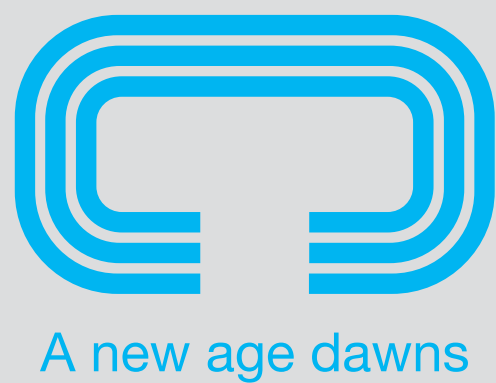




towercraft
Robotic building cleaner

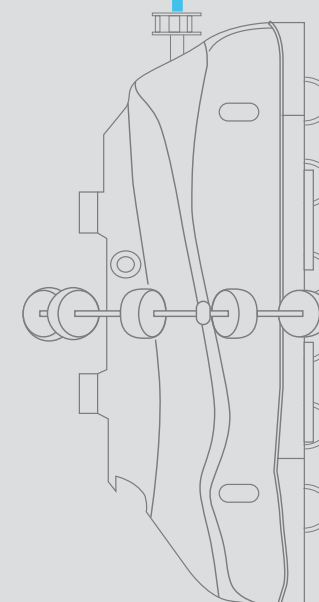


Smart Facade Cleaning Robot



Contents

History	4
Advantages of Towercraft	7
Discover Towercraft	21
Technical Specs	22
Models	24





Traditional methods not only provide a thorough cleaning, but also damage the facade of the building. Not to mention, they are excruciatingly slow.

That's why building managers and cleaning firms that opt for traditional cleaning methods risk losing significant money, while facing occupational accidents.

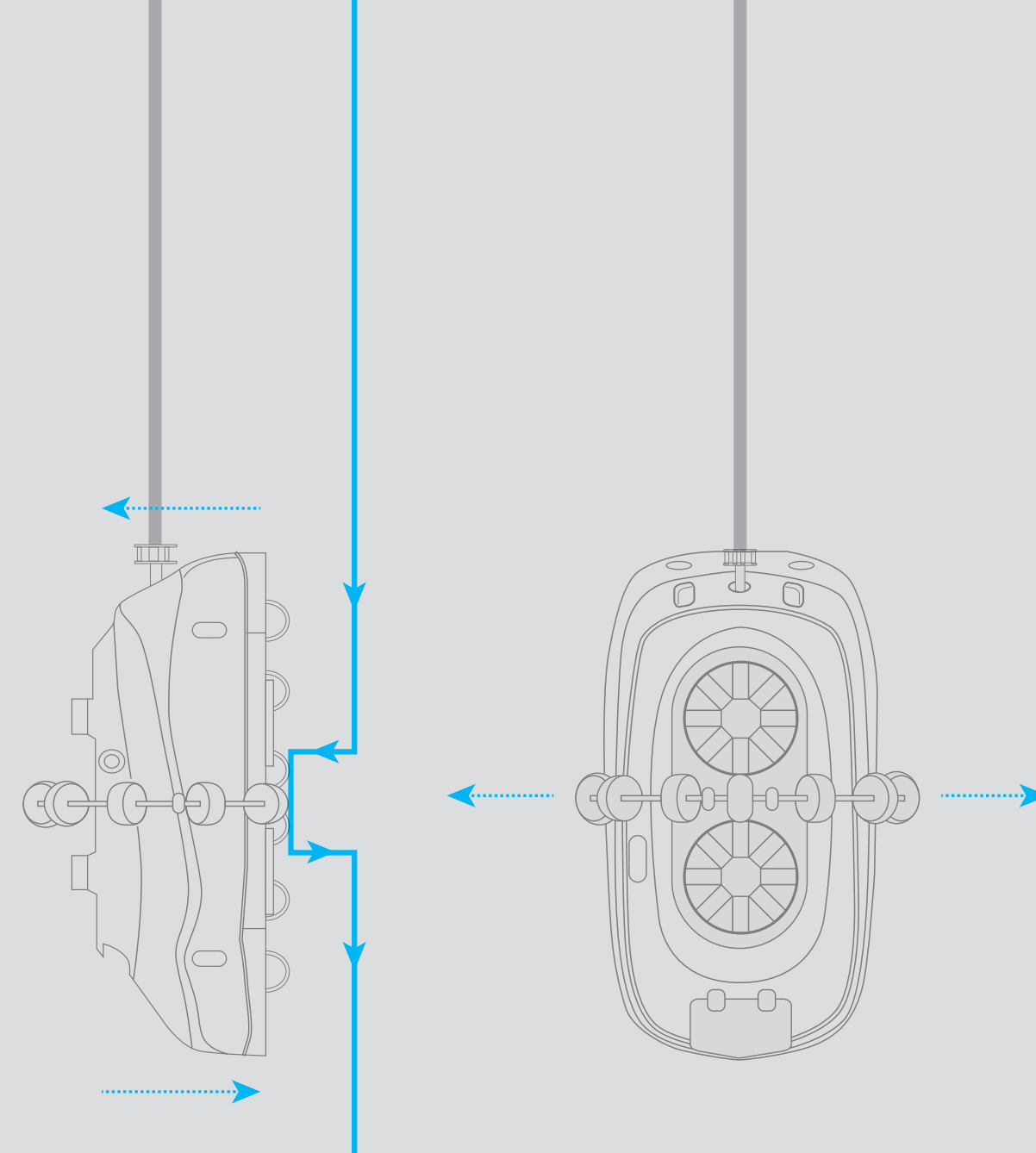
We, a group of scientists working at **T-Hub**, dedicated ourselves to solve that important problem. And we are proud to say that we succeeded

After years of meticulous research and development, **Towercraft**, the robotic building cleaner is ready to revolutionize the way we clean facades.

A new age dawns for facade cleaning. Are you ready?

Here comes
Towercraft



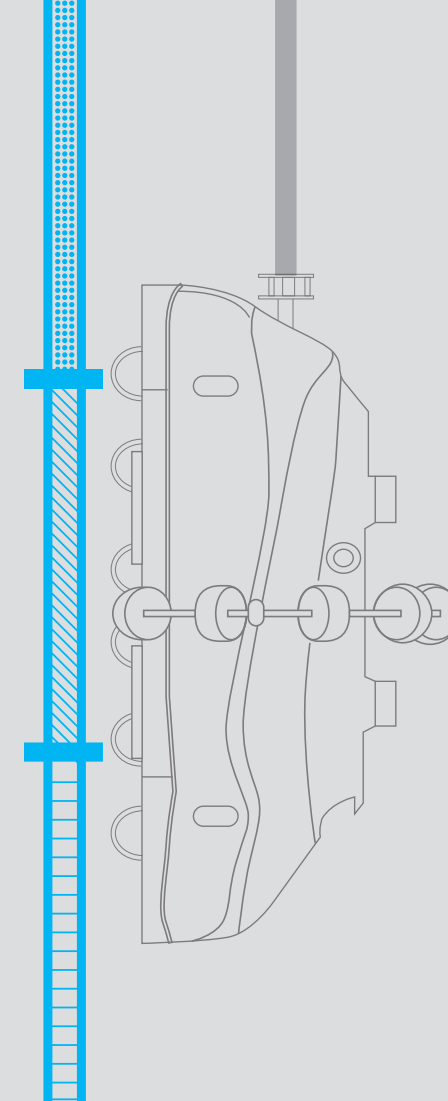
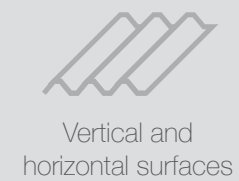


Smart cleaning, perfect results!

Thanks to the artificially-intelligent robot **Towercraft**, you get consistent and meticulous cleaning, regardless of the type of facade your building has, even under harsh weather conditions.

Towercraft determines its route by analyzing its peripheries. The robot is capable of crawling over obstacles that are up to eight cm high.* It could pivot, move vertically and horizontally, thus continue cleaning without any interruption.

*The dimensions of the obstacles that Towercraft could crawl over differ from model to model.



Spotless facades

The robotic facade cleaner **Towercraft** reaches and completely cleans composite facade panels and sills. Unlike traditional cleaning methods, it does not sweep away dirt and dust under the moldings. Therefore, facades cleaned with Towercraft do not spew out dirt, corrode, or oxidate.

Its nanotechnological solution infuses into dirt, providing an impeccable cleaning on all types of surfaces.



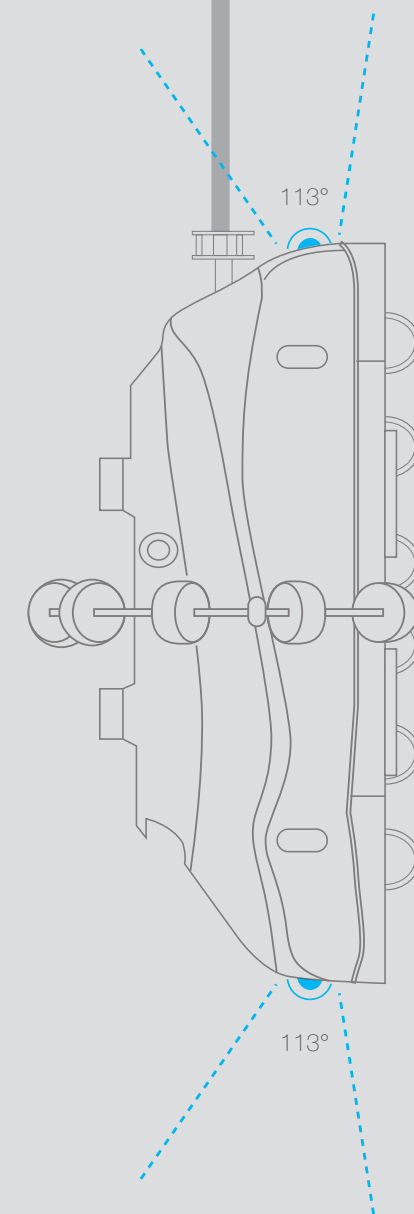
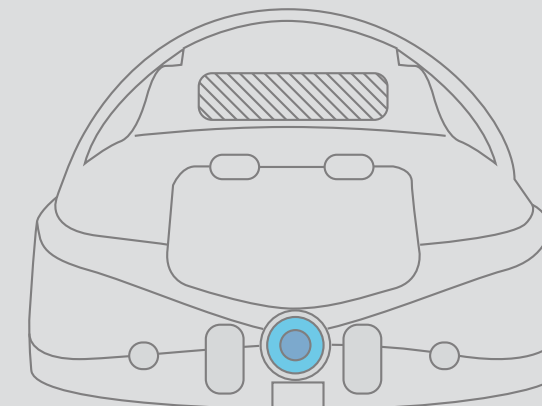
Aluminum



Composite/ Glass



Glass



Record your cleaning

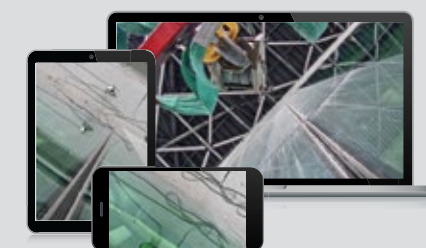
With its built-in camera, which offers a **113°** horizontal view, Towercraft allows you to closely monitor and control the robot's cleaning performance, while respecting the privacy of tenants.

Thanks to its **1080p** resolution front and back cameras, you can record the cleaning session for future references against any future issues that might arise.

Towercraft's operating system can be accessed and updated by satellite. You can also control the robot remotely by using your mobile phone, tablet, PC, or Towercraft's touch-screen remote control.



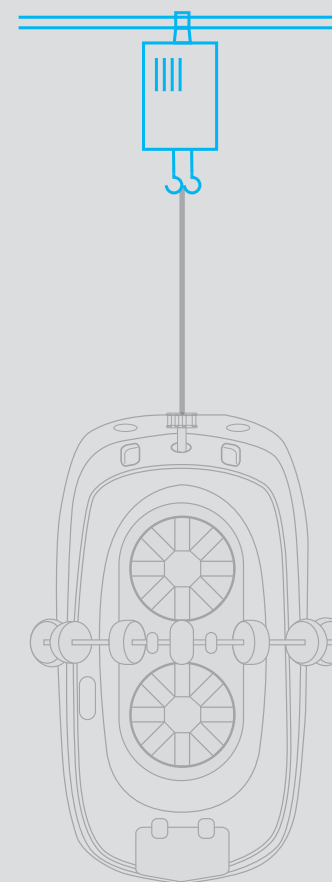
Touch-screen remote control



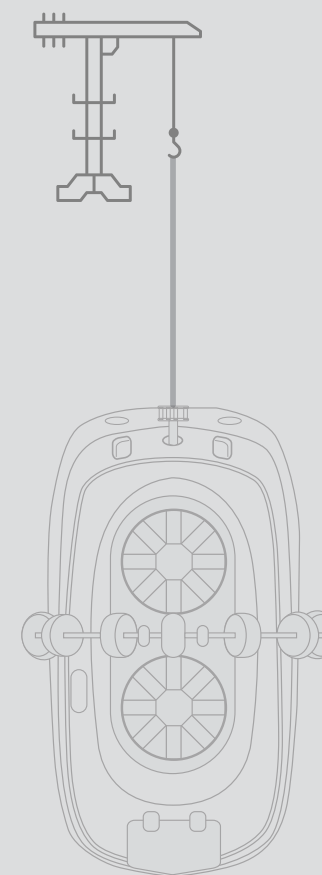
Mobile and PC access



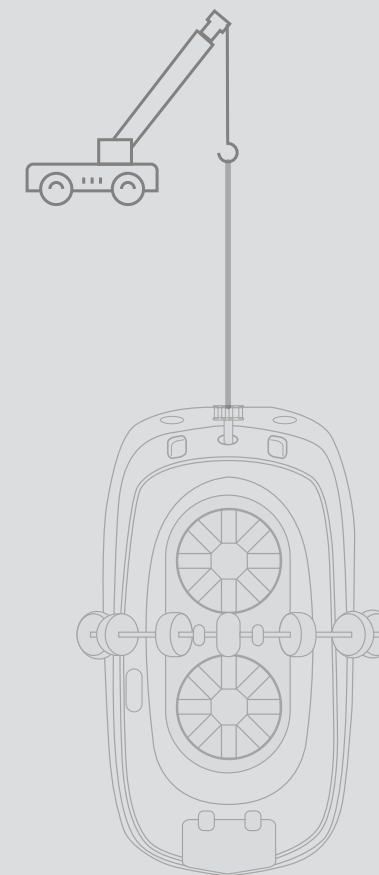
IP66
Water, dust and
impact proof sensors



TOWERCRAFT CRANE*



STABLE CRANE



MOBILE CRANE

Works night and day. Year in and year out.

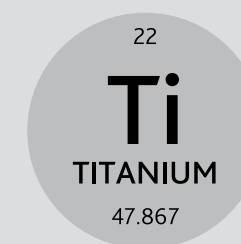
Thanks to its built-in LED lighting system, the smart facade-cleaning robot **Towercraft** is able to work uninterrupted even during the night.

Towercraft's body is made of titanium, which is five times lighter and 10 times stronger than steel, which extends the robot's economic life significantly.

It is also compatible with a myriad of crane types and speeds, which results in significantly faster and meticulous cleaning.

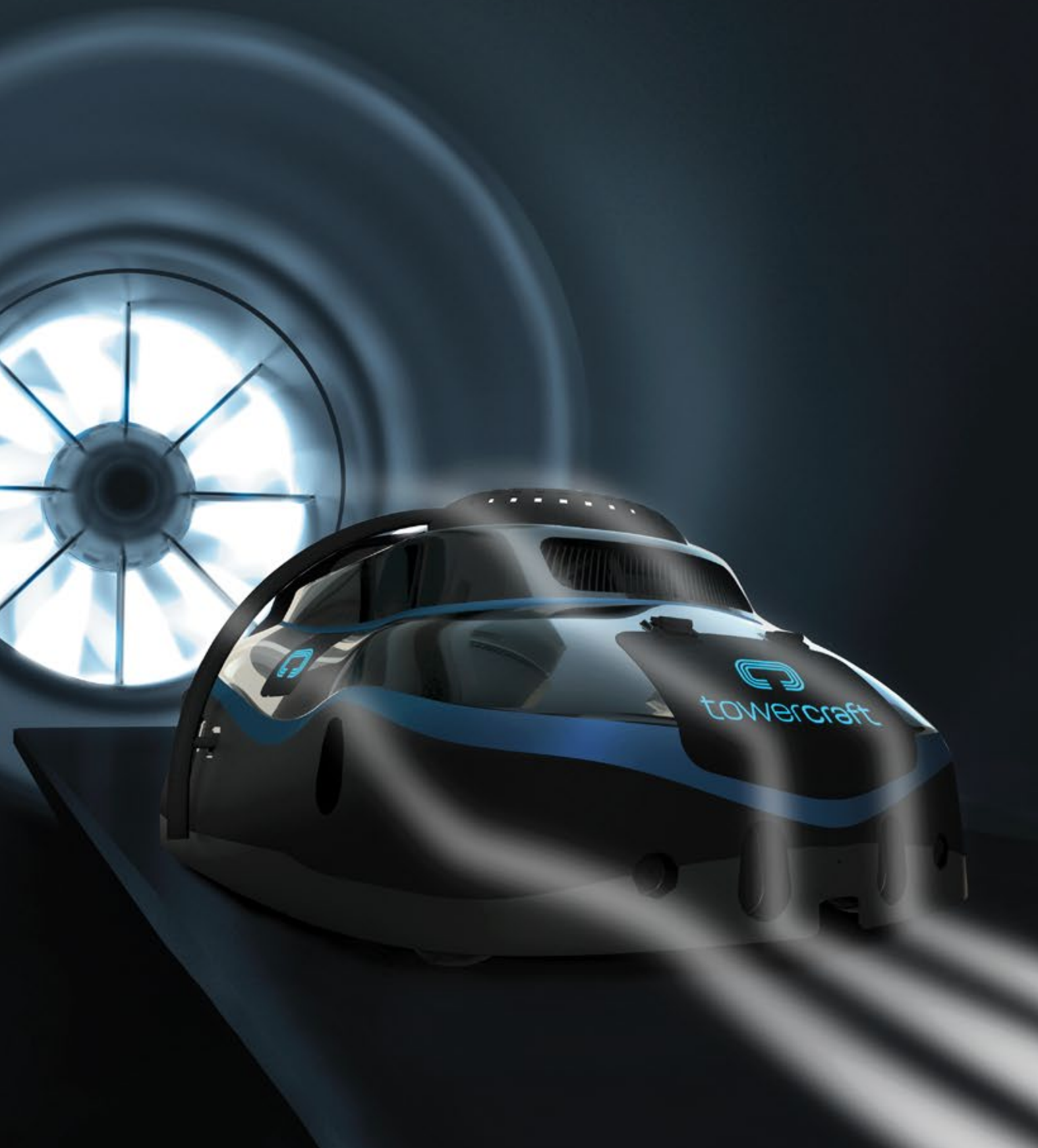


LED technology



Titanium body

*Custom-made Towercraft cranes are available



TRIED AND TESTED

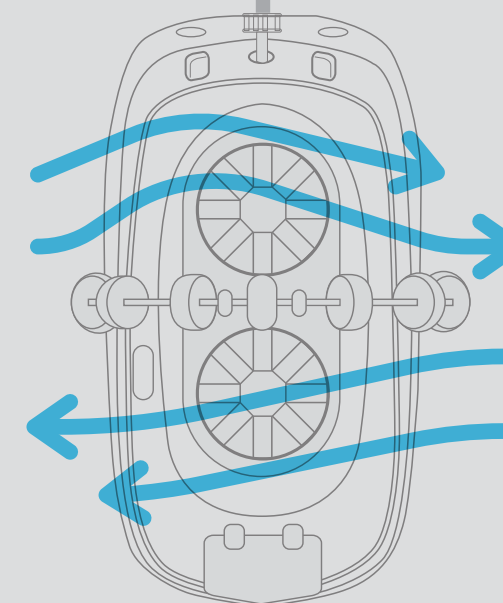
Towercraft's superior ability to resist harsh weather conditions has been proven by a myriad of international analysis.

CFD (Computational Fluid Dynamics)

This analysis measures the pressure force that the wind applies on a machine, while it is cleaning a building's facade.

FSI (Fluid – Structure Interaction)

This analysis measures the pressure force, surface distribution, oscillation and redistribution coefficient on a machine's surface.



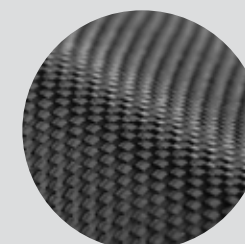
Defies weather conditions!

Thanks to its aerodynamic form and aerospace-grade carbon fiber components, **Towercraft** does not get affected by harsh weather conditions or winds up to **40 km/hour**.

Therefore, it calculates the speed and direction of the wind that hits the building's facade. It automatically recalibrates its functions and continue cleaning without any interruption. So, your yearly cleaning schedules always stays intact.



Aerodynamic form



Carbon fiber technology



Ultrasonic wind sensors



Save time and money

Towercraft offers significant time savings, because the robot could work **24/7**.

Towercraft also saves you money. It provides a far superior and more in-depth facade cleaning performance, which prevents corrosion and oxidation.

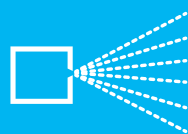
Cleans the dirt accumulated on the facade due to air pollution, dust, rain, and exhaust gases by using its **nanotechnological solution**. Provides spotless glasses and surfaces.

With its **smart liquid system**, Towercraft uses the minimum amount of solution, thus respecting the environment.



Win with Towercraft

- ✓ Unlike traditional cleaning methods, it does not sweep away dirt and dust under the moldings. Therefore, facades cleaned with Towercraft do not spew out dirt, corrode, or oxidate. It extends the building's economic life.
- ✓ Effectively mitigates the risk of work-related accidents.
- ✓ Works faster than traditional methods, offering unmatched efficiency
- ✓ Works on all kinds of surfaces
- ✓ Operates 24/7. Resists harsh weather conditions and wind up to 40 km/hour, allowing you to plan a year-long cleaning schedule
- ✓ Able to crawl obstacles up to 8 cm and move vertically and horizontally
- ✓ Provides a deep and spotless cleaning thanks to its nanotechnological solution and smart spraying system.



**SMART SPRAYING
SYSTEM**



**NANOTECHNOLOGICAL
SOLUTION**



3,2,1...Go!

Towercraft offers a far superior and more in-depth facade cleaning performance compared to traditional methods such as mopping. With its smart liquid system, Towercraft uses the minimum amount of solution to offer a spotless cleaning performance, while respecting the environment.

With its smart spraying system, bi-directional cleaning capability, nanotechnological solution, and three different cleaning functions, the intelligent robot marks a new era in facade cleaning.



PRE-WASH

Cleans dirt, dust, and construction debris, and boosts the effectiveness of the next phase of cleaning.



COMPLETE CLEANING

Cleans the dirt accumulated on the facade due to air pollution, dust, rain, and exhaust gases by using its nanotechnological solution.



POLISHING

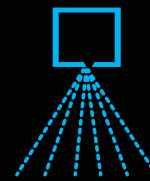
An optional function, which prevents dust particles from sticking on the facade, thus providing a long-lasting cleaning.



HORIZONTAL MOVEMENT

Towercraft automatically moves from cleaned to dirty surfaces without any physical interference. Therefore it works efficiently and prevents time loss.

With its horizontal and vertical movement features, Towercraft continuously keeps cleaning.



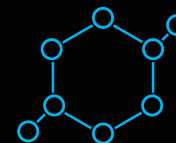
SMART SPRAYING SYSTEM

Regulates the amount of solution to be used, providing optimum efficiency.



DIFFERENT BRUSH OPTIONS

Depending on the surface materials and the amount of dirt accumulated on the facade, different brush types could be used to achieve perfect cleaning.



NANOTECHNOLOGICAL SOLUTION

Effectively cleans the dirt accumulated on the facade due to air pollution, dust, rain, and exhaust gases.



The EU Ecolabel-certified nanotechnological solution is environmentally and human-friendly.

(Manufactured in accordance with AB Ecolable ISO 14024 standards)





Discover the difference

See how vastly superior Towercraft to traditional cleaning methods.

CRITERIA	TOWERCRAFT	TRADITIONAL METHODS
Cleaning expenses	Electricity and solution	Insurance, solution, safety equipment, cleaning equipment, occupational safety specialist
Maximum hour of work	24 hours	6/8 hours
Wind speed limit	40 Km/h	15 - 20 Km/h
Preparation time	Max 30 - 45 minutes	Max 120 - 180 minutes
Ability to clean the glass seams, sills, rubber and silicon gaskets	The smart robot reaches the spaces around sills, offering a deep cleaning	Traditional methods cannot reach the spaces around sills, causing building materials to deteriorate pre-maturely
Different facade cleaning functions	The smart robot has three modes: pre-was, complete cleaning, polishing	Traditional methods provide superficial cleaning through mobbing
Cleaning performance (per 60 minutes)	720 m ² ^[1]	13 - 15 m ² ^[2]
Maximum cleaning speed (mt/minute)	15 mt / minute	0.22 mt / minute
Solution consumption (per 60 minutes)	3 - 6 lt ^[3]	Unknown
Night shift	Yes. Thanks to its built-in lighting system, Towercraft can work 24/7	No
Environmental impact	The smart robot's nanotechnological cleaning solution is certified to be 100% environmentally and human-friendly	There are no set environmental standards.
Cleaning quality standard	The smart robot offers a standard quality of cleaning performance, irrespective of facade type or weather conditions	Traditional methods have no set quality standards. The performance of the work widely varies based on the experience of the cleaning crew, type of the facade, and weather conditions.

^[1] The crane speed is calculated at 15 mt / minute.

^[2] The performance of traditional cleaning methods varies due to weather conditions and the cleaning crew's experience.

^[3] Solution consumption could vary based on the type and the speed of the crane.



Technical Specs



DIMENSIONS

Carbon fiber cover
Carbon fiber components
Titanium body
Width: ~1440 mm
Height: ~2600 mm
Depth: ~960 mm
Weight: ~350 kg
Volume of the tank: 30 lt
Cleaning width:
29.9 inches / 760
Average solution
consumption: 3 lt per hour*
Different color options are
available



HARDWARE

LED lights
Camera recording
Telecommunications,
tracking, remote access
Human-machine
interface
Touch-screen remote
control
Brush option
Smart collusion
prevention system
Ultrasonic wind and
heat sensors
Emergency equipment
Balance tracking system



SOFTWARE

Artificial intelligence
Different language
options
Automatic mode
Service indicator light
Warning notification
system
Online service control
system



CONNECTIVITY

Remote control
Mobile and computer
access
3G/ 4G/ Wifi and
radio-link
communications
system



CAMERAS

1080p resolution
Full HD picture quality
113° horizontal view
IP66 rating sensor
(resistant to water, heat,
wind, dust, and shock)



PERFORMANCE

6-8 Hours of operation
per tank
Cleaning speed 120 m²
per hour - max 720 m²
Wind resistance
(up to 40 km per hour)
Compatible with crane
capacity, 2.5- 15 mt per minute
Ability to crawl obstacles
up to 8 cm
Ability to clean a various
facade lining
Night vision mode
Ability to operate 24/7
Ability to monitor cleaned
surfaces



CLEANING SYSTEM

Ability to move horizontally
Smart Spraying System
Nanotechnological solution



CRANE

Mobile crane
BMU
Towercraft Transport
System
Tower crane
Hinged platform
Telescopic platform
Caterpillar platform



CLEANING FUNCTIONS

Pre-wash
Complete cleaning
Polishing

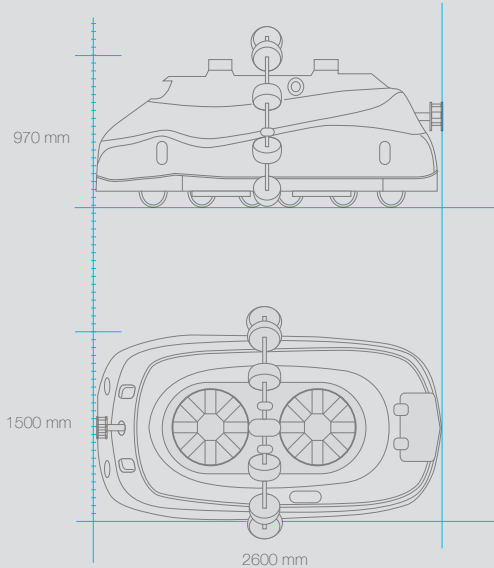
* Solution consumption could vary based on the type and the speed of the crane.



Different robots for different needs

Every building is unique. Facade styles, materials, and obstacles differ. That's why we have developed three models of intelligent robots to address your particular needs.

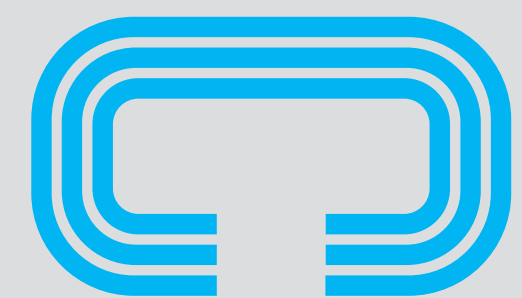
HARDWARE	TRC007	TRC007x	TRC007xi
Weight (kg)	~240	~300	~350
Strength (kW)	17,5	17,5	18
Voltage (Vac)	380	380	380
Amp (A)	46	46	50
Frequency (Hz)	50	50	50
Op mode	Manuel	Manuel	Manuel - Automatic
Leach field width (inch) - (mm)	29,9 - 760	29,9 - 760	29,9 - 760
Remote	Manuel	Manuel/Touch screen ^[1]	Touch screen
Solution storage tank (lt)	30	30	30
Tire pressure (psi)	2 - 4	2 - 4	2 - 4
Tire size (cm)	24	24	24
Balance tracking system	Manuel	Manuel/Dijital ^[2]	Digital
Cleanable barrier height (cm)	Accessible	Up to 4 cm	Up to 8 cm
Cleaning functions	Manuel	Manuel	Automatic



TECHNICAL SPECIFICATIONS	TRC007	TRC007x	TRC007xi
AI - Control	-	-	S
Wind speed and direction sensor	-	O	S
Language settings	-	O	S
Cam and rec system	O	O	S
Solution consumption (lt/h)*	3 - 6	3 - 6	3 - 6
Varied siding options	S	S	S
Night mode	S	S	S
Horizontal movement	S	S	S
Carbon fiber technology	O	O	S
Titanium body	S	S	S
Smart Spraying System	S	S	S
Different crane speed and model compatibility	S	S	S
Emergency safety equipment	S	S	S
Online service	-	-	S
Color options	S	S	S
Mobile access and tracking	-	-	S
Alarm and early warning system	-	-	S
Service and maintenance notification	-	-	S
Cleaned surface information	-	-	S
Collision avoidance system	-	-	S
Smart communication panel	-	-	S

^[1] Touch remote is optional
^[2] Digital balance tracking system is optional

- : Not available
S : Standard
O : Optional



A new age dawns



For more information: sales@towercraft.com.tr