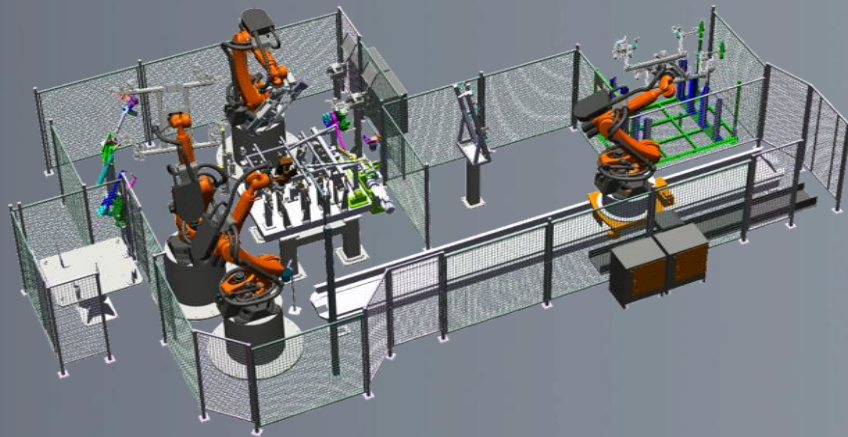




# <AutomationML/>

The Glue for Seamless  
Automation Engineering



AutomationML example: Robot cell  
*Example under by-nc-sa license*

State: March 2017

## 1 Description of the cell

The robot cell consists of three industry robots placed on pedestals and one industry robot placed on a translation axis, a transmission station, etc.

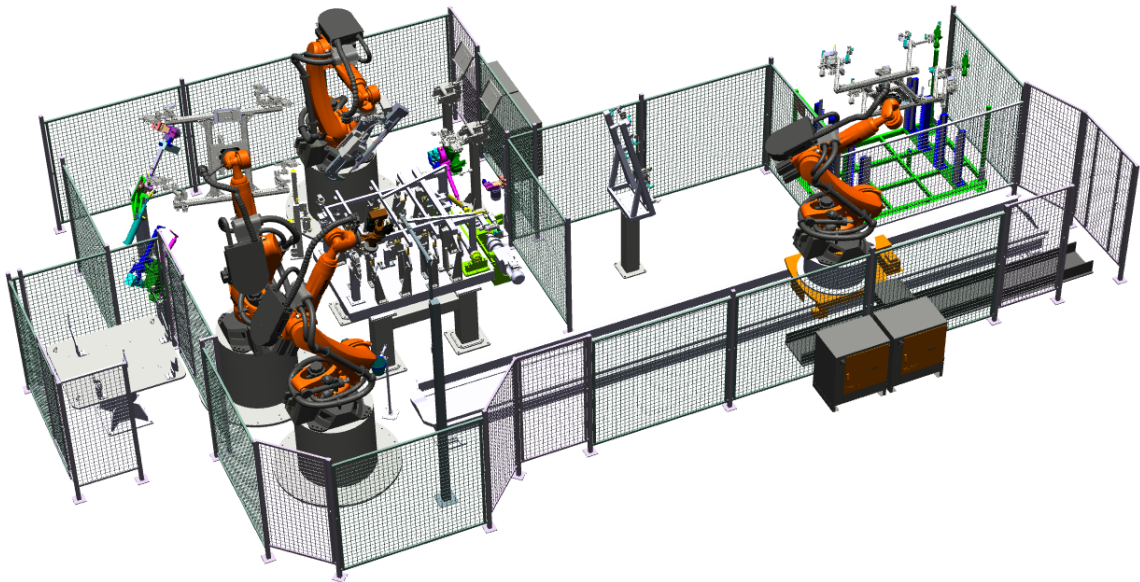


Figure 1 AML example of a robot cell for the process spot-welding

### 1.1 AMLStructure

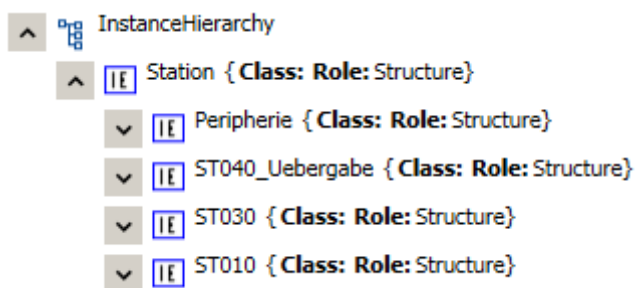


Figure 2 AMLStructure

### 1.1.1 Behavioral description of the station

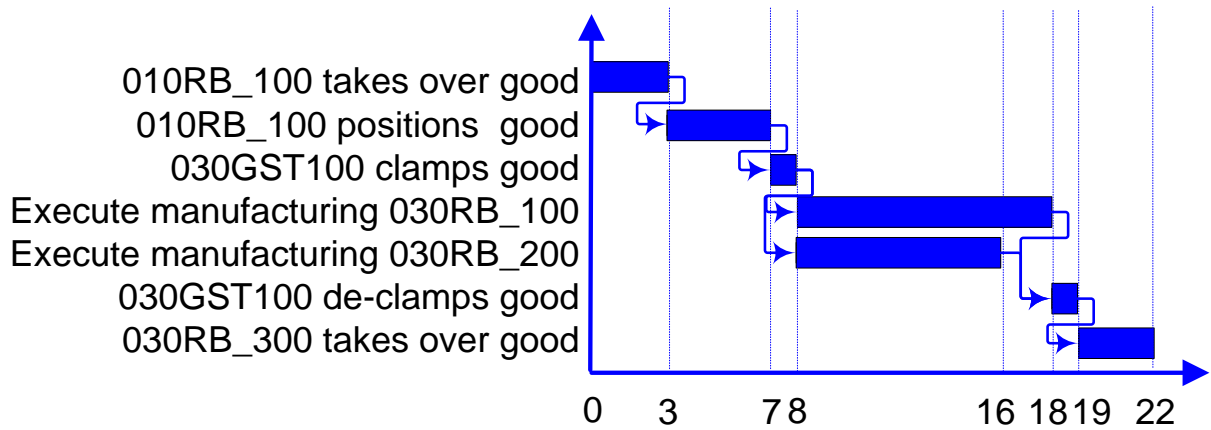


Figure 3 Representation of the process spot-welding as Gantt chart

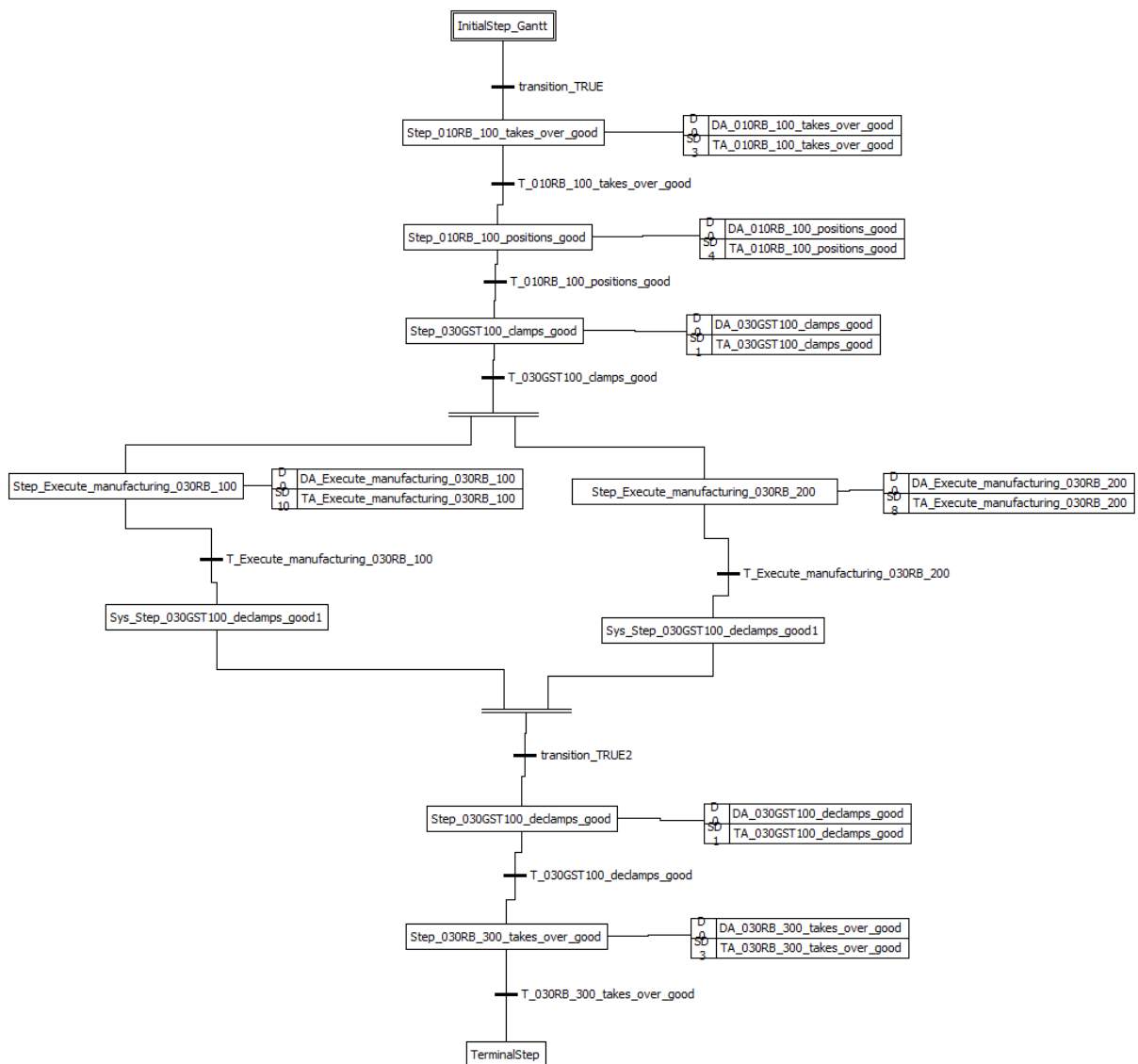


Figure 4 SFC-Representation of the process spot-welding as Gantt chart

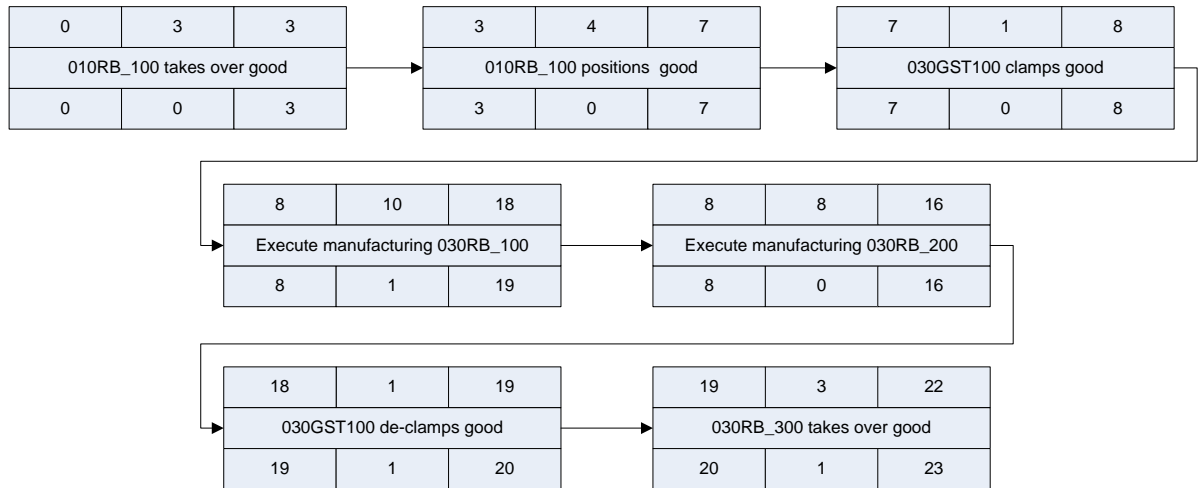


Figure 5 Alternative Representation of the process spot-welding as Activity-on-nodenetwork

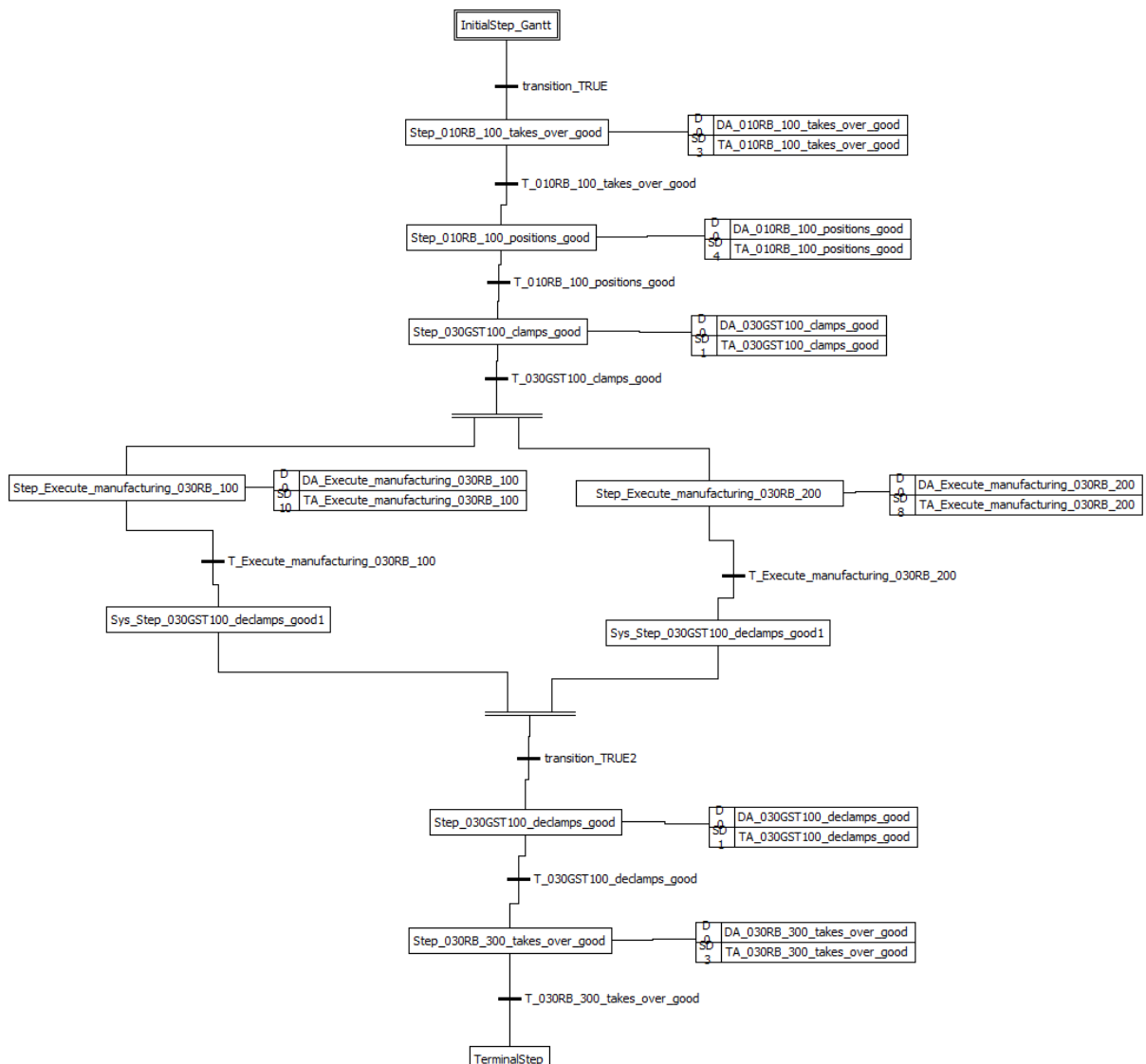


Figure 6 SFC- Representation of the process spot-welding Activity-on-nodenetwork



### 1.1.2 Periphery

The node „Periphery” contains the ring fence of the element.

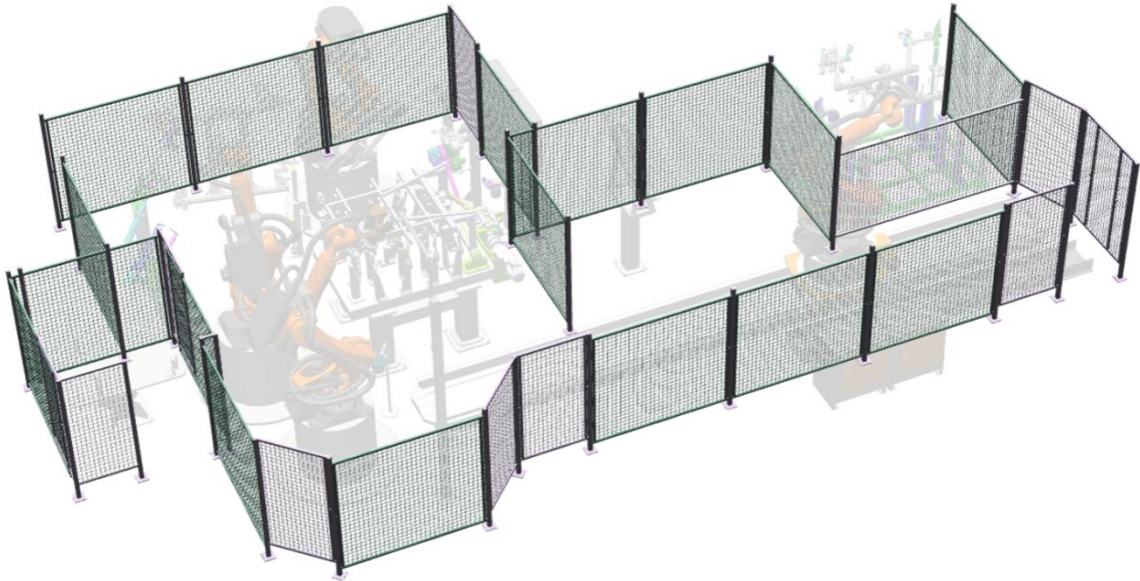


Figure 7 Element: Periphery

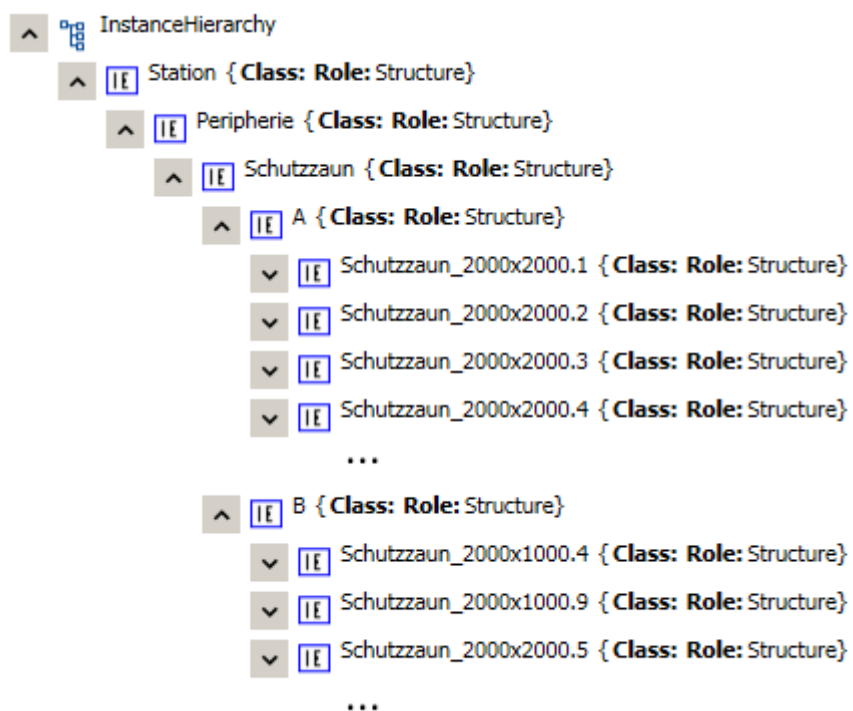


Figure 8 AML Structure for the element "Periphery"

### 1.1.3 ST010

The node „ST10” contains a robot that is mounted on a translation axis. A gripper is mounted on the robot flange.

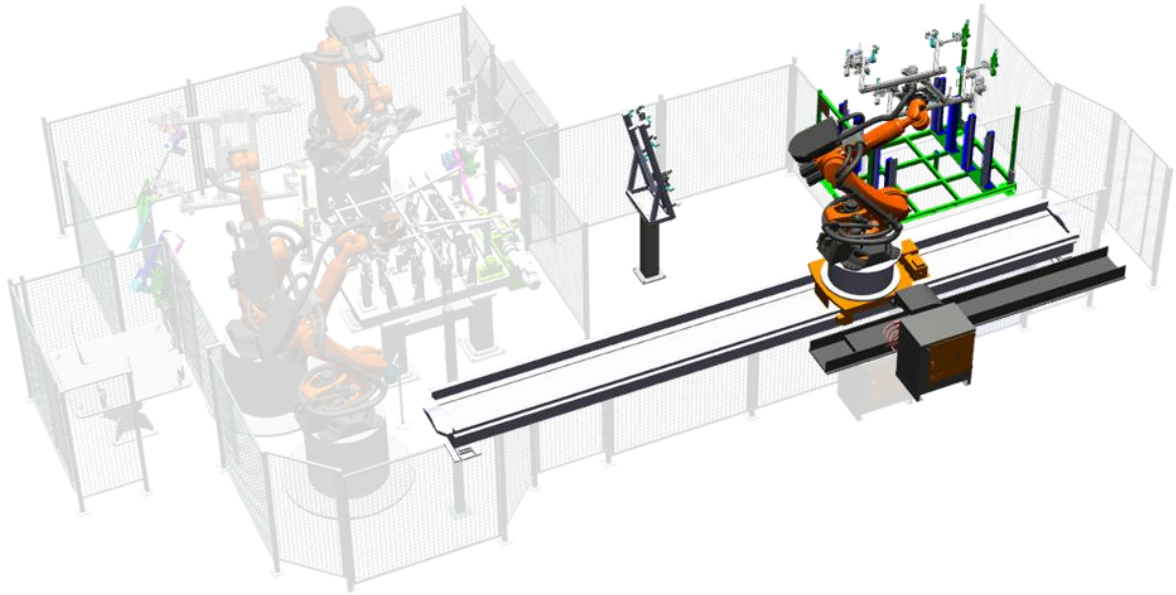


Figure 9Element: "ST010"

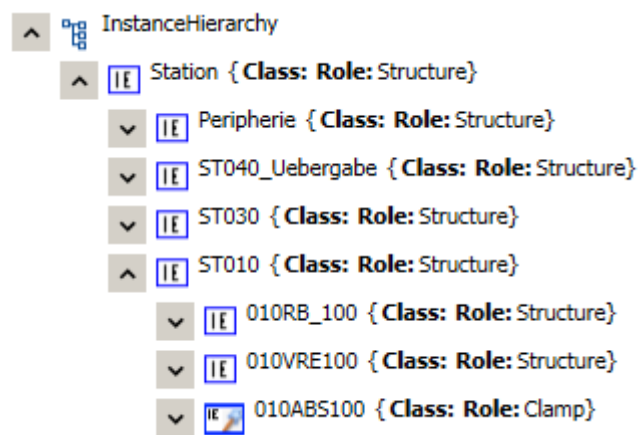


Figure 10 AMLStructure for the element: "ST010"

#### 1.1.3.1 ST010 – Overview

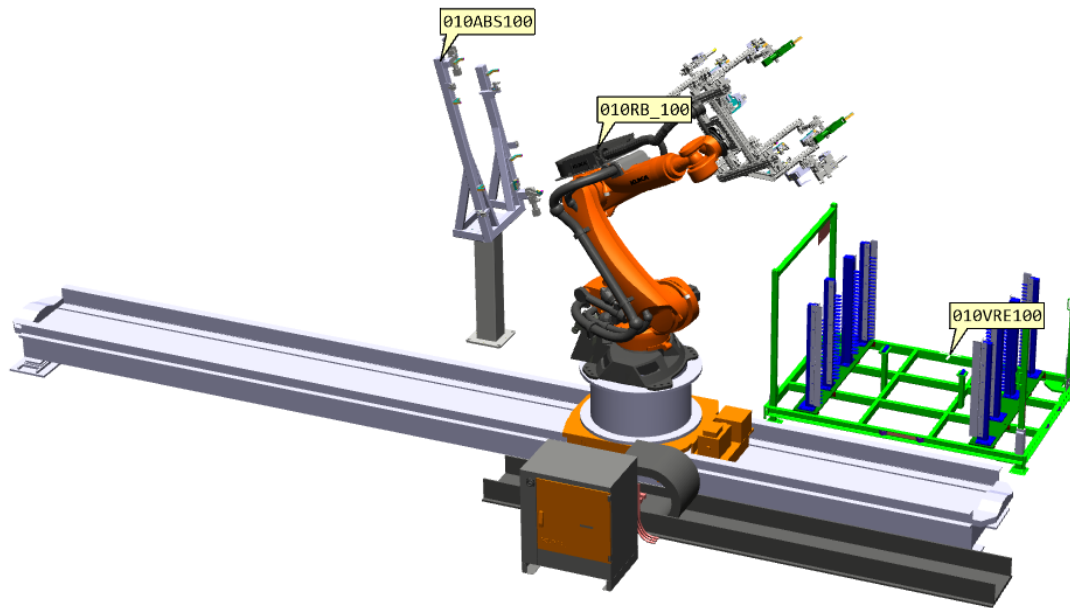


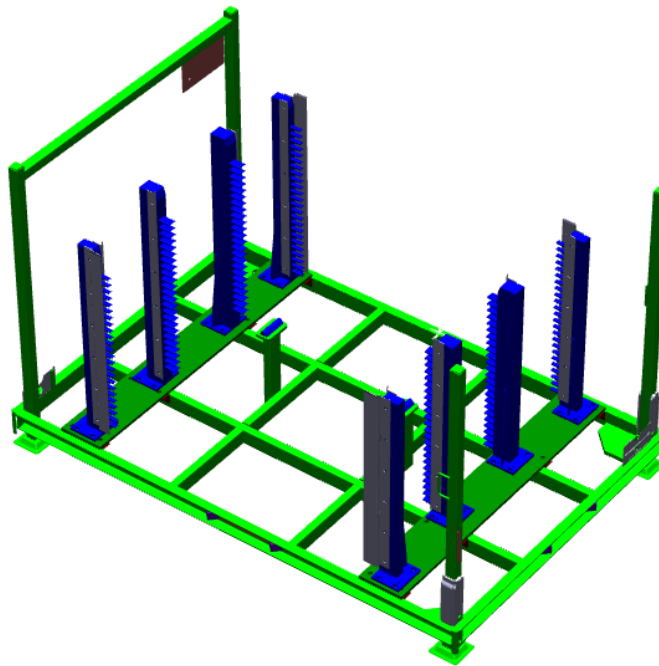
Figure 11ST010 – Overview

#### 1.1.3.2 ST010 / 010ABS100

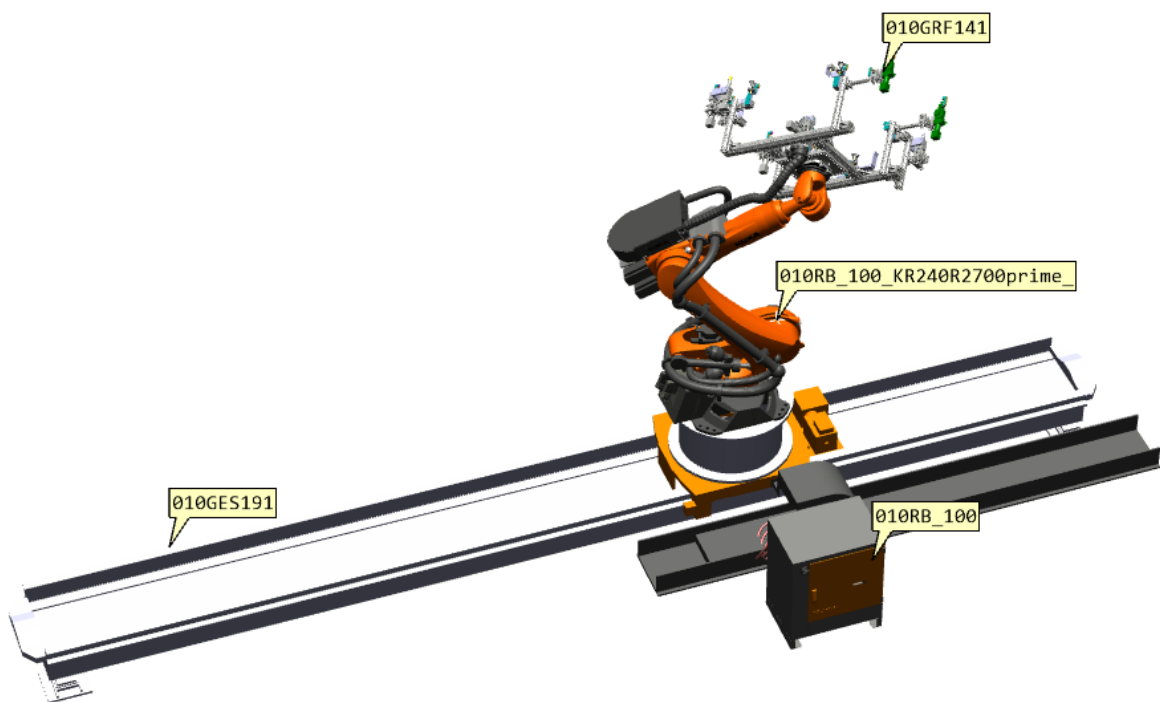


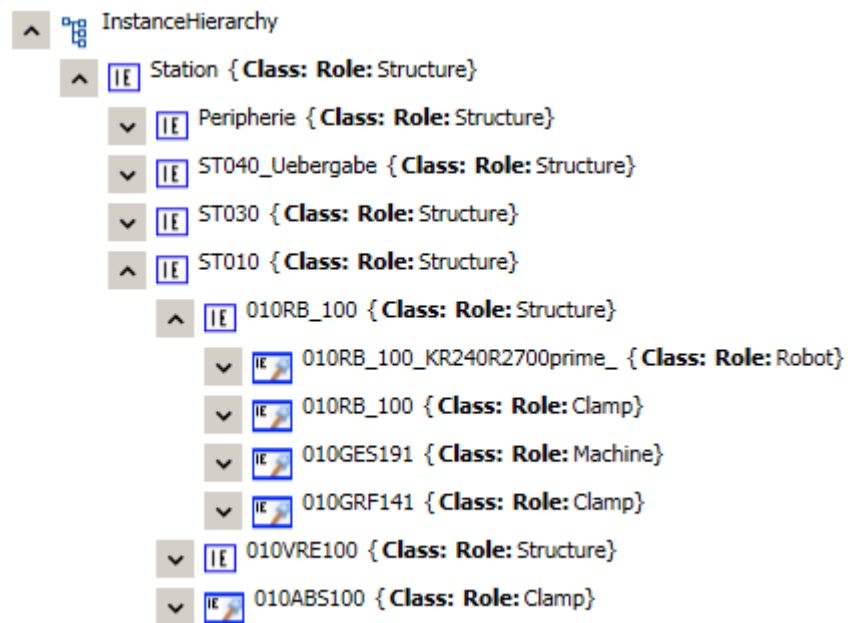


1.1.3.3 ST010 /010VRE100



1.1.3.4 ST010/010RB\_100





#### 1.1.3.4.1 ST010/010RB\_100 / 010GES191

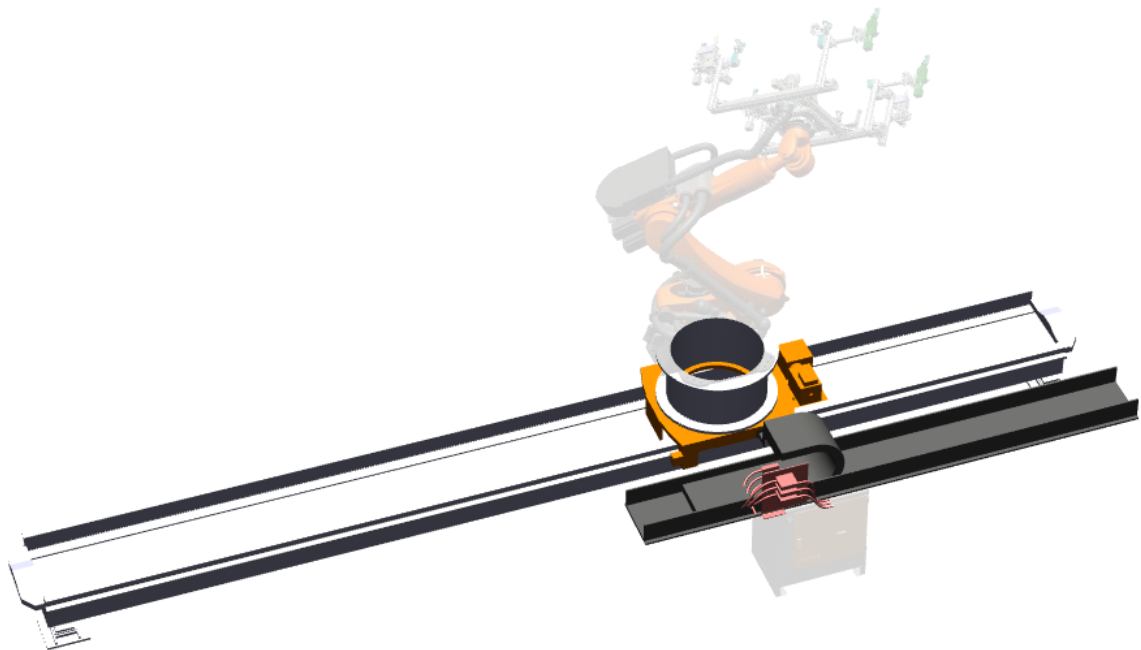


Figure 12 Translation axis with pedestal

1.1.3.4.2 ST010/010RB\_100 / 010GRF141

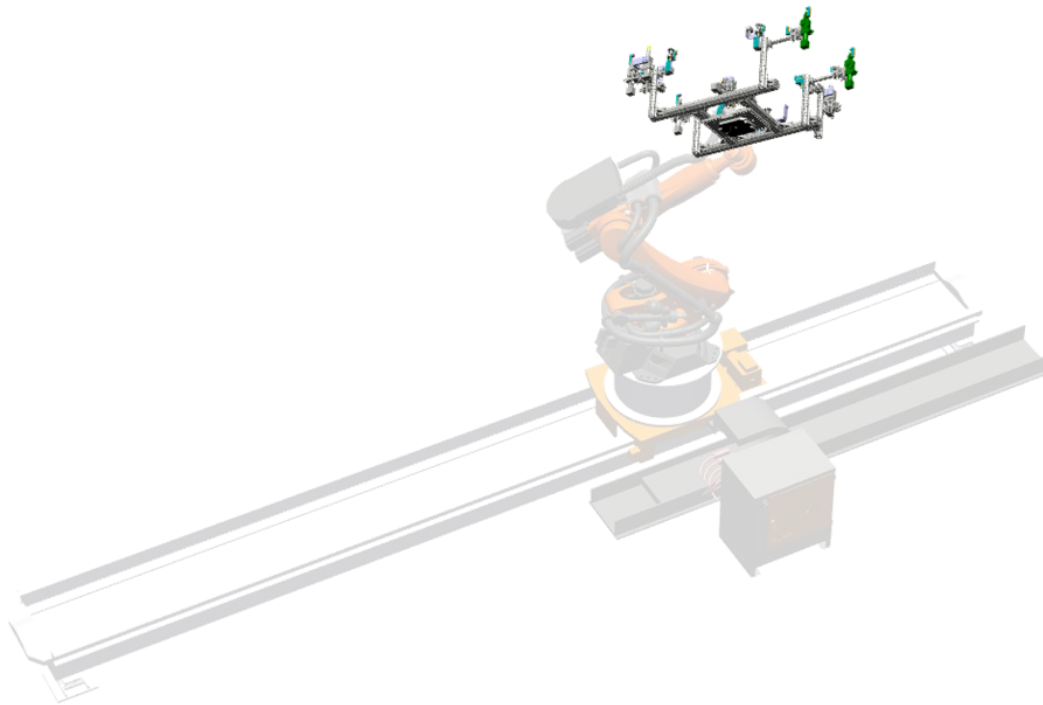


Figure 13 Gripping system

1.1.3.4.2.1 Tensioner behavior

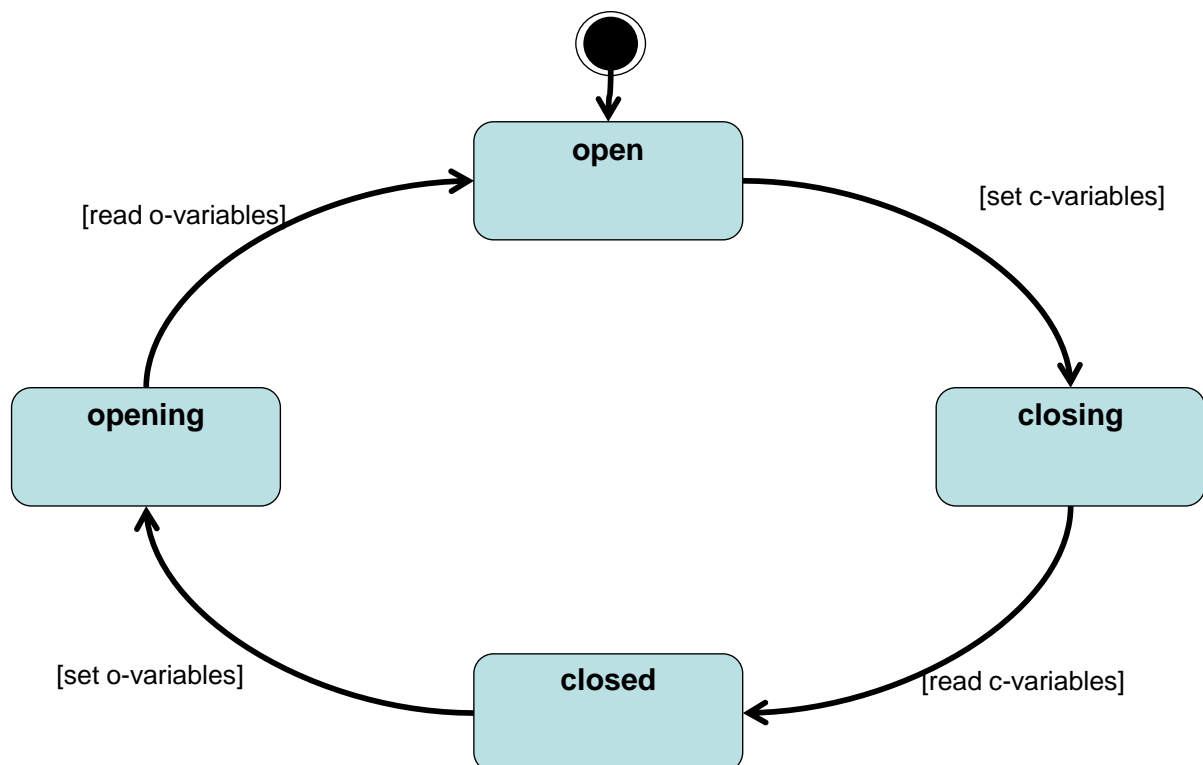


Figure 14 Representation of the behavior of the tensioning process as State chart

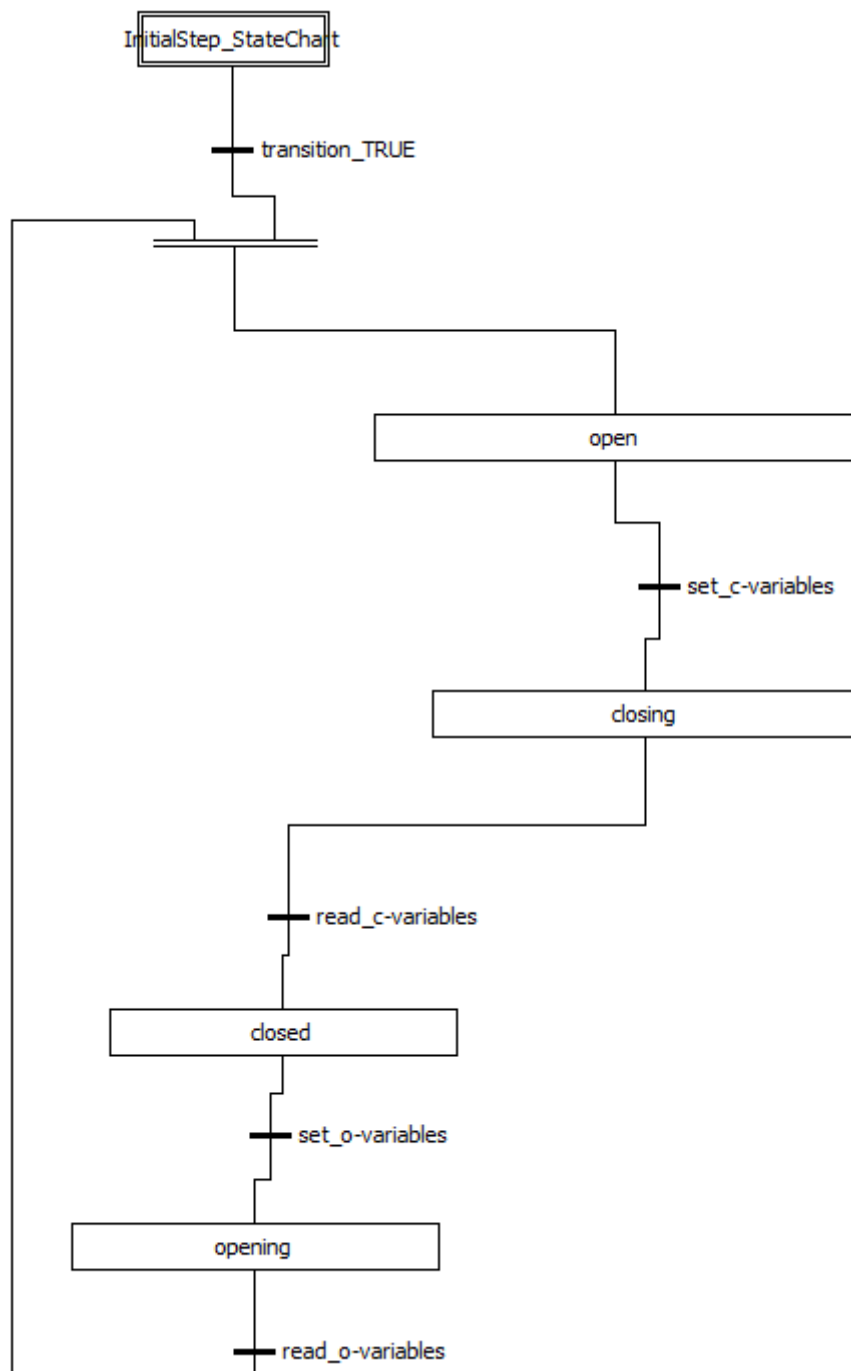


Figure 15SFC- Representation of the behavior of the tensioning process as State chart

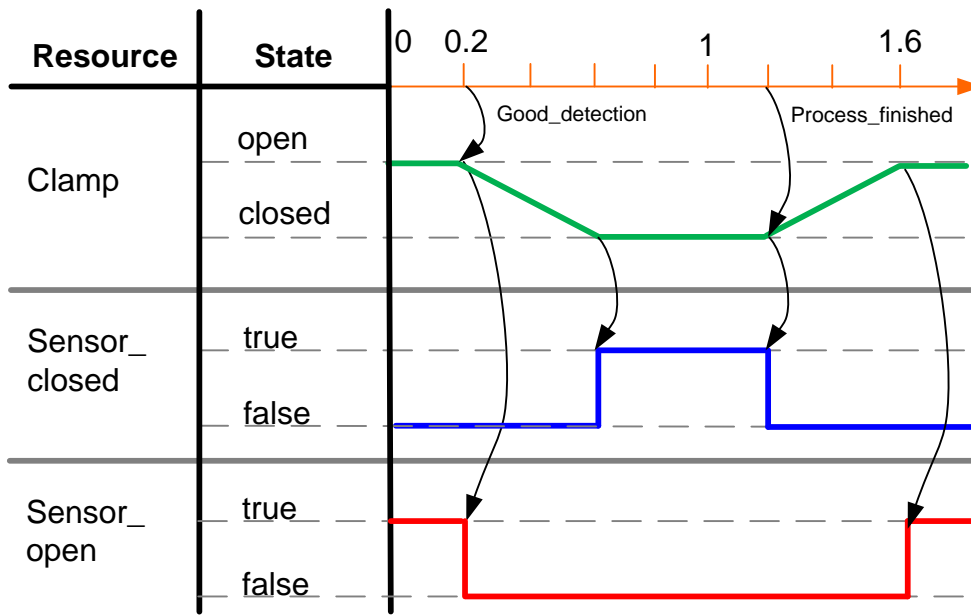


Figure 16 Alternative Representation of the tensioning process as timing diagram

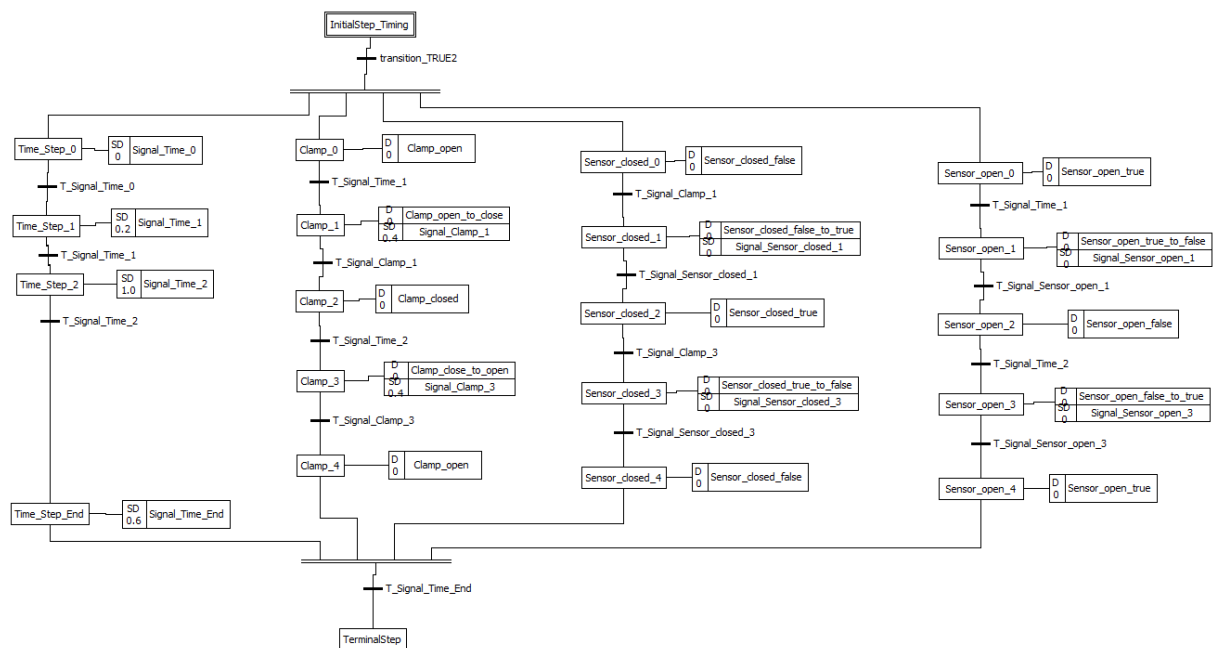


Figure 17 SFC- Representation of the tensioning process as timing diagram

1.1.3.4.3 ST010/010RB\_100 / 010RB\_100

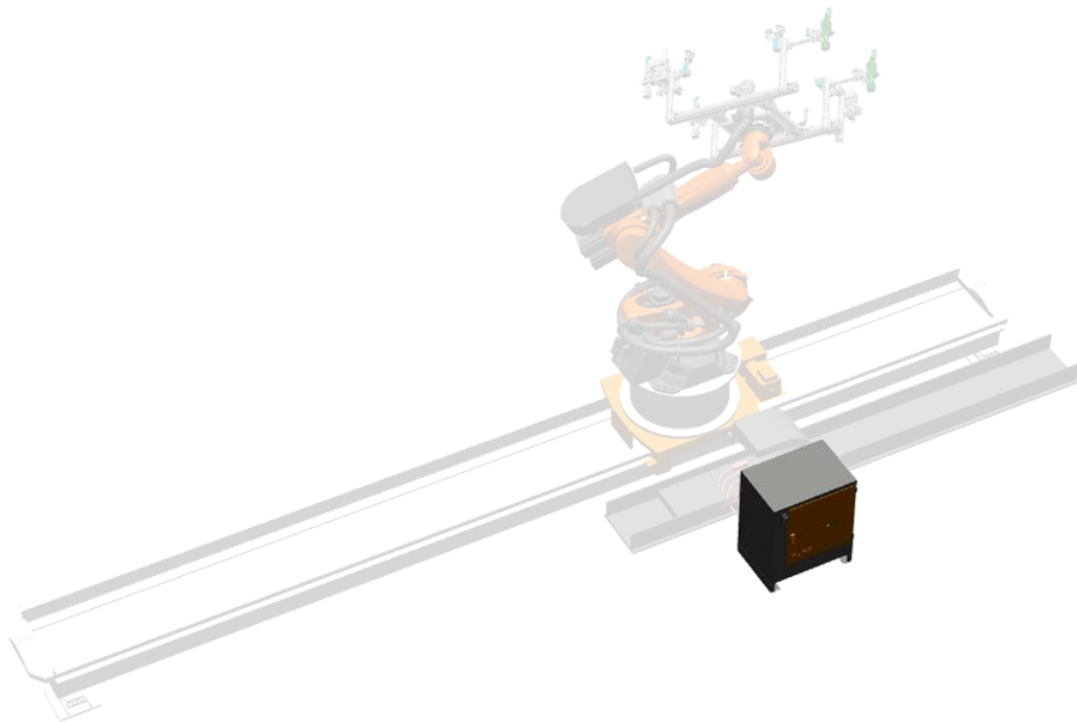


Figure 18 Control cabinet

1.1.3.4.4 ST010/010RB\_100 / 010RB\_100\_KR240R2700prime\_

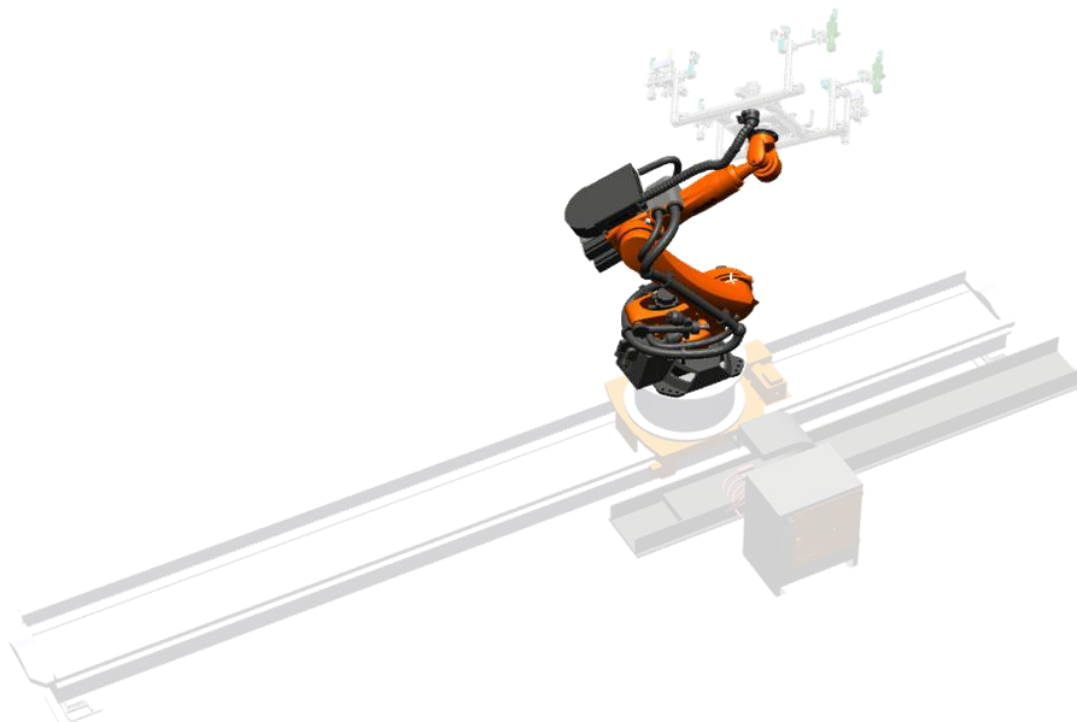


Figure 19 Robot



#### 1.1.4 ST030

The node „ST30“ contains of three stationary robots with gripping technology welding tongs.

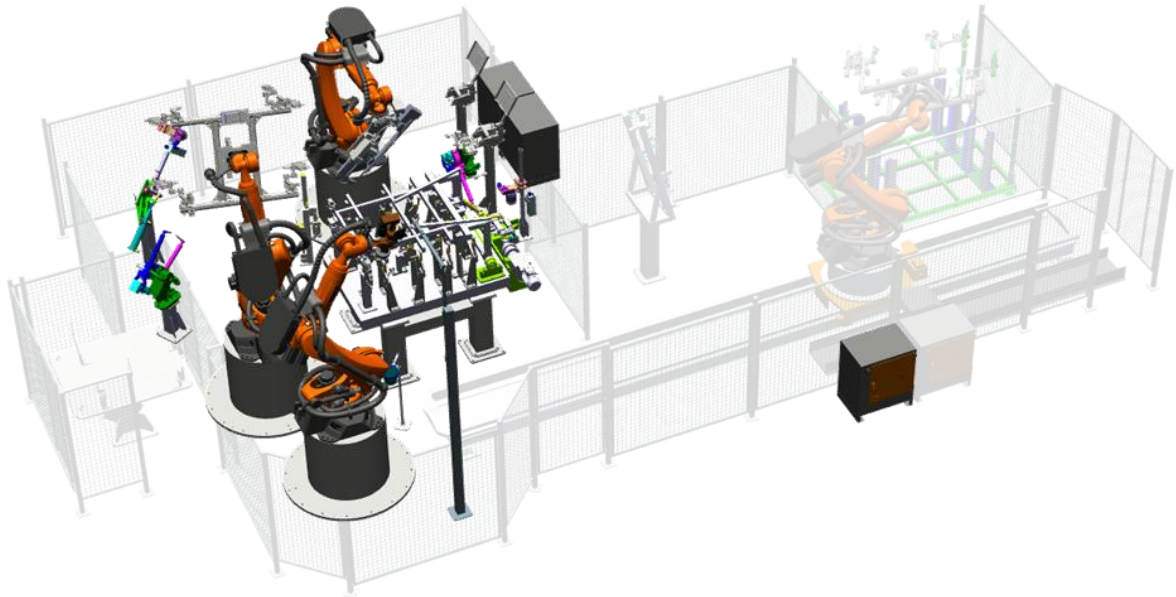


Figure 20Element: "ST030"

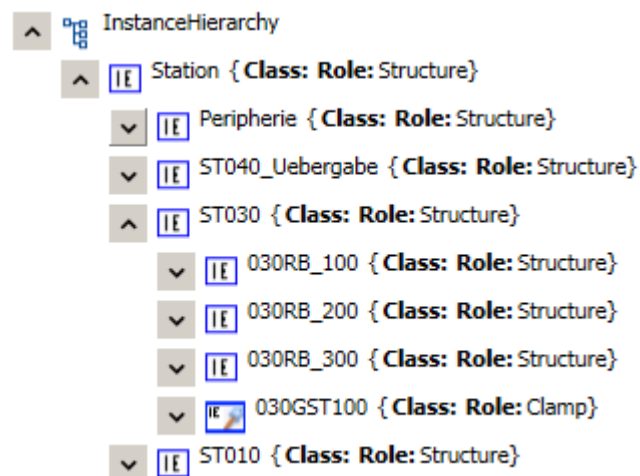


Figure 21AMLStructure for the element: "ST030"

1.1.4.1 ST030 – Overview

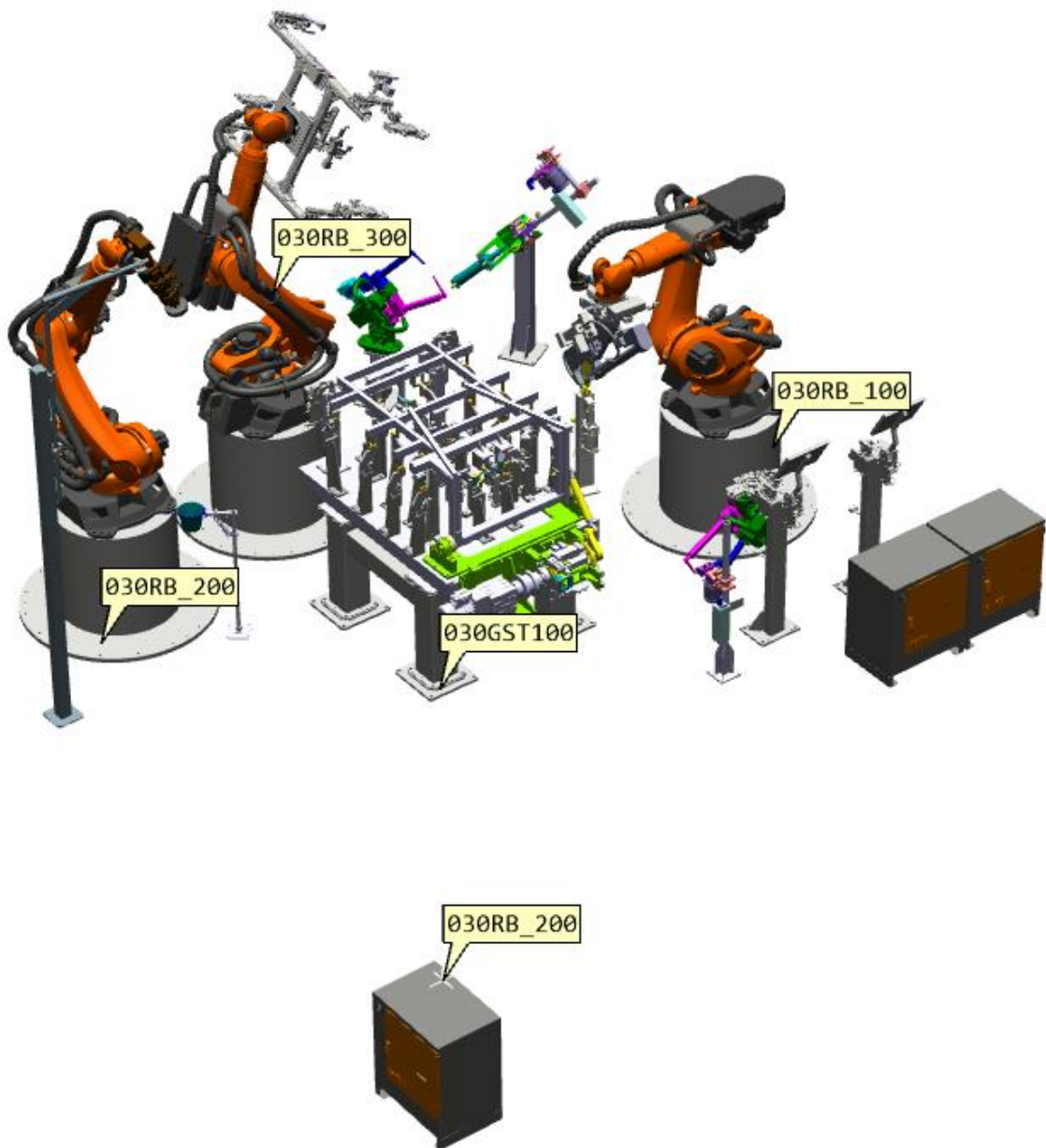


Figure 22ST030 – Overview

1.1.4.2 ST030 / 030GST100

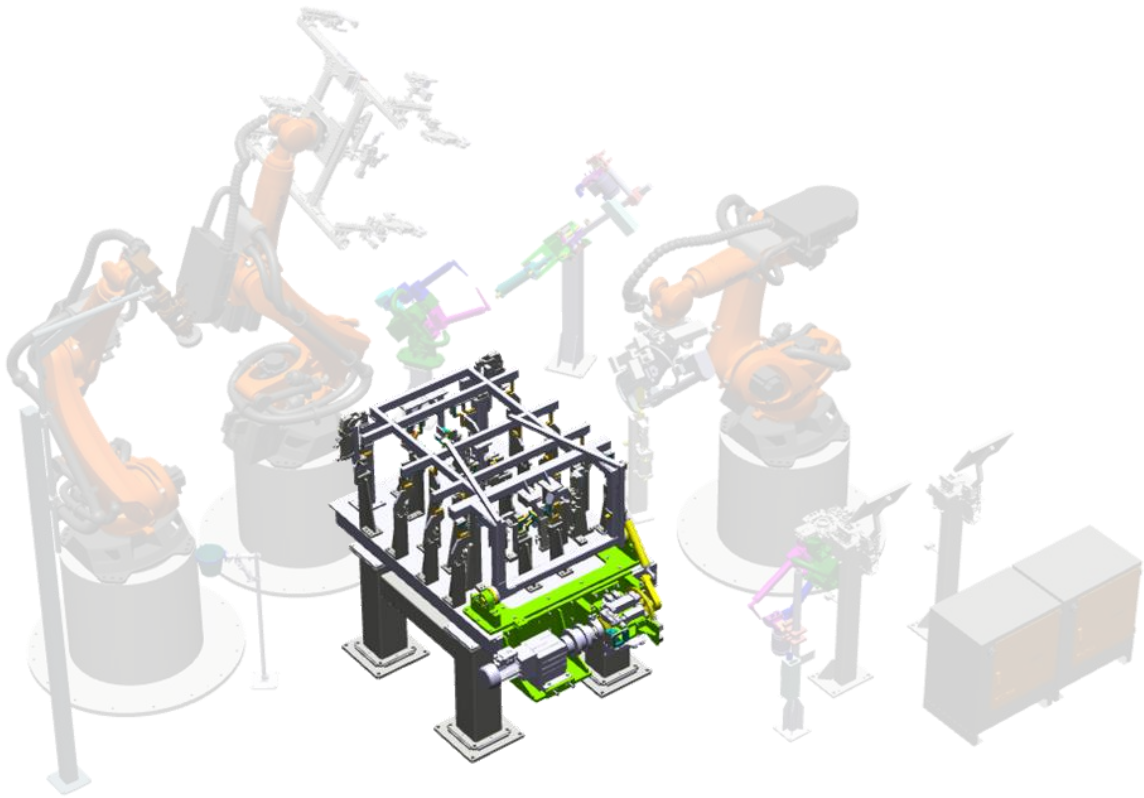


Figure 23 Clamp

1.1.4.3 ST030 / 030RB\_100



*Figure 24 Robot with mounted and stationary welding tongs incl. Control cabinet*

1.1.4.3.1 ST030 / 030RB\_100–Overview

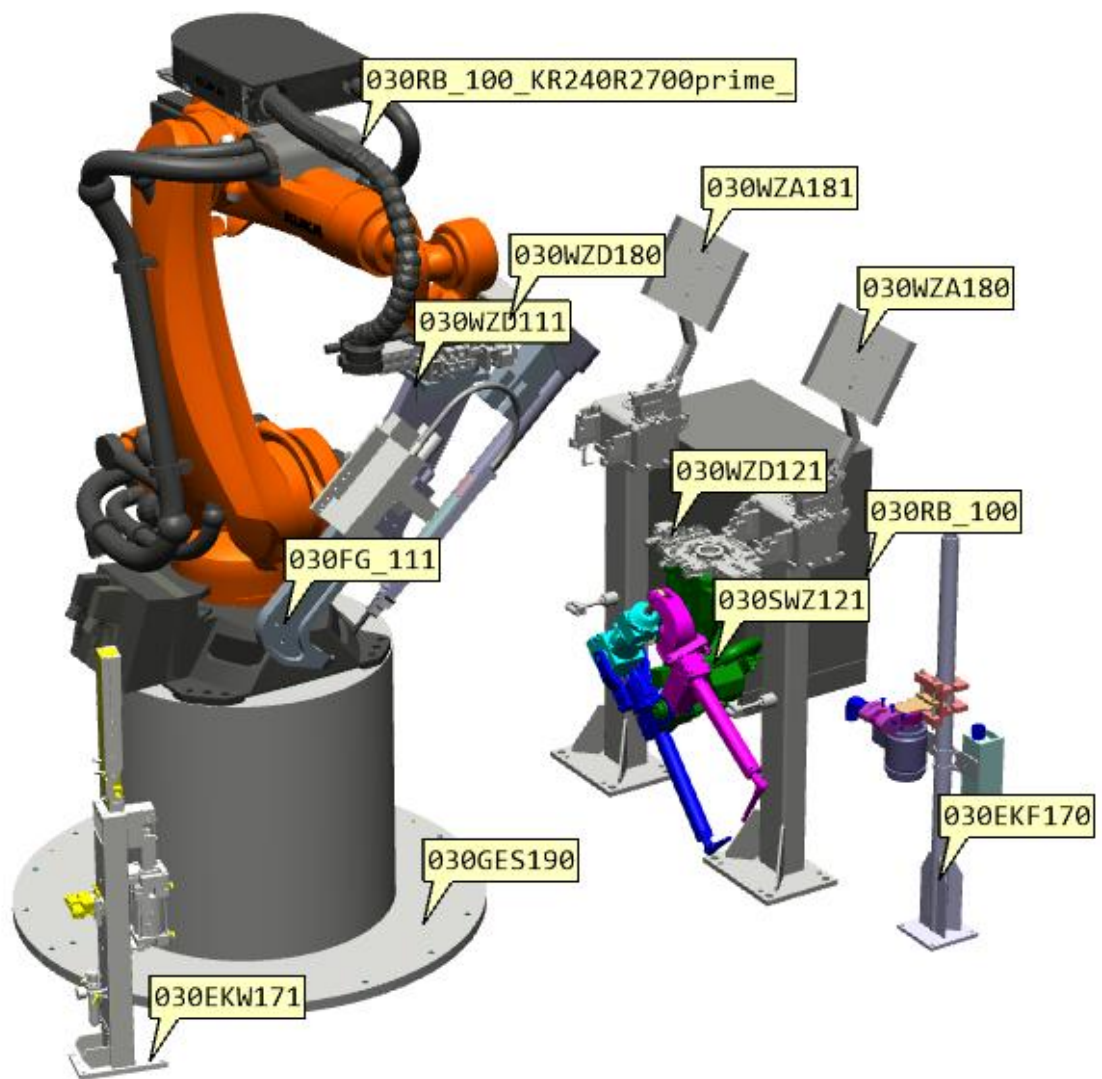


Figure 25ST030 / 030RB\_100 – Overview

1.1.4.3.2 ST030 / 030RB\_100 / 030EKF170



1.1.4.3.3 ST030 / 030RB\_100 / 030EKW171





1.1.4.3.4 ST030 / 030RB\_100 / 030FG\_111



Figure 26 Welding tongs

1.1.4.3.5 ST030 / 030RB\_100 / 030GES190

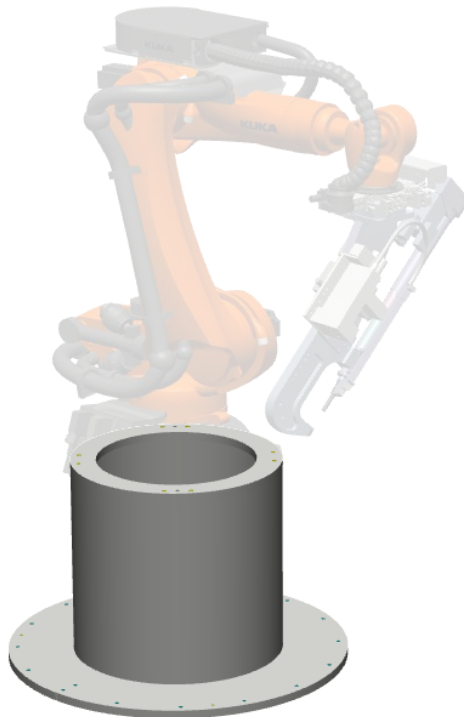


Figure 27 Robot pedestal

1.1.4.3.6 ST030 / 030RB\_100 / 030RB\_100\_KR240R2700prime\_

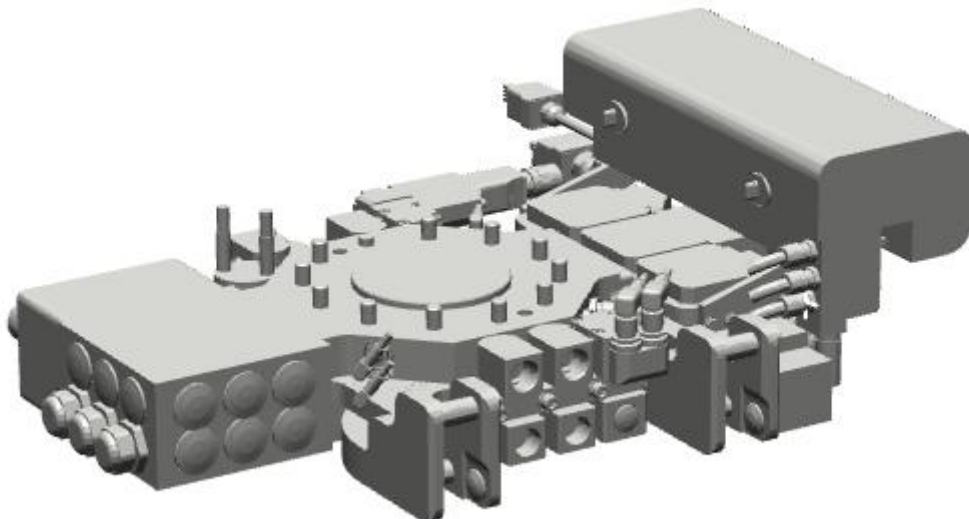


Figure 28 Robot

1.1.4.3.7 ST030 / 030RB\_100 / 030WZD111 und ST030 / 030RB\_100 / 030WZD180

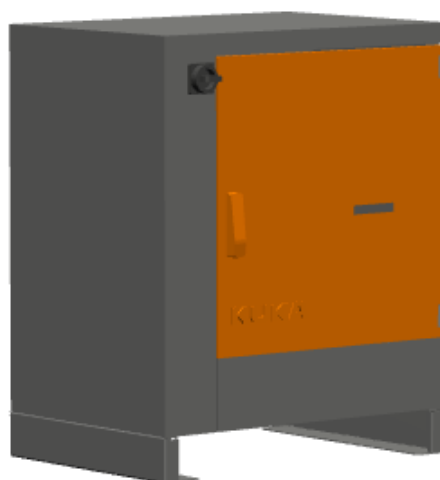


Figure 29 Adapterplate



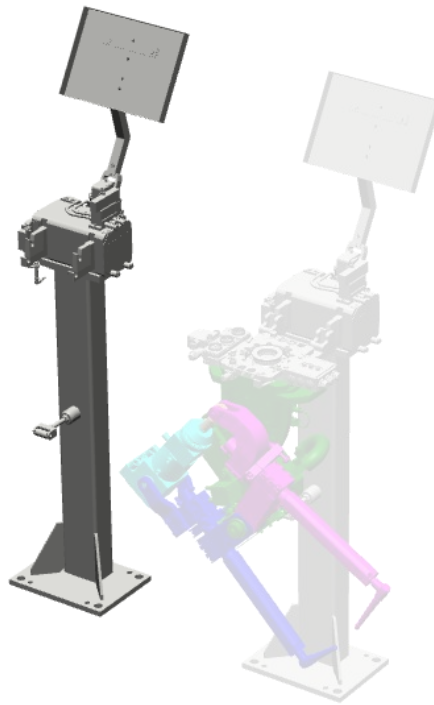
*Figure 30 Adapter plate*

#### 1.1.4.3.8 ST030 / 030RB\_100 / 030RB\_100

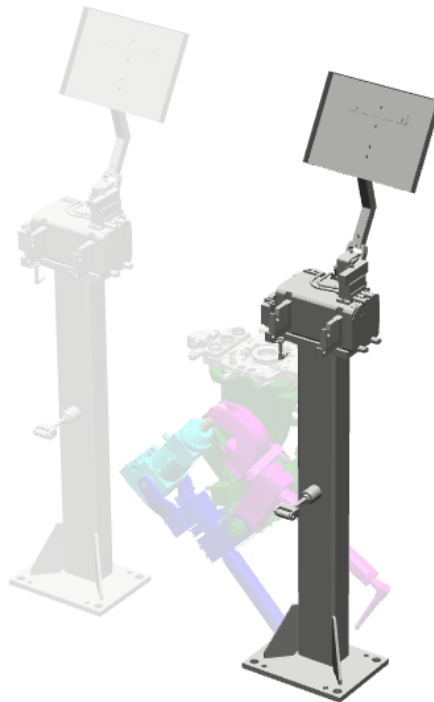


*Figure 31 Control cabinet*

1.1.4.3.9 ST030 / 030RB\_100 / 030WZA181



1.1.4.3.10 ST030 / 030RB\_100 / 030WZA180



1.1.4.3.11 ST030 / 030RB\_100 / 030SWZ121

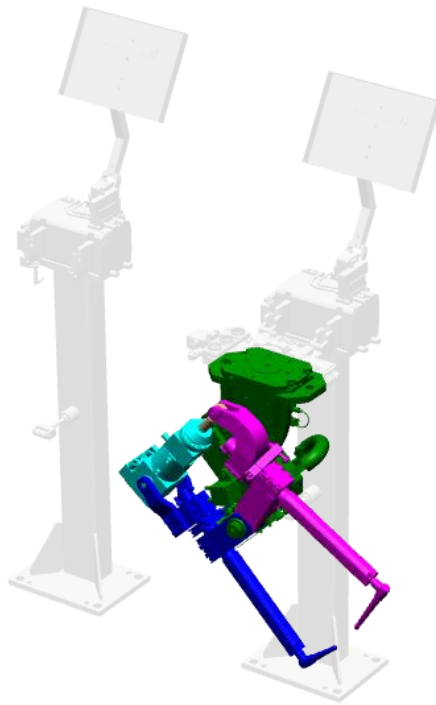


Figure32 Welding tongs

1.1.4.3.12 ST030 / 030RB\_100 / 030WZD121

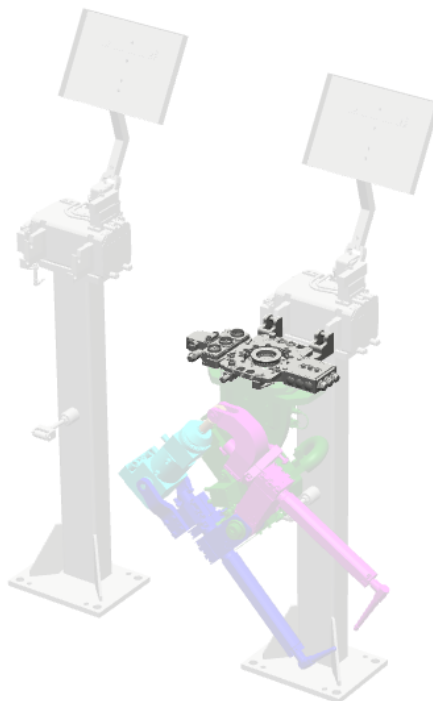


Figure33 Adapterplate

1.1.4.4 ST030 / 030RB\_200

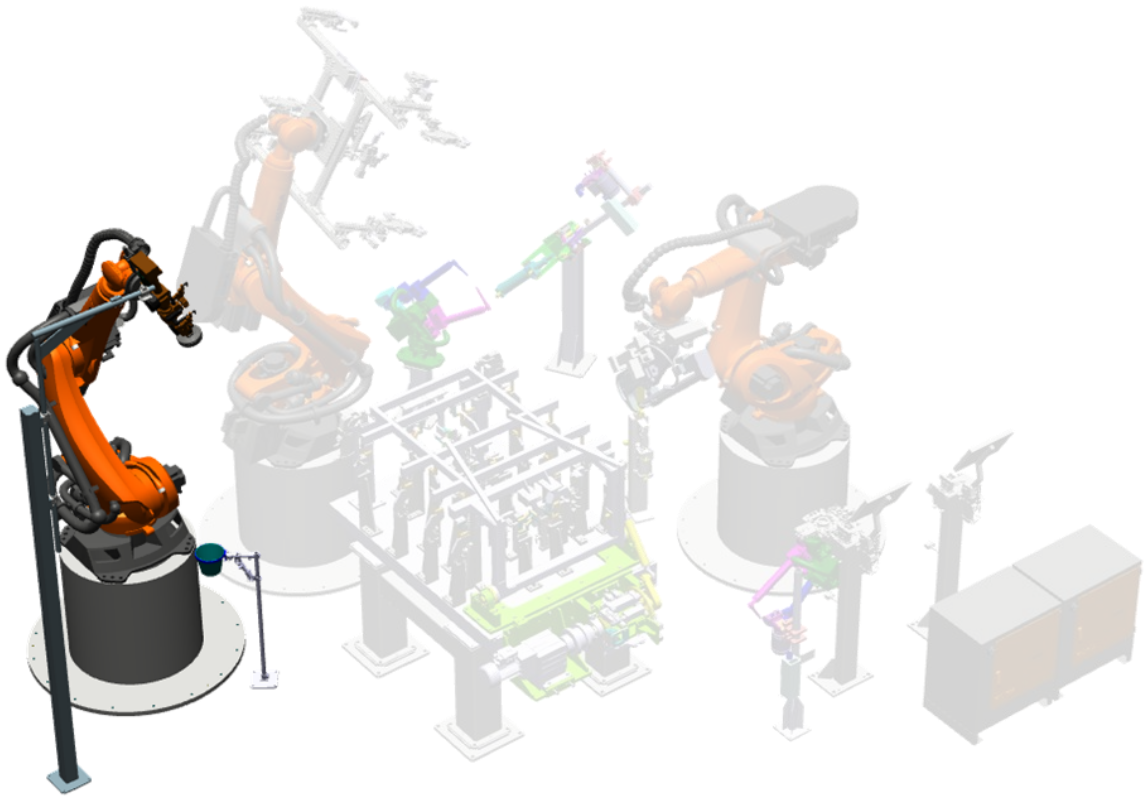


Figure34 Robotwith tool



1.1.4.4.1 ST030 / 030RB\_200 – Overview

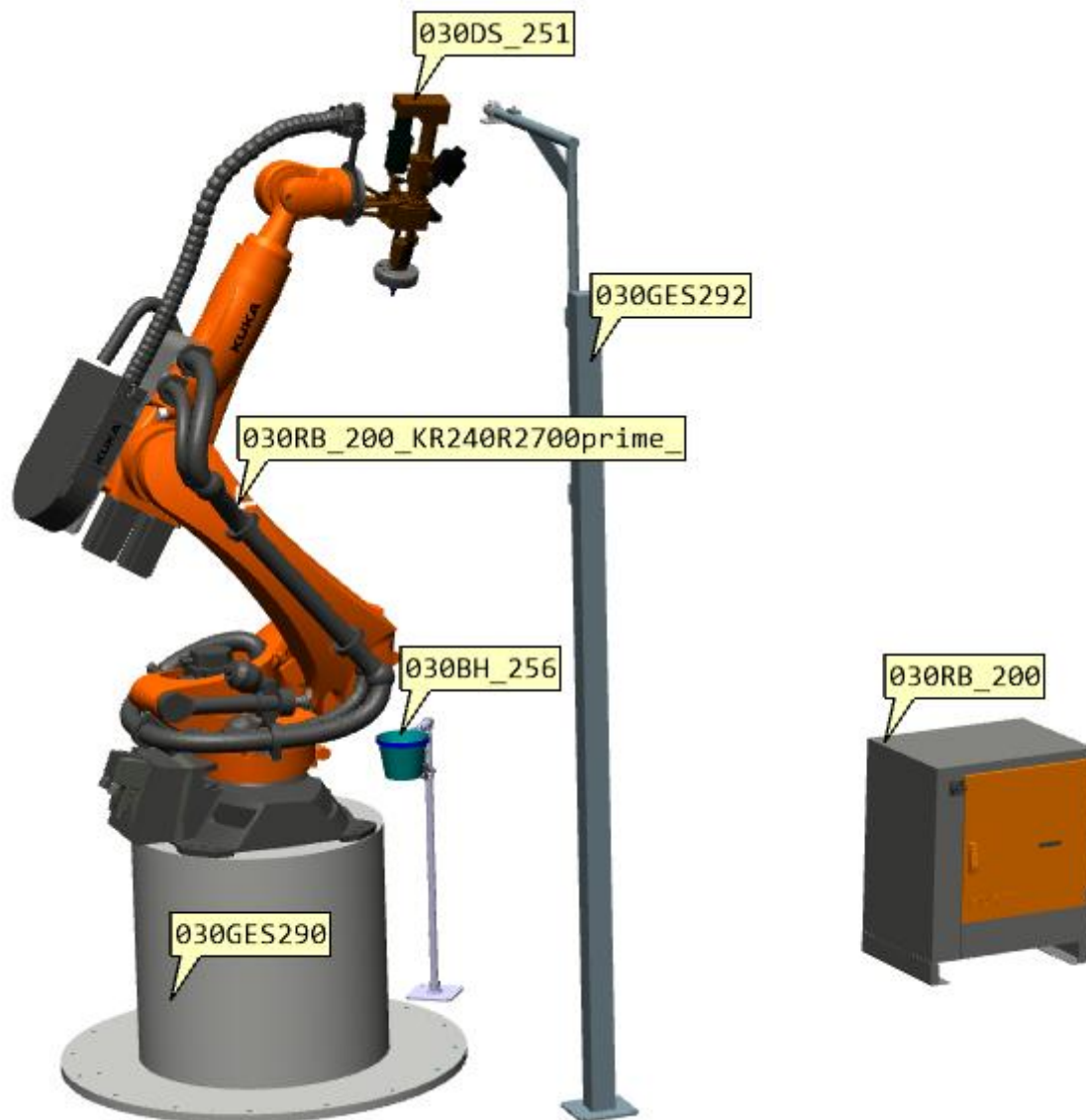
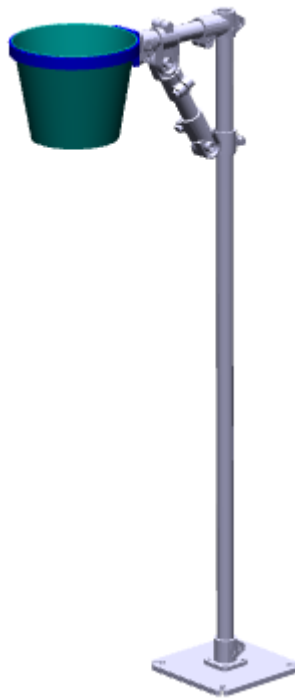


Figure35ST030 / 030RB\_200 – Overview

1.1.4.4.2 ST030 / 030RB\_200 / 030BH\_256



1.1.4.4.3 ST030 / 030RB\_200 / 030DS\_251



Figure36 Robot tool

1.1.4.4.4 ST030 / 030RB\_200 / 030GES290



Figure37 Robot pedestal

1.1.4.4.5 ST030 / 030RB\_200 / 030GES292



1.1.4.4.6 ST030 / 030RB\_200 / 030RB\_200

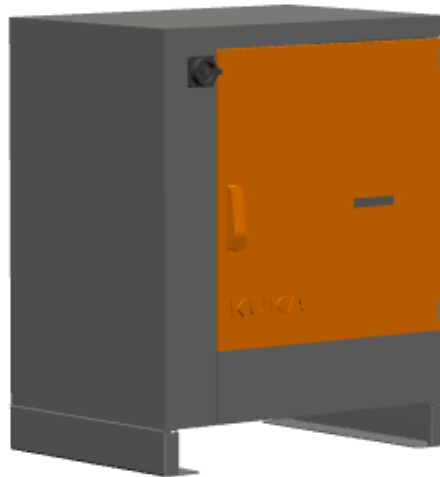


Figure38Control cabinet

1.1.4.4.7 ST030 / 030RB\_200 / 030RB\_200\_KR240R2700prime\_



Figure39 Robot

1.1.4.5 ST030 / 030RB\_300

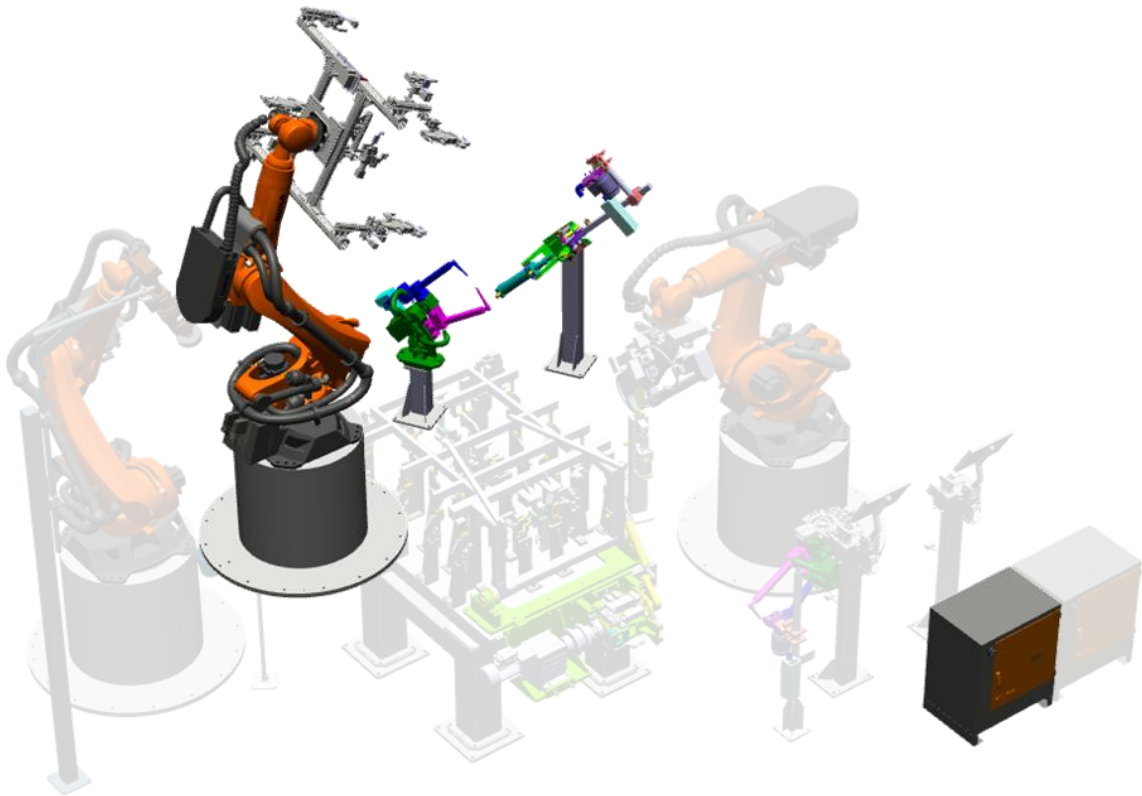


Figure40 Robot with gripping system, stationary welding tongs and control cabinet

#### 1.1.4.5.1 ST030 / 030RB\_300 – Overview

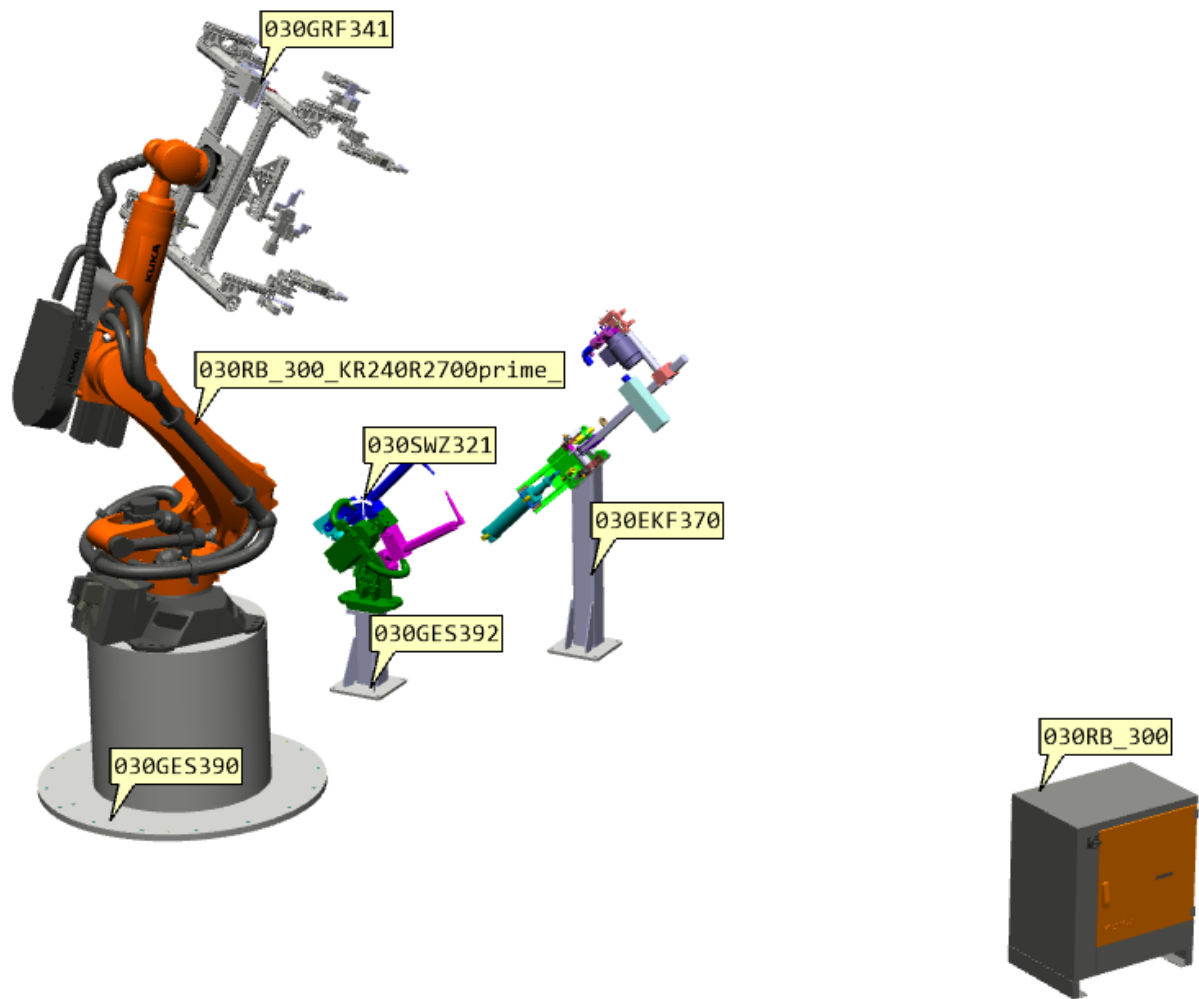
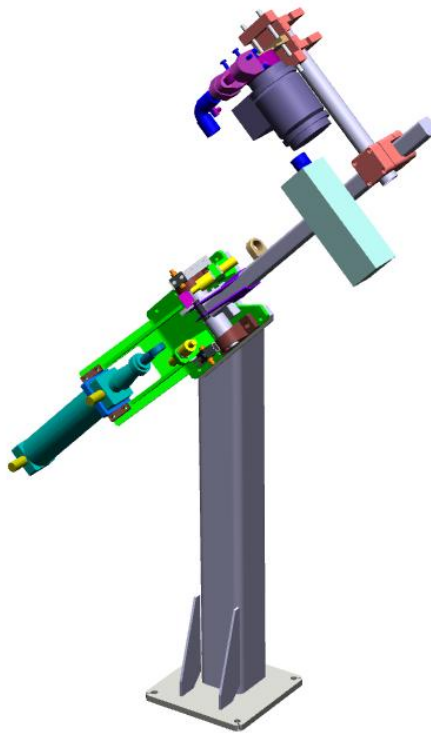


Figure41ST030 / 030RB\_300 – Overview



1.1.4.5.2 ST030 / 030RB\_300 / 030EKF370



1.1.4.5.3 ST030 / 030RB\_300 / 030GES392



1.1.4.5.4 ST030 / 030RB\_300 / 030SWZ321

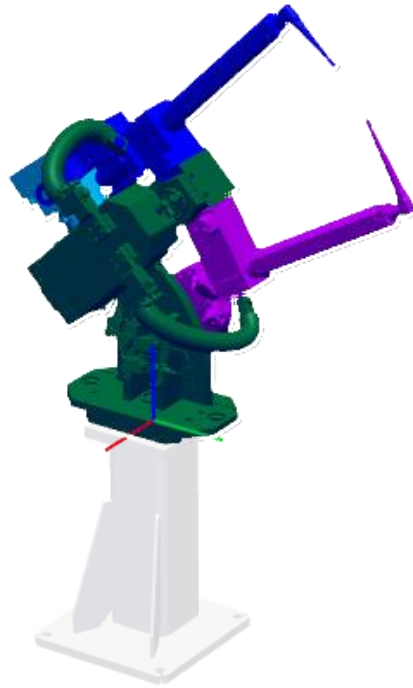


Figure42Welding tongs

1.1.4.5.5 ST030 / 030RB\_300 / 030RB\_300

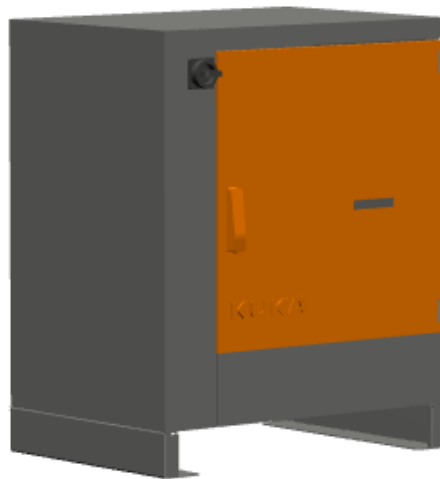


Figure43Control cabinet

1.1.4.5.6 ST030 / 030RB\_300 / 030GES390



Figure44Robot pedestal

1.1.4.5.7 ST030 / 030RB\_300 / 030GRF341



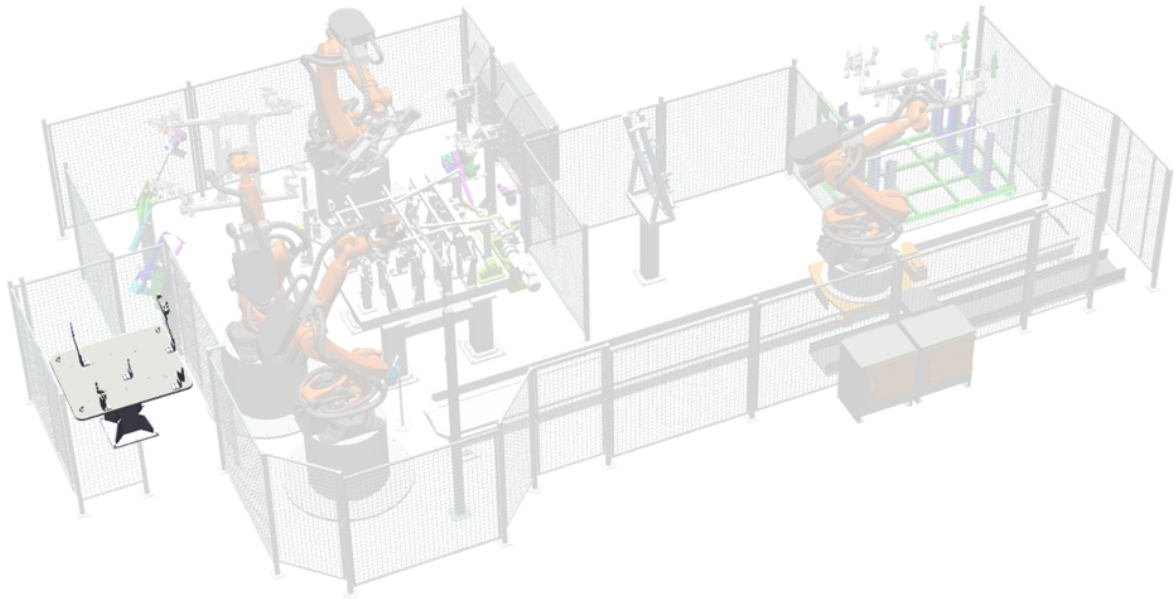
*Figure45Gripping system*

1.1.4.5.8 ST030 / 030RB\_300 / 030RB\_300\_KR240R2700prime\_



Figure46 Robot

#### 1.1.5 ST040\_Uebergabe



##### 1.1.5.1 ST040\_Uebergabe / F19721000063203000100\_001\_zb\_hb\_ablage\_001\_071106.1

