TRIMO

TECHNICAL INSTRUCTIONS FOR THE USE AND MAINTENANCE OF TRIMO PRODUCTS

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1 Introduction

The instructions are intended for the **inspection and maintenance** of Trimo products and flashing elements made of galvanised pre-painted sheet metal, protected with the coil coating organic protective coatings. These coatings provide long-term resistance and stability and aesthetic appearance of individual elements and the final facility.

On a regular basis a caretaker or user of facilities and persons with adequate professional qualifications shall **inspect, maintain and organise cleaning** of all structural elements of the facility in scope of regular maintenance works. An inspection carried out **minimally once a year** is obligatory; it may be carried out even several times if the environment is less favourable. Conclusion of a maintenance contract with the contractor is recommended.

The table at the end of this document presents a list of required procedures and measures that are to be implemented during the annual inspection of the facility, instructions for damage repairs, washing of roof and façade panels and other aspects of maintenance.

In case of questions about the inspection and maintenance of hot galvanised pre-painted sheet metal, Trimo cladding, roof and façade products, you are kindly requested to contact the Trimo service and repair department.

2 Protection of Trimo elements

Trimo elements viz. panels consist of a filling (mineral wool, honeycomb) and cladding made of galvanised pre-painted thin sheet metal.

Steel sheet metal is preliminary hot-dip galvanised in compliance with EN 10346, and additionally protected by organic coating in accordance with the »coil-coating« process (EN 10169).

The following basic types of organic coatings viz. protection are applied to steel sheet metal:
- based on SP polyester
- based on PVDF polyvinylidene fluoride
- based on PUR polyurethane
- based on PUR/PA polyamide modified polyurethane
- based on PVC polyvinyl chloride, coating or film

Individual types of organic protection with the basic characteristics are presented in Table 1.

Table 1: Basic characteristics of an individual type of organic coating or protection

TYPE OF CORROSION PROTECTION	SP	SP	PVDF	PVDF+	PUR PUR/PA	PVC(P)	PVC+F
Corrosion classification [EN ISO 12944-2]	II	III	III	III	III	III	III
Total organic thickness (my) [EN 13523-1]	15	25	25	35	35-50	175-200	120-200
Temperture resistance (°C)	70	80	110	110	110	70	70
UV resistance category [EN 10169 / Table 8]	—	Ruv3	Ruv4	Ruv4	Ruv4	Ruv2	—
Flexibility	••	••	•••	••••	••••	••••	••••
Stain resistance	••	•••	••••	••••	••••	••	••••

Legend:
•••• suitable without reservations ••• very suitable •• suitable • conditionally useful /contact Trimo - not useful

Note: There should be no sudden cooling to the dew point during cleaning. Otherwise condensate can appear. See Table: Presentation of dew point at a certain temperature of the room and relative humidity. In case of cooling the working temperature should be min. 3°C above the dew point.

2.1 Instructions for prevention of damage to products

The instructions for handling of panels and elements are to be followed in order to be able to prevent mechanical damage.

Only scissors and saws that do not heat the cutting spot to a high temperature are allowed for additional cutting of panels or elements. High temperature causes destruction of anti-corrosion protection in the immediate vicinity of the cut. Therefore the use of angle grinders is strictly prohibited for this purpose!

A protective element (e.g. cardboard) is to be inserted between a drilling machine and a façade panel during drilling and riveting of the edges and flashing in order to prevent any additional mechanical damage to a panel and falling of chips on a pre-painted thin sheet metal.

Work producing hot filings (i.e. welding, cutting) is strictly forbidden in the vicinity of panels. Panels have to be adequately temporarily protected if any additional works are carried out in the immediate vicinity (i.e. concreting, plastering, asphalting etc.).

Marking or scratching by wire nails or similar sharp objects is prohibited since it may damage the protective layer.

3 Regular annual inspection

The purpose of the inspection is elimination of any possible shortcomings / deficiencies during the use of the facility.
The facility consisting of façade and roof elements and other end / closing pieces can be exposed to various weather and temperature changes.
Regular maintenance is therefore of vital importance for long service life of a facility.

In accordance with good practice it is necessary to carry out inspection of panels and other structural elements of the facility **minimally once a year**.

In scope of maintenance special attention is to be paid to the following:
- sections where dirt, smoke soot, condensate and water may accumulate
- cleaning of inflow pipes, roof valleys and gutters
- tightening of all structural elements on the structure
- control of all seals on the facility

Activities relating to the regular annual inspection are stated in Annexes 1-6 at the end of the document:

ANNEX 1: Table of activities of regular annual inspection of the Trimoterm SNV system,
ANNEX 2: Table of activities of regular annual inspection of the Trimoterm FTV system,
ANNEX 3: Table of activities of regular annual inspection of the Trimoval system,
ANNEX 4: Table of activities of regular annual inspection of the Qbiss element system,
ANNEX 5: Table of activities of regular annual inspection of the CLEAN ROOM system,
ANNEX 6: Table of activities of regular annual inspection of the CONTAINER system.

Regular inspections and documented minutes of the inspections are a condition for the claims under the guarantee during the guarantee period. The contractor reserves the right to reject any complaint reported if it appears to be a consequence of non-maintenance.

4 Control of tightening of all structural elements

The condition of screws can be easily established by unscrewing some randomly selected screws on various parts of the facility. The condition of seals, joints between seals and fixing elements and possibly rust at screws is to be inspected thoroughly. A seal has to be pressed well against sheet metal so that tightness of a joint is provided. Insulation in panels can eventually get slightly compressed which results in a slot between a seal and a panel, and therefore screws have to be regularly inspected. Loose screws are to be tightened, and rusted screws or worn seals replaced.

5 Control of all seals

The condition of all seals on the facility has to be inspected so that the required water tightness and air tightness of the facility are provided in long-term. All damaged and worn / old seals are to be replaced by new ones.

6 Cleaning

During their use Trimo products are exposed to different surface dirt, increasingly polluted air and large quantities of UV radiation.

In some environments such as industrial estates and areas in the vicinity of motorways the pollution is higher and faster.

The presence of dirt and surface impurities does not spoil only the surface appearance, but can also cause damage to the protective coating and after a longer period of time it can damage the basic material.

Impurities in the air, emissions of sulphur, chlorine and nitrogen compounds soluble in water have especially unfavourable impact on organic coatings and react negatively to a surface of pre-painted sheet metal and shorten service life of the anti-corrosion protection.

In order to be able to achieve the longest possible service life of hot galvanised pre-painted sheet metal it is important to regularly remove surface impurities.

Regular inspections and immediate repairs of the damage caused by glowing cigarette butts and acids that appear around a chimney when heating are urgently necessary.

The complete cleaning of facilities can be carried out by authorised cleaning companies. Trimo service and repair department can provide information on contact persons.

6.1 Removal of small metal particles

Small metal particles that appear as a result of cutting and drilling corrode very quickly and cause mechanical and visible damage to the organic coating. They have to be completely removed from panel surfaces immediately or latest when the daily work has been finished. Soft brooms or suction are used for removal viz. cleaning. The use of tools with integrated power nozzles for suction of waste particles is recommended.

Hot filings that fall on sheet metal surface are extremely dangerous. They sink deeply in the protective coating and cause permanent local damage. Obligatory protection of a sheet metal surface against the subsequent impact of hot filings is recommended.

7 Washing

Washing of all areas of the facility is recommended minimally once a year.

Washing is carried out under pressure (Kercher, Wap) under consideration of the following parameters:
- temperature of washing water: up to 30 - 50°C (check prior washing project exact coating recommendation),
- water jet pressure: up to 10 bar,
- detergent solution, concentration: up to 10%,
- PH solutions: min. 6 up to max. 9 – for polyester organic coating (SP, PUR),
- PH solutions: min. 4 up to max. 9 – for plastisol organic coating (PVC) and
- PH solutions: min. 4 up to max. 9 – for polyvinylidene fluoride (PVDF).

The complete surface of Trimo products (façade, roof) is to be washed by aqueous solution of an alkaline detergent in the prescribed concentration. After cleaning by a detergent the complete surface is rinsed with clean water. Rinsing is to be carried out from top to bottom so that the cleaning agent is completely removed.

The use of too strong or inadequate cleaning agents damages the coating.

After rinsing with clean water wet surfaces are to be wiped by dry cloths.

Only completed surfaces are to be cleaned so that the surface gets uniform appearance after cleaning.

Waste water as a product of cleaning has to be treated in accordance with the relevant legislation in force.

7.1 Special recommendations

If mould appears the surface has to be cleaned with a suitable solution having the following composition:
- household detergent – 0.5%
- trisodium phosphate – 3.0%
- 5% solution of sodium hypochlorite – 25.0%
- clean and fresh water – 71.5%

After cleaning the surface is to be rinsed with running water.

The use of isopropyl alcohol (2n-propanol) or an alcohol cleaning agent (INCIDIN, producer Ecolab d.o.o.) or mineral cleaning agents based on hydrocarbons (white spirit, Tessarol) is allowed for the removal of stains. Preliminary conduct of a test is recommended on a small surface. When the stain is removed, the surface has to be rinsed well with clean water.

7.2 Warnings

Panel surfaces should not be cleaned in the strong sun or when sheet metal is very hot, if products are constantly exposed to the sun.

The use of strong organic solvents and aggressive cleaning agents or brushes is prohibited for cleaning varnished / painted surfaces.

No exaggerated cleaning or rubbing of the surface is to be carried out since it may damage the high-quality top viz. final varnish. Dark shades and shades having metal appearance are especially sensitive to cleaning.

Bitumen stains have to be immediately cleaned with Tessarol viz. white spirit and concrete stains have to be removed by a wet cloth immediately when they appear!

Important: Each intervention in the roof or façade (construction of openings, assembly of additional elements, ...) without the approval of Trimo results in termination of the guarantee period.

Cleaning agent	
INCIDIN LIQUID Supplier: Ecolab d.o.o. Vajngerlova 4, p.p. 1007 SI - 2001 Maribor Telephone: + 386 (0) 2 42 93 100 Fax: + 386 (0) 2 42 93 152	Mineral cleaning agent: TESSAROL Producer: HELIOS d.o.o. Količevo 65, SI - 1230 Domžale Telephone: +386 (01) 7213-007 Fax: +386 (01) 7212-257

8 Rehabilitation of mechanical damage to organic coating

The scope of mechanical damage has to be evaluated and on this basis the most suitable approach shall be determined.

In case of minor damage it is sufficient to make repairs (touch up); its procedure is described in this section or attached to the instructions for the use of repair paint.

Replacement of a panel is recommended in case of large-scale damage and when it cannot be repaired in accordance with the described procedure.

Each rehabilitation process including painting is discussed for each facility separately. Activities are carried out in co-operation with the Trimo Service & Repair Department.

Immediate repairs of mechanical damage are recommended, when the damage is still fresh and clean because repairs can be quick and simple then.

If mechanical damage is not repaired immediately after its occurrence / appearance it results in a poor appearance of the surface and shortens the service life of sheet metal.

After a longer period of time repairs of mechanical damage are more complicated and the result may not be excellent since the corrosion and visual differences in shades of pre-painted sheet metal can appear.

Spray paint cannot be used for repairs. Rehabilitation of major dents by polyester putty is not recommended.

8.1 Repair of mechanical damage (touch up)

The following procedure is recommended for repairs of mechanical damage
- local cleaning of a damaged area of sheet metal with rubbing alcohol,
- before use the repair coating is to be well mixed (2 component PUR) in the prescribed ratio of the A component to the B component,
- the coating is applied to a clean and dry surface in the best possible shade of sheet metal.

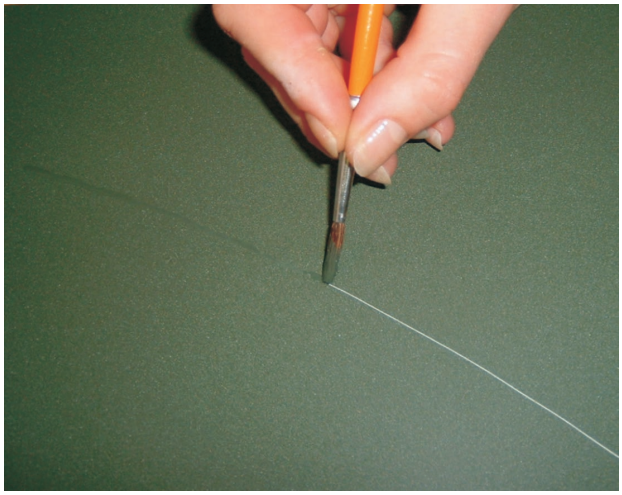
A thin school brush is used for the application of coating.

One layer of paint is sufficient in case of mechanical damage to cover coating. If the coating is damaged to the layer of zinc or basic material, it is recommended to apply another layer of paint when the first layer is completely dry.

The repair coating has to match the shade of pre-painted sheet metal as the best possible approximation.

The paint has to be applied to fully cover the damage viz. the repair. For shades with no perfect covering it is recommended that two layers of covering paint are applied.

Repair coat: 2 component polyurethane, semi-dull, 30GU
REZISTOL EMAJL 2k PUR, shade according to the Ral colour chart viz. a sample of sheet metal, Helios
INTERTHANE 990 SG, shade according to Ral viz. a sample of sheet metal, International
Hempathanne 55210, shade according to Ral viz. a sample of sheet metal, Hempel
Hardtop AS, shade according to Ral viz. a sample of sheet metal, Jotun



Working parameters:
- Air temperature: min.: +10 up to +25 °C
- Rel. air humidity: max.: 80%
- Temperature of the surface should be min 3°C above the dew point.

Working conditions have to be provided for the time of application of the repair paint and the drying time.

8.2 Mechanical damage to corroded surfaces

If corrosion already appeared on pre-painted sheet metal due to too strong and deep mechanical damage that was not rehabilitated on time, it is necessary to thoroughly remove corrosion products. Suitable abrasive cloths can be used. The prime coat containing anti-corrosion pigments is to be initially applied to locally cleaned surfaces. It is recommended to use a 2-component epoxy prime coating. A top coating has to be applied to a dry surface of the prime coating. The same type can be used as for rehabilitation of mechanical damage mentioned under Item 8.1.

A top coating has to match the shade of pre-painted sheet metal as the best possible approximation.

The paint has to be applied to fully cover the damage viz. the repair. For shades with no perfect covering it is recommended that two layers of covering paint are applied. A thin brush is to be used for application of coatings.

The working conditions prescribed in the technical information of the coatings applied are to be considered during work.

Rehabilitation has to be limited to the smallest surface possible. In case of local rehabilitation a visual difference in the shade of the repair coat and the shade of pre-painted sheet metal may appear in the course of time.

The instructions are of informative character.

The contractor carrying out the rehabilitation is fully liable for the guarantee for the performance of rehabilitation.

All other and additional information can be obtained from the Trimo Service Department.

TRIMO Servis
Prijateljeva 12
8210 Trebnje
Tel.: +386 7 34 60 383
Fax.: +386 7 34 60 340

Annex 1: Table of activities of regular annual inspection of the SNV Trimoterm system

INSPECTION	IRREGULARITIES	CONSEQUENCES	MEASURES
PANELS AND SHEET METAL ELEMENTS	DEPOSITS around openings	Water and dirt accumulate; coats may appear and cause corrosion, capillary action. Due to this phenomenon water flows behind the edges into the facility and sheet metal corrodes.	Removal of deposits and washing of the area.
	DIRT (in the areas that are not washed by rainwater – e.g. under eaves)	It spoils the appearance of the facility and can cause damage to the paint.	Washing as described in Section 7.
	MOULD (It appears rarely, but it can grow in exceptional conditions)	It spoils the appearance, corrodes, reduces the protection, causes poor hygiene.	The area is to be washed and protected by an anti-mould agent.
	MECHANICAL DAMAGE (uncorroded, corroded)	It spoils the appearance of the facility, corrodes, reduces service life of the facility.	Procedures are described in Section 8.
	PRESENCE OF FILINGS (corroded)	They corrode and leave stains on sheet metal surfaces. Walking on roofing covered with filings results in additional damage.	Removal immediately after the occurrence, procedures are described in Section 6.1.
GUTTERS AND VALLEYS	DEPOSITS	Water and dirt accumulate, coats may appear, and cause corrosion.	Removal of deposits and washing of the area, if necessary.
	CLOGGED GUTTERS	Obstacles may cause penetration of water into the facility.	Removal of deposits.
FIXING AND SEALING MATERIAL	ROOF DEFORMATION DUE TO EXTERNAL INFLUENCES (causes leaking of seals under screws and deformation of sealing material)	Leaking may be the reason for penetration of water into the facility and corrosion in the panel.	Tightening of screws, replacement of screws and seals, renewal of sealing material.

* The inspection is carried out minimally once a year viz. according to the plan of maintenance of the facility user.

Annex 2: Table of activities of regular annual inspection of the FTV Trimoterm system

INSPECTION	IRREGULARITIES	CONSEQUENCES	MEASURES
PANELS AND SHEET METAL ELEMENTS	DIRT (in areas that are not washed by rainwater e.g. under eaves)	It spoils the appearance of the facility and can cause damage to the paint.	Washing of the areas as described in Section 7.
	MOULD (It appears rarely, but can grow in exceptional conditions)	It spoils the appearance, corrodes, reduces the protection, causes poor hygiene.	Washing of the areas and protection by an anti-mould agent.
	MECHANICAL DAMAGE (uncorroded, corroded)	It spoils the appearance of the facility, corrodes, reduces service life of the facility.	Procedures are described in Section 8.
	PRESENCE OF FILINGS (corroded)	They corrode and leave stains on sheet metal surfaces.	They have to be removed as soon as they appear. Procedures are described in Section 6.1.
FIXING AND SEALING MATERIAL	DEFORMATION DUE TO EXTERNAL INFLUENCES (causes leaking of seals under screws)	Leaking may be the reason for penetration of water into the facility and corrosion in the panel.	Tightening of screws, replacement of screws and seals, renewal of sealing material.

* The inspection is carried out minimally once a year viz. according to the plan of maintenance of the facility user.

Annex 3: Table of activities of the regular annual inspection of the Trimoval system **

INSPECTION	IRREGULARITIES	CONSEQUENCES	MEASURES
PANELS AND SHEET METAL ELEMENTS	DEPOSITS around openings	Water and dirt accumulate, coats may appear and cause corrosion.	Removal of deposits and washing of the area.
	DIRT (in the areas that are not washed by rainwater e.g. under eaves)	It spoils the appearance of the building and can cause damage to the paint.	Washing of the area as described in Section 7.
	MOULD (It appears rarely, but can grow in exceptional conditions)	It spoils the appearance, corrodes, reduces the protection, causes poor hygiene.	Washing of the area and protection by an anti-mould agent.
	MECHANICAL DAMAGE (uncorroded, corroded)	It spoils the appearance of the facility, corrodes, and reduces service life of the facility.	Procedures are described in Section 8.
	PRESENCE OF FILINGS (corroded)	They corrode and leave stains on sheet metal surfaces. Walking on roofing covered with filings results in additional damage.	They have to be removed as soon as they appear. Procedures are described in Section 6.1.
GUTTERS AND VALLEYS	DEPOSITS	Water and dirt accumulate, coats may appear, and cause corrosion.	Removal of deposits and washing of the area, if necessary.
	CLOGGED GUTTERS	Obstacles may cause penetration of water into the facility.	Removal of deposits.
INSPECTION OF TIGHTNESS OF FIXING AND CORROSION OF SCREWS	POOR / LEAKING TIGHTNESS OF PANELS AND SHEET METAL	Leaking can be the reason for penetration of water into the facility and can cause corrosion in the panel.	Tightening of screws, replacement of screws and seals, renewal of sealing material.

* The inspection is carried out minimally once a year viz. according to the plan of maintenance of the facility user.

** Trimoval product range is no longer part of Trimo product portfolio. The table is to be used for maintenance purposes of already installed products.

Annex 4: Table of activities of regular annual inspection of the Qbiss One and Qbiss Screen element system

INSPECTION	IRREGULARITIES	CONSEQUENCES	MEASURES
QBISS ONE ELEMENTS	DEPOSITS around openings	Water and dirt accumulate, coats may appear and cause corrosion.	Removal of deposits and washing of the area, if necessary.
	DIRT (in areas that are not washed by rainwater e.g. under eaves)	It spoils the appearance of the facility and can cause damage to the paint.	Washing of the area as described in Section 7.
	MECHANICAL DAMAGE (uncorroded, corroded)	It spoils the appearance of the facility, corrodes, reduces service life of the facility.	Procedures are described in Section 8.
	PRESENCE OF FILINGS (corroded)	They corrode and leave stains on sheet metal surfaces. Walking on roofing covered with filings results in additional damage.	They have to be removed as soon as they appear. Procedures are described in Section 6.1.
GUTTERS AND VALLEYS	DEPOSITS	Water and dirt accumulate, coats may appear and cause corrosion.	Removal of deposits and washing of the area, if necessary.
	CLOGGED GUTTERS	Obstacles may cause penetration of water into the facility.	Removal of deposits.
INSPECTION OF TIGHTNESS AND CORROSION OF SCREWS	LEAKING OF FIXING OF PANELS AND SHEET METAL	Leaking can be the reason for penetration of water into the facility and corrosion in the panel.	Tightening of screws, replacement of screws and seals, renewal of sealing material.

* The inspection is carried out minimally once a year viz. according to the plan of maintenance of the facility user.

Annex 5: Table of activities of regular annual inspection of the CONTAINER system

INSPECTION	IRREGULARITIES	CONSEQUENCES	MEASURES
PANELS	DIRT (in areas that are not washed by rainwater e.g. under eaves)	It spoils the appearance of the facility and can cause damage to the paint.	Washing of the areas as described in Section 7.
	MOULD (It appears rarely, but can grow in exceptional conditions)	It spoils the appearance, corrodes, reduces the in protection, causes poor hygiene.	Washing of the area (Section 7) and protection by an anti-mould agent.
	MECHANICAL DAMAGE (uncorroded, corroded)	It spoils the appearance of the facility, corrodes, reduces service life of the facility.	Procedures are described in Section 8 (A 0.25 kg pot of paint is enclosed).
	PRESENCE OF FILINGS (corroded)	They corrode and leave stains on sheet metal surfaces.	They have to be removed as soon as they appear. Procedures are described in Section 6.1.
GUTTERS AND DISCHARGE PIPES	DEPOSITS	Water and dirt accumulate, coats may appear and cause corrosion.	Removal of deposits and washing of the area, if necessary.
	CLOGGED GUTTERS	Obstacles can cause penetration of water into a container.	
CORNER ELEMENTS	ICED WATER IN CORNER ELEMENTS		Removal of ice.

* The inspection is carried out minimally twice a year viz. according to the plan of maintenance of the facility user.
** Detailed instructions for the use and maintenance of Trimo containers are attached to a product.

Annex 6: Table of activities of regular annual inspection of the CLEAN ROOM system

INSPECTION	IRREGULARITIES	CONSEQUENCES	MEASURES
PANELS	DIRT (on sealing putty)	It spoils the appearance of the facility and can cause damage to the paint.	Washing of the areas as described in Section 7.
	SEALING PUTTY REMOVED (between panels on roundings)	No tightness provided during surface washing.	Removal of the existing and installation of new sealing putty on a clean and dry surface.
	MECHANICAL DAMAGE (uncorroded, corroded)	It spoils the appearance of the facility, corrodes, reduces service life of the facility.	Rehabilitation of minor untight areas by sealing putty and major areas by gluing sheet metal patches.

* The inspection is carried out minimally once a year viz. according to the plan of maintenance of the facility user, together with the FTV and SNV systems.

NOTE

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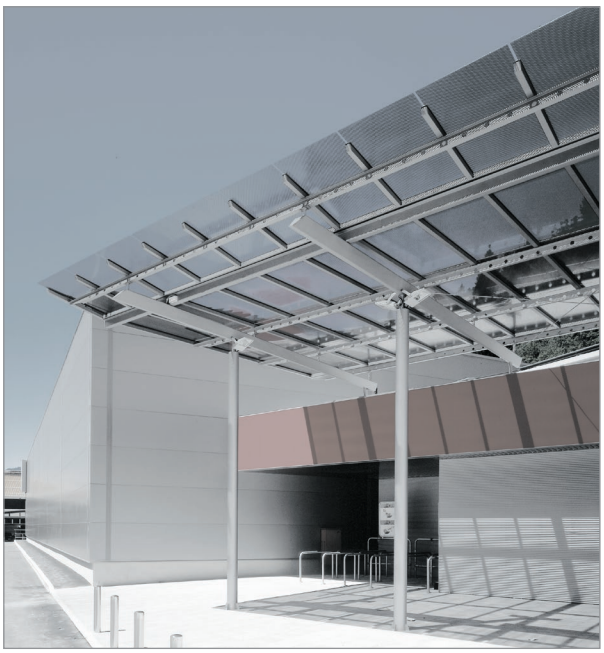

TRIMO D.O.O.
PRIJATELJEVA CESTA 12,
8210 TREBNJE, SLOVENIA
T: +386 (0)7 34 60 200
F: +386 (0)7 34 60 127
TRIMO@TRIMO-GROUP.COM
WWW.TRIMO-GROUP.COM

ID_TID9IN001EN

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