

# INTELLIGENT COBOT

---

Collaborate. Automate. Innovate.



**AROJA XORFEX**  
DIGITAL SOLUTIONS

ABOUT US .....	1
HISTORY .....	2
FAIRINO COBOTS .....	3
APPLICATIONS .....	4
PRODUCT RANGE .....	5
SPECIFICATIONS .....	6
CONSTRUCTION .....	7
ONTOLOGY .....	8
COBOT END .....	9
CONNECTION .....	10
SAFETY BOX .....	11
CONTROL BOX .....	12
TEACH PENDANT .....	13
SOFTWARE .....	14
SIMMACHINE .....	15
PROGRAMMING .....	16
APPLICATION CASES .....	17



AROJA XORFEX is a leader in the development and supply of industrial digital inkjet printing machines, 3D printers and dedicated equipment with a history since 2005.

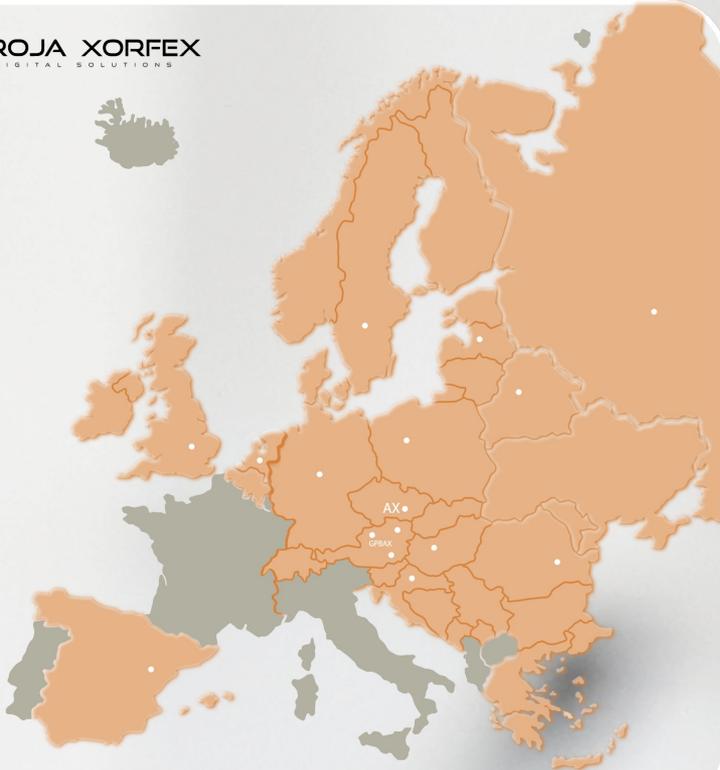
Among our solutions are supply of digital inkjet printing technology for printing on large-format panels, rotary objects, stickers, labels and special custom made solutions to worldwide customers.

All our activities are supported with CNC machinery, assembling and 3D measuring reportings.

The company Aroja Xorfex is certified according to ISO 9001 for research and development, production and servicing of equipment.

**AROJA XORFEX**  
DIGITAL SOLUTIONS

**AROJA XORFEX**  
DIGITAL SOLUTIONS



Our representation in Europe

# ABOUT US

## Our support business

- CNC Machining of metal products
- Mechanical and electromechanical assemblies for external customers
- Programming & Development customized electronic

## What is our core business

- Development and production of digital Ink-Jet printing machines
- Automation and robotization
- Supply of consumables

## About our company

- We are friendly family bases company
- Our team is based on 18 highly experienced colleagues
- Sales representatives cover almost whole Europe and Russia

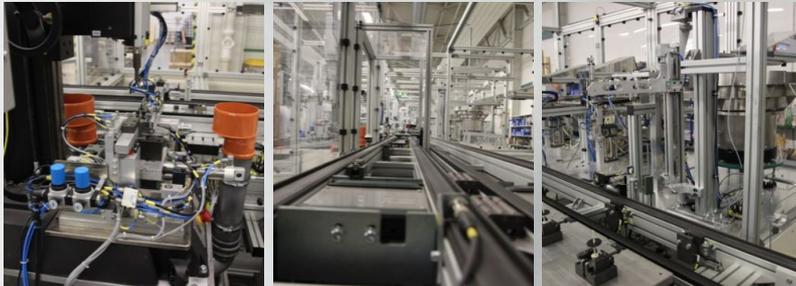
# HISTORY



- Established in 2005
- Development and production of 3D printers and special machines mainly for the automotive industry
- Certified manufacturer and R&D according to ISO 9001



Customer inspection station STV WOCO – Mercedes Benz line (water valves), machine cycle 28 sec, annual production 850 thousand pcs



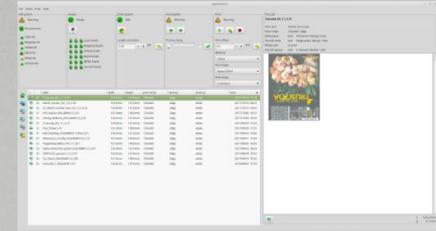
Customer VW, Audi – production line, production cycle 8 sec, assembled from 10 parts, including ultrasonic welding 2 stations, annual production 2 500 000 pcs



- Specialist in ink-jet technology
- Expert in construction of industrial digital applications
- Expert in development of electronics and software



Electronics ink-jet

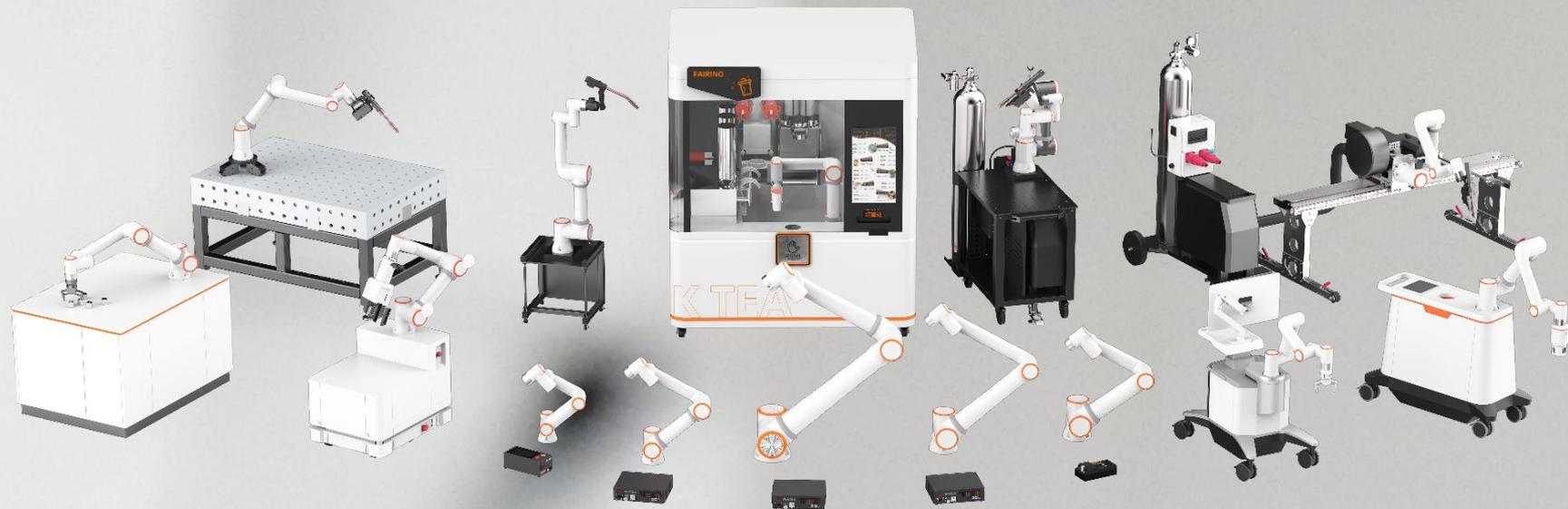


Control software for ink-jet



Print head and line for printing rubber boats by separator, Gumotex a.s.

# FAIRINO COBOTS



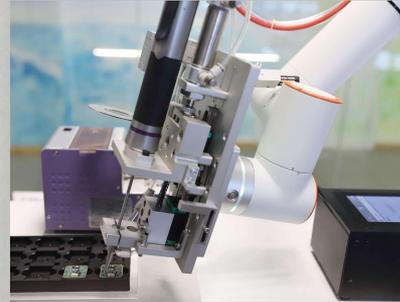
# APPLICATIONS



WELDING



PALLETIZING



ASSEMBLING



PICK & PLACE



PACKAGING

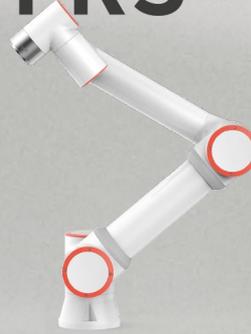


REHABILITATION

**FR3**



**FR5**



**FR10**



**PRODUCT RANGE**

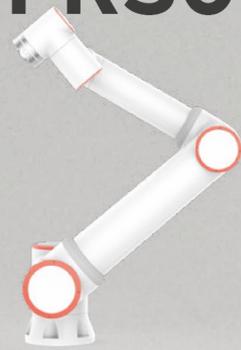
**FR16**



**FR20**



**FR30**



# SPECIFICATIONS

	FR3		FR5		FR10		FR16		FR20		FR30	
Payload	3kg		5kg		10kg		16kg		20kg		30kg	
Reach	622mm		922mm		1400mm		1034mm		1854mm		1403mm	
Degrees of freedom	6 rotating joints		6 rotating joints		6 rotating joints		6 rotating joints		6 rotating joints		6 rotating joints	
HMI	10.1 inch teach pendant or mobile terminal Web App				10.1 inch teach pendant or mobile terminal Web App				10.1 inch teach pendant or mobile terminal Web App			
Pose repeatability per ISO 9283	±0.02mm		±0.02mm		±0.05mm		±0.03mm		±0.1mm		±0.1mm	
Axis movement	Working range	Maximum speed	Working range	Maximum speed	Working range	Maximum speed	Working range	Maximum speed	Working range	Maximum speed	Working range	Maximum speed
Base	±175°	±180°/s	±175°	±180°/s	±175°	±120°/s	±175°	±120°/s	±175°	±120°/s	±175°	±120°/s
Shoulder	+ 85° / - 265°	±180°/s	+ 85° / - 265°	±180°/s	+ 85° / - 265°	±120°/s	+ 85° / - 265°	±120°/s	+ 85° / - 265°	±120°/s	+ 85° / - 265°	±120°/s
Elbow	±150°	±180°/s	±160°	±180°/s	±160°	±180°/s	±160°	±180°/s	±160°	±120°/s	±160°	±120°/s
Wrist 1	+ 85° / - 265°	±180°/s	+ 85° / - 265°	±180°/s	+ 85° / - 265°	±180°/s	+ 85° / - 265°	±180°/s	+ 85° / - 265°	±180°/s	+ 85° / - 265°	±180°/s
Wrist 2	±175°	±180°/s	±175°	±180°/s	±175°	±180°/s	±175°	±180°/s	±175°	±180°/s	±175°	±180°/s
Wrist 3	±175°	±180°/s	±175°	±180°/s	±175°	±180°/s	±175°	±180°/s	±175°	±180°/s	±175°	±180°/s
Typical TCP speed	1m/s		1m/s		1.5m/s		1m/s		2m/s		2m/s	
IP classification	IP54 (IP65 Optional)		IP54 (IP65 Optional)		IP54 (IP65 Optional)		IP54 (IP65 Optional)		IP54 (IP65 Optional)		IP54 (IP65 Optional)	
Noise	<65dB		<65dB		<65dB		<65dB		<70dB		<70dB	
Robot mounting	Any orientation		Any orientation		Any orientation		Any orientation		Any orientation		Any orientation	
I/O Ports	(DI) 2 (DO) 2		(DI) 2 (DO) 2		(DI) 2 (DO) 2		(DI) 2 (DO) 2		(DI) 2 (DO) 2		(DI) 2 (DO) 2	
	(AI) 1 (AO) 1		(AI) 1 (AO) 1		(AI) 1 (AO) 1		(AI) 1 (AO) 1		(AI) 1 (AO) 1		(AI) 1 (AO) 1	
Tool I/O power supply	24V/1.5A		24V/1.5A		24V/1.5A		24V/1.5A		24V/1.5A		24V/1.5A	
Footprint	128mm		149mm		190mm		190mm		240mm		240mm	
Weight	≈15kg		≈22kg		≈40kg		≈40kg		≈85kg		≈85kg	
Operating temperature	0-45°C		0-45°C		0-45°C		0-45°C		0-45°C		0-45°C	
Operating humidity	90%RH(non-condensing)		90%RH(non-condensing)		90%RH(non-condensing)		90%RH(non-condensing)		90%RH(non-condensing)		90%RH(non-condensing)	
Materials	Aluminium, Steel		Aluminium, Steel		Aluminium, Steel		Aluminium, Steel		Aluminium, Steel		Aluminium, Steel	
Typical power test payload settings, different loads are set according to robot models, payload configuration parameters are as follows :												
	FR3 payload setting: 3kg, Z-axis: 18mm		FR5 payload setting: 5kg, Z-axis: 30mm		FR10 payload setting: 10kg, Z-axis: 60		FR16 payload setting: 16kg, Z-axis: 96mm		FR20 payload setting: 20kg, Z-axis: 120mm		FR30 payload setting: 30kg, Z-axis: 200mm	
Select aging test program, connect robot's total power to power meter, set robot to automatic mode, set global speed to 100, click run, if there are no abnormalities after running two cycles, start continuous testing for 24 hours. After 24 hours, respectively, record the peak and average power of the power meter, and then statistically analyze each model :												
Typical average power	224W		261W		294W		315W		624W		594W	
Typical peak power	276W		314W		503W		410W		806W		909W	

# CONSTRUCTION



DRIVE

ENCODER

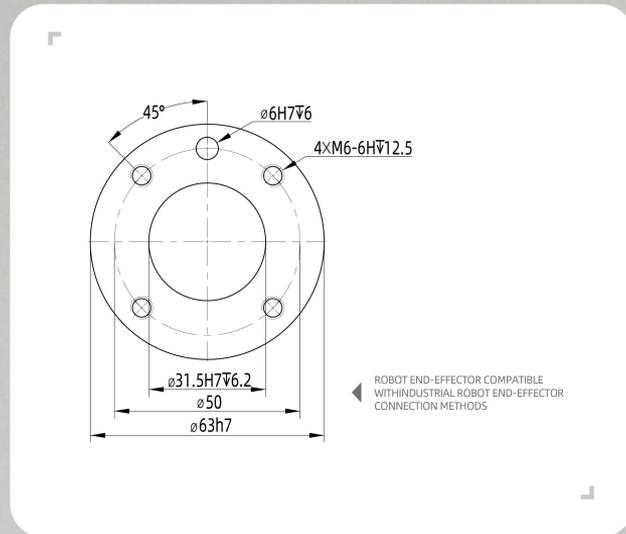
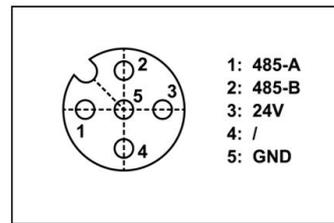
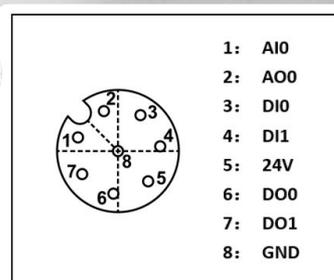
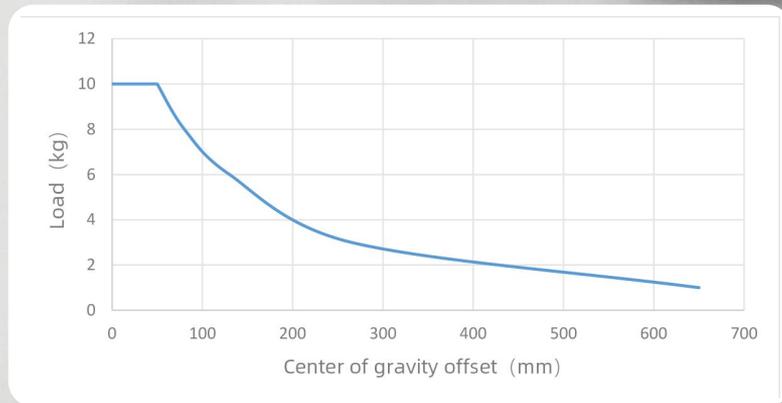
MAGNETIC BRAKE

AIR TORQUE MOTORS

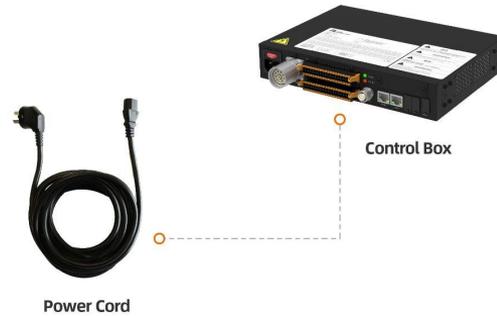
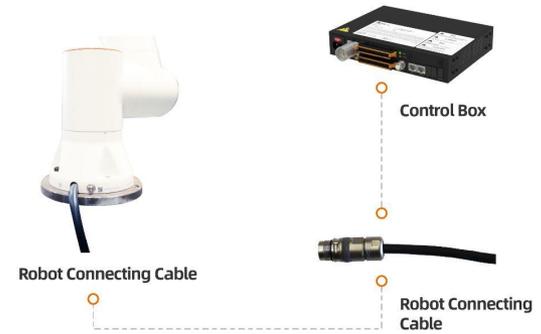
HARMONIC DRIVE



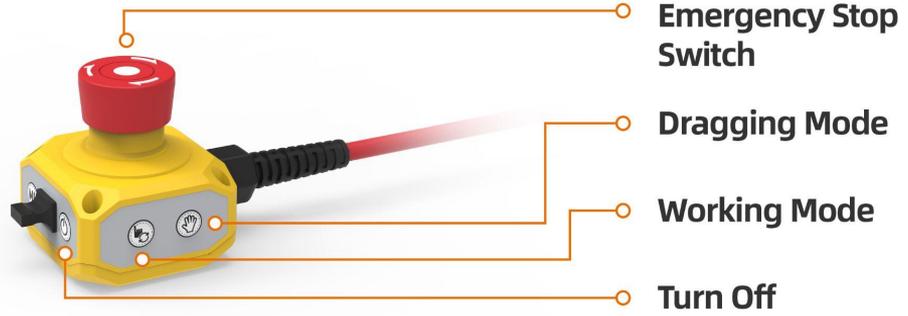
# COBOT END



# CONNECTION



# SAFETY BOX



# CONTROL BOX

## IO interface

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
E-24V	E-0V	EI0-1	EI1-1	SI0-1	SI1-1	EDM-	EST0-1	EST1-1	485-B0	485-B1	5V	B1+	B1-	B2+	B2-	GNDa	A00	A01
24V	0V	EI0-2	EI1-2	SI0-2	SI1-2	EDM+	EST0-2	EST1-2	485-A0	485-A1	GND	A1+	A1-	A2+	A2-	GNDa	A10	A11
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
D00	D01	D02	D03	E-24V	D04	D05	D06	D07	E-24V	C00	C01	C02	C03	E-24V	C04	C05	C06	C07
D10	D11	D12	D13	E-0V	D14	D15	D16	D17	E-0V	C10	C11	C12	C13	E-0V	C14	C15	C16	C17



# TEACH PENDANT



# SOFTWARE

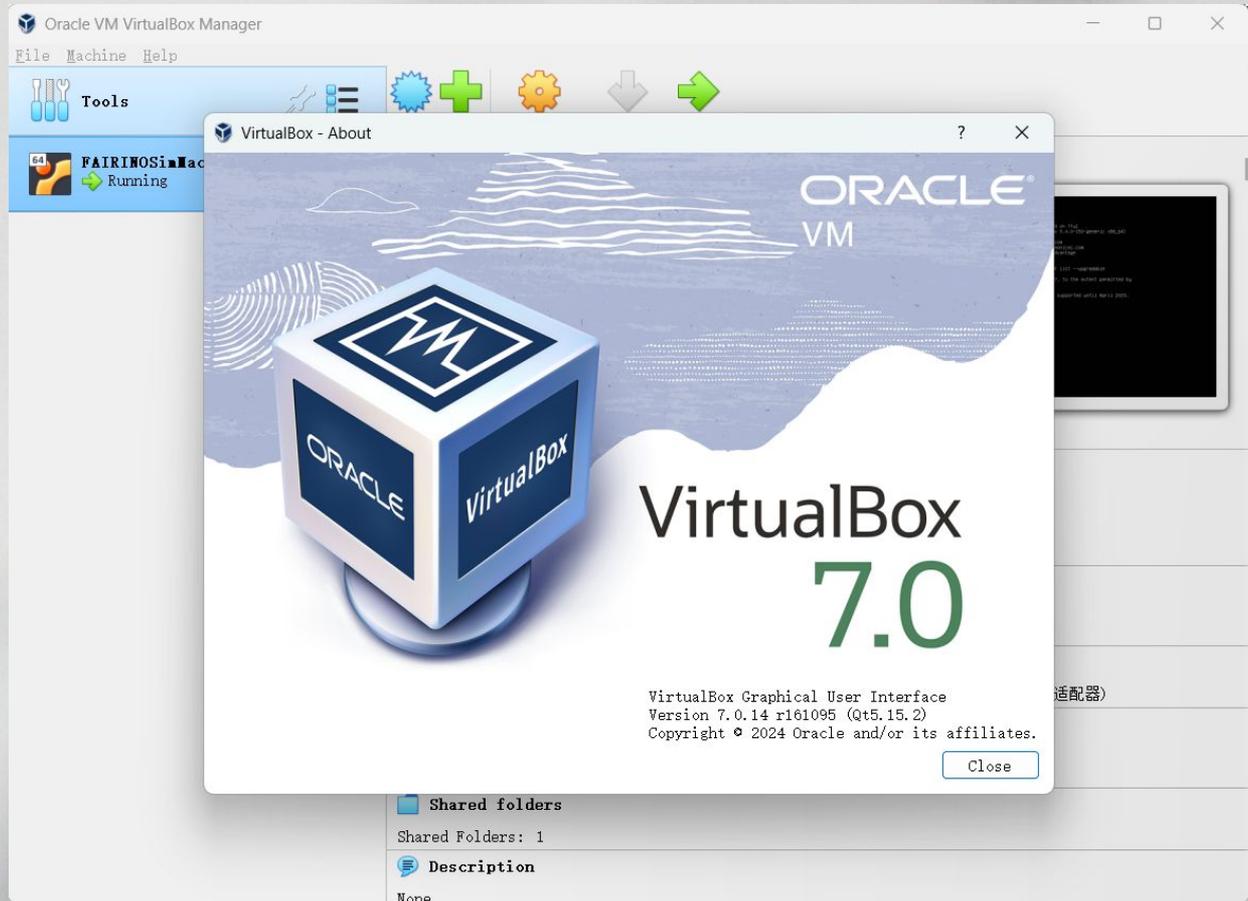


The main interface is divided into several sections. On the far left is a dark sidebar with a menu containing: Initialize, Teaching, Status, Auxiliary, and Settings. The top navigation bar includes a status indicator 'Stopped', tool selection 'tool1', workpiece selection 'wobj1', axis selection 'exaxis1', and a numerical value '100'. It also contains several control icons: a stop icon, a play icon, a square stop icon, and a pause icon. Below the navigation bar, there are tabs for 'Operation & Status', '360° Free Mounting', and 'Fixed Mounting'. The central area is a 3D visualization of a robotic arm with a blue vertical arrow pointing upwards from its end effector. To the left of the 3D view is a control panel with a table for joint parameters:

Joint	Base	Tool	Wobj	Move
Axis	IO	TPD	FT	RCM
Speed	100	%		
Acceleration	180	%/s^2		
Threshold	30	°		

Below the table are 'Single' and 'Multi' mode buttons, followed by six rows of directional controls (minus, slider, plus) with numerical input fields. At the bottom of this panel are 'Prefix' and 'Print name' input fields with an 'Add' button. On the right side of the interface, there are several data panels: 'Robot Pose' with a refresh icon; 'Joints' showing coordinates for J1, J2, J3, J4, J5, and J6; 'TCP' showing X, Y, Z, RX, RY, and RZ coordinates; 'FT' showing Tool force/torque (Fx, Fy, Fz, Tx, Ty, Tz) and 'Act\_State'; 'Line-Num' showing 'Num : 0'; and 'CtrlBox' with a grid of 14 status indicators (D00-D07, C00-C07, D10-D13).

# SIMMACHINE



# PROGRAMMING

The screenshot displays a robot programming software interface. At the top, there are control buttons for power, play, stop, and pause. The status bar shows 'Stopped' and various tool/wobj coordinates. The main interface is divided into several panels:

- Left Panel:** Contains navigation and tool options like 'Initialize', 'Teaching', 'Program Teaching', 'Graphical Program', 'Manage Teaching', 'Status', 'Auxiliary', and 'Settings'.
- Logic Command Panel:** Shows a list of commands for 'test01.lua':
  - 1 → while (1) do
  - 2 → PTP(A1,100,-1,0)
  - 3 → PTP(A2,100,-1,0)
  - 4 → end
- Motion Command Panel:** Lists various motion types such as PTP, LIN, ARC, Circle, Spiral, N-Spiral, Spline, N-Spline, Weave, TPD, Offset, ServoC, Trajectory, and TrajectoryJ.
- Joint Data Panel:** Displays parameters for joints J1 through J6:

Joint	Base	Tool	Wobj	Move	...
Eaxis	IO	TPD	FT	RCM	
J1	43.772				
J2	-57.112				
J3	76.562				
J4	-106.99				
J5	-86.247				
J6	-161.139				
- 3D Model:** A 3D rendering of a robotic arm with coordinate axes (X, Y, Z).
- Robot Pose Panel:** Shows 'Robot Pose' data:
  - Joints:** J1: 43.772, J2: -57.112, J3: 76.562, J4: -106.99, J5: -86.247, J6: -161.139
  - TCP:** X: -268.604, Y: -407.653, Z: 191.134, RX: -176.455, RY: -2.752, RZ: -65.254
  - FT:** Fx: 0.000, Fy: 0.000, Fz: 0.191, Tx: 0.000, Ty: 0.000, Tz: 0.000, Act\_State: 1
  - Line-Num:** Num: 0,0,0,0
  - CtrlBox:** A grid of control buttons (D00-D07, C00-C07, Aout0-Aout1, Ain0-Ain1).
  - EndEff:** Buttons for D00, D01, D10, D11, Aout0, Aout1, Ain0, Ain1.

# APPLICATION CASES



# AROJA XORFEX

D I G I T A L   S O L U T I O N S

**THANK YOU FOR YOUR ATTENTION!**

