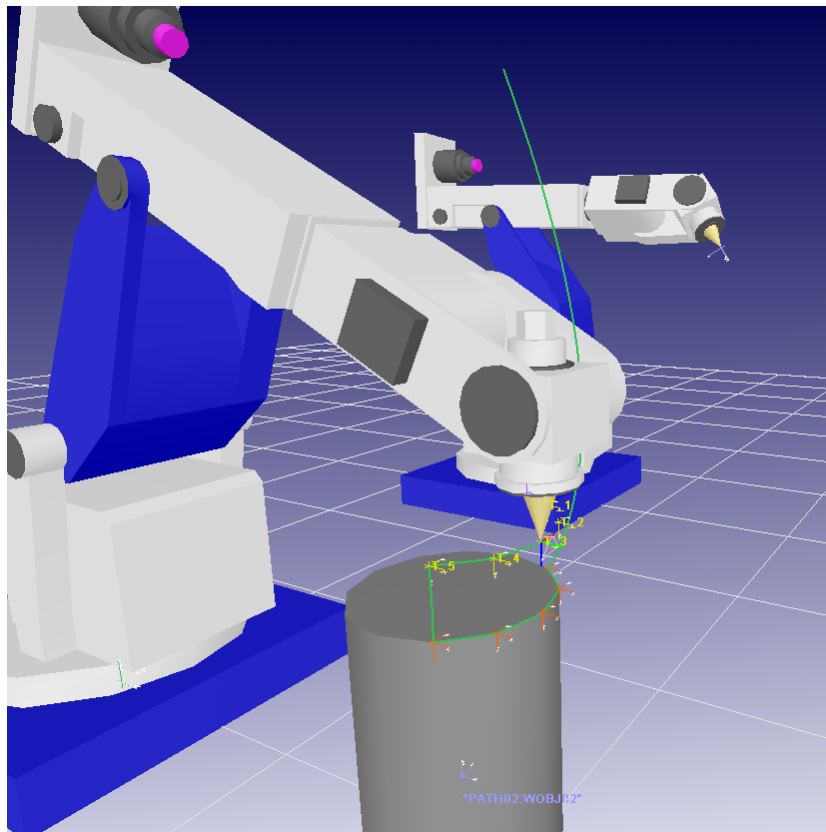


# Update

## EASY-ROB™ V4.305



December 2006

Version 1.1

# EASY-ROB™

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# EASY-ROB™ V4.305

## The current Version

A further milestone is created - the version EASY ROB™ V4.305 contains a multiplicity of new functionalities.

Apart from small changes and/or extensions of functions already existing, there are also completely new functionalities - e.g. the possibility to shift or rotate the system floor, or the new functionalities to sort objects and tags.

Beside the extension of the robot library with new robots of DENSO and MITSUBISHI we extended as well the CAD import interface, we simplified the creation of AVI's and we implemented the preliminary stage for the Multi Prog ability.

But like previous versions, this version is only a further milestone. Despite ever more complex becoming processes and constantly growing requirements, our development continues - the goal is to provide a tool which makes planning and simulation tasks easier for the user.

We would like to thank our customers and users, who send suggestions and requirements for further development

Thank you

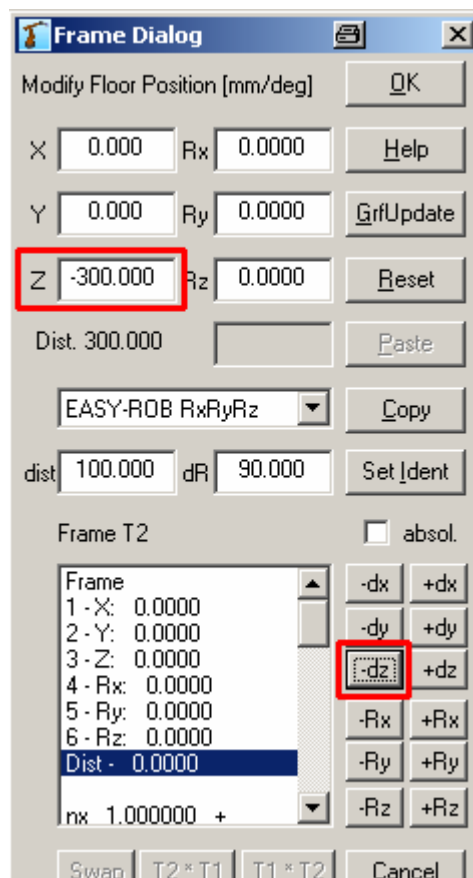
Stefan Anton

EASY-ROB  
3D Robot Simulation Tool

## Positioning of the floor

With this version of EASY-ROB you are able to change position and orientation of the floor in EASY-ROB.

Call the Fame Dialog with the menu „View | Floor | Floor Position“.



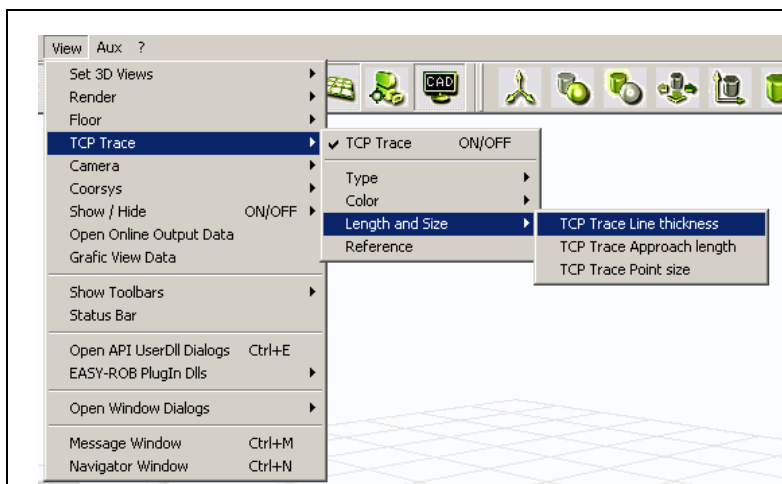
Use the buttons  
„dx, dy and dz“ bzw „Rx, Ry und Rz“  
To shift and rotate the floor.

The position of the floor can be stored in the  
Environment-file „easy-rob.env“

## TCP Trace

For the TCP Trace you are able now to change the length, the thickness and the reference.

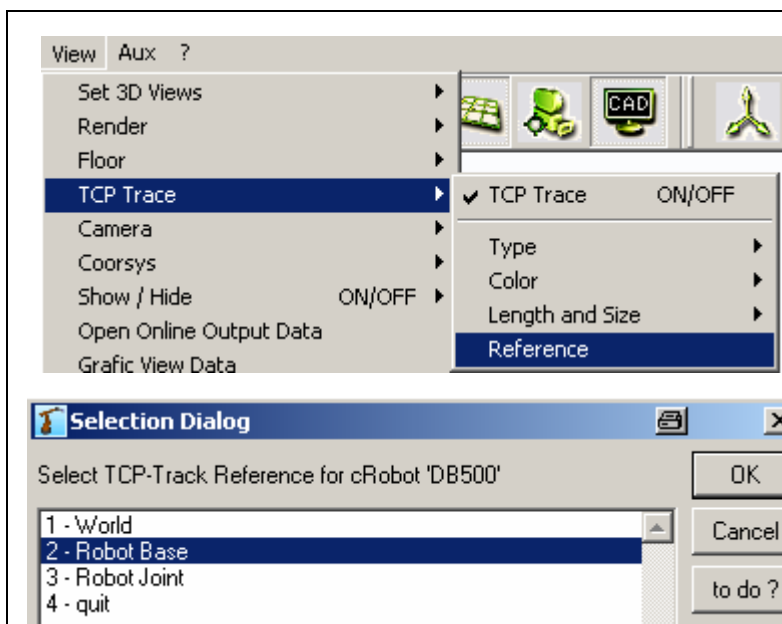
### Change Length and Size



Use the menu „View | TCP Trace | Length and Size“ to change the corresponding attributes

Select an item from the submenu and insert the value.

### Change the Reference



Select the command Reference and then the reference where you want to attach the TCP Trace to.

## Tag Window - New functions for Tag-Points

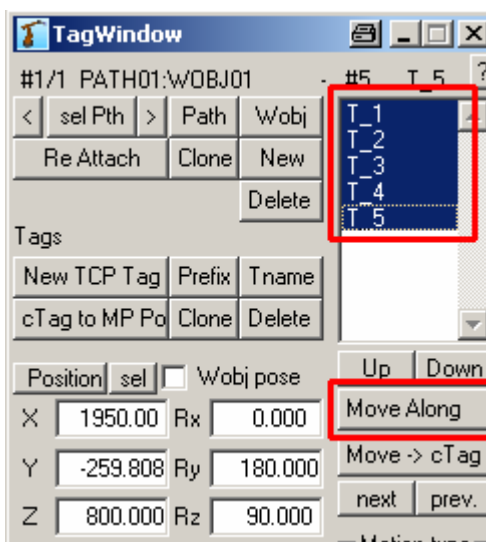
The new functions for working with Tag Points and Paths – e.g. shift more than one Tag or clone Tags into a new Path – will make the daily work easier.

In detail we are talking about:

- multi select of Tag Points (all or single like only TAG\_2 and TAG\_4) by mouse
- multi select of Tag Points by keys „Ctrl + A“
- copy and paste of Tag Points by keys „Ctrl + C“ und „Ctrl + V“
- copy several Tag Points into another Path
- delete Tag Points by key „Del“
- sort Tag Points by „Up- and Down buttons“
- Export of Tag Points

1. Load the work cell „tag\_functions.cel“
2. Open the Tag Window by double click on „SEL TAG“ or by menu Tags | open Tag Window“

### Multi selection of Tags



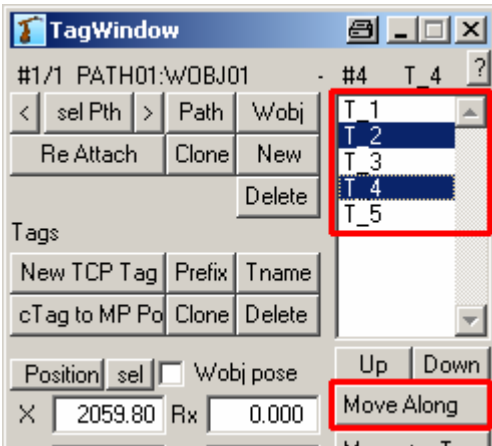
Select the whole list by:  
„Shift + click onto the first Tag“,  
keep „Shift“ and click the last Tag

Or use „Ctrl + A“  
To get the whole list.

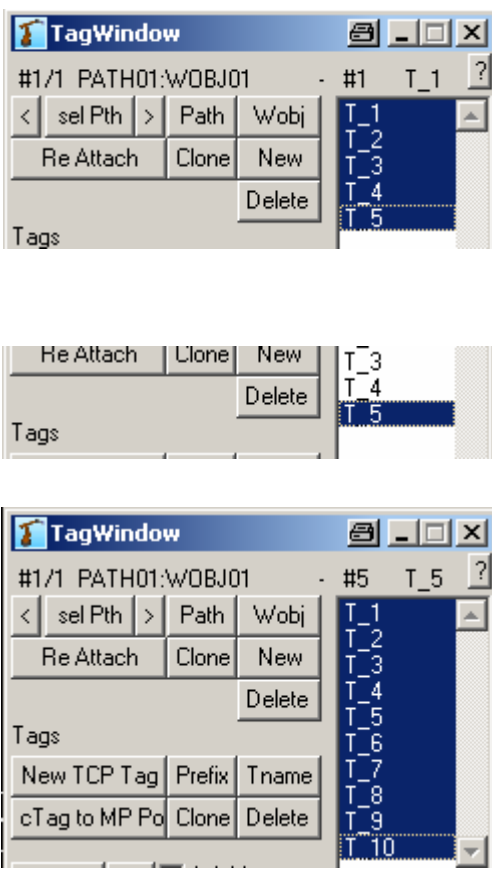
Let the robot run along the path with „Move Along“

-> the robot is moving along all Tags

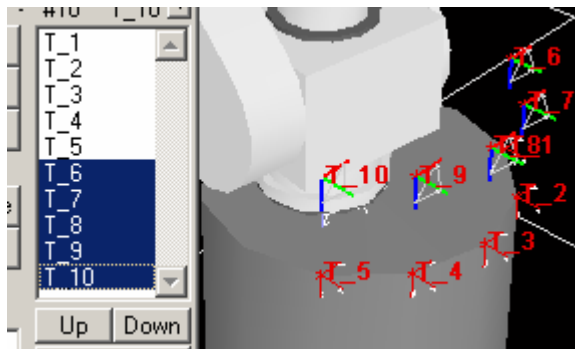
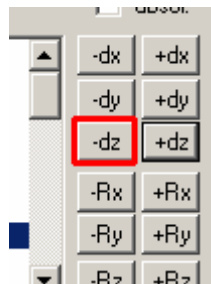
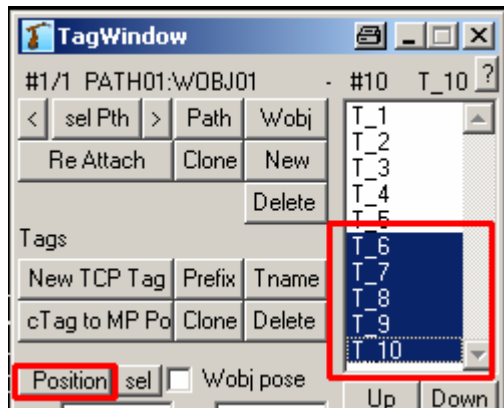
## Select Tags

	<p>Move the robot back to HOME position</p> <p>select by „Ctrl + click the Tag T_2“ and „Ctrl + click the Tag T_4“ only those two Tags</p> <p>Let the robot run along the path with „Move Along“</p> <p>-&gt; the robot is moving only to the two selected Tags</p>
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## Multi select and Multi copy of Tags

	<p>Select the whole list by: „Shift + click onto the first Tag“, keep „Shift“ and click the last Tag</p> <p>Or use „Ctrl + A“ To get the whole list.</p> <p>copy the Tags by „Ctrl + C“</p> <p>select the last Tag</p> <p>and paste the Tags by „Ctrl + V“</p> <p><b>TIP</b></p> <p>To copy the Tags into another Path –simply create a new path after copying and just paste the Tags into the new path.</p>
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## Shift/Move selected Tags



Move the robot back to HOME position

Select by  
„Shift “ and click Tag T\_6,  
keep „Shift“ and click Tag T\_10

and open the Frame Dialog  
by pushing the Position-button

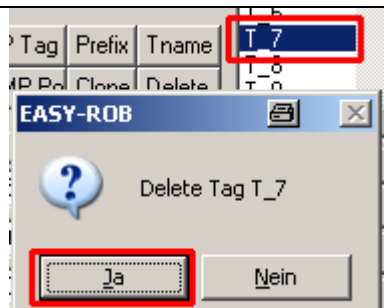
move the Tags by two time clicking on „-dz“

Select all Tags by  
„Ctrl + A“

Let the robot run along the path with „Move Along“

-> the robot is moving along all Tags

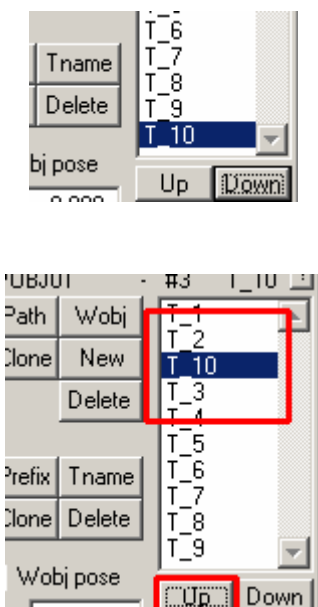
## Delete selected Tags



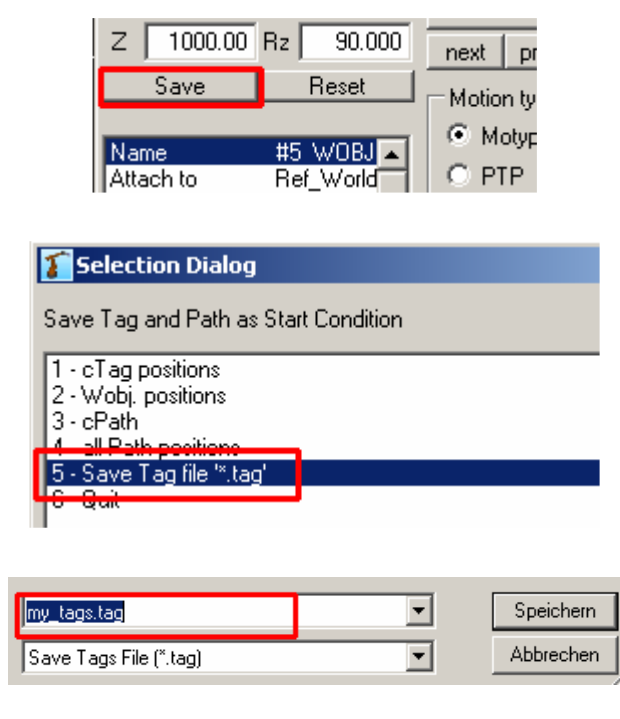
To delete one or more Tags just select them like usual and delete them by DEL-key.



## Sort Tags

	<p>Move the robot back to HOME position</p> <p>select the Tag T_10</p> <p>and</p> <p>move the Tag by UP-Button to third position in the list</p> <p>select all Tags by „Ctrl + A“</p> <p>Let the robot run along the path with „Move Along“</p> <p>-&gt; the robot is running now the new order</p>
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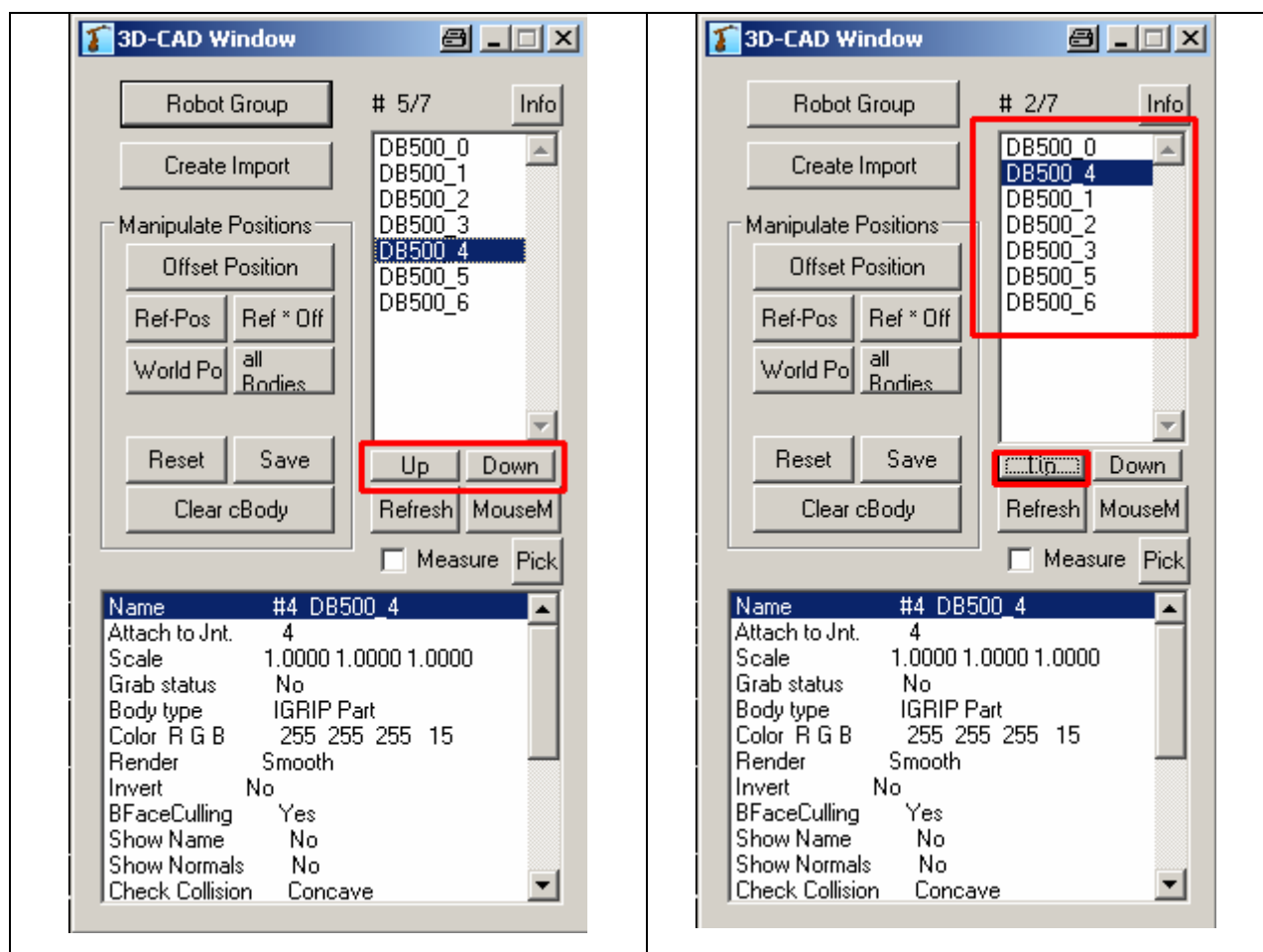
## Export of Tags

	<p>To export the Tags just select „Save“ in the Tag Window</p> <p>select „Save Tag file“</p> <p>and save the Tags in a file with the name of your choice</p>
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## 3D-CAD Window - New function for objects

All objects of the Robot-, Tool- or Body Group, can be shifted in the list by using the Up- and Down buttons

1. Load the work cell „tag\_functions.cel“
2. Open the 3D-CAD Window by menu „3D-CAD | open 3D-CAD Window“
3. Select the part you like to move and bring it by the Up- and Down buttons into the desired position

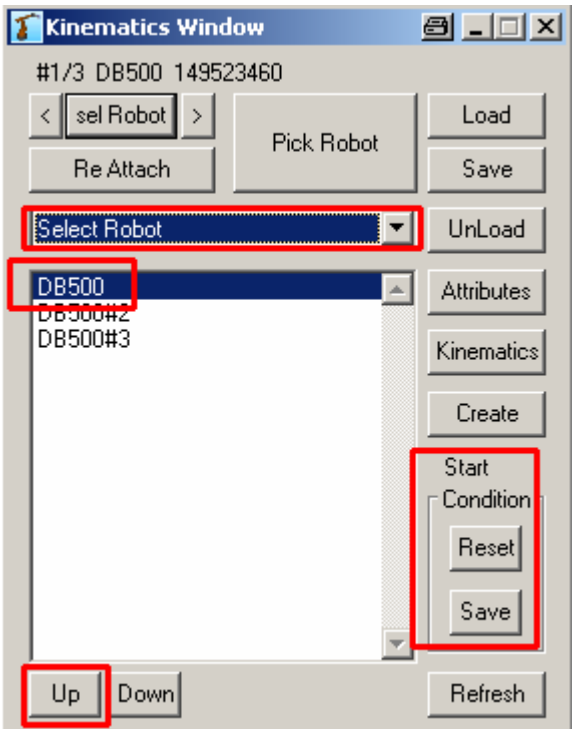


## Kinematics Window – New functions for the robot

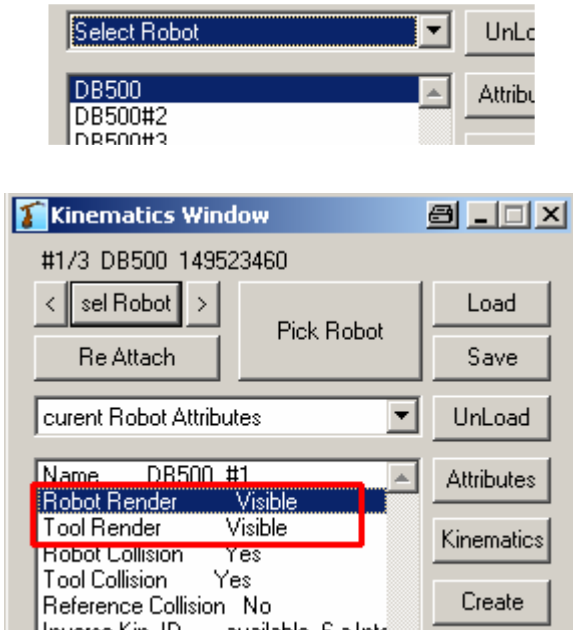
In detail we are talking about:

- select a robot by pull-down-menu
- sort the order of the robots by „Up- und Down buttons“
- save and reset to start conditions
- direct switch (on / off) of the rendering of the robot and the tool
- direct switch (on / off) of collisions queues

1. Load the work cell „three\_robots.cel“
2. Open the Kinematics Window by „Ctrl + K“ or by menu „Robotics | open Kinematics Window“

	<p>Select the desired robot and shift the robot by Up- und Down buttons into the right place</p> <p>Save the current positions or reset to start conditions.</p>
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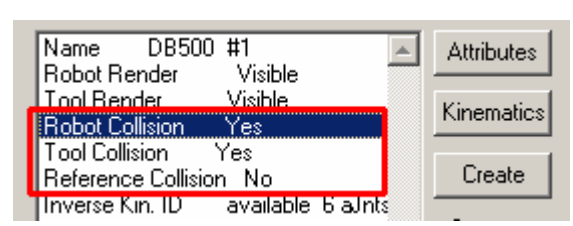
## Change rendering (visibility)



By double click onto the desired robot the system will provide a list with attributes for this robot.

By double click onto „Robot Render“ respectively „Tool Render“ you set the robot respectively the tool visible/invisible

## Collision queues On / OFF



By double click on the desired item you can switch the collision queues ON or OFF.

**Remark :**  
Reference Collision is a collision queue between a DEVICE, that grabbed another DEVICE.

Example:  
A robot grabbed a weld gun.

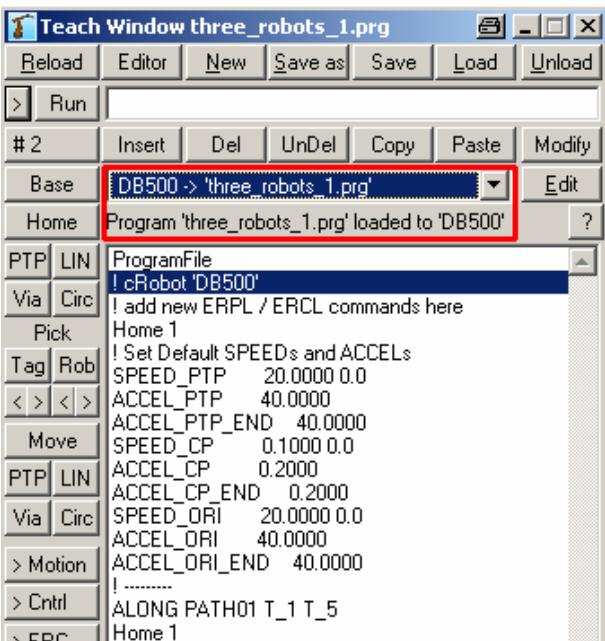
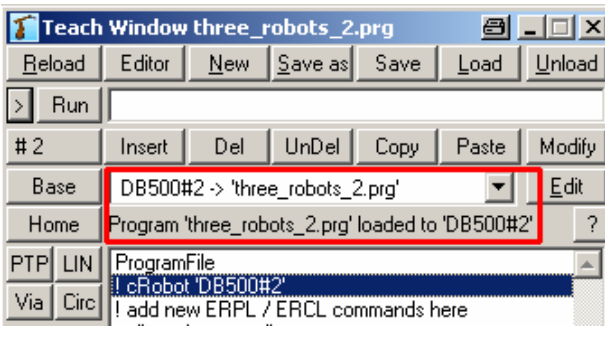
Of course there will be a collision between both DEVICES – but there is no need to show this.

## Teach Window – New function for robots

The preliminary stage for Multi Prog is implemented now.

In the Teach Window you can select the corresponding program for the robot and you can „Copy & Paste“ by using „Ctrl + C“ and „Ctrl + V“ parts of a program into another program.

1. Load the work cell „three\_robots.cel“
2. Open the Teach Window by menu  
„Robotics | cRobot Program | open Teach Window“

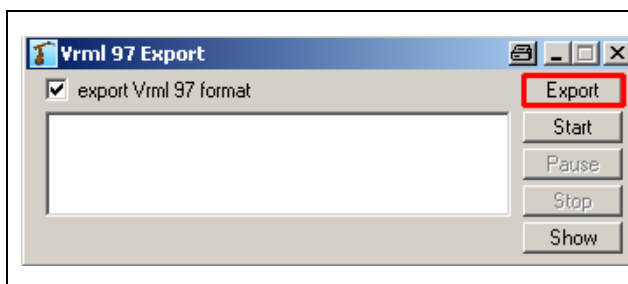
	<p>Select the desired robot and create with „NEW“ a new program.</p>
	<p>If you want to Copy &amp; Paste something from one program into another one, you have to create first a new program with NEW &amp; SAVE</p> <p>Afterwards you can jump between the programs by using the Pull Down Menu.</p>

## PlugIns – VRML-Export

If you want to exchange the work cell (static) or the result of the simulation (with animation) you can use the VRML 97 Export to store the whole work cell including the animations sequence into a file with extension (\*.wrl).

1. Load the work cell „three\_robots.cel“
2. Open the panel by menu:  
View | EASY-ROB PlugIn DLLs | VRML 97 Export

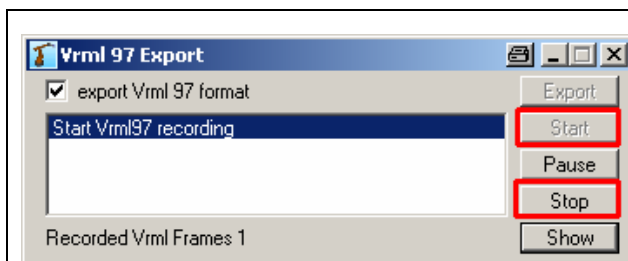
### Export statisch



To export a static work cell click on „Export“ and save the VRML-file.

To see the work cell in the explorer just click „Show“.

### Export dynamisch



To export a work cell with animation click on „Start“ to record and start the simulation. At the end of the simulation Stop the recording with „Stop“ and save the VRML-file.

To see the animation in the explorer just click „Show“

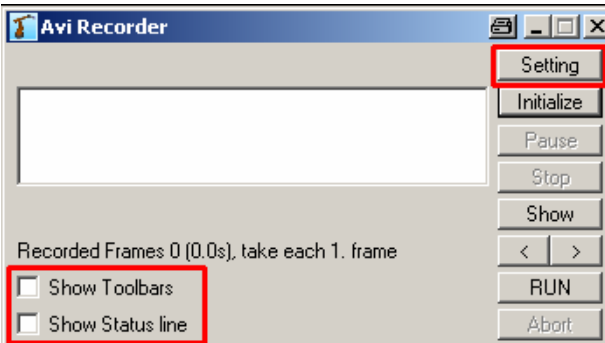
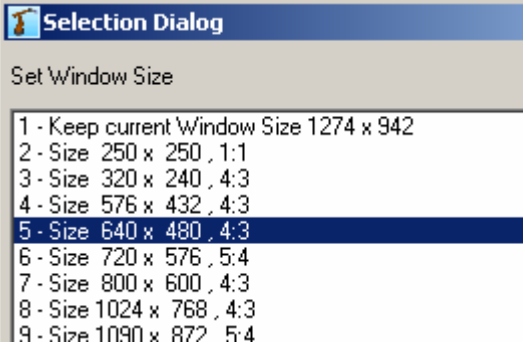

**Remark:** Prerequisite for an animation is a loaded and running program in the robot.


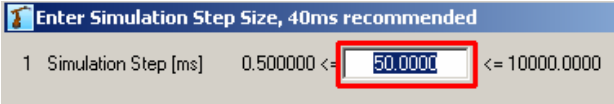

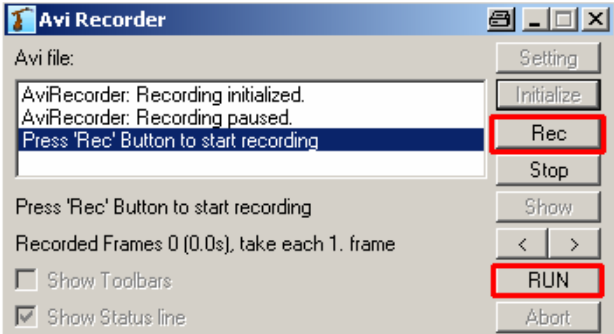
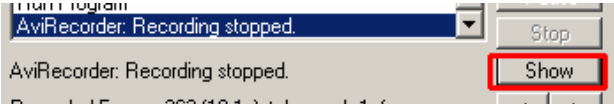
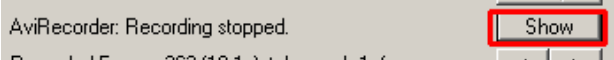
## PlugIns – AVI Recorder

Beside the VRML, Export EASY-ROB can create a movie as an AVI-file.

1. Load the work cell „three\_robots.cel“
2. Open the panel either by using the menu:  
View | EASY-ROB PlugIn DLLs | AVI Recorder or hit the button:



	<p>Select first if you want to record with or without toolbars and status line. Just select or deselect the check box.</p>
	<p>Click on „Settings“ to set the window size for the recording</p>
	<p>With „Initialize“ you set name and place for the file.</p>

	<p>Set the Frame rate and Simulations Step size</p>
	
	<p>Select the compressor</p>
	<p>with „Rec“ you can start the recording</p>
	<p>and with „RUN“ you can start the simulation</p>
	<p>After the recording you can run the AVI-file by using the „Show“ button</p>



## CAD Import / VRML

All common 3D-CAD systems like Catia, ProEngineer, Solid Works, Solid Edge, etc are able to export VRML 1.0 and VRML 2.0.

EASY-ROB™ can import VRML files and save them as IGP-Format (\*.igp). The Import does not include kinematics or animations in the VRML-file.

The importer will create automatically a \*.rob-file.

Even when the files from different systems are all VRML-files, with regard to the inner structure (number of objects and number of polygons) they are all different.

Solid Edge, UGS e.g. is using „Shapes“ to set colors and objects.

EASY-ROB™ is taking this into consideration while import by using a presetting and the functionality to „merge“ the polygons.

The „merger“ will reduce the number of objects and will increase the number of polygons per object.

And even when the file that the merger is creating will be bigger as the „not-merged“ file, you will have a better performance.

In the „VRML-Examples“ you will find examples from different systems with some remarks about the presettings.

**TIP: Always use the „Mergen“, so you will have a better performance while rendering.**

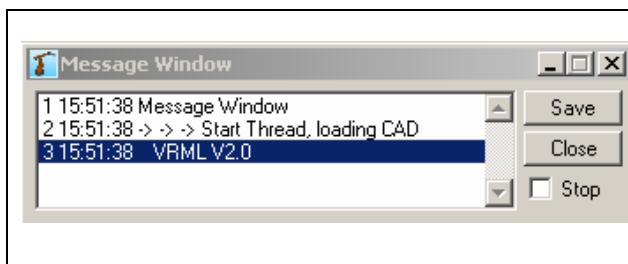
VRML files are ASCII-files. You can open and read them in every editor.

Most times you will find additional information in the header of the file.

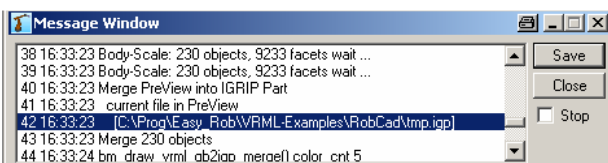
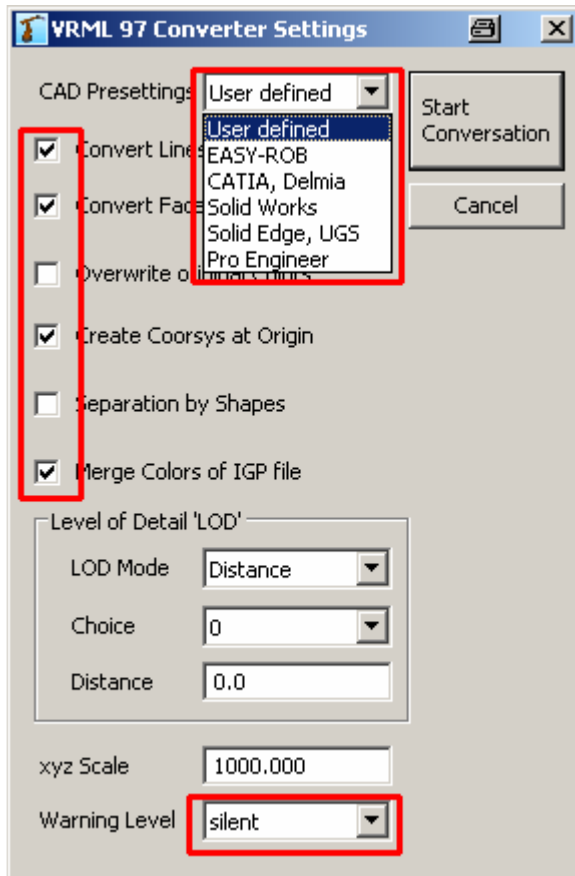
**TIP: Before the import always save your work and start a new session of EASY-ROB.**

To load a VRML file you can either

1. select the file by menu File | Load | Import / Convert | Convert VRML1.0 /2.0 into CAD Preview or
2. use „Drag'n Drop“ from Explorer



Beside the Message Window you will get the dialog for the Converter Settings



By the CAD Presettings you select the exporting system.

This is important because depending on the export system EASY-ROB has to use different options for the import

**TIP:**

Always use the pre settings.  
Changing the pre settings can cause bad system performance.

With the Warning level you decide how much information you will get while the import.

Silent = Standardmessages  
Warning = only warnings  
Verbose = detailed

With Start Conversation  
you can start the converter

In the Message Window you can follow all messages and by using the „Save“-button you can store the protocol of the import

**TIP:**

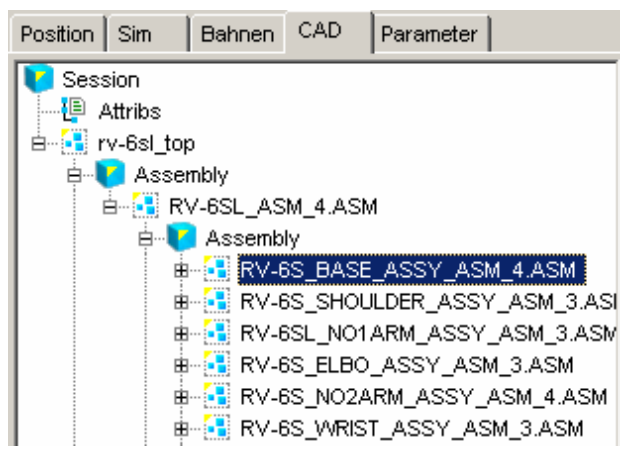
Double click onto a line with bracket will open the file in the editor  
Double click onto any other line will delete the whole Message Windows

## CAD Import / STEP & IGES

The standard exchange formats like STEP (AP203/AP214) and IGES can be imported by the FAMOS® Demo.

After installation of the program FAMOS ROBOTIC V7 Demo you can start program by using the button in the menu.

1. Start the program
2. register without password – confirm with OK
3. by using the menu CAD | add CAD Model add the corresponding file
4. select the CAD group Cell component
5. now the program will read the file

	<p>Open the file tree of the session, select the file you want save as an IGP-file and export it by menu CAD   export CAD Model. Save it as IGP-file.</p>
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6. now you can use the exported file in EASY-ROB™.

## Notes