



Industry & Facilities Division
Third Party Inspection Report

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INSPECTION REPORT No. FST17022501	Revision No. 0
<input type="checkbox"/> Initial <input type="checkbox"/> Interim <input checked="" type="checkbox"/> Final <input type="checkbox"/> Resident <input type="checkbox"/> Remote	
Inspection requested by: T HUB ROBOT TEKNOLOJILERI VE MAKINE SANAYI TICARET ANONIM SIRKETI	
Inspection performed as Recognised Authority: <input type="checkbox"/> Yes, :(Recognition) <input checked="" type="checkbox"/> No	
BV Job Nr: BVGH.IDD.TR.10291764.24.A42	

Project: Factory Acceptance Tests (FAT) of Towercraft Exterior Cleaning Robot	IPO Ref (If applicable): - (BV internal P/o)
BV Client: T HUB ROBOT TEKNOLOJILERI VE MAKINE SANAYI TICARET ANONIM SIRKETI	P/o nr: BVGH.IDD.TR.10291764.24.A42 (client to BV)
Manufacturer/Vendor: T HUB ROBOT TEKNOLOJILERI VE MAKINE SANAYI TICARET ANONIM SIRKETI	P/o nr: - (client to Manufacturer)
Sub-Vendor (If applicable):	
Inspection Location (Address): TÜBİTAK MAM Teknoloji Serbest Bölgesi B Blok No: 7-11, 41400 Gebze/Kocaeli, Türkiye	Previous Inspection (If applicable): -
Inspection Location (GPS Coordinates): 40.79272610080492, 29.46374704088709	Next Inspection (If applicable): -
Inspection performed on: 17.02.2025	Total No. of Inspection Days: 1 Day

MATERIAL / SUBJECT OF INSPECTION	ITEM / TAG Nr	QTY As per P/O	QTY Offered for inspection
<input type="checkbox"/> Refer to attachment section I instead (Indicate if separate material list is provided in attachment)			
Towercraft Exterior Cleaning Robot	TRC009X TRC010X	2	2

A – INSPECTION RESULT		
<input checked="" type="checkbox"/> Satisfactory (Without comments)	<input type="checkbox"/> Satisfactory with comments (Any of trailing Punch or Non Conformity items is still open)	<input type="checkbox"/> Not Satisfactory (NCR raised during the inspection)
Inspection Summary: (for details refer to section E)		
THE EQUIPMENT AND MATERIAL COVERED / DESCRIBED ABOVE ARE VISUALLY AND FUNCTIONALLY INSPECTED AND TESTED ACCORDING TO THE TECHNICAL SPECIFICATIONS AND APPLICABLE STANDARDS AND FOUND CONFORMING TO REQUIREMENTS.		
Open Non Conformities:	<input type="checkbox"/> Yes, details in section G	<input checked="" type="checkbox"/> No
Open Punch List Items:	<input type="checkbox"/> Yes, details in section H	<input checked="" type="checkbox"/> No
Release Note Issued:	<input type="checkbox"/> Yes, number(s): (Release Note number)	<input checked="" type="checkbox"/> No
BV Traceability Stamping:	<input type="checkbox"/> Yes,	<input checked="" type="checkbox"/> No

BV Inspector: Faruk Şamil Tekir (Name and Signature)	BV Coordinator: SEDAT ŞAHİN (Name and Signature)
BV Office: BV ISTANBUL / TURKEY	Inspection Report Date: 24.02.2025
Distribution: <input checked="" type="checkbox"/> CLIENT <input checked="" type="checkbox"/> BV <input type="checkbox"/> MANUFACTURER <input type="checkbox"/> OTHER:	Attachments Repo <input checked="" type="checkbox"/> Yes, details in section J <input type="checkbox"/> No

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B - REFERENCE DOCUMENTATION:					
<input type="checkbox"/> Refer to attachment section J instead (Indicate if separate document list is provided in attachment)					
Title	Reference n°	Rev.	Approval status	Approved by	Date
Towercraft Performance Control Test Form	-	-	as final	-	-
Instruction Manual	-	-	as final	-	-
Catalogues	-	-	as final	-	-

C – ATTENDEES		
Name	Position	Representing
Faruk Samil Tekir	Inspector (Electrical Engineer)	Bureau Veritas Turkey
Gizem Çakir	Project Engineer	T Hub

D - MEASURING & TESTING EQUIPMENT USED			
<input checked="" type="checkbox"/> Refer to attachment section J instead (Indicate if separate equipment list is provided in attachment)			
Equipment Type	Equipment Identity n°	Last Calibration Date	Expiry Date
-	-	-	-

E - INSPECTION DETAILS
<p>E – General</p> <p>The tests witnessed & reviewed as seen in the signed & stamped T HUB ROBOT TEKNOLOJILERI test report given as the attachment of this IR by all parties are satisfactory about the manufacturer procedures as mentioned in the reference document's section.</p> <p>Factory Acceptance Tests have been performed according to “TOWERCRAFT PERFORMANCE CONTROL TEST FORM” successfully for Towercraft Exterior Cleaning Robot (TRC009X & TRC010X).</p> <p>FAT results are found satisfactory according to reference documents.</p>
<p>E1 – Details of Witness (W) & Hold (H) Inspection Points</p> <p>1- Visual & marking checks</p> <p>Towercraft Exterior Cleaning Robots (TRC009X & TRC010X) visually inspected and found of good workmanship. Final visual, external effect, surface finish and markings checks were done. It has been witnessed that the visual & marking requirements of Towercraft Exterior Cleaning Robot complied with the instruction manual.</p> <p>Result: Satisfactory, Accepted</p>



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2- Dimensional & material list checks

Product material list and product visual control of the Towercraft Exterior Cleaning Robot, material control, dimensional control with measured assembly drawings were made.

Dimensional checks were carried out on offered materials against applicable drawings, giving priority to all critical dimensions. All checked dimensions were found in compliance with drawing requirements. Bill of Material (BOM) control was performed against applicable material list and found in compliance.

Result: Satisfactory, Accepted

3- Functional controls

Item	Activity Description	Result
Suspension System (EDS)		
1	When movement is given from the joystick remote control, it should be checked whether the right and left actuators work at the same time and whether they stop at the same time.	Satisfactory
2	When movement is given via the panel, it should be checked whether the right and left actuators work at the same time.	Satisfactory
3	It should be checked that there is a ground connection between the crane and the suspension system.	Satisfactory
4	It should be checked that the right and left actuators go in the same direction.	Satisfactory
5	When the actuators reach the starting or ending point, they should not be forced to pass the point they are at with the buttons.	Satisfactory
6	When movement is given from the joystick on the panel, it should be checked whether the right and left actuators work at the same time and whether they stop at the same time.	Satisfactory
Communication Equipment Control		
1	The remote-control battery must be checked.	Satisfactory
2	It should be checked that the 40 A power supply on the robot is turned off when the emergency stop on the robot, the emergency stop on the remote control or the on/off button is turned off.	Satisfactory
3	The buttons on the remote control must be checked. <ul style="list-style-type: none"> • Fan button • Brush button • Pump water button • Pump solution button • Balance actuator forward movement (with joystick) • Balance actuator reverse movement (with joystick) • EDS forward button (with joystick) • EDS reverse button (with joystick) • Washing system up 	Satisfactory



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	• Washing system down	
Wheel And Wheel Cleaning System		
1	The wheel angle system (actuator) should be moved to the right and left via the remote control. Limit switches should cut off the signal when they reach the end point.	Satisfactory
2	It should be checked that the limit switches are connected to the correct points in the wheel system.	Satisfactory
3	It should be checked that the wheel cleaning system is working. The wheel cleaning motors should be activated with the operation of the brush motors.	Satisfactory
4	There should be no jamming of the wheels while the wheel cleaning system is operating, the wheels in contact with the surface should be able to move freely.	Satisfactory
Brush System		
1	When the fans are running, the brushes should be activated automatically.	Satisfactory
2	The brushes will turn towards the suction port.	Satisfactory
3	When the button is pressed on the remote control, it should be checked that the timer is working.	Satisfactory
4	When the brush motors are activated, the wheel cleaning brushes should also be activated.	Satisfactory
5	When the brush motor is activated, the dead space brushes should also be activated.	Satisfactory
Air Vacuum System		
1	When the button on the remote control is pressed, it should be checked that the fans are sucking.	Satisfactory
2	When the button on the remote control is pressed, it should be checked that the timer is working.	Satisfactory
3	When the fan button on the panel on the electrical panel is pressed, the fan motor and brush motor should be activated.	Satisfactory
4	It should be checked that there is a protection wire on the fans.	Satisfactory
5	When the fan button is active, it should be checked that the brush motor wheel cleaning system and dead brushes are activated.	Satisfactory
6	It should be checked that the fans are turning towards each other.	Satisfactory
Washing System		
1	The water pump should be activated via the remote control.	Satisfactory
2	The upper washing or lower washing system should be operated according to the direction of travel of the robot.	Satisfactory
3	The solution pump should be activated via the remote control.	Satisfactory
4	The upper washing or lower washing system should be operated according to the direction of travel of the robot.	Satisfactory
5	It should be checked that each solenoid valve and nozzle are working. The nozzles should spray directly without leaking or urination.	Satisfactory
6	It should be checked that the solenoid valves of the upper and lower nozzles, 2 water and 2 solution solenoid valves open/close for the time given on the screen.	Satisfactory
7	The lower and upper solenoid valve pressures should be minimum 7 bar.	Satisfactory



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8	Low bar or non-operation is due to low pressure. In these cases, the air in the system should be discharged via the valves.	Satisfactory
9	When the water or solution system is operated and the lower washing is activated, the lower pressure sensor value should be checked on the screen.	Satisfactory
10	When the water or solution system is operated and the upper washing is activated, the upper pressure sensor value should be checked on the screen.	Satisfactory
11	It should be checked whether the water float sends a signal when the water runs out.	Satisfactory
12	It should be checked whether the solution float sends a signal when the solution is finished.	Satisfactory

Warning Lamp

1	When any of the brush motors do not work/the thermal switch is tripped, the yellow light should be on.	Satisfactory
2	When any of the fan motors do not work/the thermal switch is tripped, the red light should be on.	Satisfactory
3	When the water in the solution tank runs out, the green light should be on.	Satisfactory
4	When the water in the water tank runs out, the blue light should be on.	Satisfactory

Headlight

1	When working at night, the headlight button should be pressed on the control panel on the electrical panel to control it.	Satisfactory
2	The headlight system should directly illuminate the surface being cleaned.	Satisfactory

E2 – Details of Monitoring and Surveillance Patrols	<input type="checkbox"/> Tick if conducted during the visit
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E3 – Details of Certificates Review	<input type="checkbox"/> Tick if conducted during the visit
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F – HEALTH, SAFETY & ENVIRONMENT COMMENTS
<i>(Comment on Observations and Actions Taken During the Inspection)</i>
All required PPEs were used by all parties' representatives during inspection period.

G- NON CONFORMITIES	<input type="checkbox"/> Refer to attachment section J instead <i>(Indicate if separate punch list is provided in attachment)</i>
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Item	Description	Status	Raised on	Report Nr.	Closed on	Report Nr.	Comments
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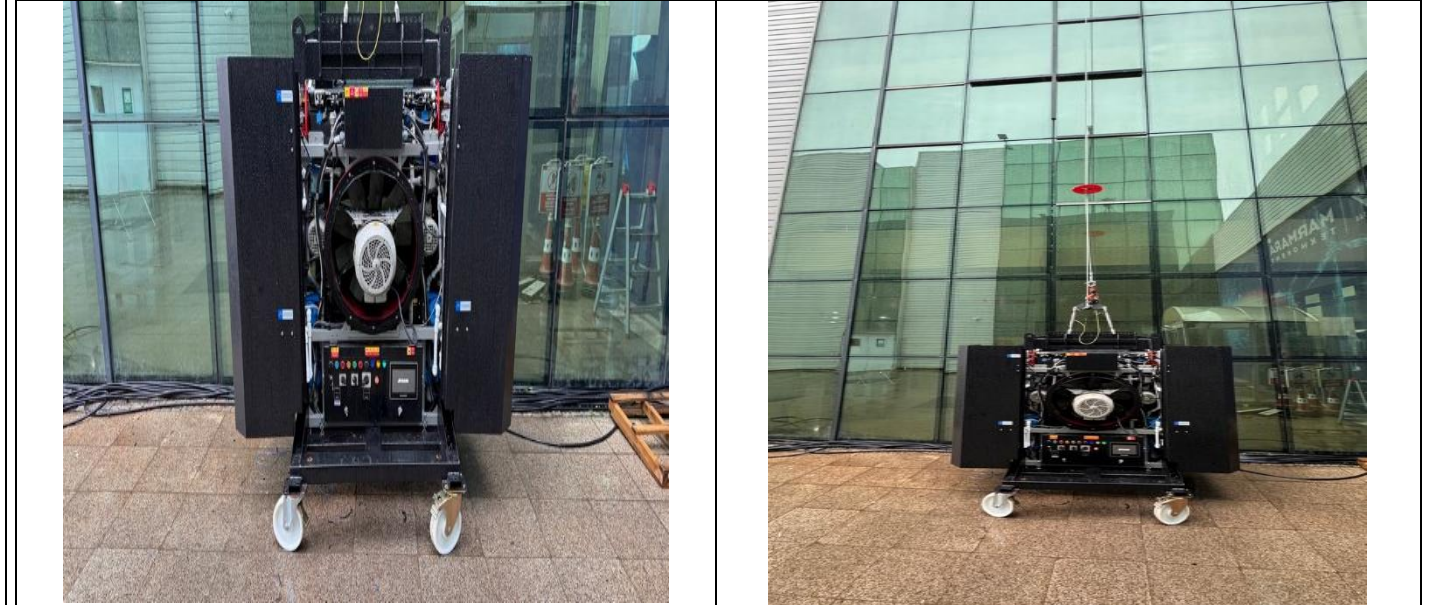
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H – PUNCH LIST ITEMS

Refer to attachment section J instead
(Indicate if separate punch list is provided in attachment)

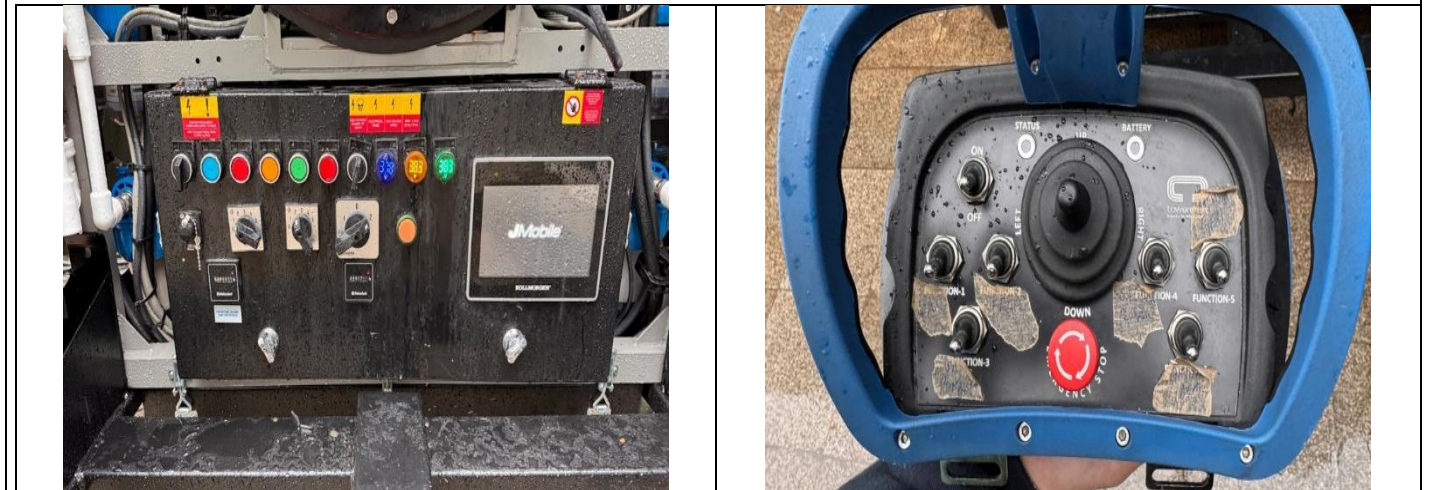
Item	Description	Status	Raised on	Report Nr.	Closed on	Report Nr.	Comments
-	-	-	-	-	-	-	-

I - DIGITAL PICTURES



Towercraft Exterior Cleaning Robot (TRC009X)

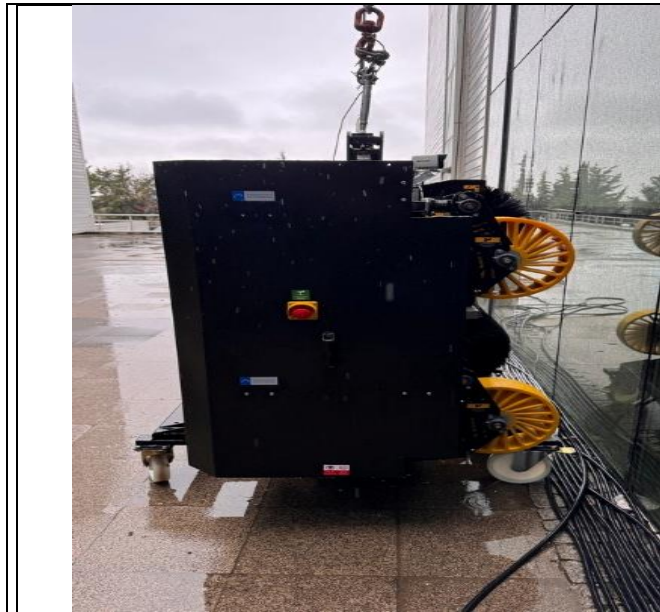
Towercraft Exterior Cleaning Robot (TRC009X)



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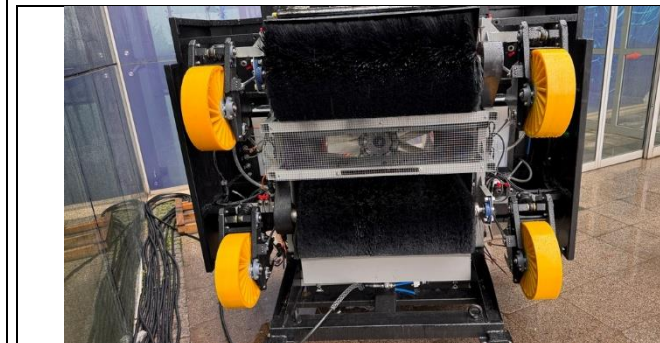
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Towercraft Exterior Cleaning Robot (TRC009X)



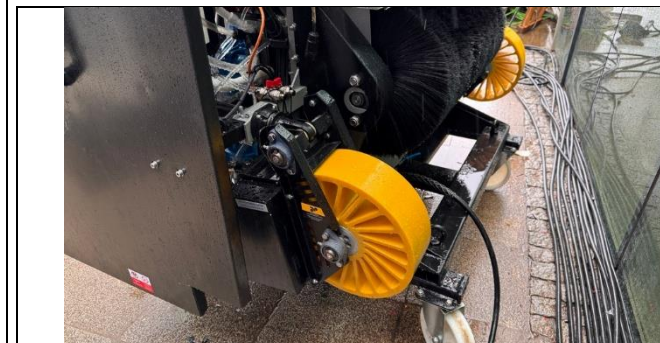
A
Towercraft Exterior Cleaning Robot (TRC009X)



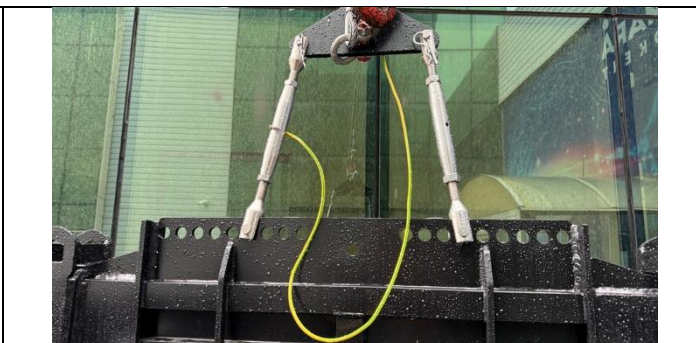
Towercraft Exterior Cleaning Robot (TRC009X)



Towercraft Exterior Cleaning Robot (TRC009X)

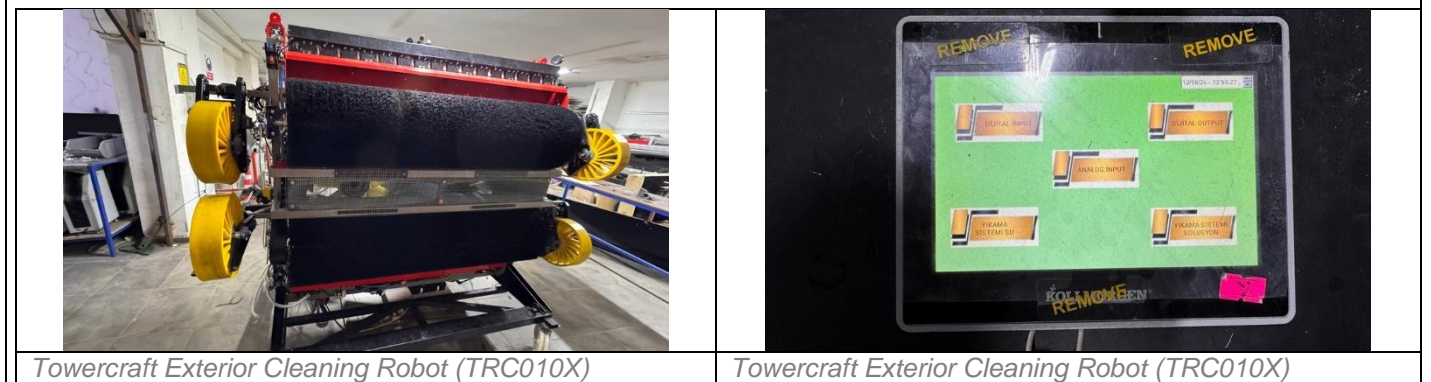
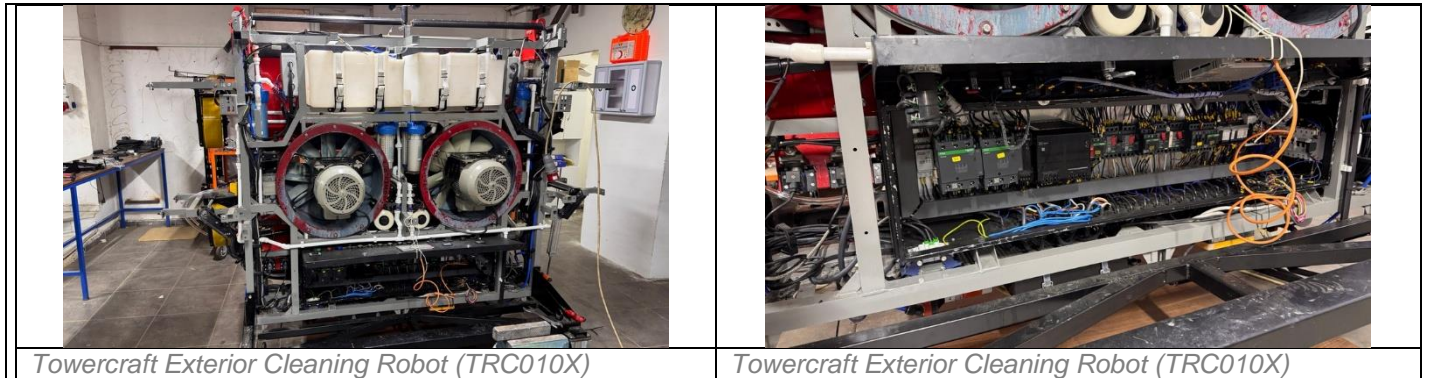


Towercraft Exterior Cleaning Robot (TRC009X)



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I – ATTACHMENTS

Item	Attachment Name	Total Pages	Description
1	Towercraft Performance Control Test Form	6	Functional controls checklist of Towercraft

END OF REPORT