ARCHITECTURAL
BUILDING
ENVELOPES

FOCCHI
SINCE 1914

Port Street
Manchester

Operation and Maintenance (O&M) Instructions

FOCCHI Ltd – Curtain Walling, Windows & Doors



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1. PRELIMINARY INFORMATION

DOCUMENT DETAILS

Project:	Port Street – Manchester
Package:	Curtain walling, Windows & Doors
SubContractor:	FOCCHI Ltd
Client	RENAKER
Document:	FOCCHI O&M Instructions

COMPANY DETAILS

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REVISION HISTORY

REVISION	DESCRIPTION	DATE	AUTHOR
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2. MAINTENANCE OPERATIONS

ALUMINUM CURTAIN WALLING, WINDOWS & DOORS		
PRODUCT [Material]	**MAINTENANCE TASK**	**TASK FREQUENCY (RECOMMENDED)**
ALUMINIUM COMPONENTS	Visual inspection [a)]	4-6 months
	Cleaning [b)]	4-6 months
	Extraordinary maintenance [d)]	in case of anomalies, defects, breakages
STEEL COMPONENTS	Visual inspection [a)]	4-6 months
	Cleaning [b)]	4-6 months
	Extraordinary maintenance [d)]	in case of anomalies, defects, breakages
STAINLESS STEEL COMPONENTS	Visual inspection [a)]	4-6 months
	Cleaning [b)]	4-6 months
	Extraordinary maintenance [d)]	in case of anomalies, defects, breakages
FIXING BRACKETS	Visual inspection [a)] (only for accessible elements)	4-6 months
	Cleaning [b)]	4-6 months
	Extraordinary inspection [a)]	in case of exceptional events or significant deformations
	Extraordinary maintenance [d)]	in case of anomalies, defects, breakages
FASTENERS Screws, Nuts, Bolts	Visual inspection [a)] (only for accessible elements)	4-6 months
	Cleaning [b)]	4-6 months
	Extraordinary inspection [a)]	in case of exceptional events or significant deformations
	Extraordinary maintenance [d)]	in case of anomalies, faults, breakages
GLASS PANELS Monolithic Glass / Laminated Glass / Insulated Glass Unit (IGU)	Visual inspection [a)]	4-6 months
	Cleaning [b)]	4-6 months
	Extraordinary maintenance [d)]	in case of anomalies, defects, breakages
EPDM GASKETS/ SILICONE GASKETS	Visual inspection [a)]	4-6 months
	Cleaning [b)]	4-6 months
	Extraordinary maintenance [d)]	in case of anomalies, defects, breakages
STRUCTURAL SEALANT/ WEATHERPROOFING SEALANT	Visual inspection [a)] (only for accessible elements)	4-6 months
	Cleaning [b)]	4-6 months
	Extraordinary maintenance [d)]	in case of anomalies, defects, breakages

ALUMINUM CURTAIN WALLING, WINDOWS & DOORS		
PRODUCT [Material]	**MAINTENANCE TASK**	**TASK FREQUENCY (RECOMMENDED)**
OPENABLE WINDOWS/ DOORS (*) *(*): see also Supplier's O&M Manual provided as additional documentation to this manual*	Visual inspection a)	4-6 months
	Cleaning b)	4-6 months
	Ordinary maintenance c)	4-6 months
	Extraordinary maintenance d)	in case of anomalies, defects, breakages
MOVING PARTS' IRONMONGERY Hinges, Pins, Handles, Windows / Vents / Doors / Gate Hardware and Locking systems.	Visual inspection a)	4-6 months
	Cleaning b)	4-6 months
	Ordinary maintenance c)	4-6 months
	Extraordinary maintenance d)	in case of anomalies, defects, breakages
EMERGENCY DEVICES FOR DOORS ON ESCAPE ROUTES Antipanic handles, Push bar	Inspection e)	1 month
	Cleaning b)	4-6 months
	Ordinary maintenance f)	4-6 months
	Extraordinary maintenance d)	in case of anomalies, defects, breakages

a) see table 2.1.1 - *Aluminum Curtain Walling, Window & Doors: inspections, faults and related tasks to carry out*

Note:

- It is recommended to regularly verify the joint between the window/door frame and sash and check the operational readiness of actuators for openable windows or doors.
- It is recommended to ensure proper ventilation, both vertically and horizontally, for laminated glass edges and edge sealing of the IGU to prevent moisture buildup.

b) Follow the cleaning procedures and precautions for materials. Refer to section 2.2. *Guidelines for Cleaning Materials*.

c) **Ordinary maintenance** consists of periodic operations on moving parts ironmongery (adjustments, tightening, lubrication of equipment), cleaning of drainage slots and channels of doors

d) **Extraordinary maintenance** consists of repairs/ restoration or replacements performed by Focchi or by specialized companies

e) Specialized personnel are recommended to perform the following **anti panic checks in accordance with EN 1125 - Annex C:**

- Inspect and operate the panic device and make sure that all components are in satisfactory working conditions. In case of doubt, use a force gauge to measure the operating forces to release the exit device
- Check that the fastening screws are correctly tightened
- Check that the keepers are free from obstruction
- Check that the contact surfaces of the latches and the keepers are well lubricated
- Check that no additional locking devices have been added to the door since its original installation
- Check that no modifications and / or replacements have been made to the original components supplied with the system

f) **Periodic maintenance on the emergency devices components according to EN 1125 - Annex C**

- Measurement and recording by a force gauge the operating forces to release the exit device and comparison with the maximum values set by EN 1125
- Tightening of fastening screws, if necessary
- Periodic cleaning of the keepers in order to prevent any obstruction
- Lubrication of latches and the keepers on their contact surfaces

WARNINGS

- In case of water seepage contact Focchi Ltd
- Preferably use the safety exits only as emergency exits on escape routes in accordance with the intended use

2.1 INSPECTION PROCEDURES AND REMEDIES OPERATIONS

Table 2.1.1 – Aluminium Curtain Walling, Window & Doors: inspections, faults and related tasks to carry out

ALUMINIUM CURTAIN WALLING, WINDOWS & DOORS														
INSPECTIONS, FAULTS AND RELATED MAINTENANCE TASKS TO CARRY OUT														
		Product											**Maintenance Task / Remedy**	**Who carries out the task**
Inspection	**Fault**	**Aluminium Components**	**Steel Components**	**Stainless Steel Components**	**Fixing Brackets**	**Fasteners** Screws, Nuts, Bolts	**Glass Panels** Monolithic glass/ Laminated glass/ Insulated glass	**EPDM Gaskets / Silicone Gaskets**	**Structural Sealant/ Weatherproofing Sealant**	**Openable Windows / Doors**	**Moving Parts' Ironmongery** Hinges, Pins, Handles, Windows / Vents / Door Hardware, Actuators and Locking systems	**Emergency Devices on Escape Routes** Antipanic handles, Push bar		
SURFACE FINISH CHECKING	Slight deposits / Dust	•	•	•	•	•	•	•	•	•	•	•	Cleaning [(a)]	Specialized Company
	Adherent deposits	•	•	•	•	•	•	•		•	•	•	Cleaning [(a)]	Specialized Company
	Change in surface finishing[(*)] [(*)] surface roughness increase, surface gloss decrease, discoloration, etc.	•	•	•	•					•	•		Repair / Restoration or Replacement	Specialized Company or Focchi Ltd
	Limescale						•			•	•		Cleaning [(a)]	Specialized Company
	Moisture buildup						•		•				Repair / Restoration or Replacement	Specialized Company or Focchi Ltd
	Corrosion / Rust		•	•	•	•					•		Cleaning [(a)] or Repair / Restoration or Replacement	Specialized Company or Focchi Ltd

ALUMINIUM CURTAIN WALLING, WINDOWS & DOORS														
INSPECTIONS, FAULTS AND RELATED MAINTENANCE TASKS TO CARRY OUT														
		Product											**Maintenance Task / Remedy**	**Who carries out the task**
Inspection	**Fault**	**Aluminium Components**	**Steel Components**	**Stainless Steel Components**	**Fixing Brackets**	**Fasteners** Screws, Nuts, Bolts	**Glass Panels** Monolithic glass/ Laminated glass/ Insulated glass	**EPDM Gaskets / Silicone Gaskets**	**Structural Sealant/ Weatherproofing Sealant**	**Openable Windows / Doors**	**Moving Parts' Ironmongery** Hinges, Pins, Handles, Windows / Vents / Door Hardware, Actuators and Locking systems	**Emergency Devices on Escape Routes** Antipanic handles, Push bar		
STRUCTURAL INTEGRITY CHECKING	Impact damages / Damages due to mechanical stresses	•	•	•	•	•	•			•	•		Repair / Restoration or Replacement	Specialized Company or Focchi Ltd
	Sash deformation (*) (*) Change in the regularity and integrity of the joint between window frame and sash									•			Repair / Restoration or Replacement	Specialized Company or Focchi Ltd
	Scratches and Incisions	•	•	•	•	•	•			•	•		Repair / Restoration or Replacement	Specialized Company or Focchi Ltd
	Glass chipping						•			•			Replacement	Focchi Ltd
	Glass breakage						•			•			Replacement	Focchi Ltd
STRUCTURAL INTEGRITY CHECKING	Gasket damages (cuts, nicks, cracks)							•		•			Replacement	Focchi Ltd
FIXING SYSTEM INSPECTION	Structural failure of fixing system / Loosening of mechanical fixings				•	•				•	•		Restoration or Replacement	Focchi Ltd
GASKET INSPECTION	Gasket deterioration							•		•			Replacement	Focchi Ltd

ALUMINIUM CURTAIN WALLING, WINDOWS & DOORS														
INSPECTIONS, FAULTS AND RELATED MAINTENANCE TASKS TO CARRY OUT														
Product													**Maintenance Task / Remedy**	**Who carries out the task**
Inspection	**Fault**	**Aluminium Components**	**Steel Components**	**Stainless Steel Components**	**Fixing Brackets**	**Fasteners** Screws, Nuts, Bolts	**Glass Panels** Monolithic glass/ Laminated glass/ Insulated glass	**EPDM Gaskets / Silicone Gaskets**	**Structural Sealant/ Weatherproofing Sealant**	**Openable Windows / Doors**	**Moving Parts' Ironmongery** Hinges, Pins, Handles, Windows / Vents / Door Hardware, Actuators and Locking systems	**Emergency Devices on Escape Routes** Antipanic handles, Push bar		
STRUCTURAL/ WEATHERPROOFING SEALANT INSPECTION	Sealant deterioration								•	•			Replacement	Focchi Ltd
LAMINATED GLASS DELAMINATION CHECK	Glass delamination						•			•			Replacement	Focchi Ltd
IGU EDGE SEAL INSPECTION	Glass surface dulling / Condensation in the DGU cavity						•			•			Replacement	Focchi Ltd
COATING/ FRITTING INSPECTION ON GLASS SURFACE	Coating or fritting discoloration on glass surface						•			•			Replacement	Focchi Ltd
DRAINAGE SLOT CHECK ON WINDOWS/DOORS	Drainage slots obstruction									•			Ordinary Maintenance (Cleaning water drainage slots and channels)	Specialized Company

ALUMINIUM CURTAIN WALLING, WINDOWS & DOORS														
INSPECTIONS, FAULTS AND RELATED MAINTENANCE TASKS TO CARRY OUT														
		Product												
Inspection	**Fault**	**Aluminium Components**	**Steel Components**	**Stainless Steel Components**	**Fixing Brackets**	**Fasteners** Screws, Nuts, Bolts	**Glass Panels** Monolithic glass/ Laminated glass/ Insulated glass	**EPDM Gaskets / Silicone Gaskets**	**Structural Sealant/ Weatherproofing Sealant**	**Openable Windows / Doors**	**Moving Parts' Ironmongery** Hinges, Pins, Handles, Windows / Vents / Door Hardware, Actuators and Locking systems	**Emergency Devices on Escape Routes** Antipanic handles, Push bar	**Maintenance Task / Remedy**	**Who carries out the task**
MOVING PARTS'(*) IRONMONGERY OPERATION CHECK (*) Hinges, pins, handles, windows / vents / doors hardware and locking systems, etc.	Malfunction of moving parts ironmongery									•	•		Ordinary Maintenance (adjustments, tightening, lubrication of equipment)	Authorized and qualified personnel or Focchi Ltd
	Breakage or wear of moving parts ironmongery									•	•		Restoration or Replacement	Authorized and qualified personnel or Focchi Ltd
OPERATING CHECK OF EMERGENCY DEVICES ON ESCAPE ROUTES ACCORDING TO EN 1125-ANNEX C	Malfunction of emergency devices											•	Ordinary Maintenance (tightening of fastening screws, measurement the operating forces, cleaning of keepers, lubrication of latches and keepers contact surfaces)	Authorized and qualified personnel or Focchi Ltd
	Breakage or wear of emergency devices											•	Restoration or Replacement	Authorized and qualified personnel or Focchi Ltd
	a) Follow the cleaning procedures and precautions for materials. Refer to section 2.2. Fo*cchi Guidelines for Cleaning Materials*													
	WARNINGS: In case of water seepage contact Focchi Ltd													

2.2 GUIDELINES FOR CLEANING MATERIALS

2.2.1 CLEANING RECOMMENDATIONS FOR ANODISED ALUMINIUM

Although anodised aluminium possesses exceptional resistance to corrosion, discoloration and wear, a periodic cleaning and maintenance are required to retain its aesthetics qualities and protective properties.

IT IS IMPORTANT THAT THE ANODIC COATING IS CLEANED REGULARLY.

The frequency of cleaning depends on geographical location of the building, environmental conditions (marine, swimming pool, industrial, rural, urban), levels of atmospheric pollution (acid rain, chlorine content, airborne debris such as sand and dust), atmospheric conditions (seasonal rainfall, sunlight, moisture, temperature, condensation).

More frequent cleaning will be required in heavy industrialized areas or marine and swimming pool environments compared to rural or urban areas. Seasonal rainfall can affect washing frequency by removing water soluble deposits and less adherent soil. Recessed and sheltered areas usually become more heavily soiled because of the lack of rain washing and a periodic maintenance would be needed.

IN ANY CASE WE RECOMMEND TO PERFORM REGULARLY INSPECTION AND CLEANING OF ANODISED ALUMINIUM EVERY 4 MONTHS AND AT LEAST TWICE A YEAR.

Applying this regular servicing of the anodised surfaces any possible damage can be promptly identified and remedied on time by suitable measures. Maintenance will be easier and less costly if all surfaces are washed down frequently to prevent deposits remaining on the finish.

For a best result, cleaning should be carried out by a professional cleaning company.

2.2.1.1 ANODISED ALUMINIUM CLEANING PROCEDURES

Select an appropriate cleaning product and a proper cleaning method for the aluminium finish to be cleaned. The exact procedure for cleaning will vary depending on the nature and degree of soil.

It is recommended to make a preliminary test in a small non-exposed area before cleaning the entire surface in order to check the cleaners' suitability with the surface finish.

- Rinse off the surface with running water under low pressure; fully deionized water should be used;
- Clean with warm water containing, if necessary, mild neutral detergent (pH 5-8) using a soft cloth or a non-abrasive sponge; severe rubbing must be avoided and cleaning should be concluded within a short period to avoid the detergent drying out on the surface;
- Adherent deposits may be removed using an ultra-fine scotch-brite pads and water or a mild abrasive such as pumice powder and water. In case of heavier deposits, stiff bristle or nylon brush and water may be used;
- Greasy, oily or sooty substances can be removed with white spirit or isopropyl alcohol (IPA) using a soft cloth or a non-abrasive sponge. Residues of adhesives, silicone cartouche or adhesive tapes, etc., can be removed by the same method;
- Rinse thoroughly with clean water and dry immediately the aluminium surfaces with a soft cloth or a chamois leather.

2.2.1.2 ANODISED ALUMINIUM CLEANING PRECAUTIONS

- Do not use aggressive acid or alkaline cleaners;

- Do not use detergents of unknown chemical composition;
- Do not use cleaners containing trisodium phosphate, phosphoric acid, hydrochloric acid, hydrofluoric acid, fluorides or similar compounds;
- Do not use abrasive materials (sandpaper, wire brush, metal scrapers, steel wool, blades):
- Steam-jet devices and high-pressure systems should not be used;
- The aluminium surface temperature of façade elements must not exceed 25°C during cleaning. It is preferable to clean the aluminium surfaces when shaded;
- Cleaners are to be tested for their suitability on a small non-exposed area before use;
- Avoid that spray of cleaner run-down over the other building components such as glazing materials, sealants, gaskets, etc. and rinse these areas immediately;
- Avoid contact with wet mortar, concrete and plaster that could permanently damage the aluminium surfaces;
- Care must be taken to prevent an aggressive cleaner used for some other component of the building from contacting the anodized aluminium surface;
- Different cleaners should not be mixed.

Further instructions for maintenance and cleaning are available from:

- Gütegemeinschaft für die Reinigung von Metallfassaden e.V. - GRM (Registered Quality Association for the Cleaning of Metal Façade Elements), http://www.grm-online.de/;
- RAL Deutsches Institut für Gütesicherung und Kennzeichnung E.V. (RAL German institute for Quality Assurance and Certification), RAL-GZ 632 Cleaning and protection Façade and Monument https://fassadenreinigung.grm-online.de/fileadmin/Redaktion/Downloads/FU%CC%88R_ORDENTLICHE_MITGLIEDER/Reinigung_Fassaden_RAL-GZ632_Dez21.pdf.
- American Architectural Manufacturer's Association (AAMA) U.S.A., (AAMA 609 & 610-15 Cleaning and maintenance guide for Architecturally Finished Aluminium).

2.2.2 CLEANING RECOMMENDATIONS FOR POLYESTER POWDER COATED (PPC) ALUMINIUM

A thorough cleaning of the coated surfaces is required to retain the aesthetics qualities and the protective properties of the coating.

IT IS IMPORTANT THAT THE ORGANIC COATING IS CLEANED REGULARLY.

The frequency of cleaning depends on many factors including:

- the geographical location of the building;
- the environment surrounding the building, i.e. marine, swimming pool, industrial, rural, “normal” urban etc.;
- the levels of atmospheric pollution;
- the prevailing wind;
- the seasonal rainfall that can remove water soluble deposits and slightly adherent soil;
- the protection of the building by other buildings;
- the possibility of airborne debris (e.g. sand, dust, etc.) causing erosive wear of the coating;
- the changes in the environmental circumstances during the lifetime of the building (sunlight, moisture, temperature).

More frequent cleaning will be required in areas of high pollution or limited rainfall, marine and swimming pool environments compared to rural or urban areas. Recessed and sheltered areas usually become more heavily soiled because of the lack of rain washing and a periodic maintenance would be needed.

IN ANY CASE WE RECOMMEND TO PERFORM REGULARLY INSPECTION AND CLEANING OF PPC ALUMINIUM FAÇADE COMPONENTS EVERY 4 MONTHS AND AT LEAST TWICE A YEAR.

Applying this regular servicing of the coated surfaces any possible damage can be promptly identified and remedied on time by suitable measures.

A proper maintenance and regular cleaning at the above specified frequency are both conditions of the PPC Guarantee.

For a best result, cleaning should be carried out by specialized companies.

Cleaning records must be kept and maintained as they can be needed when a claim arise against the guarantee, but under all circumstances during the entire Limited Warranty period.

2.2.2.1 PPC ALUMINIUM CLEANING PROCEDURES

Select an appropriate cleaning product and a proper cleaning method for the aluminium finish to be cleaned. The exact procedure for cleaning will vary depending on the nature and degree of soil.

It is recommended to make a preliminary test in a small non-exposed area before cleaning the entire surface in order to check the cleaners’ suitability with the surface finish.

- Rinse off the surface with running water under low pressure; only filtered water should be used;
- Clean with cold water containing, if necessary, mild neutral detergent (pH 5-8) using a soft cloth or a non-abrasive sponge; strong rubbing is not to be undertaken;
- Greasy, oily or sooty substances can be removed with white spirit free of aromatic compounds or isopropyl alcohol (IPA) using a soft cloth or a non-abrasive sponge. Residues of adhesives, silicone cartouche or adhesive tapes, etc., can be removed by the same method;
- Rinse thoroughly with clean cold water and dry immediately the aluminium surfaces with a soft cloth or a chamois leather.

2.2.2.2 PPC ALUMINIUM CLEANING PRECAUTIONS

- Do not use aggressive acid or alkaline cleaners;
- Do not use detergents of unknown chemical composition;
- Do not use scratching, abrasive materials (sandpaper, wire brush, metal scrapers, steel wool, blades);
- Do not use organic solvents containing ester, ketones, alcohol, aromatics compounds, ethylene glycol or halogenated hydrocarbons;
- Detergents must not be used at temperatures higher than a maximum of 25°C;
- Steam-jet devices should not be used;
- The surface temperature of façade elements must not exceed 25°C during cleaning. It is preferable to clean the painted surfaces when shaded;
- Cleaners are to be tested for their suitability on a small non-exposed area before use;
- The maximum exposure period of these detergents must not exceed one hour; when necessary, the entire cleaning process can be repeated after at least 24 hours;
- Avoid that spray of cleaner run-down onto the other building components such as glazing materials, sealants, gaskets, etc. and rinse these areas immediately;
- Avoid contact with wet mortar, concrete and plaster that could permanently damage the aluminium surfaces;
- Care must be taken to prevent an aggressive cleaner used for some other component of the building from contacting the coated aluminium surface;
- Never mix different cleaners together.

Further instructions for maintenance and cleaning are available from:

- Gütegemeinschaft für die Reinigung von Metallfassaden e.V. - GRM (Registered Quality Association for the Cleaning of Metal Façade Elements), http://www.grm-online.de/;
- RAL Deutsches Institut für Gütesicherung und Kennzeichnung E.V. (RAL German institute for Quality Assurance and Certification), RAL-GZ 632 Cleaning and protection Façade and Monument https://fassadenreinigung.grm-online.de/fileadmin/Redaktion/Downloads/FU%CC%88R_ORDENTLICHE_MITGLIEDER/Reinigung_Fassaden_RAL-GZ632_Dez21.pdf;
- American Architectural Manufacturer's Association (AAMA) U.S.A., (AAMA 609 & 610-15 Cleaning and maintenance guide for Architecturally Finished Aluminium).

2.2.3 CLEANING RECOMMENDATIONS FOR HOT DIP GALVANISED (HDG) STEEL

Hot dip galvanizing (HDG) provides an extremely effective corrosion protection to steel.

Zinc coating has a threefold protective nature:

a) as a *barrier coating*, it completely covers the steel surface and seals the steel from the corrosion action of environments. The zinc metallurgically reacts with the iron in the steel to form a tough, tightly-bonded zinc coating composed of a series of zinc-iron alloy layers and an outer pure zinc layer;

b) by giving *cathodic protection*, zinc prevents corrosion, even where damage or a minor discontinuity in the coating occurs;

c) the natural weathering of the coating results in the development of an additional layer of protection on the surface (*patina*) composed of zinc oxides and zinc carbonates. The zinc patina is a thin, compact and stable film that adheres to the zinc surface and is not water soluble. It corrodes very slowly and protects the galvanized coating underneath retarding the corrosion rate.

The corrosion resistance of the galvanized coating depends on the environment conditions (industrial, marine, urban, rural). The formation and corrosion resistance of the zinc patina are influenced by several factors such as: atmospheric conditions (rain, snow, hail, fog, condensation, moisture, temperature), types and density of corrosive fumes and pollutants caused by industry, traffic, chlorides in coastal areas, airborne debris (sand and dust).

Although the performance and service life of galvanized coatings are determined primarily by the thickness of the coating and the severity of environmental conditions, a regular cleaning and maintenance of the hot dip galvanizing steel surfaces are important to retain the hot dip galvanizing aesthetics qualities and corrosion resistance overtime.

WE RECOMMEND TO PERFORM REGULARLY INSPECTION AND CLEANING OF HOT DIP GALVANZED STEEL EVERY 4 MONTHS AND AT LEAST TWICE A YEAR.

Applying this regular servicing of the hot dip galvanized steel surfaces any possible damage can be promptly identified and remedied on time by suitable measures. Maintenance will be easier and less costly if all surfaces are washed down frequently to prevent deposits remaining on the finish.

For a best result, cleaning should be carried out by a professional cleaning company.

2.2.3.1 HDG STEEL CLEANING PROCEDURES

Select an appropriate cleaning product and a proper cleaning procedure depending on the nature and degree of soil.

It is recommended to make a preliminary test in a small non-exposed area before cleaning the entire surface in order to check the cleaners' suitability with the surface finish.

- Clean using alkaline-based cleaners (6<pH<12) or organic solvents. Rinse thoroughly with water to remove any residues of cleaner. If necessary, wipe clean with a soft cloth;
- In highly corrosive environments it is recommended the galvanized product be rinsed with water on a regular basis, particularly under sheltered conditions (e.g. not exposed to rain and sun);
- To remove light soiling, clean with water and neutral detergent;
- More stubborn dirt may be removed using a low-pressure wash, with just pure water or in conjunction with proprietary cleaning materials;
- Mild water stains can be removed with the use of common household ammonia cleansers;
- Cement or mortar deposits and brown stains due to water containing rust can be treated with the use of oxalic acid;

- Paints can be removed using thinners or a non-alkaline stripper. If some form of scraping is required, use plastic or wooden scrapers (not steel/metallic items). Rinse thoroughly to remove residues that may cause discoloration later and/or encourage corrosion.

2.2.3.2 HDG STEEL CLEANING PRECAUTIONS

- Do not use acid cleaners, except in cases specified above;
- Avoid direct contact of the galvanized steel product with dissimilar metals, such as brass and copper, particularly in corrosive environments (marine, industrial);
- Avoid long term storage of any galvanized product in damp and poorly ventilated conditions which may cause wet storage staining (white rust). Ensure the storage location is dry and there is effective ventilation;
- Avoid abrasive cleaning of the galvanized surface that may reduce the life of the galvanized coating. Abrasive cleaning will wash away the protective patina and the formation of this barrier protection again will consume the zinc more quickly;
- When a mechanical abrasion or “scrubbing” is required, a hard plastic bristle brush is recommended to be used. Steel bristle brushes are not to be used since they will cause discolouration of the surface;
- Cleaners are to be tested for their suitability in an inconspicuous area before use;
- Special precautions are necessary when toxic substances such as oxalic acid are used;
- Avoid that spray of cleaner run-down onto the other building components such as glazing materials, sealants, gaskets, etc. and rinse these areas immediately.

2.2.4 CLEANING RECOMMENDATIONS FOR HOT DIP GALVANIZED (HDG) + PAINTED STEEL

The attractive appearance and functional properties of a painted steel surface is the result of an engineered product manufactured under carefully controlled conditions. A thorough cleaning of the painted surfaces is required to retain the aesthetics qualities and the protective properties of the coating.

IT IS IMPORTANT THAT THE ORGANIC COATING IS CLEANED REGULARLY.

The frequency of cleaning depends on many factors including:

- the geographical location of the building;
- the environment surrounding the building, i.e. marine, swimming pool, industrial, rural, “normal” urban etc.;
- the levels of atmospheric pollution;
- the prevailing wind;
- the seasonal rainfall that can remove water soluble deposits and slightly adherent soil;
- the protection of the building by other buildings;
- the possibility of airborne debris (e.g. sand, dust, etc.) causing erosive wear of the coating;
- the changes in the environmental circumstances during the lifetime of the building (sunlight, moisture, temperature).

More frequent cleaning will be required in areas of high pollution or limited rainfall, marine and swimming pool environments compared to rural or urban areas. Recessed and sheltered areas usually become more heavily soiled because of the lack of rain washing and a periodic maintenance would be needed.

WE RECOMMEND TO PERFORM REGULARLY INSPECTION AND CLEANING OF HDG + PAINTED STEEL EVERY 4 MONTHS AND AT LEAST TWICE A YEAR.

Applying this regular servicing of the coated surfaces any possible damage can be promptly identified and remedied on time by suitable measures.

A proper maintenance and regular cleaning at the above specified frequency are both conditions of the PPC Guarantee.

For a best result, cleaning should be carried out by specialized companies.

Cleaning records must be kept and maintained as they can be needed when a claim arise against the guarantee, but under all circumstances during the entire Limited Warranty period.

2.2.4.1 HDG + PAINTED STEEL CLEANING PROCEDURES

Select an appropriate cleaning product and a proper cleaning method for the HDG + painted steel finish to be cleaned.

The exact procedure for cleaning will vary depending on the nature and degree of soil.

Take care to ensure that the cleaning methods and solutions employed only remove unwanted material without damaging the underlying paint.

It is recommended to make a preliminary test in a small non-exposed area before cleaning the entire surface in order to check the cleaners’ suitability with the surface finish.

- Loose debris may be removed by washing with water or high-pressure water spray. If necessary, a mild neutral detergent (pH 5-8) such as washing up liquid can be used with a soft bristle brush or a soft cloth. Avoid abrading the paint;

- Rinse off the surface with clean water to remove any cleaner residues and dry immediately the painted steel surface with a soft cloth;
- Greasy, oily or sooty substances can be removed with ammoniated cleaners and solvents such as white spirit free of aromatic compounds or isopropyl alcohol;
- Mildew can be removed by using household bleach;
- Red rust stain can be removed with a phosphoric acid-based cleaner. The cleaner should be completely rinsed off after application;
- Graffiti is difficult to remove since it requires an aggressive solvent. Use proprietary graffiti removers and rinse thoroughly the painted steel surface.

2.2.4.2 HDG + PAINTED STEEL CLEANING PRECAUTIONS

- Do not use aggressive acid or alkaline cleaners that may damage the paint;
- Do not use detergents of unknown chemical composition;
- Do not use organic solvents containing esters, ketones, alcohol, aromatics compounds, ethylene glycol or halogenated hydrocarbons. *Acetone, Methylethyl Ketone, Toluene, thinners or commercial paint strippers must never be used;*
- Do not use phosphated detergents;
- Cleaners are to be tested for their suitability on a small non-exposed area before use;
- Do not use scratching or abrasive materials (hard bristle brushes, metal scrapers, blades);
- For best results painted steel surfaces should be cleaned when shaded and not in direct sunlight;
- Most solvents are toxic. Use proper disposal methods and follows safety instructions from the manufacturer;
- Avoid that spray of cleaner run-down onto the other building components such as glazing materials, sealants, gaskets, etc. and rinse these areas immediately;
- Care must be taken to prevent an aggressive cleaner used for some other component of the building from contacting the painted steel surface;
- Never mix different cleaners together.

2.2.5 CLEANING RECOMMENDATIONS FOR STAINLESS STEEL

Stainless steels have inherent corrosion resistance. They do not require any coating or other forms of external corrosion protection. Their corrosion resistance is due to a process called “self-passivation” where the chromium in the stainless steel alloy forms a thin, transparent “passive layer” on the surface. This protective layer seals the stainless steel below from the environment. In the presence of oxygen from air or water, it instantaneously reforms if it is damaged.

However, accumulations of dirt may lead to concentrations of corrosive substances like sulphur dioxide or chlorides and ferrous contamination that may damage the passive layer causing tea staining and localized corrosion.

A periodic cleaning and maintenance are required to retain its aesthetics qualities and corrosion resistance overtime.

IT IS IMPORTANT THAT THE STAINLESS STEEL IS CLEANED REGULARLY.

The frequency of cleaning depending on geographical location of the building, environmental conditions (marine, industrial, rural, urban), levels of atmospheric pollution (acid rain, chlorine content, airborne debris such as sand and dust), atmospheric conditions (seasonal rainfall, sunlight, moisture, temperature, condensation).

More frequent cleaning will be required in extremely aggressive environments (heavy industrialized areas, coastal zones or locations exposed to de-icing salts) compared to rural or urban areas.
Seasonal rainfall can affect washing frequency by removing water soluble deposits and less adherent soil.

Recessed and sheltered areas usually become more heavily soiled because of the lack of rain washing and a thorough, periodic maintenance will be required.

IN ANY CASE WE RECOMMEND TO PERFORM REGULARLY INSPECTION AND CLEANING OF STAINLESS STEEL EVERY 4 MONTHS AND AT LEAST TWICE A YEAR.

Applying this regular servicing of the stainless steel surfaces any possible damage can be promptly identified and remedied on time by suitable measures. Maintenance will be easier and less costly if all surfaces are washed down frequently to prevent deposits remaining on the finish.

For a best result, cleaning should be carried out by a professional cleaning company.

2.2.5.1 STAINLESS STEEL CLEANING PROCEDURES

Select an appropriate cleaning product and a proper cleaning procedure depending on the nature and degree of soil.

It is recommended to make a preliminary test in a small non-exposed area before cleaning the entire surface in order to check the cleaners’ suitability with the surface finish.

- Rinse off the surface with running water to remove loose dirt; fully deionized water should be used;
- To remove light soiling, clean with warm water containing neutral detergent (pH 6-8) or 5% ammonia using a damp soft cloth or a chamois leather. Use a soft long fibre brush if necessary;
- Rinse thoroughly with clean water and dry with a soft cloth or a chamois leather using overlapping strokes and working in the same direction as the grain;
- Heavier deposits may be removed with a soft nylon brush and water or proprietary slightly abrasive cream cleaning agents. Rinse with (preferably de-ionised) water to remove cleaners’ residues, avoiding streaking and water marks;
  A detailed guidance of cleaning methods for stainless steel is given in the following table 2.2.5.1 – *Guidance for stainless steel cleaning*.

Table 2.2.5.1 - Guidance for Stainless Steel Cleaning

Type of soil	Suggested cleaning method	Note
LIGHT SOILING	Warm water and neutral detergent (pH 6-8) or 5% ammonia. Apply with a damp soft cloth or a chamois leather. Use a soft, long fibre brush, if necessary Rinse thoroughly with clean water and dry immediately with a soft cloth or a chamois leather	For a best result dry using overlapping strokes, working from top to bottom For cleaning brushed surface finishes, the cleaning movement should be in the same direction as the grain
FINGERPRINTS	Warm water and neutral detergent; alternatively, hydrocarbon solvent Proprietary spray polishes are also available to clean and minimise remarking	
OIL AND GREASE MARKS	Hydrocarbon solvents (methylated spirit, isopropyl alcohol or acetone) applied with a clean, soft cloth Alternatively, alkaline formulations are available with surfactant additions	Care is needed with solvents to avoid spreading the staining on the stainless steel surface
STUBBORN SPOTS, WATER MARKS AND LIGHT DISCOLOURATION. LIGHT RUST STAINING[1]	Non-scratching domestic cleaning creams or polishes usually containing calcium carbonate or citric acid. Apply with soft cloth or soft sponge and rinse off residues with de-ionized water and dry, avoiding streaking and water marks	Do not use chloride solutions For more stubborn dirt, nylon pads such as “scotch-brite” pads may be used. Care must be taken not to scratch the stainless steel surface
FRESH IRON/STEEL GRINDING GRIT OR DUST[1]	A saturated solution of oxalic acid applied with a soft cloth or cotton wool allowed to stand for a few minutes, without rubbing or abrading	Special precautions are necessary with oxalic acid as it is highly toxic
RUST STAINS[1]	Phosphoric acid cleaners or dilute nitric acid. Use white vinegar for light rust stains. Severe rust stains can be removed by more aggressive treatments (pickling and/or passivation) using acid substances (nitric and hydrofluoric acid)	Take care to use these products in accordance with the health and safety requirements from the supplier and the relevant legislation on environmental protection Specialist finishing companies should carry out this cleaning
ADHERENT HARD WATER SCALES AND MORTAR/CEMENT SPLASHES	10-15% solution of phosphoric acid. Use warm, neutralise with dilute ammonia solution, rinse with clean (preferably de-ionised) water and dry Alternatively soak in a 25% vinegar solution and use a nylon brush to remove deposits Proprietary products are also available with surfactant additions	Do not use any mortar removers or diluted hydrochloric acid
HEAVILY NEGLECTED SURFACES WITH ACCUMULATED GRIME DEPOSITS	A fine, abrasive paste or metal polishes as used for car body refinishing Rinse thoroughly to remove any residue and dry	To avoid a patchy appearance, the whole surface may need to be treated
PAINT, GRAFFITI	Proprietary alkaline or solvent paint strippers Use soft nylon or bristle brush on patterned surfaces	Avoid using hard objects such as scrapers or knives that may scratch the underlying stainless steel surface Apply following the manufacturer’s instructions

[1] Contamination with iron particles can occur by contact with tools, structural carbon steel members and from nearby operations such as welding, cutting, drilling and grinding carbon steel.

2.2.5.2 STAINLESS STEEL CLEANING PRECAUTIONS

- Do not use chloride-containing solutions, including hydrochloric acid-based cleaning agents such as silver cleaners or building mortar removers, and hypochlorite bleaches;
- Do not use scratching products and abrasive materials (sandpaper, non-stainless steel based scouring pads, wire brush, metal scrapers or blades, steel wool);
- High pressure systems should not be used;
- Care must be taken to prevent an aggressive, acid-containing stainless steel cleaner from contacting other materials such as aluminium, galvanized carbon steel, decorative stone, sealants, glass, etc.;
- Cleaners are to be tested for their suitability on a small, non-exposed area of the surface before use.

Further instructions for maintenance and cleaning are available from:

- Worldstainless (Research and Development association) - https://www.worldstainless.org/Files/issf/non-image-files/PDF/Euro_Inox/Cleaning_EN.pdf

2.2.6 CLEANING RECOMMENDATIONS FOR GLASS

A regular and thorough cleaning of the glass surfaces is necessary to retain the decorative appearance of the façade.

IT IS IMPORTANT THAT THE GLASS IS CLEANED REGULARLY.

The frequency of cleaning depends on many factors including:

- the geographical location of the building;
- the environmental conditions surrounding the building, i.e. marine, swimming pool, industrial, rural, “normal” urban etc.;
- levels of atmospheric pollution;
- the atmospheric conditions (prevailing wind, temperature changes, seasonal rainfall).

WE RECOMMEND TO PERFORM REGULARLY INSPECTION AND CLEANING OF THE GLASS SURFACES EVERY 4 MONTHS AND AT LEAST TWICE A YEAR.

For a best result, cleaning should be carried out by a professional cleaning company.

2.2.6.1 GLASS CLEANING PROCEDURES

Always use appropriate glass cleaning products and follow the manufacturer’s instructions. The exact procedure for cleaning will vary depending on the nature and degree of soil.

It is recommended to make a preliminary test in a small non-exposed area before cleaning the entire surface in order to check the cleaners’ suitability with the material.

- Rinse off the glass surface with a clean cloth and clean warm water;
- Clean with water and mild detergent using a soft cloth or a non-abrasive sponge;
- Rinse off immediately with clean and warm water to remove any chemical substances and soap residue;
- Dry the glass immediately after cleaning with a clean and soft cloth;
- In case of heavier deposits (greasy, oily or sooty substances), an isopropyl or denatured alcohol/water mix or an ammonia/water mix would also be used. Rinse it off immediately with clean water and dry the glass as well as the door frame and any hardware with a clean soft cloth or a cellulose sponge;
- Limescale can be removed using a low concentration (5%-10%) solution of acetic acid. Rinse it off immediately with clean water and dry the glass as well as the door frame and any hardware with a clean soft cloth or a cellulose sponge.

2.2.6.2 GLASS CLEANING PRECAUTIONS

- Clean small areas at a time and inspect the surface frequently for any sign of damage;
- For best results glass surfaces should be cleaned when shaded and not in direct sunlight;
- Do not use abrasive cleaning solutions or materials (sandpaper, wire brush, metal scrapers, steel wool, blades or high-pressure systems) on glass surfaces;
- Do not use petroleum-based products;
- Do not use basic or acid substances particularly containing chlorides and fluorides. These substances can damage glass surfaces, sealants, gaskets, pvb layers of the laminated glasses, painted and anodized aluminium profiles;

- HYDROFLUORIC ACID AND PHOSPHORIC ACID ARE CORROSIVE FOR GLASS SURFACES AND THEY MUST NEVER USED;
- Do not use detergents of unknown chemical composition;
- Cleaners are to be tested for their suitability on a small non-exposed area before use;
- Protect all glass surfaces from possible acid splatter of cleaning products used in the cleaning of aluminium, concrete and bricks. Glass should be protected from splatters produced during the welding process;
- Concrete or mortar slurry that runs down (or is splashed on) glass can be especially damaging and should be washed as soon as possible;
- Avoid glass cleaning products and solutions coming into contact with the glass edges;
- For surfaces with frit or coatings (anti-scratch, self-cleaning, anti-reflective or similar) particular precaution must be used. Particularly not use scrapers, abrasive detergent and follow the specific manufacturer's instructions.

2.2.7 CLEANING RECOMMENDATIONS FOR EPDM / SILICONE GASKETS

EPDM/Silicone gaskets have a good resistance to ageing, weather conditions (rain, wind, sunlight, UV radiation, ozone), high and low temperature. Even if they have excellent long-term elasticity and durability, the accumulations of atmospheric dirt (air dust, limestone, sand or sea salt deposits, pollen, resins) and corrosive substances like sulphur dioxide, sulphur, carbon, hydrocarbons, chlorides may quickly deteriorate and harden these components.

In order to retain a good appearance and preserve technical performance over time it is necessary:

- to carry out periodic inspections of the gaskets to check for any damage (cuts, nicks, cracks) or changes in watertightness and positioning;
- to CLEAN GASKETS REGULARLY (usually gaskets and other components of the same façade can be cleaned at the same time).

2.2.7.1 EPDM / SILICONE GASKETS CLEANING PROCEDURES

Select a proper cleaning product depending on the chemical composition of the gasket material (please, refer to the following table 2.2.7.1 - *Chemical Resistance of elastomeric materials*).

It is recommended to make a preliminary test in a small non-exposed area before cleaning the entire surface in order to check the cleaners' suitability with the material.

- Clean with cold or warm water; using a fluid neutral detergent (e.g. shampoo) at the recommended concentrations, if necessary;
- Rinse thoroughly with clean cold water;
- Heavier deposits can be removed using a specific more aggressive cleaning agent.

2.2.7.2 EPDM / SILICONE GASKETS CLEANING PRECAUTIONS

- Do not use acid or alkaline cleaners, oils, solvents or products with unknown chemical composition;
- Do not use abrasive materials (sandpaper, steel wool, wire brush, metal scrapers, blades or high-pressure systems) that can damage the gasket causing it to be broken down;
- DO NOT GREASE THE GASKET. Greasing may cause the hardening of the gasket or damage other materials such as aluminium, galvanized carbon steel, sealants;
- Cleaners are to be tested for their suitability before use (please, refer also to the following table 2.2.7.1 - *Chemical Resistance of elastomeric materials*).

Table 2.2.7.1 – Chemical Resistance of elastomeric materials

CHEMICAL RESISTANCE OF ELASTOMERIC MATERIALS		
Elastomer / Cleaning product	EPDM (e.g. Dutral)	VMQ (e.g Silastic)
ACETONE	A	B
25% ACETIC ACID	A	B
10% HYDROCHLORIC ACID	A	C
10% NITRIC ACID	B	X
WHITE SPIRIT	X	C
ETHYL ALCOHOL	A	A
AMMONIA	A	C
BENZENE	X	X
PETROL	X	X
CYCLOHEXANE	X	X
CHLOROFORM	X	X
METHYLENE CHLORIDE	C	X
DIETHYLENE GLYCOL	A	B
DIOCTYLPHTHALATE	B	C
SILICON EMULSION	A	X
HEXAN	X	X
DIETHYL ETHER	X	X
DIESEL	X	X
GLYCERIN	A	A
ISOCOTANE	X	X
KEROSENE	X	X
METHANOL	A	A
METHYL ETHYL KETONE	A	C
METHYL ISOBUTYL KETONE	B	C
NAPHTHA	X	X
MINERAL OIL	X	B
SILICONE OIL	A	X
PERCHLOROETHYLENE	X	X
PETROLEUM	X	C
SOAP SOLUTION	A	A
SODIUM CARBONATE SOLUTION	A	A
SODIUM HYDROXIDE SOLUTION	A	C
10% SODIUM HYPOCHLORITE	B	B
TOLUOL	X	X
TRICHLOROETHANE	X	X
TRICHLOROETHYLENE	X	X
XYLOL	X	X

Key:

A = Excellent chemical resistance. Minimal changes in physical properties

B = Good chemical resistance. Moderate changes in physical properties

C = Limited chemical resistance. Significant changes in physical properties

X = No chemical resistance. Severe decay of the all characteristics

2.2.8 CLEANING RECOMMENDATIONS FOR SEALANTS

The types of sealants used in building construction can be defined according to their applications (structural glazing sealants or weatherproofing sealants), their hardening process (mono or two-components sealants), their movement capability to adapt to dimensional variations of joints, their chemical composition (acrylic, silicone, polyurethane, polysulphide…).

The durability of a sealant depends on many factors including:

- the sealant mechanical and physical properties;
- the primers and substrates properties;
- the environmental circumstances i.e. ultraviolet (UV) light of the sun, moisture, ozone, acid rain, temperature, micro-organisms, atmospheric pollution, dirt or other airborne contaminants;
- the vandalism or animal attack like birds that may cause mechanical damage;
- the joint movements due to applied loads, vibrations, temperature changes.

Sealants in general do not require maintenance. They exhibit long-term performance for over 30 years provided that they have been applied in accordance with the manufacturer's recommendations.

Periodic visual inspection of the sealant is recommended every 4 months and at least twice a year in order to check any physical property change such as sealant cohesion, loss of sealant adhesion to substrates.

2.2.8.1 SEALANTS CLEANING PROCEDURES

It is recommended to make a preliminary test in a small non-exposed area before cleaning the entire surface in order to check the cleaners' suitability with the material.

- Clean with water and neutral detergent (pH 5-8) using a soft cloth or a non-abrasive sponge;
- Rinse thoroughly with clean water to remove any chemical substances and soap residue;

2.2.8.2 SEALANT CLEANING PRECAUTIONS

- Do not use acid or alkaline cleaners, oils, solvents or products with unknown chemical composition;
- Do not use abrasive materials (sandpaper, wire brush, steel wool or high-pressure systems);
- Cleaners are to be tested for their suitability before use;
- Damaged areas can be repaired with the use of new silicone sealant.

Please contact *Focchi Ltd* for further recommendations

2.3 REPLACEMENT STRATEGIES

Glass and Panels dimensions are designed accordingly to the available load capacity, in order to guarantee their replacement.

Maximum panel size to allow internal replacement has been established accordingly to the ability to transport panels through the building, by means of a flex-wide trolley, and vertically by the goods lift.

Refer to specific design project and information, and to the following documents:

DOCUMENT NAME	DOCUMENT DESCRIPTION
Z1-FOC-G251-CA-XX-008	GLASS REPLACEMENT STRATEGY

Refer to the following table for glass panels sizes and weights information:

FAÇADE TYPE	PRODUCT DESCRIPTION	MAXIMUM PANEL SIZE (mmxmm)	GLASS PANEL WEIGHT (Kg)
VISION GLASS ACOUSTIC ZONE C-D UNITIZED SYSTEM FACET 1-4	Triple glazed insulated clear glass unit (GL-101)	925 x 2850	178
VISION GLASS ACOUSTIC ZONE B UNITIZED SYSTEM FACET 1-4	Triple glazed insulated clear glass unit (GL-101 C)	925 x 2450	153
VISION GLASS ACOUSTIC ZONE C-D UNITIZED SYSTEM FACET 1-4 LEVEL 32	Triple glazed insulated clear glass unit (GL-101 A)	925 x 3590	224
VISION GLASS AMENITY L07 UNITIZED SYSTEM FACET 1-4	Triple glazed insulated clear glass unit (GL-101 B)	925 x 2450	153
VISION GLASS ACOUSTIC ZONE C-D UNITIZED SYSTEM FACET 2-3	Triple glazed insulated clear glass unit (GL-102)	925 x 2850	178
VISION GLASS ACOUSTIC ZONE C-D UNITIZED SYSTEM FACET 2-3 LEVEL 32	Triple glazed insulated clear glass unit (GL-102 A)	925 x 3590	224
VISION GLASS AMENITY L07 UNITIZED SYSTEM FACET 2-3	Triple glazed insulated clear glass unit (GL-102 B)	925 x 2450	153
VISION GLASS ACOUSTIC ZONE B UNITIZED SYSTEM FACET 2-3	Triple glazed insulated clear glass unit (GL-102 C)	925 x 2450	153

FAÇADE TYPE	PRODUCT DESCRIPTION	MAXIMUM PANEL SIZE (mmxmm)	GLASS PANEL WEIGHT (Kg)
VISION GLASS DGU GROUND FLOOR STICK SYSTEM EWS-101 FACET 1	Double glazed insulated clear glass unit (GL-103)	1182 x 4700	389
VISION GLASS DGU GROUND FLOOR STICK SYSTEM EWS-121 FACET 2-3-4	Double glazed insulated clear glass unit (GL-103 A)	1268,5 x 4700	417

3. OPERATING AND SAFETY INSTRUCTIONS

3.1 GENERAL PROVISIONS

GENERAL PROVISIONS
It's absolutely forbidden to bring any change to the façade or to any façade component, since this could compromise its safety performance
Any changes in the façade system design, screening devices and moving systems, including doors and actuators must be previously agreed with Focchi Ltd
Focchi Ltd cannot be held responsible for any damages to the façade caused by improper use, negligence or poor maintenance. This will involve the invalidation of product warranty
All check and maintenance actions must be carried out by a qualified technician in compliance with the requirements of the standards in force
During access, maintenance and cleaning operations, all the operatives must comply with personal safety best practices, including the use of provided personal protective equipment, permanent safety structures for access to the façade and related restraint equipment
It is a Health and Safety Regulations (HSE) legal requirement that any maintenance / cleaning activity of the façade is carefully planned in advance and that comprehensive Method Statement and Risk Assessment are produced by a competent person. Copies of such documents must be issued and explained to the operative carrying out the task

3.2 OPERATION PROCEDURES FOR CURTAIN WALLING, WINDOWS, VENTS AND DOORS

OPERATION PROCEDURES FOR CURTAIN WALLING, WINDOWS, VENTS AND DOORS
Avoid to expose the product to heat sources or naked flames
Avoid impacts with sharp objects (bags, clothing accessories like studs, keys, rings, etc.) that may scratch or chip the glass surface
In case of relevant impacts on the façade, a specialist should inspect the connections and the materials, even if there are no glass breakage, visible cracks or malfunctions
Any breakages or relevant carvings on the façade must be reported to the maintenance personnel to evaluate with Focchi Ltd the necessary safety measures and restoration work
Do not install, without appropriate check by Focchi Ltd, devices or elements which screen the façade, such as interior furnishings, thermal installations, plastic films, removable wrapping skins, metal or paper surfaces, sticks and / or panels stuck on glasses that may cause the glass breakage due to thermal shock
Open and close doors / windows / vents with caution to prevent glass breakage
Secure and close doors / windows / vents in case of strong wind and pressure variation
Do not leave doors' / windows' / vents' sashes open for long periods without direct control (especially during the night)
Do not swing on or hang objects on the doors and / or the windows / vents and their handles
Do not put any objects in the opening area between the frame and the openable part which may prevent doors / windows / vents closure

OPERATION PROCEDURES FOR CURTAIN WALLING, WINDOWS, VENTS AND DOORS
Avoid to force doors / windows / vents over their opening limits
Accidental impacts in open doors / windows / vents parts may cause injuries. Do not leave the doors / windows / vents open in presence of unsupervised children
Pay attention to the accidental falling in case of doors / windows / vents opened sashes
Make always use of the handle or other proper systems to close the doors / windows / vents to prevent accidental trapping of fingers between the sashes and the frame
In case of defect in opening and / or closure of the doors / windows / vents: - do not force the accessories as this could cause sudden breaking of the moving system - check for dirt or elements that may obstruct movement - lubricate the mechanisms - adjust the ironmongery by means of dedicated registers - refer to the Manufacturer's O&M Manual - please contact the supplier for any clarification
Avoid any unexpected manoeuvres with movement and closure systems
In case of opening doors with mechanical arms or actuators (fitted to the floor or ceiling), perform the routine checks and periodic maintenance reported in this manual. Contact a qualified technician in presence of evident malfunctioning or faults
In case of openable doors / windows / vents, verify the regularity and integrity of the joint between frame and sashes
Check periodically the correct operation of the anti-panic handles according to EN 1125 – Annex C
Preferably use the safety exits only as emergency exits on escape routes in accordance with the intended use
Do not lean out for any reason, neither during cleaning and maintenance of windows and shutters
Prevent falling of objects and materials during cleaning and maintenance
Delimit the dangerous area with appropriate signs and inform the user of any dangers in accordance with the standards in force
Whenever any failure or malfunction of any part of the façade is detected for unknown reasons or improper use, it will be necessary to secure the damaged unit to prevent accidental falls of people if there is any potential and evident risk. This operation shall involve the temporary blocking of the opening unit with a clear and legible notice for users containing the prohibition of use. At the same time, it will be necessary to delimit the concerned or adjacent area with appropriate signage in order to limit the transit of people or things into a danger zone. Then contact Focchi Ltd for on-site repair
Avoid to remove accessories during ordinary operations or during cleaning and maintenance
Avoid contact with electrical parts under tension, prevent falling of materials and equipment which may damage other components, and avoid exposure to toxic or dangerous substances during maintenance / cleaning operations
During the application in touch up areas Focchi would suggest that no stick pins or sticky tapes are used on any painted substrates, the water-based paint can take a while to fully cure with the low temperatures. Nothing should be stuck to freshly painted substrates
Nothing should be placed or positioned on top of the fire stop tray (including pedestals) as it has not been designed to support loads
Contact Focchi Ltd in case of water seepage

OPERATION PROCEDURES FOR CURTAIN WALLING, WINDOWS, VENTS AND DOORS
All rope access equipment, temporary jib / davits, and access equipment shall be set-up and anchored at each use and derigged for remote storage at the end of the working day
All ladders are to be securely anchored or fixed at the foot to prevent slipping, using rubber pads at the ladder top to avoid glass damage. Care must be taken to ensure that any element of the glazing, or non-load bearing surface, is not use for support during cleaning and maintenance operations
For all cleaning operations, operatives are to wear suitable anti-slip footwear with a soft underside to prevent damage to surfaces
During maintenance, cleaning and replacement operations, all ground level landscape areas immediately beneath the curtain wall must be arranged in order not to present obstructions to the operations / emergency descent of the rope access operatives, and for the positioning of the façade panels for replacement
During maintenance, cleaning and replacement operations, areas should be cordoned off to minimize contact with the public
Do not use “reach and wash” pole systems in high areas or where there is a risk of losing control of the pole and its falling on the ground
Any significant operations, particularly those requiring the handling / movement of materials of significant dimensions or Mobile Elevating Working Platforms (MEWP) or BMU system operations, shall require the prior consultation and possible consent of local Authorities

3.3 EMERGENCY CONDITIONS

When a glass breakage occurs, please check the consistence of the impact. If there are not penetrations through the glass or large detachments of pieces, that is depending by the type of impact, the double glass unit can be maintained in place up to the scheduled replacement phase, because the glass maintains a safety behaviour against the risk of failure. However, it’s better to isolate the internal surface with a physical barrier like temporary screens in order to discourage the physical human contact.

In the case of façade parts failure and/or detachment, due to misuse or unknown reasons, secure the façade in order to avoid people/components falling down and prevent any kind of accident because of damaged element compromised structural properties (e.g. fall of objects / persons due to glasses, doors, windows loss of tightness; etc.).

This operation involves temporary blocking opening modules, securing other façade elements (e.g. with anti-shatter glass film, plywood, etc.) and signalling with clear and legible signs that the use and/or access is forbidden to users and general public.

At the same time, delimit the areas concerned by the damage, both internally and externally to the façade, with proper signs to restrict the passage of persons and vehicles or the storage of objects in a dangerous zone.

Contact then FOCCHI Ltd for façade replacement.

3.4 RESIDUAL RISKS

RESIDUAL RISKS AND ASSOCIATED HAZARDS
Working at height
Slips, trips and falls
Small objects falling from height (nuts, screws, bolts, operator’s personal objects, etc.)
Accidental glass breakages during maintenance and cleaning operations
Poor egress and access

RESIDUAL RISKS AND ASSOCIATED HAZARDS
Lack of supervision
Manual handling
Inclement weather
Use of lifting equipment and working platforms (Mobile Elevating Work Platforms, lifting cranes)
Use of Vacuum Lifters
Use of ladders
Use of powered logistical equipment
Use of hazardous substances
Thermal fractures
Human behaviour
Falls from height
Injury from falling materials
Uncontrolled collapse
Risks from connected services
Traffic management
Hazardous materials
Noise and vibration
Fire (local link)
Worker involvement