![TROAX®]

MACHINE GUARDING SOLUTIONS FOR

AUTOMATION & ROBOTICS

It's one thing to be a world leader

It's quite another to develop products that really are world leaders

TROAX lightweight yet secure mesh panels have an important job to do: to make an area safe. Our systems are well-planned and carefully developed to cope with great stresses. Feedback from our customers and our skilled employees makes it possible to offer the strongest and most intelligent systems in our sector.

Three strong market segments

Troax delivers a broad range of high-quality safety solutions all over the world.

TROAX systems are marketed in three market segments: automation and robotics, material handling and logistics, and storage and property protection. By dividing operations up in this way, we can focus completely on the requirements and technical aspects within each market segment.

Automation and robotics
Today's modern industry with advanced processes places significant demands on safety. In particular, there is a great need for controlled access for authorised personnel. Troax mesh panels are based on a carefully developed modular system that also includes special adaptations.

Material handling and logistics
TROAX can meet all requirements for storage and security. We are suppliers to all types of industry – from traditional manufacturers that require large-scale flows and volumes through their factories to facilities with high-bay storage and retail storage. We can meet all your requirements and we offer complete solutions.

Storage and property protection
Whether it's a question of new development or renovation of an existing installation, we are convinced that you will find our products easy to work with. Your unique needs and our creativity have contributed to our constant product development, giving rise to our motto: "Secure storage must be simple".

Table of contents

BUREAU VERITAS
1828
ISO 9001
ISO 14001

Sustainable product development

TROAX's own research and development department has been entrusted with continuous optimisation of our products and system solutions.

You should always feel confident with us and our products. This is therefore one of the most important parts of our business and our continued ability to translate ideas into strong products of high quality. All for your safety.

TROAX has an environment-friendly, flexible and streamlined production process. We are certified according to quality management system ISO 9001 and environmental management system ISO 14001, and we work continuously on improvements to our quality and environmental performance.

TROAX®

Global presence

TROAX is represented in 26 countries, with its own sales companies in 17, and is continually developing its operations on all continents. A global presence that aims to strengthen our position worldwide.

Sales Office ●
Distribution center ●

Production facility, Hillerstorp, Sweden

Local presence

We meet your needs through local sales offices backed up by daily deliveries from the world's largest warehouse for mesh panels, Troax in Hillerstorp, Sweden.
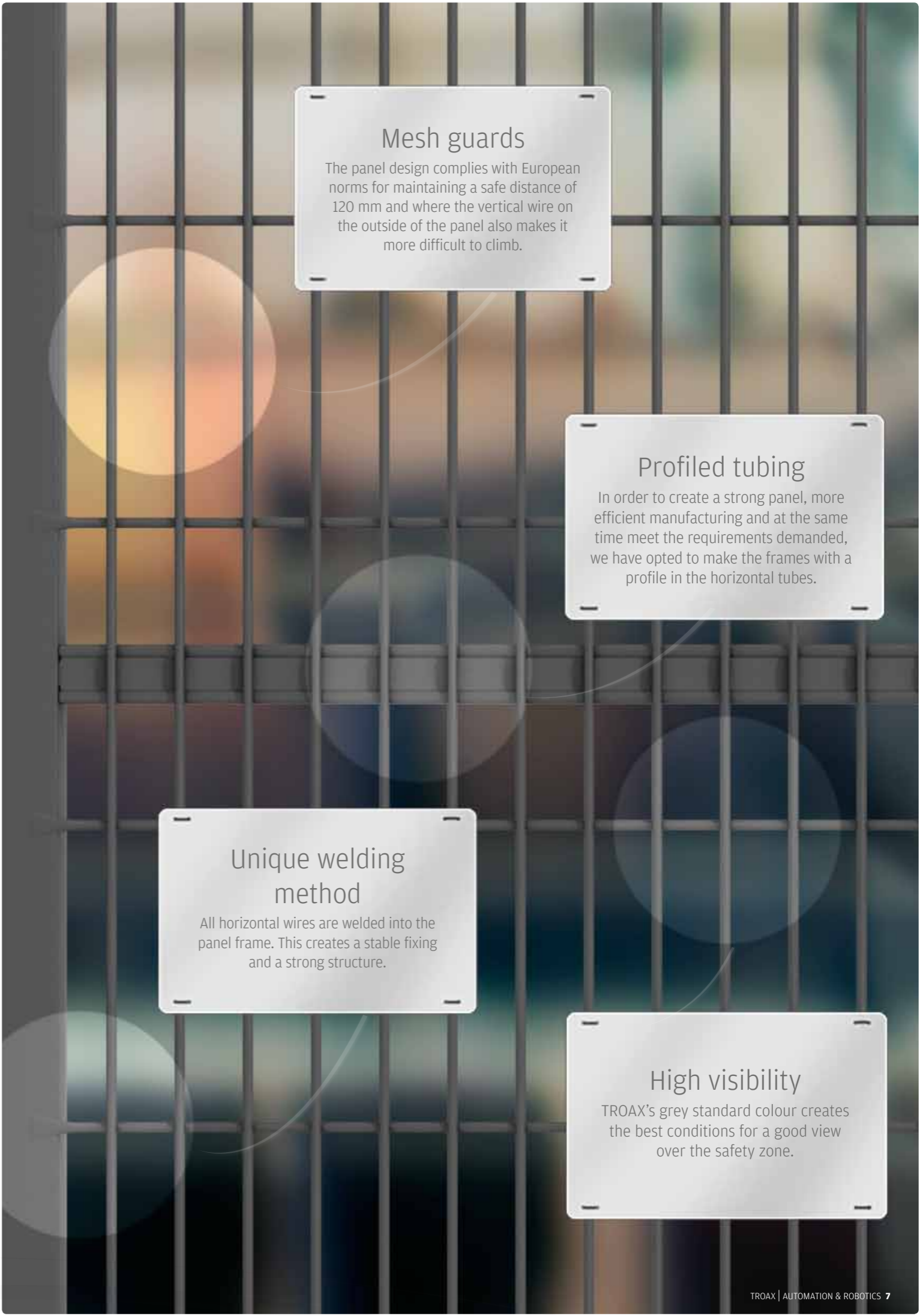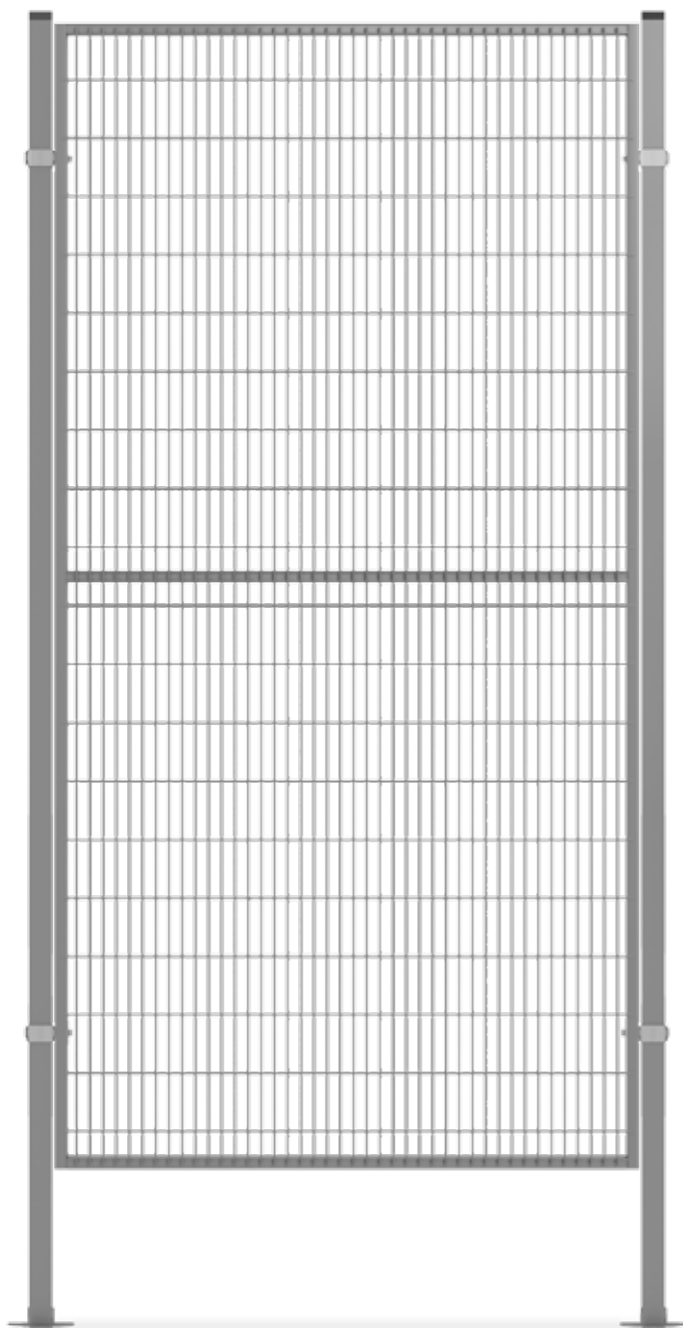
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Our strength is in the details

Dealing with our own requirements and those of the market demands smart solutions that improve safety.

Together with our unique solutions for posts, panels and panel fixings, we are able to offer a flexible modular panel system. The panels come in various versions, from mesh panels ST20 and ST30, which require a safety distance of at least 120 mm, to the PC panel, which allows good visibility of the area while providing impact protection, and our ST Steel Plate panel, which meets requirements for protection from welding sparks, dust and liquids, where both panels can also be placed close to machinery.
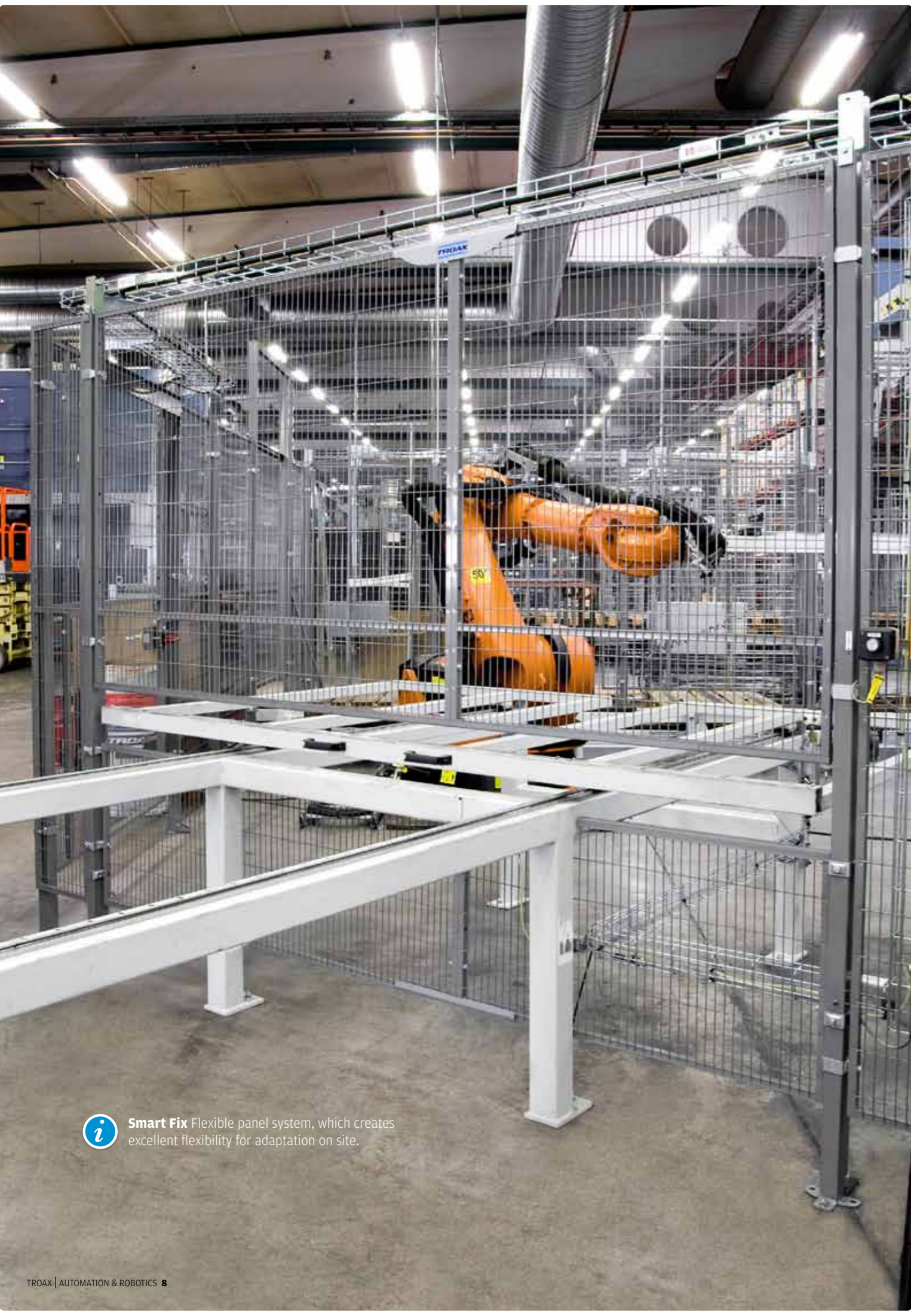
Mesh guards

The panel design complies with European norms for maintaining a safe distance of 120 mm and where the vertical wire on the outside of the panel also makes it more difficult to climb.

Profiled tubing

In order to create a strong panel, more efficient manufacturing and at the same time meet the requirements demanded, we have opted to make the frames with a profile in the horizontal tubes.

Unique welding method

All horizontal wires are welded into the panel frame. This creates a stable fixing and a strong structure.

High visibility

TROAX's grey standard colour creates the best conditions for a good view over the safety zone.
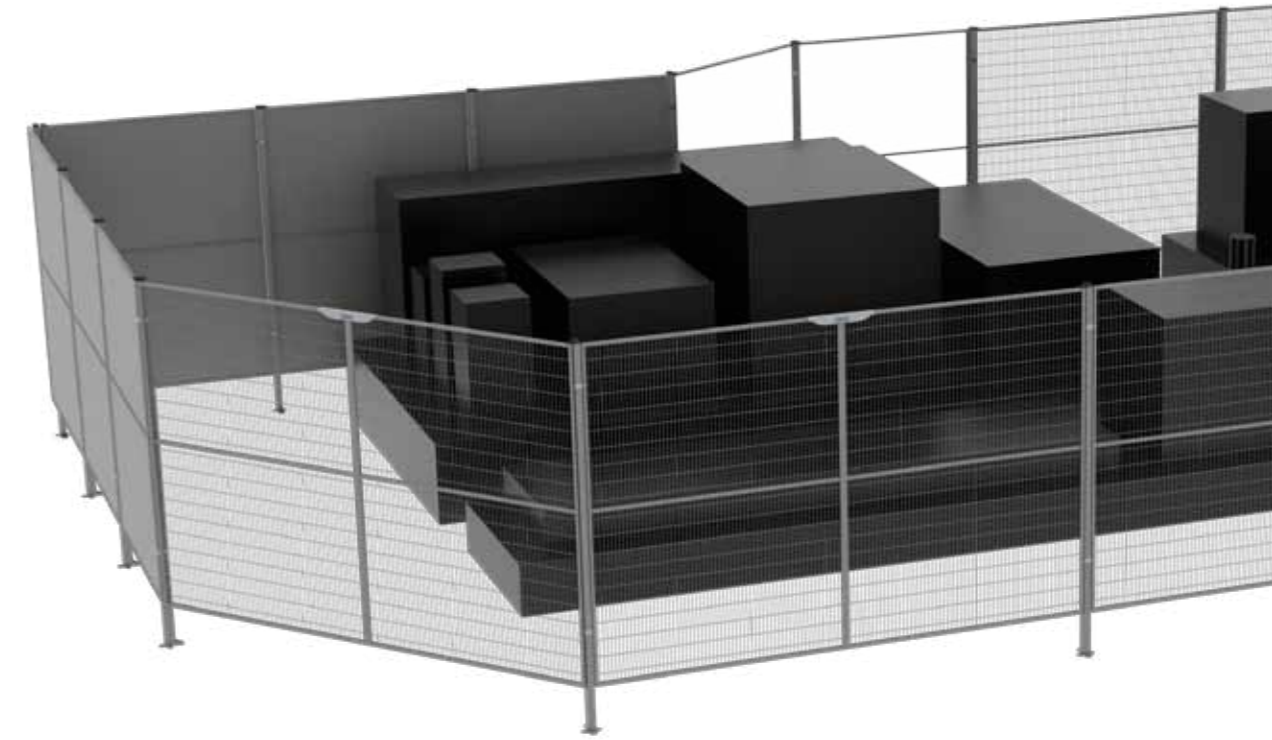
Smart Fix Flexible panel system, which creates excellent flexibility for adaptation on site.

Smart Fix system

Simple and flexible machine guards

Smart details

Smart Fix is a tried and tested machine guard system. The system consists of mesh panels, hinged and sliding doors, posts, angle brackets, and a smart panel fixing method.

Compliant with the Machinery Directive

Smart Fix components are held captive in the guard even when system is disassembled, fulfilling the current requirements, rules and standards for fixed guarding.

Unique properties

Smart Fix has many unique properties. The panel fixing can be adjusted to compensate for uneven floors. The angle of the corner bracket can easily be adjusted on installation. The posts are universal, which means that the same posts can be used with several of the TROAX systems.

Door Kit
With our door kit you can easily make an existing panel into a door anywhere in the installation.

Panel fixing
Strong and flexible steel clamp.

Hinge
Hard wearing steel hinge tested to ensure a long service life.

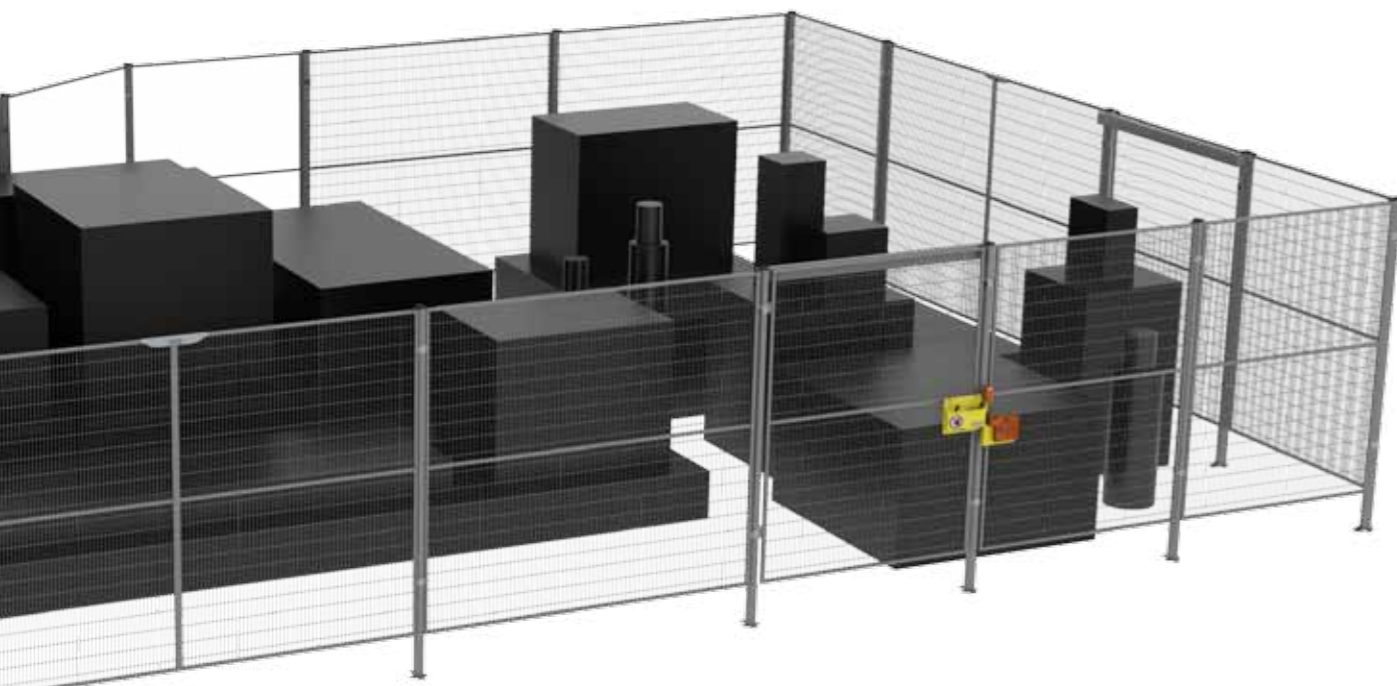**Angle bracket**
Enables adjustment of angle up to 180 degrees on installation.

So if you already have an existing Smart Fix installation and want to change to Rapid Fix for quick access when something happens or for maintenance all you have to do is simply change the brackets. Of course, you can do the opposite if you want to have Smart Fix with fixed panels on certain parts of the installation.

Rapid Fix system
A machine guard for rapid access

Upper fixing
Secured with ease using the built-in click function

Lower fixing
Simply secures the panel's lower fixing position.

Quick access

Rapid Fix is a machine safety system with a clever design that offers quick and easy access to the machine area.

Unique properties

Rapid Fix is equipped with a 2-point fixing with click function, which means that after the work has been completed, you can install the panel again without the need for any tools, thus avoiding costly stoppages.

Compliant with the Machinery Directive

Rapid Fix meets all the requirement in the Machinery Directive - 2006/42/EC and we are working continuously to adapt both existing and new products before they reach the market.

If you choose to install a Rapid Fix system initially, it is possible to change to Smart Fix for protection that is permanently screwed into place, simply by changing the brackets in the installation. Of course, you can change to Smart Fix brackets in a Rapid Fix installation if you want fixed panels instead.

Technical information

Standard dimensions for all hinged doors		
Door leaf Width	700, 800, 1000 and 1200 mm	
Door leaf Height	1200 and 2000 mm	

Standard dimensions for Emergency Exit doors		
Door leaf Width	800, 1000 mm	
Door leaf Height	1200 and 2000 mm	

For more options, contact your local dealer.

Information Switch

Doors can easily be upgraded with our different fixing systems for safety switches.

Panels in the Smart Fix system can easily be converted into doors afterwards. All doors are constructed from ST30 panels. For more lock options/more info, see pages 18-19.

Hinged door - Magnetic lock

TROAX hinged door with magnetic lock can be supplied pre-assembled or in component form. This lock should be chosen if there is a low level safety risk. The lock can also be supplemented with a safety switch.

Hinged door - Cylinder lock

TROAX hinged door with cylinder lock can be supplied pre-assembled or in component form. This lock should be chosen if there is a medium level safety risk. The lock can also be supplemented with a safety switch.
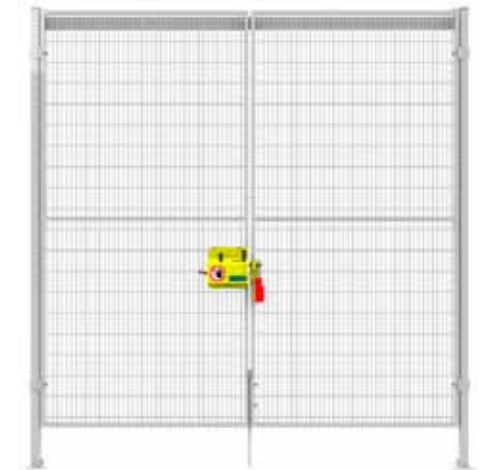
Hinged door - Emergency Exit

TROAX Hinged door for emergency exit can be supplied pre-assembled or in component form and with the option of either a Panic Bar or a Push Pad and can be supplemented with a safety switch if required. This lock should be chosen if there is a need for emergency exit only without external access.
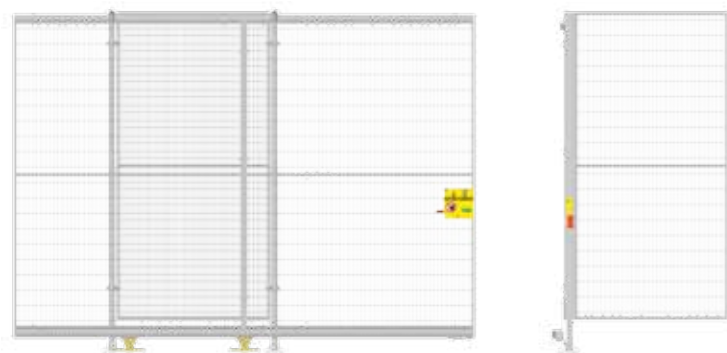
Hinged door - Safe Lock

TROAX hinged door with Safe Lock can be supplied pre-assembled or in component form. *The choice of Safe Lock is determined by the security level required. See page 18-19.*

Double Hinged door

TROAX double hinged door can be supplied pre-assembled or in component form. *The choice of lock is determined by the security level required.*

TROAX®

Linear Sliding Door

Our linear sliding doors run on roller bearings at the top and bottom of the door panel. With opening width options up to 3000 mm. Can be used together with our Safe Locks.

Door height (mm)	Opening width (mm)	Construction width (mm)
1400, 2200	1800	4900
	3000	7600

Frame: 30x20 mm, Wire: 3x3 mm, Mesh size: 100x20 mm

Telescopic sliding door

Our telescopic sliding doors have a telescopic rail located in the centre of the door panel, in three opening widths: 750, 950 or 1150 mm. Can be used together with our Safe Locks.

Door height (mm)	Opening width (mm)	Construction width (mm)
1400	750	1750
2200	950	2150
	1150	2550

Frame: 30x20 mm, Wire: 3x3 mm, Mesh size: 100x20 mm

Technical information

Standard dimensions for all sliding doors

Door leaf Width	700, 800, 1000, 1200 and 1500 mm	
Door leaf Height	1200 and 2000 mm	

For more options, contact your local dealer.

Information Switch

Doors can easily be upgraded with our different fixing systems for safety switches.

Can also be supplied as a double sliding door. All doors are constructed from ST30 panels. For more lock options/more info, see pages 18-19.

Sliding Door Magnetic

TROAX sliding door with magnetic lock can be supplied pre-assembled or in component form. This lock should be chosen if there is a low level safety risk. The lock can also be supplemented with a safety switch.

Sliding Door Cylinder Lock

TROAX sliding door with cylinder lock can be supplied pre-assembled or in component form. This lock should be chosen if there is a medium level safety risk. The lock can also be supplemented with a safety switch.

Sliding Door Safe Lock

TROAX sliding door with Safe Lock can be supplied pre-assembled or in component form. *The choice of Safe Lock is determined by the security level required. See page 18-19.*

Sliding Door double

TROAX sliding door in double or single rail can be supplied pre-assembled or in component form. *The choice of lock is determined by the security level required.*

TROAX®

Safe Lock 2x3

Safe Lock 2x3 is suitable for machinery and machine systems where there is a low level safety risk. It stops the machine when the door is opened.

Safe Lock 2x4

This is a refined version of Safe Lock 2x3 and is intended for similar applications. The safety switch locks the key and prevents the door from being opened until the machine is in a safe state. This lock is suitable for environments requiring a low to medium level of safety.

Safe Lock 4x3

Safe Lock 4x3 is suitable for environments requiring a medium to high level of safety. This lock is an augmented version of Safe Lock 2x3. Double switches ensure that single faults do not cause loss of safety.

Safe Lock 4x4

Safe Lock 4x4 is suitable for environments requiring a high degree of safety. This lock is an augmented version of Safe Lock 2x4. Double switches ensure that single faults do not cause loss of safety.

Safe Lock 4x4i

Safe Lock 4x4i is intended for environments with extremely stringent safety requirements. The lock constantly checks itself to meet the highest requirements for security, the lock's components communicate using unique codes and the locking device is monitored using transponder technology and a photocell.

Categories, PL (Performance Level) and SIL (Safety Integrity Level)

The control system's lowest category is determined by the results of the risk analysis. The weakest link is the deciding factor. The entire system must be correctly designed in order to meet the desired category, PL or SIL.

Special rules apply for particularly dangerous machines. Further information about categories is available in the standards EN 954-1 and about PL in EN ISO 13849-1 which run in parallel up to 2012. Further information on SIL can be found in EN62061-1.

Technical information
Dimensions WxHxD (approx.): 312x264x78 mm
Standard switch:
Guardmaster Trojan 5 Telemecanique XCS-A702 Schmersal AZ16

Technical information
Dimensions WxHxD (approx.): 312x264x78 mm
Standard switch:
Guardmaster TLS1-GD2 Telemecanique XCS-E7412+7312+7512 Euchner TZ1

Technical information
Dimensions WxHxD (approx.): 275x293x78 mm
Standard switch:
Telemecanique XCS-A702 + XCLJ

Technical information
Dimensions WxHxD (approx.): 375x333x78 mm
Standard switch:
Telemecanique XCS-E7412 + XCLJ Euchner TZ1 + NZ1RS

Technical information
Dimensions WxHxD (approx.): 289x114x51 mm
PLe SIL3 IP54
Integrated contact-free switch

All Safe Locks can be secured in the open position using a padlock while maintenance is being performed on the machine. All options fit our hinged and sliding doors.

Further information on interlocking devices in combination with guards can be found in EN1088 and ISO 14119.

Mesh Panel Information

Sturdy mesh panels suitable for all environments

ST20 Panel

A lighter alternative to ST30 for environments requiring a high level of safety for dangerous machines or moving parts.

Frame: 19x19 mm, Wire: 3 mm
Mesh size: 20x100 mm
Heights: 1200 and 2000 mm
Width: 200, 300, 700, 800, 1000, 1200 and 1500 mm

PC Panel

Consists of a tubular frame with a laminated polycarbonate sheet. Allows good visibility of the area while providing protection.

Frame: 30x20 mm, Thickness PC: 3 mm
Heights: 2000 mm
Width: 200, 300, 700, 800, 1000 and 1200 mm

ST30 Panel

Designed for environments requiring a high level of safety for dangerous machines or moving parts.

Frame: 30x20 mm, Wire: 3 mm
Mesh size: 20x100 mm
Heights: 1200 and 2000 mm
Width: 200, 300, 700, 800, 1000, 1200 and 1500 mm

ST Steel Plate panel

Meets requirements for protection from welding sparks, dust and liquids. Ideal for shielding.

Frame: 30x20 mm, Thickness: 0.7 mm
Heights: 2000 mm
Width: 200, 300, 700, 800, 1000 mm

Sliding Door Components

Add width or height, focusing on flexibility and strength

Guide rail

The guide rail stabilises and controls the position of the door. It slides through a plastic component for smooth and quiet operation.

Door leaf guide

This guide captures the door leaf to ensure it assumes the right position when closed.

Door leaf carriage

This carriage, which runs in an aluminium track, clamps tight around the panel, making it unnecessary to drill holes in the tube.

Suspension bracket

This robust suspension bracket is there to keep the rail in place.

Single track

Made of glossy finish extruded aluminium for single track doors.

Double track

Made of glossy finish extruded aluminium for double doors.

Hinged Door Components

Whatever your requirement, we have the right type of door

Door stop

The door stop has a rubber damper to eliminate vibrations and noise when closing.

Hinge

The hinge is made from sturdy steel and replaces the normal panel fixing clamp where doors are required.

Door stay

An upper door stay of steel is used to reinforce the structure of the door. This is fitted between the posts of the system.

Floor fixing

Our double hinged doors are delivered with a secure floor fixing as standard.

Door kit

With our door kit you can easily make an existing panel into a door anywhere in the installation.
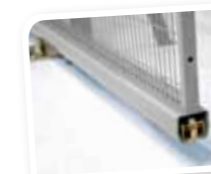
Linear and Telescopic Sliding Door Components

Doors without rail above for free passage

Roller bearings

Roller bearings have two functions. The first is to increase stability, and the second is to enable the door to slide easily and safely.

Integrated rail wheels

The integrated rail wheels guide the sliding door to its correct position when opening and closing.
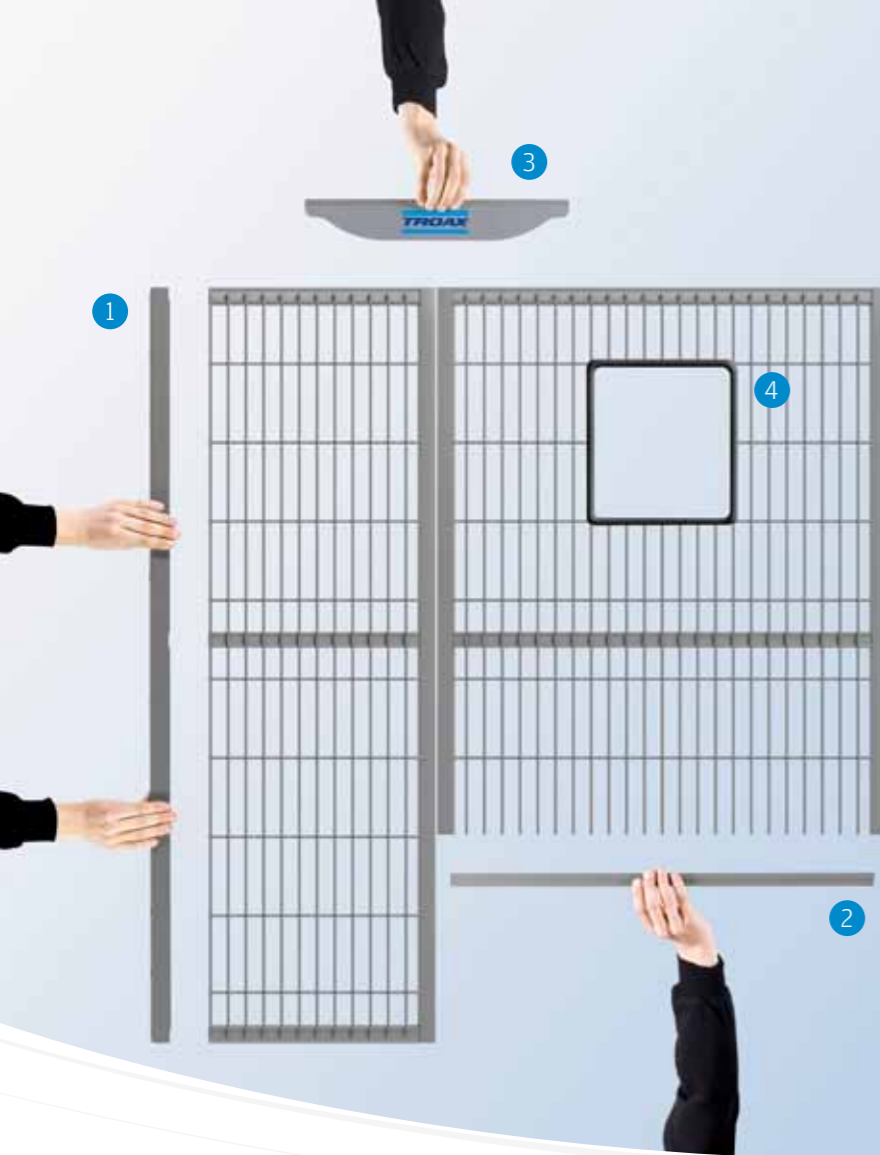
Telescopic function (not linear)

A telescopic sliding door is used for openings up to 1150 mm, compared with the linear sliding door, which can cope with openings up to 3000 mm.

Door leaf guide

This guide captures the door leaf to ensure it assumes the right position when closed.

TROAX®

❶ END profile

The END profile is a flexible solution for adjusting the width of the mesh panel on site while still retaining the same strength as a welded panel frame.

❷ Cut profile

The cut profile is a flexible solution for adjusting the height of the mesh panel on site while still retaining the same strength as a welded panel frame.

❸ Snapper

The Troax Snapper is an alternative solution to posts, acting as a strengthening connector for two adjoining mesh panels in an installation. The Snapper is fitted without screws or the use of tools.

❹ Edge cover

Edge cover is a flexible solution for covering sharp edges after cutting mesh for access.

End, Cut, Snapper and Edge cover are accessories that are fully compatible with all TROAX mesh panels and systems.

The customer in focus

Perfect workflow with Configura Light

Configura is the in-house program Troax use for drawing and pricing. Configura "Light" has been developed especially for our customers to utilize, enabling the design of specific layouts using Troax products.

With either a blank worksheet or an imported CAD drawing as a background, Configura Light allows you to drag and drop our products onto the drawing surface to help create the ideal solution.

One click away from everything you need

TROAX customer login is an online resource at www.troax.com that gives you access to technical product information, CAD files to help you design your layout using Troax products, the latest guidelines for the new Machinery Directive and much more.

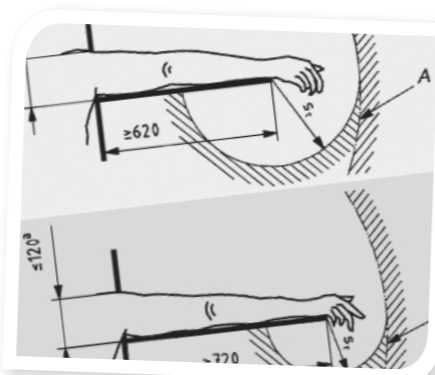| Configura Light | Guide for safety | TROAX CAD | Product Database |

Constant development of tools

Our tools/programs allow you to obtain information on TROAX products 24 hours a day. Developments and improvements are constantly taking place.

Standards and Rules

Machinery Directive – 2006/42/EC

The 2006/42/EC Directive governs the requirements that machinery must meet before it can be released onto the market, or put into operation inside the European Union, Iceland, Norway and Liechtenstein. The Member States of the EU are obliged to incorporate the Directive into their legislature.

TROAX products and systems comply with all requirements of the directive, and the company works continuously to adapt both existing and new products before they reach the market.

Our products comply with the New Machinery Directive
2006/42/EC

High-quality tests

TROAX has its own research and development department, which continually works to optimise our products and system solutions. All test results are carefully documented and are made available to customers.

With energy units from 309 to 1600 Joules

TROAX has opted not to just depend on theoretical calculations. When new products and systems are developed, tests are carried out using energy units from 309 up to 1600 Joules in order to both guarantee function and maintain our globally renowned quality reputation.

Grey increases visibility

TROAX can supply mesh panels and systems in any colour. But the grey colour of our mesh panels and systems is not there by chance. This colour has a very important function: visibility. The eye can see through a dark panel more easily, so we have also chosen black as an optional standard colour.

TROAX®

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