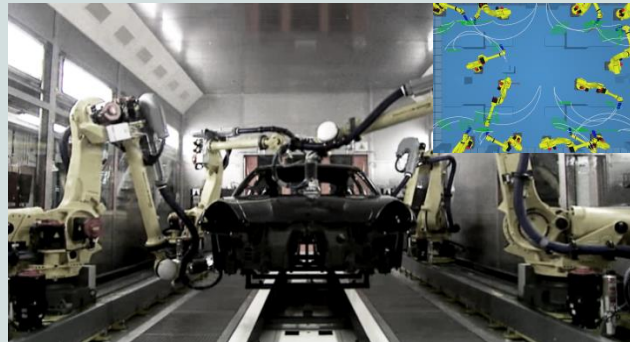
- AUTOMAPPPS OLP for offline programming also at very high variants
- AUTOMAPPPS REACTIVE for programming robots automatically from sensor input or IT input

proven in millions of robot programs generated!

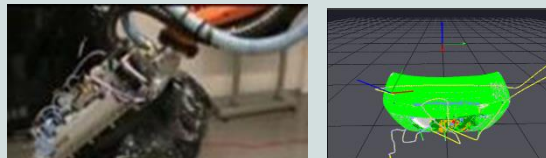
Off-line Programming w. WYSIWYG

AUTOMAPPPS OFFLINE offers faster and convenient robot offline programming using CAD or other data about the workpieces for programming of robots and tasks. Automated collision avoidance and robot motion planning simplifies dealing with the robots itself – especially for users that are not frequently programming robots as well as for experts when dealing with narrow multi-robot cells and line-tracking. WYSIWYG simulation of the processes allows to predict and validate the result even before the cell is set up and reduces test-runs required. Advantages:

- minimized time & costs for robot programming
- simple use for non-experts
- embedded process know-how
- reduced testing and non-productive time
- reduced cycle-time, space & HW requirements
- cost efficient line tracking & multi-robot cells
- ideal for very high variants & small lot sizes



Examples for robot offline programming of multi-robot grinding. Main image courtesy of ASIS GmbH.



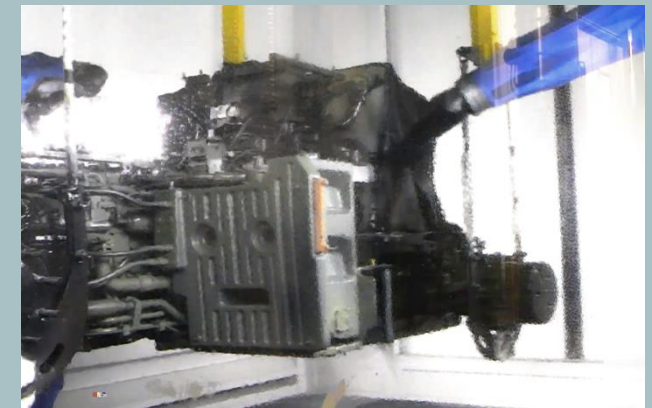
Example WYSIWYG process simulation: contact-based cleaning prior to painting. Simulation covers dust-removal, re-contamination, sequence- and speed effects. It replaces / reduces test-runs.

OLP for high variants – scales to 10-thousands of parts

AUTOMAPPPS OFFLINE has proven to scale up to programming even thousands of variants of parts in painting applications.

Two approaches are supported:

- Parts build up of several components with very high variations
- Adaptation to changing dimensions of parts



Example for robot offline programming and optimization – for complex parts and very high variations

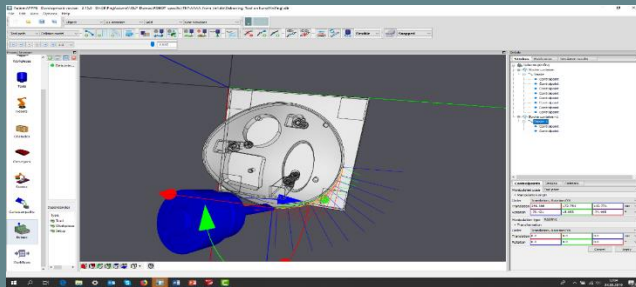
The software does support the user during OLP with different features:

- automatic adaptation of tool-paths to changing dimensions
- with and without adjusting of path-offset
- collision avoidance of tool
- adaptation / re-planning of collision-free robot motions
- multi-variant programming of several parts at the same time
- validation of collision free against other variants
- minimal effort for defining programs
- minimal efforts for optimization

CAD feature-based programming

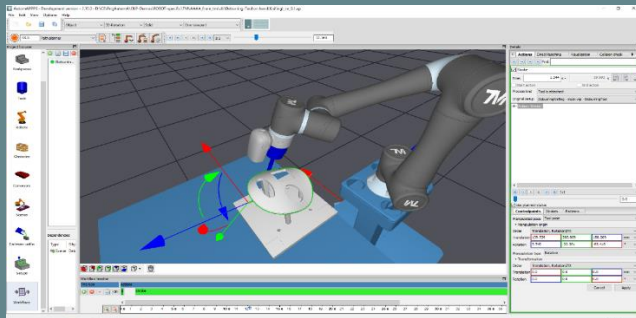
Using CAD features, programming processes becomes faster, easier, more accurate, e.g.:

- trimming, deburring, water cutting, cutting
- Weld-seam grinding, welding, dispensing



CAD features for faster programming of edge-/feature-based tasks.

Selecting the feature mode for defining tool-paths and simply clicking in the vicinity of the feature you want to process – and the tool follows that feature automatically.



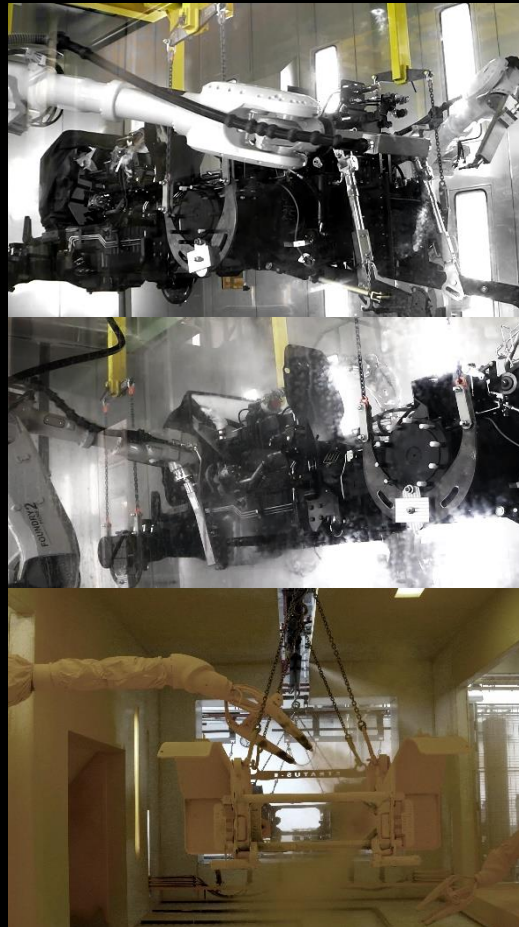
Treating with a cobot (force-controlled) in simulation and real.

Process models

Processes optimally supported by simulation and process modules (options):

- powder coating & wet painting
- grinding + polishing
- cleaning contact (brushes / “robot-sword”)
- cleaning non-contact (water, CO2)
- drying, sandblasting, shot-blasting
- surface inspection / paint inspection, 3D vision
- and many more...

Other processes via PlugIns or on request.



Example processes: cleaning, drying, powder-coating. Bottom image courtesy of Jungheinrich Moosburg AG & Co. KG.

Requirements

PC (Desktop / Notebook, IPC) with

- 8 GB RAM
- 100 GB HDD (free)
- Entry-level 3D graphic card
- Win 7,8,10 (ask for Linux)

Data-formats:

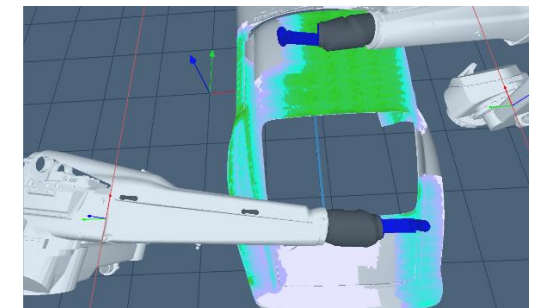
- STEP, IGES, JT, STL
- CAD or sensor

Robots:

- 20 producers supported
- Native robot code exported – ready to upload

License models

- With dongle (easy PC/Notebook change)
- Permanent and temporary (for rent) and trials
- 12 months free support and SW updates, can optionally be extended



Contact:

Convergent Information Technologies GmbH
Schulstraße 2, 4053 Haid, Austria
Tel: +43 681 107 22 671 / +49 151 2109 7292
office@convergent-it.at
www.convergent-it.com

Regional Distributors

See: www.convergent-it.com/contact/

Automatic collision free motion planning

AUTOMAPPPS creates collision free robot motions automatically (basic version).

- Robots with 6 or 7 axes
- With rotation tables
- With additional axes

With AUTOMAPPPS you will not have to bother with collisions or singularities.

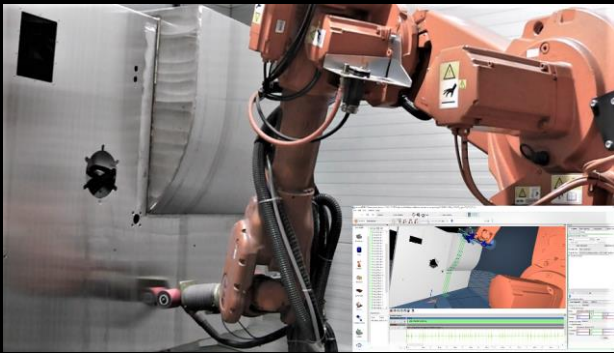


Image: Semi-automated programmed grinding of large parts in narrow cells with additional axes.

Optionally AUTOMAPPPS can create collision free motions even for line tracking without additional axes – and can reach inside moving parts.

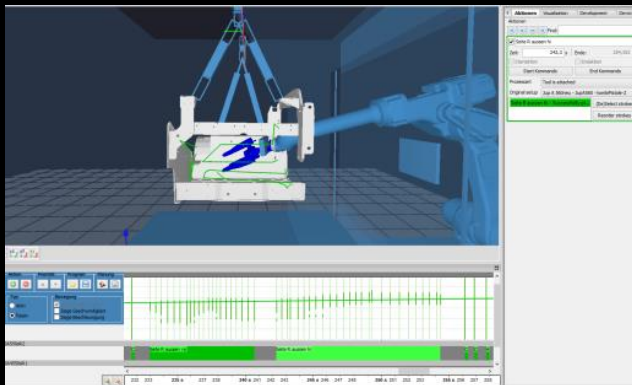
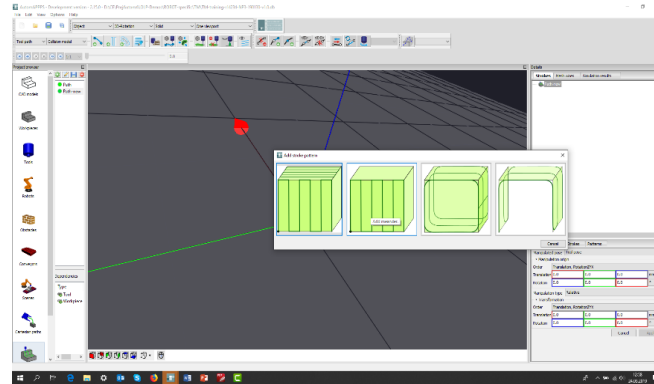


Image: line-tracking inside moving parts and between chains.

Patterns and Macros for higher level of graphical programming

Create tool-paths at the highest possible level, with easy common use macros that are

- Fast to define
- Fast to adapt
- Self-adapting
- Easy to re-use



Quicker start: some of the standard patterns available to define treatment of larger portions of the parts at once.

Beyond standard OLP

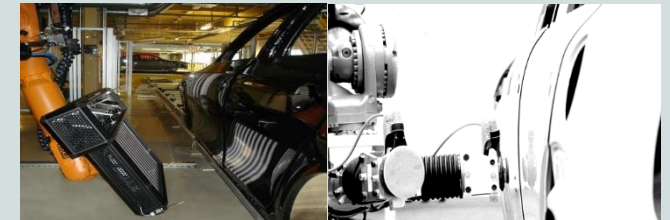
"No No size fits all" and "no solution fits all". If your application really is special, features that accelerate programming at other companies may not serve you best. Having all code in hand and working closely together with our customers to solve their challenges, we offer customized features or task information imports from other sources that are ideally matching your needs:

- implement what you really need
- how you really need it
- easy to use
- in a timely manner
- in a pragmatic approach
- affordable, with fast/high ROI
- future-proof

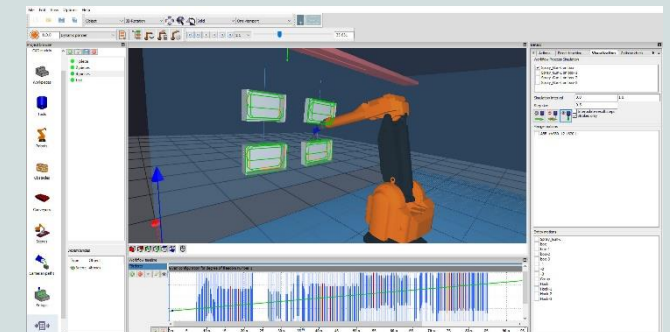
Beyond OLP: AUTOMAPPPS Reactive: Programming in Seconds

100% automated programming in Real-Time: Generate robot programs within seconds - up to 1000 times faster than conventionally. Automate extreme variant processes not thinkable otherwise: MRO, vision-based deburring, shape corrections, or touch-up and spot-repair of defects detected seconds before. Advantages:

- automates novel, reactive applications
- automates lot-size 1
- compensates very large pose deviations
- supports cost-efficient line-tracking
- minimal reaction time
- automatic scheduling
- reduced cycle time



Spot-repair and MRO. Images courtesy of Micro-Epsilon Messtechnik GmbH & CoKG and ATENSOR Engineering and Technology Systems GmbH



Visualization of painting multiple parts in rack. Automatic generation for new, different parts and positions in the rack