



# Facade Access Systems

## Product Guide

# Facade Access Systems

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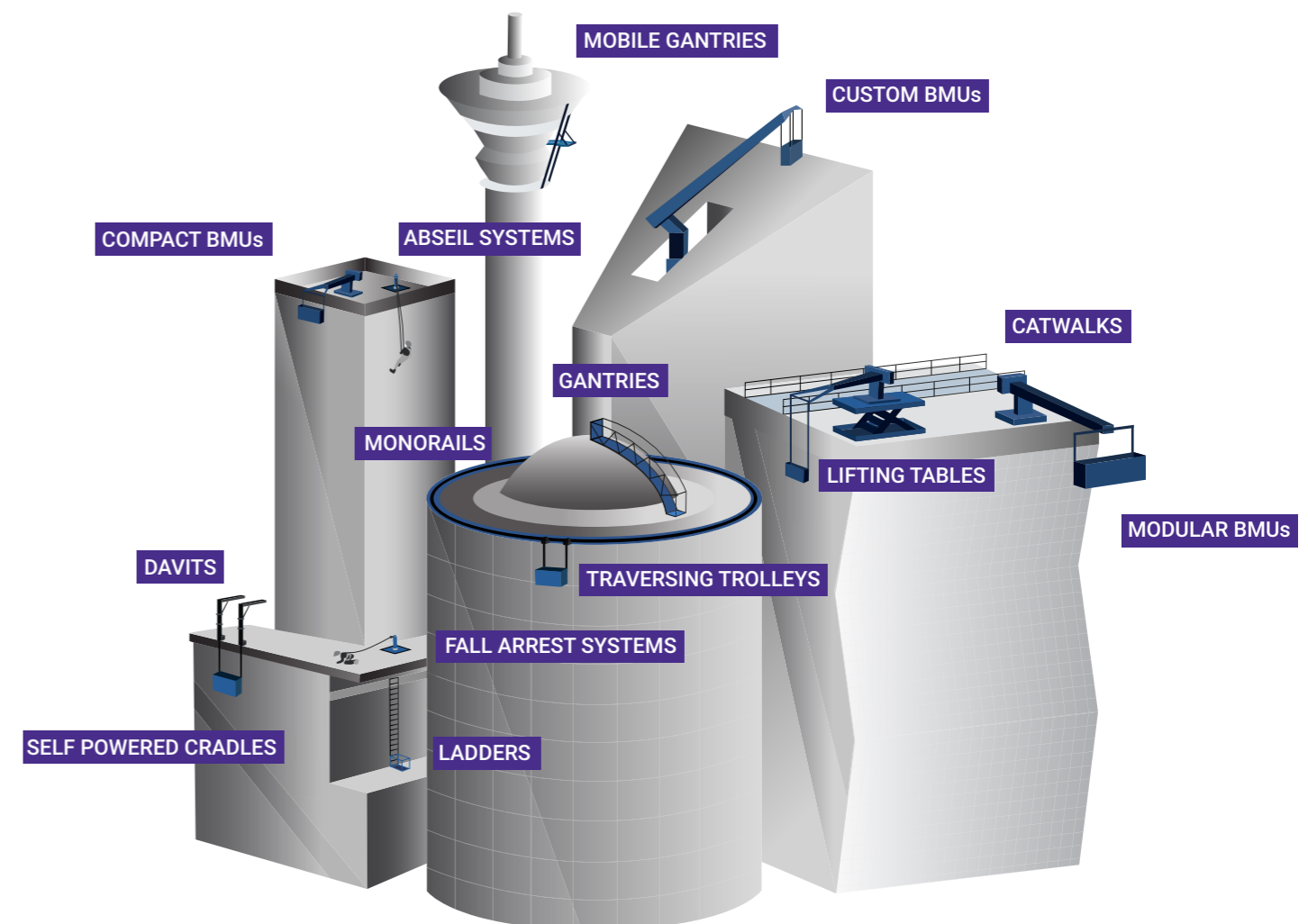
## The complete facade access solution

Manntech™ offers a complete range of products for building and facade access. Together with CoxGomyl, our full range of facade access solutions include; building maintenance units, self powered platforms, traversing trolleys, monorails, ladders, davits, lifting tables, abseil systems, catwalks, fall arrest systems and gantries.

Our wide range of facade access systems covers all aspects of building design, keeping with the overall architecture while providing the highest possible safety standards.

Our facade access solutions are developed in accordance with our client's needs and requirements, including roof access, facade stabilisation, refurbishment, local codes and standards, installation and ongoing maintenance requirements.

The components of all Manntech facade access systems are designed with the latest programs and undergo life cycle testing in conjunction with meeting International Standards.



The compact range consists of low-maintenance, durable and fully equipped building maintenance units.

Unique to Manntech's compact range of products are large traversing wheels to allow safe and durable use on uneven and solid concrete runways or on free laid tracks. All of Manntech's compact range of facade access solutions are designed and certified according to EN 1808 standard and ISO 9001. The compact range of products follow the same criteria of high performing functionality and safety features to last decades.



## Type 1 Series

**Type 1.1** Compact BMU on a horizontal track system

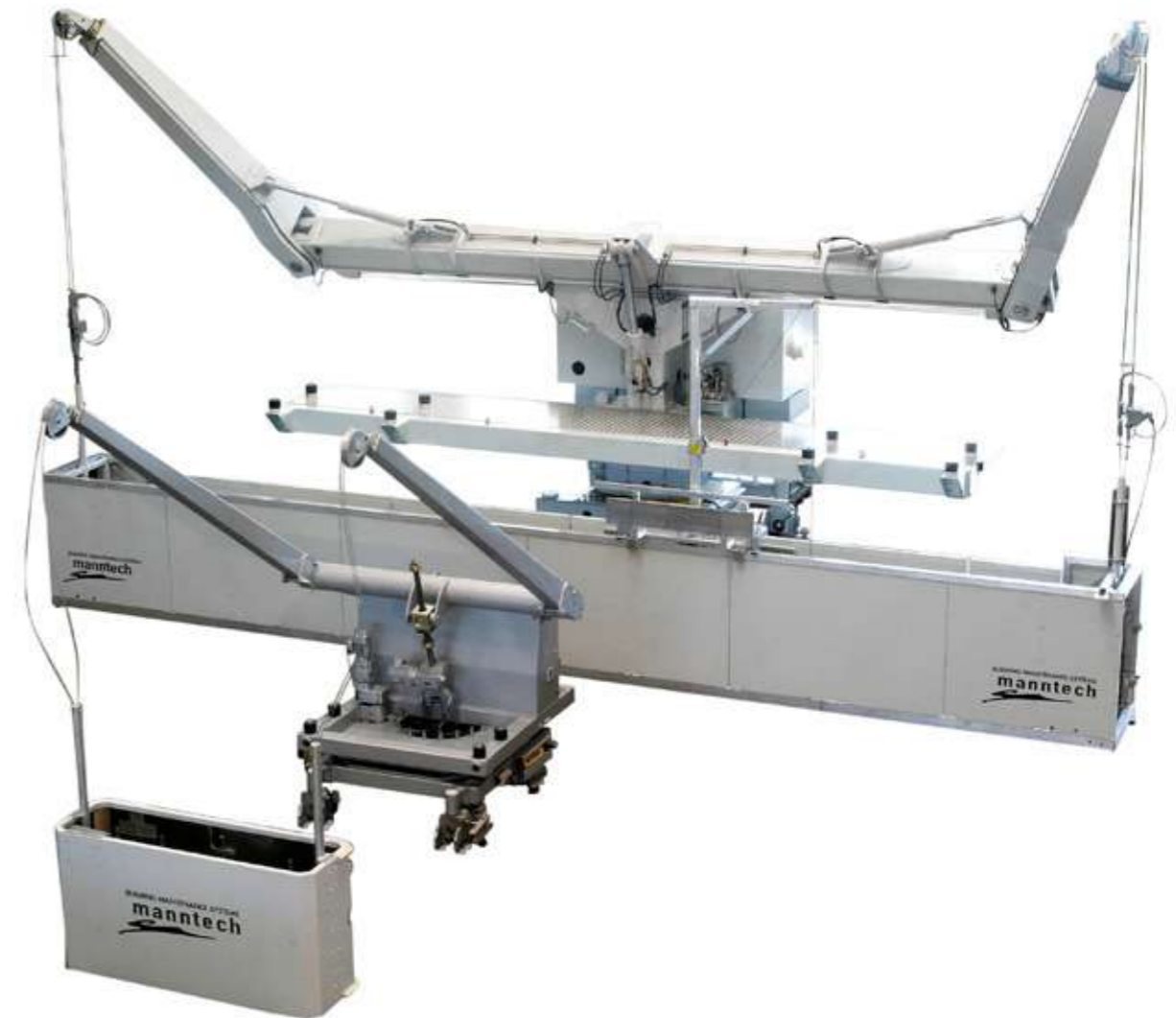
**Type 1.2** Compact BMU on a vertical track system along a roof parapet

**Type 1.3** Compact BMU on a load-bearing concrete runway

Wherever the building's geometry allows, these proven and economical facade access systems are deployed on buildings without major protrusions or recesses.

### Advantages

- ▶ Simple and safe to operate
- ▶ Easy to maintain
- ▶ Operable in narrow spaces
- ▶ Low visibility from ground level
- ▶ Entrance and exit of the cradle (platform) can be situated at front or rear of the BMU
- ▶ Countless possibilities of combinations and installations
- ▶ Hoist will operate for a long period of time without need for overhaul



- ▶ **Front BMU:** Standard Type 1.1 with slewing device
- ▶ **Rear BMU:** Type 1.1 - with 4,000 kg hoisting gear, 286 metres hoisting height and support crane in the cradle for facade renovation.

## Type 1.1 Compact BMU on a horizontal track system

The Type 1.1 track-based compact building maintenance unit is suitable wherever there is sufficient roof space for installation of track systems as close as possible behind the parapet or, respectively, along the roof edge.

The track system can either be independently laid (i.e. without penetration of roof membrane and compression load only on the support points) or implemented as an anchored rail system fixed to the building structure. If required, the entire device can be steered into a garage or other parking position using a shunting car.



Type 1.1 with retractable jibs for parked position

### Key Features

- Automation ready, fully digital BMU
- Lowest life-cycle costs and maximum availability due to predictive maintenance systems
- Remote monitoring for convenient building management
- Control system with the highest safety level worldwide
- Minimum loads on roof structure in this class in the market

### Specifications

Hoist mechanism	EN 1808 Manntech 4-rope multi-position safety
Rated working load (standard)	240-500 kgs
Height coverage (standard)	125-270m
Rope diameter	7-10mm
Rope safety factor according to EN 1808	>12
Lifting speed	~11m/min
Traversing speed	~10-15m/min
Power cable	Optional
Cradle	+/- 45° Slewing function of cradle (optional)

## Type 1.2 Compact BMU on a vertical track system along a roof parapet

The Type 1.2 track-based compact building maintenance unit has the track system anchored to the roof parapet. Suitable for use on buildings with a load-bearing parapet. Preferred application for buildings with non-load-bearing roofs and/or insufficient space on the roof. Also suitable for use on buildings with extremely high parapets.



Type 1.2 in parked position with covered work platform

### Key Features

- Automation ready, fully digital BMU
- Lowest life-cycle costs and maximum availability due to predictive maintenance systems
- Remote monitoring for convenient building management
- Control system with the highest safety level worldwide
- Safe and efficient operation also on very narrow passageways

### Specifications

Hoist mechanism	EN 1808 Manntech 4-rope multi-position safety
Rated working load (standard)	240-500 kgs
Height coverage (standard)	125-270m
Rope diameter	7-10mm
Rope safety factor according to EN 1808	>12
Lifting speed	~11m/min
Traversing speed	~10-15m/min
Power cable	Optional
Cradle	+/- 45° Slewing function of cradle (optional)

## Type 1.3 Compact BMU on a load-bearing concrete runway

The Type 1.3 trackless compact building maintenance unit is used on roofs with a load bearing concrete runway. The BMU moves on large wheels with durable polyurethane tyres on guide rails or parapet.

The driving surface can be designed to allow the BMU to be steered into a parked position away from the building edge. The BMU can be mechanically anchored in accordance with the documented standards specified for that country.



Type 1.3 with crossbar for load-bearing hoist

### Key Features

- Automation ready, fully digital BMU
- Lowest life-cycle costs and maximum availability due to predictive maintenance systems
- Remote monitoring for convenient building management
- Control system with the highest safety level worldwide
- Large optimum wheels for smooth operation also on uneven roof surfaces

### Specifications

Hoist mechanism	EN 1808 Manntech 4-rope multi-position safety
Rated working load (standard)	240-500 kgs
Height coverage (standard)	125-270m
Rope diameter	7-10mm
Rope safety factor according to EN 1808	>12
Lifting speed	~11m/min
Traversing speed	~10-15m/min
Power cable	Optional
Cradle	+/- 45° Slewing function of cradle (optional)

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## Compact building maintenance unit for Fashion House

Frankfurter Ring 162 (also known as Fashion House) in Munich, approached Manntech with a challenging set of requirements that would call on the engineering know-how gained over many decades of innovation and expertise in the facade access industry. The existing building maintenance unit servicing Frankfurter Ring 162 had always performed well and satisfied the facade access requirements. However, after 59 years of service, the BMU had reached the end of its life cycle. While the building itself is a modest 35 meters in height and presents a relatively uniform shape, the significant challenges raised by updating the facade access system required the experience and expertise of the Manntech team.

Manntech, therefore, developed a refurbishment solution for a compact building maintenance unit. This design was engineered to meet the requirements of a highly functional, cost-effective, and sustainable new facade access system while also retaining the base of the old unit. Overall, this ensured that the weight of the system was minimised, therefore utilising the existing track to avoid unnecessarily costly and disruptive work.

The factory refurbished facade access system improves upon the old building maintenance unit with a four-rope suspension system replacing the previous twin-rope setup, electrical upgrades, new cradle, and foldable jib. Manntech's superior engineering ability was vital in the problem-solving process required to house all necessary new parts into the limited space allowed by the design of the underlying machine housing, which had to retain the weight and dimensions.

This project represents an example of Manntech's commitment to constant development, innovative thinking and high-quality engineering. While it was undertaken to meet the specific requirements of Frankfurter Ring 162, the future possibilities are exponential. Throughout the process, Manntech has essentially created a new building maintenance unit with excellent potential as a compact facade access option for a whole array of similar building access needs across the world.



Fashion House, Munich: Manntech compact building maintenance unit

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## Type 1 Series Technical specifications

### Function

- ▶ **Cradle**  
Ascends and descends with electrically powered multi-layered safety hoisting gear.
- ▶ **Twin jib**  
Luffing motion using electrically powered trapeze spindle mechanism for safe and simple cradle positioning as well as safe entry and exit.
- ▶ **Traversing gear**  
Horizontal movement using electrically driven carriage with brakes.
- ▶ **Controls**  
All movements can be controlled from the cradle (platform) as well as from the roof car via panels or touchpad. Key-operated and electrical interlock to avoid maloperation.

### Quality

- ▶ **Steel structure**  
Galvanised construction for maximum corrosion resistance, exposed parts mainly made from non-ferrous materials. Primed and painted in RAL colours for optimal visual building integration.
- ▶ **Suspension ropes**  
Galvanised high tensile steel ropes with individual certification. Integrated controls ensure safe transmission of signals between roof car and cradle.
- ▶ **Rope guidance**  
Secure and precise rope guidance for multi-layered safety hoisting gear of the four independent suspension ropes. Pulleys with large diameter made of PA6 (high tensile plastics) for maximum long-lasting rope performance.
- ▶ **Components**  
From tried and tested systems; dimensioned and optimised solutions based on computer-aided calculation programs.

- ▶ **Cradle**  
Aluminium construction with rope suspension attachment made from high tensile steel, rope adjustment and overload device.
- ▶ **Electrical components**  
Only superior products are used with high protection levels against moisture, dirt and extreme environmental influences. Remote access is now a standard to every PLC Control of your BMU.
- ▶ **Manoeuvring spindles**  
Made from stainless steel, case hardened and ground.
- ▶ **Factory approval**  
Each completely assembled device is tested for function and safety. Quality is also controlled in accordance with DIN EN ISO 9001, AS 1418.13, OSHA 1910.66 (Health) and ASME A120.1 (Suspended rope access etc.).

### Safety

- ▶ **Hoist mechanism**  
Four-rope hoist mechanism with operating brake motor and highest safety capacity.
- ▶ **Safety brake**  
Integrated secondary brake with direct action on the winch drum, automatically triggered mechanism once cradle reaches unintentional speed.
- ▶ **Mechanical devices**  
Electrical monitoring and automatic shut-off of all motors when end positions are reached or when motors are desynchronized. Independent emergency shut-off for all relevant safety movements.
- ▶ **Suspension ropes**  
Four-rope suspension system, independent action, with highest safety capacity and in accordance with the documented standards specified for that country.



## Technology of standard BMUs

- ▶ **Controls**  
Control voltage 24V, no power cord is required.
- ▶ **Emergency shutdown**  
Specially marked emergency stop buttons at every control panel.
- ▶ **Automatic overload shutdown**  
Protects the BMU from illegal overload and consequential breakdown.
- ▶ **Jib adjustment**  
Via self-locking spindle system with automatic interceptor device.

- ▶ **Traversing gear**  
Traversing motor with soft stop and soft start.
- ▶ **Track clamps**  
For storm protection (only with track-based systems).
- ▶ **Cable reel**  
To secure and easily reel on and wind up the AC power line with cable reel limit switch to automatically switch off the horizontal movement and protect the power cable.

### Hoist mechanism

MannTech has 60 years of experience in developing and manufacturing hoist units in various types and sizes to meet the highest safety standards.



▶ Multi-layer hoist unit



▶ High-performance hoist unit, approx. 4,000kg lifting capacity.

## Type 1 Series Modifications and additional components

### I. Modifications

Customisation solutions:

- ▶ Track gauge
- ▶ Jib configuration
- ▶ Multi-layer hoists with hoist capacity currently at 4,000kg and hoisting height capacity of 500m
- ▶ Power supply voltage and frequency
- ▶ Cradle sizes



Rotating head for cradle guidance and consequent improvement of operating conditions

### II. Additional components

- ▶ Auxiliary hoist to transport glass panels and facade elements outside the cradle
- ▶ Rotating head for cradle guidance and consequent improvement of operating conditions
- ▶ Mullion guide systems for safe operation on buildings in windy conditions
- ▶ Foam face rollers for safe and comfortable movement parallel to the facade
- ▶ Intercom between cradle and roof car via control device in the ropes
- ▶ Emergency call to building (central control technology)
- ▶ Safety belts, tarpaulin for cradle
- ▶ Wind speed indicator with visual and/or acoustic warning signal
- ▶ Retractable jib arms for garage/parking position
- ▶ Additional custom modifications as necessary

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## Options for standard BMUs



▶ Retractable jib arms for garage/parked position



▶ Alternative foam attachment for protection of both platform and facade



▶ Auxiliary hoist to transport glass panels and elements outside the cradle



▶ Additional foam face rollers for safe and comfortable movement parallel to the facade for protection of both platform and facade

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## Type 4 Series

**Type 4.1** Economical crane BMU on a horizontal track system

**Type 4.2** Economical crane BMU on a vertical track system along a roof parapet

**Type 4.3** Economical crane BMU on roofs with load-bearing concrete runway

The Type 4 economical crane building maintenance units are compact in design with central, overhead slewing jib and slewing head. Especially suitable where medium reach is necessary due to building terraces, recesses, protrusions or obstacles on the roof.

With the slewing head located on the jib point, the cradle can always be positioned parallel to the building facade.

With its stationary BMU house and slender architecture, the crane type BMUs are particularly suitable for narrow passageways and small track gauges.



Type 4.1 fixed jib track-based crane

## Type 4.1 Economical crane BMU on a horizontal track system

The Type 4.1 building maintenance units tend to have a longer reach and heavier suspended loads for the main cradle and material hoist. The Type 4.1 model is economical due to its simple design yet provides added functionality. This model of track-based building maintenance unit is suitable for buildings with limited space on the roof for the installation of a track mechanism.

Where track gauge allows, the track mechanism can either be independently laid (i.e. without penetration of roof membrane and compression load only on the support points, optionally insulated decoupling) or implemented as an anchored rail system for transmission of tension loads. If required, the building maintenance unit can be steered into a garage or parking position using a shunting car.



### Key Features

- Automation ready, fully digital BMU
- Lowest life-cycle costs and maximum availability due to predictive maintenance systems
- Remote monitoring for convenient building management
- Control system with the highest safety level worldwide
- Offers more functionality due to additional optional features

### Specifications

Hoist mechanism	EN 1808 Manntech 4-rope multi-position safety
Rated working load (standard)	240-500 kgs
Height coverage (standard)	125-270m
Rope diameter	7-10mm
Rope safety factor according to EN 1808	>12
Lifting speed	~11m/min
Traversing speed	~10-15m/min
Power cable	Optional
Cradle	+/- 45° Slewing function of cradle (optional)

## Type 4.2 Economical crane BMU on a vertical track system along a roof parapet

The Type 4.2 track-based economical building maintenance unit is suitable where track construction is anchored to the loadbearing parapet.

The range is suitable for installation on buildings where roofs are non-load bearing and where there is insufficient space on the roof, as well as buildings with high parapets.



### Key Features

- Automation ready, fully digital BMU
- Lowest life-cycle costs and maximum availability due to predictive maintenance systems
- Remote monitoring for convenient building management
- Control system with the highest safety level worldwide
- Safe and efficient operation on very narrow passageways

### Specifications

Hoist mechanism	EN 1808 Manntech 4-rope multi-position safety
Rated working load (standard)	240-500 kgs
Height coverage (standard)	125-270m
Rope diameter	7-10mm
Rope safety factor according to EN 1808	>12
Lifting speed	~11m/min
Traversing speed	~10-15m/min
Power cable	Optional
Cradle	+/- 45° Slewing function of cradle (optional)

## Type 4.3 Economical crane BMU on roofs with load-bearing concrete runway

The Type 4.3 trackless economical building maintenance unit is suitable for applications on building roofs with load bearing concrete runways.

The building maintenance unit moves on large dimensional wheels with durable polyurethane tyres controlled on guide rails or a parapet and can be mechanically anchored if required. The concrete runway can be configured so that the BMU can be placed in a parked position and stored away from the building edge.



### Key Features

- Automation ready, fully digital BMU
- Lowest life-cycle costs and maximum availability due to predictive maintenance systems
- Remote monitoring for convenient building management
- Control system with the highest safety level worldwide
- Large optimum wheels for smooth operation including on uneven roof surfaces
- Includes a rear balancer to aid weight distribution

### Specifications

Hoist mechanism	EN 1808 Manntech 4-rope multi-position safety
Rated working load (standard)	240-500 kgs
Height coverage (standard)	125-270m
Rope diameter	7-10mm
Rope safety factor according to EN 1808	>12
Lifting speed	~11m/min
Traversing speed	~10-15m/min
Power cable	Optional
Cradle	+/- 45° Slewing function of cradle (optional)

## Type 6 Series

**Type 6.1** Modular crane BMU on a horizontal track system

**Type 6.2** Modular crane BMU on a vertical track system along a roof parapet

**Type 6.3** Modular crane BMU on roofs with load-bearing concrete runway

**Type 6.4** Stationary crane BMU anchored on roof

Manntech's modular range of building maintenance units (BMUs) are characterised by a long jib with slewing head for standard reaches up to 45 meters. In practice, a single unit of this type, positioned correctly on the building, can service the entire building complex including all its terraces and annexes.

Typically, the BMUs either run on horizontally laid tracks or they are anchored to the building in a stationary position. They are also often made to telescope vertically to an operating position to avoid all roof obstructions, while parking below and between the obstructions in order to be hidden from sight.

## Type 6.1 Modular crane BMU on a horizontal track system

The Type 6.1 modular series building maintenance units (BMUs) are characterised by a long jib with slewing head for standard reaches up to 45 meters. In practice, a single unit of this type, positioned correctly on the building, can service the entire building complex including all its terraces and annexes.

Typically, the BMUs either run on horizontally laid tracks or they are anchored to the building in a stationary position. They are also often made to telescope vertically to an operating position to avoid all roof obstructions, while parking below and between the obstructions in order to be hidden from sight.

**Type 6.1** with telescopic jib and lowering device for minimum height in parked position



### Key Features

- Advanced functionality to suit a wide range of building requirements
- Customisable mast and jib
- Digital system with automatic movements and remote monitoring for data insights
- Recommended for high complexity building structures

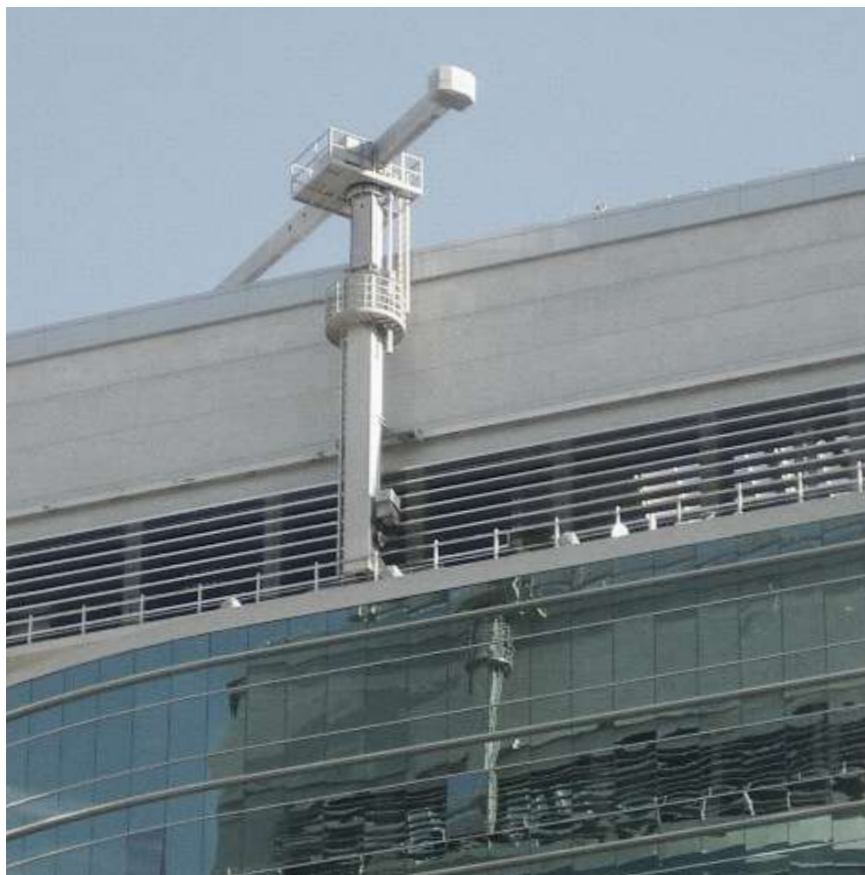
### Specifications

Hoist mechanism	Manntech multi-layer safety drum hoist
Rated working load (standard)	240-1,000 kgs
Height coverage (standard)	125-270m
Rope diameter	7-14mm
Rope safety factor according to EN 1808	>12
Lifting speed	~11m/min
Traversing speed	~10-15m/min
Power cable	Optional
Cradle	+/- 45° Slewing function of cradle (optional)

## Type 6.2 Modular crane BMU on a vertical track system along a roof parapet

The Type 6.2 track-based modular building maintenance unit (BMU) is suitable where track construction is anchored to the load bearing parapet.

The range is suitable for installation on buildings where roofs are non-load bearing and where there is insufficient space on the roof, as well as buildings with very high parapets.



### Key Features

- Advanced functionality to suit a wide range of building requirements
- Customisable mast and jib
- Digital system with automatic movements and remote monitoring for data insights
- Recommended for high complexity building structures

### Specifications

Hoist mechanism	Manntech multi-layer safety drum hoist
Rated working load (standard)	240-1,000 kgs
Height coverage (standard)	125-270m
Rope diameter	7-14mm
Rope safety factor according to EN 1808	>12
Lifting speed	~11m/min
Traversing speed	~10-15m/min
Power cable	Optional
Cradle	+/- 45° Slewing function of cradle (optional)

## Type 6.3 Modular crane BMU on roofs with load-bearing concrete runway

The Type 6.3 modular building maintenance unit (BMU) has a large outreach and a rotating hoist unit, which allows the facade access system to rotate +/- 180 degrees. These features provide the operators with more flexibility in reaching challenging areas on the facade.

The BMU moves on large dimensional wheels with durable polyurethane tyres controlled on guide rails or a parapet and can be mechanically anchored, if required. The concrete runway can be configured so that the BMU can be placed in a parked position and stored away from the building edge.



### Key Features

- Advanced functionality to suit a wide range of building requirements
- Customisable mast and jib
- Digital system with automatic movements and remote monitoring for data insights
- Recommended for high complexity building structures

### Specifications

Hoist mechanism	Manntech multi-layer safety drum hoist
Rated working load (standard)	240-1,000 kgs
Height coverage (standard)	125-270m
Rope diameter	7-14mm
Rope safety factor according to EN 1808	>12
Lifting speed	~11m/min
Traversing speed	~10-15m/min
Power cable	Optional
Cradle	+/- 45° Slewing function of cradle (optional)

## Type 6.4 Stationary crane BMU anchored on roof

The Type 6.4 stationary modular building maintenance unit (BMU) is typically installed on the roof core of the building, which is the main support structure. The range is highly suited when there is limited space available.

This BMU has a large outreach and a rotating hoist unit, which allows the machine to rotate +/- 180 degrees. These features provide the operators with more flexibility in reaching challenging areas in the facade.



### Key Features

- Advanced functionality to suit a wide range of building requirements
- Customisable mast and jib
- Digital system with automatic movements and remote monitoring for data insights
- Recommended for high complexity building structures

### Specifications

Hoist mechanism	Manntech multi-layer safety drum hoist
Rated working load (standard)	240-1,000 kgs
Height coverage (standard)	125-270m
Rope diameter	7-14mm
Rope safety factor according to EN 1808	>12
Lifting speed	~11m/min
Traversing speed	~10-15m/min
Power cable	Optional
Cradle	+/- 45° Slewing function of cradle (optional)

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**Type 6.1** triple telescopic jib and a satellite cradle for reaching recesses on the facade.



**Type 6.1** with a quadruple telescopic jib and a vertical telescopic mast, completely retractable on the roof.



**Type 6.4** stationary with a quadruple telescopic jib (BMU is completely retractable on the roof).



**Type 6.4** with a quadruple telescopic jib, slewing device and telescopic mast. Unit assembled at factory for testing and mounted on building roof.

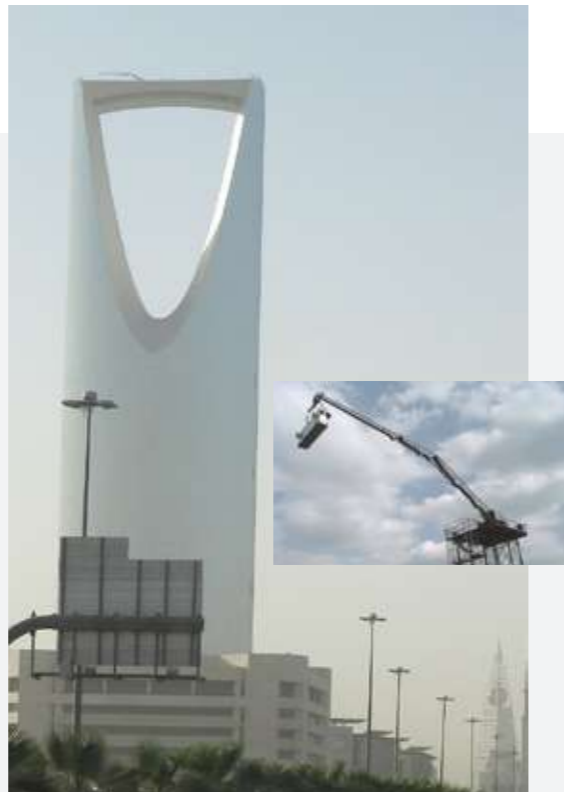
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Type 6.1 track-based with horizontal slewing articulated jib



Type 6.1 track-based with vertical slewing articulated jib to reach recessed building areas



Type 6.1 track-based with vertical slewing articulated jib to reach recessed building areas



Type 6.1 track-based with fixed luffing jib and horizontal slewing articulation



Type 6.2 track-based with fixed luffing jib, low-profile design.



Type 6.1 track-based with fixed luffing jib and mechanism (load-bearing hoist) for transportation of a Type 1.1 BMU to various parts of the building.

## Type 4 and Type 6 Series Technical specifications

### Function

- ▶ **Cradle**  
Ascends and descends with electrically powered safety multi-layer hoisting gear.
- ▶ **Jib/slewing head**  
When combined, they enable the cradle (platform) to be positioned parallel to the facade, to negotiate terracing, protrusions, recesses and allow safe landing on roof.
- ▶ **Jib systems**  
Fixed or telescopic jib as well as single or multiple articulated jib and/or luffing device, according to requirements.
- ▶ **Traversing gear**  
Horizontal movement using multiple electrically driven carriages with brakes.
- ▶ **Controls**  
All movements can be controlled from the cradle as well as from the roof car via panels or touchpad. Key-operated and electrical interlock to ensure safety.

### Quality

- ▶ **Steel structure**  
Galvanised construction for maximum corrosion resistance, exposed parts mainly made from non-ferrous materials. Primed and painted in RAL colours for optimal visual building integration.
- ▶ **Suspension ropes**  
Galvanised high tensile steel ropes with individual certification. Integrated controls ensure safe transmission of signals between roof car and cradle.

- ▶ **Rope guidance**  
Secure and precise rope guidance for single or multi-layered safety hoisting gear of the four independent suspension ropes. Pulleys with large diameter made of PA6 (high tensile plastics) for maximum long-lasting rope performance.
- ▶ **Components**  
From tried and tested systems; dimensioned and optimised solutions based on computer-aided calculation programs.
- ▶ **Cradle**  
Aluminium construction with rope suspension attachment made from high tensile steel, rope adjustment and excessive load device.
- ▶ **Electrical components**  
Only high quality products are used with high protection levels against moisture, dirt and extreme environmental influences. Remote access is now a standard to every PLC Control of your BMU.
- ▶ **Slewing motion**  
Highly dimensioned ball-bearing slewing rim powered by multi-level gear brake motor.
- ▶ **Factory approval**  
Each completely assembled device is tested for function and safety. Its quality is also controlled in accordance with DIN EN ISO 9001, AS 1418.13, OSHA 1910.66 (Health) and ASME A120.1 (Suspended rope access etc.).

### Safety

- ▶ **Hoist mechanism**  
With gear brake moto. Service brakes optional as squirrel cage rotor brake motor.
- ▶ **Safety brake**  
Integrated secondary brake with direct action on the winch drum, automatically triggered mechanism once cradle reaches unintentional speed.
- ▶ **Mechanical devices**  
Electrical monitoring and automatic shut-off of all motors when end positions are reached or when motors are desynchronized. Independent emergency shut-off for all relevant safety movements.

## Technology of crane BMUs

- ▶ **Suspension ropes**  
Four-rope suspension system, independent action, with highest safety capacity and in accordance with the documented standards specified for that country.
- ▶ **Controls**  
Control voltage 24V, no power cord is required.
- ▶ **Automatic overload shutdown**  
Protects the BMU from illegal overload and consequential breakdown.
- ▶ **Main jib**  
Box shaped structure fixed with ball-bearing slewing rim to the mast of roof car. Weight compensation handled by counterweight at jib end.
- ▶ **Telescopic jib**  
Using two separate adjustment drives running on bearing rollers to avoid friction, noise and vibration for extended lifecycle.

- ▶ **Traversing gear**  
Traversing motor with soft stop and soft start.
- ▶ **Emergency shutdown**  
Specially marked emergency stop button on every control panel.
- ▶ **Track clamps**  
For storm protection (only with track-based systems).
- ▶ **Jib-bracing device**  
Protects the jib slewing system when in parked position during storms.
- ▶ **Cable reel limit switch**  
Automatic shut-off of horizontal movement and protection of power cable.



Crane BMU with telescopic jib

## Type 4 and Type 6 Series Modifications and additional components

### I. Modifications

Individual solutions for customisation to a structure's special features, for example:

- ▶ Track gauge; outreach, height of luffing mast
- ▶ Individual jib configuration
- ▶ Multi-layer hoists with hoist capacity currently at 4,200kg and hoisting height capacity of 760m
- ▶ Power supply voltage and frequency
- ▶ Special cradle (platform) sizes and designs
- ▶ Retractable V-shaped arms for low parking position

### II. Additional components

- ▶ Automatic control of all motion using tried and tested software and hardware components
- ▶ Individual control software
- ▶ Cradle lever
- ▶ Safety belts and tarpaulin for cradle
- ▶ Wind speed indicator with visual or acoustic warning signal
- ▶ Cradle changing device
- ▶ Slewing head with asymmetrical cradle attachment for circumnavigating obstacles
- ▶ Auxiliary hoist to transport glass panels and facade elements outside the cradle
- ▶ Various cradle guidance systems for safe operation on buildings in windy conditions
- ▶ Intercom between cradle and roof car
- ▶ Emergency call to building (central control technology)
- ▶ Additional horizontal articulation/double or triple articulation of the jib
- ▶ Hydraulically operated telescopic slewing mast to lower jib in parking position
- ▶ Various satellite cradle solutions for reaching recesses in building
- ▶ Customised cradle solutions to suit building requirements
- ▶ Additional custom modifications as necessary



Customised cradle solutions to fit building requirements



Customised cradle - 15m long for replacing large facade elements

## Options for crane BMUs



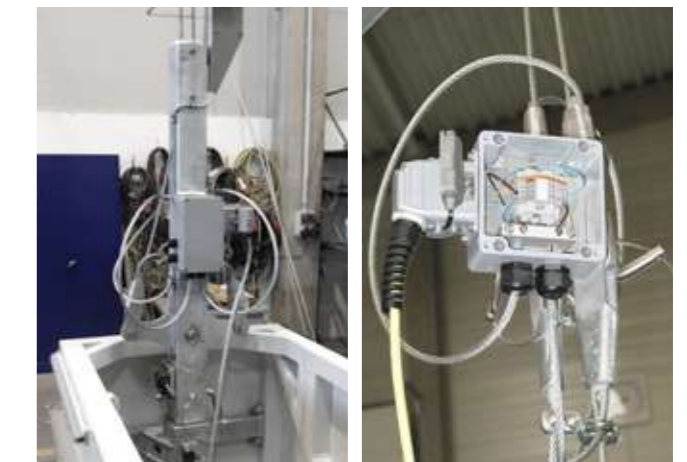
Auxiliary hoist to transport glass panels and facade elements outside the cradle - movable or fixed installation



Various cantilevered cradle solutions for reaching recesses in building



Hydraulically operated telescopic slewing mast



Cradle changing devices



## Bespoke designs

The Manntech brand is synonymous with the design and manufacture of high quality, bespoke solutions made for purpose to suit complex facades worldwide. Our customised facade access solutions are exclusively developed to meet the various requirements of specific architectural challenges. These unique solutions are conceived and tailored to the requirements of the building in terms of the design aesthetic, the technical parameters and the practical access requirements for the maintenance of the building.

Manntech has a wealth of experience in developing bespoke access solutions for buildings with numerous architectural features where standard systems are not an option. This includes staggered height constructions, facades with numerous protrusions and recesses, and systems for sloping or spherical roofs.

We are regularly involved with numerous 'landmark' projects where the architectural integrity of the building is paramount, demanding that the access solutions meet the same high standards of technological innovation to preserve the clean lines of the building structure. This often means drawing on all of our expertise and experience to deliver an access solution integrated into the contours of the building, without losing functionality.

Some of our landmark projects include the Pylon of the Erasmus Bridge in Rotterdam, which provides access to all facades for painting, the World Trade Centre in Abu Dhabi where Manntech have four high angle climbing BMUs garaged neatly inside the buildings and the mega tall Shanghai Tower.



### Custom solutions for a unique building World Trade Centre, Abu Dhabi

The pinnacle of our complex, customised range can be found in action at the World Trade Centre in Abu Dhabi. With two towers of 58 and 88 stories respectively and a total floor area of 550,000m<sup>2</sup>, Manntech's solution was the only proposal that could meet the high expectations of architects Norman Fosters. They demanded that the Building Maintenance Units (BMUs) must leave the building's design unspoiled without sacrificing any efficiency in operation.

These challenges were met with a number of unique access solutions including four BMU systems which are all completely concealed when not in use. To complement the unique curvilinear shape of the building, Manntech also developed a custom-built curved twin track on a roof slope of 55 degrees in order to effectively maintain the high energy-performance panels.

## Custom solutions



**Rose Rotana Hotel, Dubai:** Retractable crane BMU with twins jibs for optimal cleaning service

Testing rig in Mammendorf



**Shanghai Tower:** 3D climbing building maintenance unit capable of changing climbing angle and traversing direction at the same point on the track



**Milad Tower, Iran:** Sloped elevator for maintenance of tower cupola. Designed for extreme wind stress and seismological conditions.



**Mercedes Benz, Munich:** Overhanging custom gantry for Mercedes Benz showroom



**ING Bank, Amsterdam:** Sloped track sections with a Type 6.1 BMU, here with rack and pinion drive and slewing head in a special design.



**Sydney Harbour Bridge:** Custom gantry-based bridge access system

## Refurbishment and replacement of aging facade access systems

Manntech's range of products are designed and engineered to last long term and many of our systems can still be seen in use decades after installation. Ongoing maintenance is still an important factor in ensuring the optimum performance and safety of any BMU and, in a fast-moving world, the original solution may no longer suit the current needs and uses of the building. Manntech can restore your original facade access equipment to optimum functionality, allowing you to mitigate the risks of having an untrained company provide maintenance. With the input of our team across the world, this is a valuable asset to have in your corner. Your equipment, your people and your property are all too valuable to leave the service in the hands of unqualified providers.

Providing access solutions for aging skyscrapers is one of the largest growing aspects of Manntech's services worldwide. Older systems are more problematic, requiring building owners to spend more money annually to keep these old systems running. At some point, a decision must be made as to whether the current system is still efficient and fit for purpose or whether it is time to replace the existing facade access equipment with the benefit of the most recent technological advances. Manntech will work with you to deliver a modern building access system which better serves your needs and also offer extra functionality which had not previously been available to keep your building pristine for many years to come.



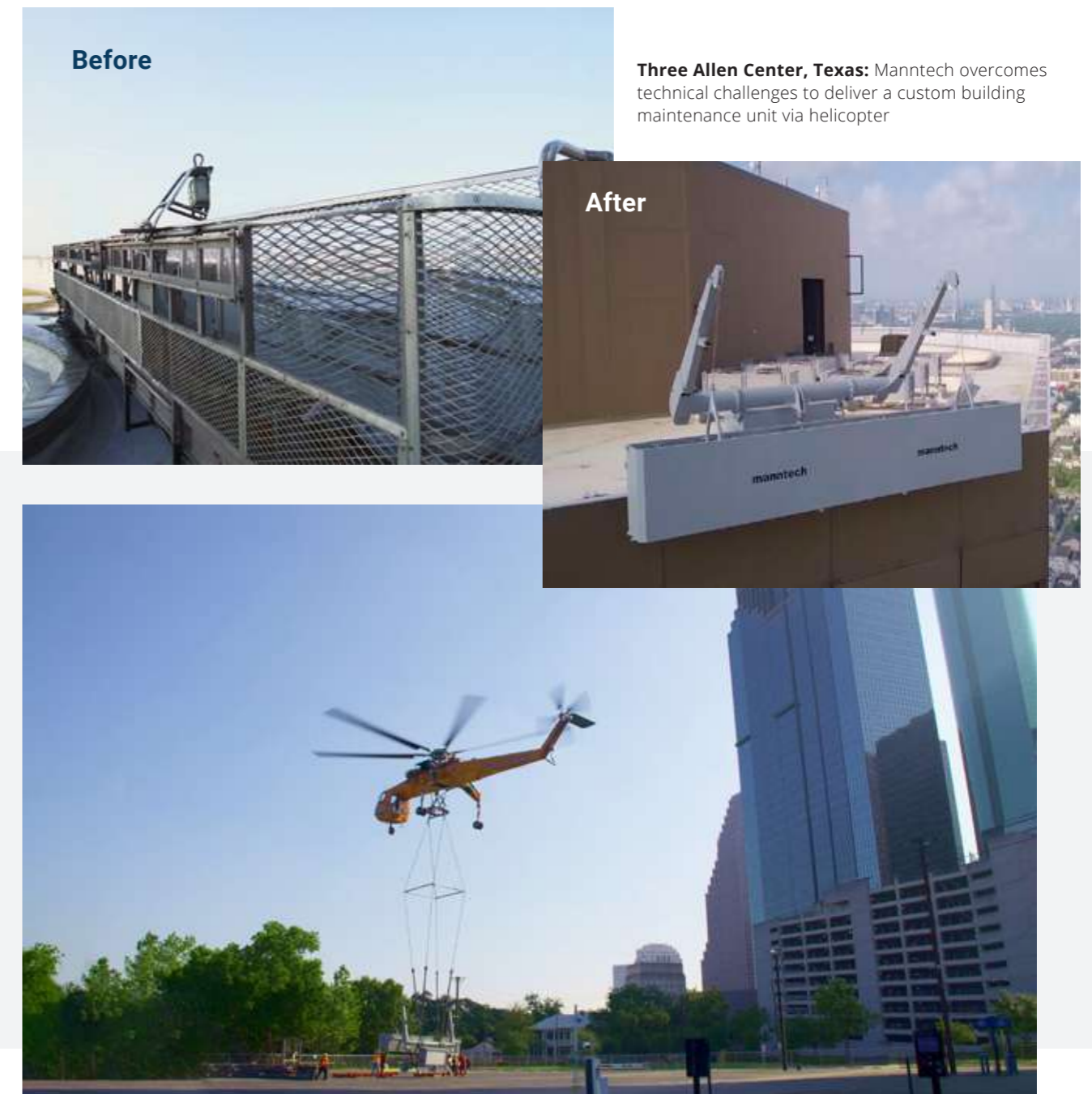
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## Facade access system replacement for Three Allen Center

As part of the redevelopment of Three Allen Center in Houston, Texas, a new building maintenance unit was required to replace an aging system which had been out of use for a long time. Renowned for developing innovative custom facade access solutions, Manntech was the first choice for the task. The stakeholders required the replacement BMU to feature the same functional abilities of the previous model to preserve the appearance of this iconic building for decades to come.

The team at Manntech devised an innovative solution and successfully designed, manufactured and delivered the building maintenance unit to its new home on the roof of Three Allen Center. There were a number of technical challenges to overcome in order to lift the building maintenance unit onto the roof of the 208-metre tower without significantly impacting its full-time residents.

Following careful consideration, the engineers at Manntech concluded that the safest and most efficient way to overcome the logistical challenges associated with lifting the new BMU to the roof of the building and minimize disruption to the building tenants, was to deliver it by helicopter. Thus, the twin arm BMU was strategically designed and weighted to be lifted from street level to its final location on the roof via helicopter. Manntech has once again overcome a variety of technical challenges to deliver reliable, high-quality facade access to every elevation of this landmark tower.



**Three Allen Center, Texas:** Manntech overcomes technical challenges to deliver a custom building maintenance unit via helicopter

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## A leading approach to quality and service

Aside from product features, which help us address your project's unique circumstance, there are many other reasons why Manntech are the facade access providers of choice for the world's leading developments.

### It starts with the design

Using our reference library of thousands of successful jobs and sub-assemblies, Manntech's design engineers create solutions tailored to the variables of your project. This includes the structural heights, shape and nature of exterior surfaces, maintenance cycles, building loads, operational safety, roof access, slopes, protrusions and concealment options.

Using cutting edge 3D Software and advanced BIM capabilities, our clients benefit from early design concept modeling, better coordination and simpler collaboration with all project team members. Using the latest industry-standard softwares such as Revit, Solidworks, and Navisworks, 3D modeling is used to assist with design reviews, coordination and facilitate clash detection.

Critical structures are designed using Finite Element Analysis (FEA) to manage stresses, loads and weight optimisation. Our shared challenge is to ensure your work of art maintains its masterpiece status well into the future.

### Service Solutions

As part of the Alimak Group of companies, CoxGomyl and Manntech provide world-leading product and customer support services to the owners and operators of CoxGomyl and Manntech vertical access equipment across the globe. In addition our high level of technical expertise allows us to maintain and support all third party machines to an identical or higher standard than the OEM.

With service support centers in 100 countries and 700 employees, we provide a full range of service, parts and training solutions to ensure the highest levels of product uptime and operator safety over the total lifecycle of the equipment.

Our customers will receive the high-quality spare parts and services of the CoxGomyl and Manntech brands that they have come to expect, with the added benefits of an increased geographical footprint, added capabilities and even more timely support.

## Service Solutions



#### Service Maintenance

A comprehensive range of service contracts, maintenance programmes and repair solutions



#### Asset Management

A range of support solutions to manage the total life cycle of CoxGomyl and Manntech equipment



#### Genuine Spare Parts

Genuine spare parts prolong equipment life and maximise performance



#### Refurbishment Solutions

Bring new life to aging systems with a cost-effective refurbishment



#### Training

Training to support the safe operation, maintenance and installation of equipment



#### Inspections, Safety & Compliance

Routine inspection programmes to ensure equipment is kept safe and compliant

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