

# Machine guarding.

Mesh panels for machine safety solutions.

PROTECTING PEOPLE, PROPERTY, AND PROCESSES | [troax.com](https://troax.com)

**TROAX**<sup>®</sup>

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Troax is a global developer and manufacturer of steel mesh panels for machine guarding, warehouse partitioning and property protection. This brochure presents our solutions for the market segment Machine guarding. Our business concept is to develop innovative steel mesh panel solutions to protect people, property and processes. Our lightweight but strong mesh panels can be combined into unique solutions and are built to withstand the toughest tests and environments. Read more about our systems at [www.troax.com](http://www.troax.com)

**TROAX**

# Machine guarding.

For more than 60 years we have been developing innovative steel mesh panel solutions for machine guarding, warehouse partitioning, and property protection. Today we are the market leader, and our products can be found all over the world – protecting people, property and processes.

# Our services.

Troax is in the business of safety. Our steel mesh panel systems offer the safest and most flexible solutions on the market.

Whatever your safety needs may be, we will create a solution that is perfect for you. Our systems are marketed in three segments: Machine Guarding, Warehouse Partitioning and Property Protection.

## **SAFETY DOESN'T HAPPEN BY ACCIDENT**

The Troax Test Centre is the heart of our business. Here, our products go through rigorous tests to maintain a high standard. We conduct impact tests on our panels, brackets and retainers on a daily basis. It is a job that requires both time and effort. But it is all worth it, because your safety is our priority.

## **SURVEYS ON SITE**

One of our Technical salesmen will personally manage your inquiry and – if needed – carry out a detailed site survey on location. We use the Configura drawing tool to create each solution, which allows you to view our proposal in 2D and 3D before ordering any material. Our skilled assembly team can take care of the installation of your system while your contact at Troax will follow up your project.

## **PLANNING AND DESIGN**

Our systems are adapted and designed to suit your specific needs, with everything intricately planned down to the smallest detail. With several security levels and a variety of different lock and door designs, our systems can be built to suit all kinds of application areas.





### **ASSEMBLY IS PART OF OUR OFFER**

Troax offers help with assembly and installation of all our systems. Should you choose to assemble the products yourself, each Troax delivery includes clear user instructions and assembly guidelines, which make it easy to assemble our system on site.

### **IF YOU ARE STILL NOT CONVINCED...**

- Each installation is unique and created to meet the customer's specific demands.
- Our mesh panels are extremely durable and can withstand the most demanding applications.
- Troax provides products of the highest quality and functionality, using automated and environmentally friendly production processes.
- Our systems are versatile and can easily be combined with each other, which makes them a good investment.
- We are the first mesh panel solution company in the world to have our test method certified by TÜV.
- Local presence – both service and support
- High-capacity
- Fast deliveries

# Your partner in better **Safe** **Guarding.**

Your modern industrial processes are safe, when no one except authorized personnel has access to the company's machines. Troax mesh panels for machine guarding provide maximum personal and machine safety in accordance with the Machinery Directive.

Troax is a well-known name in machine guarding and machine security for the production industry in many parts of the world. The key is intelligent details which can be combined with new and old modules in well-tested systems.

## **PROVEN STRENGTH**

Step by step, we are developing the foundation of our systems – our mesh panels. Theoretical calculations are tested in our own test center.

The panels are tested using energies of up to 2,500 joules, which is a very respectable level. If an accident were to happen, you should know that the panels are strong enough to keep both

people and machinery safe. Every single weld can withstand a heavy blow and that makes all the difference.

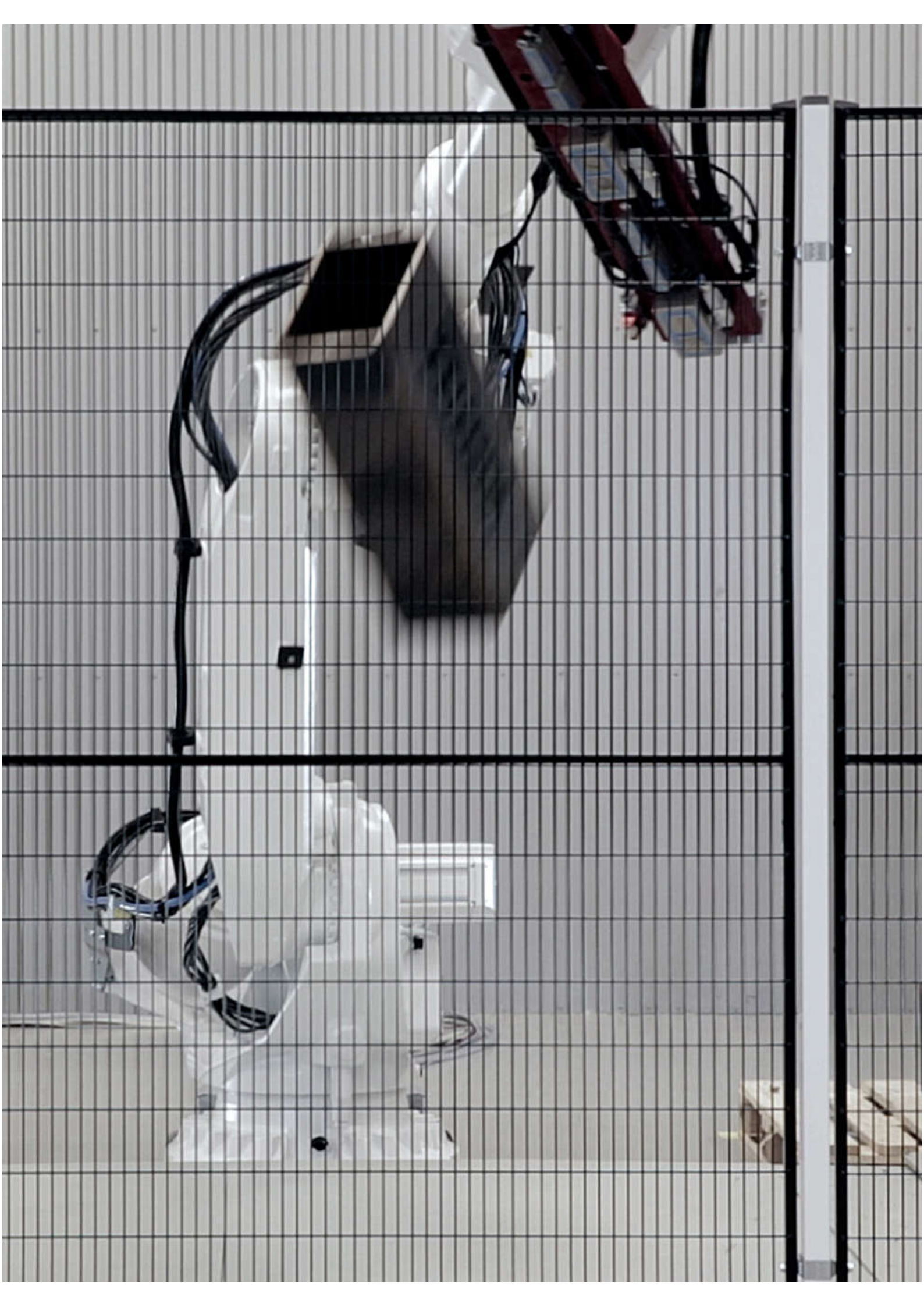
## **IN COMPLIANCE WITH THE MACHINERY DIRECTIVE**

Troax machine guarding and machine safety products meet all the requirements set in the European Machinery Directive, 2006/42/EC – requirements which your installation should meet today as well as into the future when you have supplemented or extended your machine guarding system with new mesh panels, doors and locks.

**When testing our products,**  
**we use a method that itself**  
**is certified by TÜV.**



ISO 12100  
ISO 14120  
ISO 14119  
ISO 10218-2  
ISO 13857  
ISO 14121-1



# Optimize your Machine Guard.

Troax offer complete solutions to protect your personnel and production process. Our machine guarding products will make your production safer and more efficient.

There are several dimensions to the safety of your machine guarding. Our world-class products, such as the strong mesh panels, the quick release Rapid Fix system and the Safe Lock solution fit many variants of safety switches, have been developed to make your machine guarding safe and smooth.

The polycarbonate panels offer excellent visibility and using the steel sheet panels you can create a fully covered cell. With the wire mesh panels you will get good ventilation and the strongest solution for your guard. Choose Smart Fix or Rapid Fix system for easy access supplied with our 60x40 mm posts. For heavy industry environments or where there is a risk for an impact to the guard, the stronger 80x80 post with Strong Fix is recommend. Troax will create a solution that fits your needs.



**1 Strong Fix**  
Our strongest machine guard that can withstand an impact of 2,500 joules.



**2 Sliding door**  
A large door solution – 6 meter using the Troax



**6 Mesh ST20/ST30**  
The characteristic Troax mesh panels with 3 mm wire and 20x100 mm mesh size.



**7 Full steel solutions**  
Our URSP steel sheet panels assembled with the Safe Fix system gives a covered cell suitable for welding applications.



**8 Folding door**  
The Folding door is folded together when opened, saving space on the side and allowing free opening space.



**9 Rapid Fix**  
For quick and easy access. The panels are released from the inside of the





**6** **Roller on wheels**  
 – up to approximately 2.5m high. Equipped with ST30 mesh panels.



**3** **High guards**  
 Using the extension bracket, it's easy to build high walls with standard panels and posts.



**4** **Galvanized Guard**  
 For outdoor and humid environments we recommend galvanized panels and posts.



**5** **Safe Lock**  
 Fits all door types and can be equipped with your choice of safety switch.



Access to a machine. Equipped with a hex key lock mechanism.



**10** **Polycarbonate panels**  
 Gives good overview and protects against fluids and small particles.



**11** **Automatic sliding door**  
 A CE-marked, automatic sliding door with Troax posts, PC panels and with a motor from Besam/Assa Abloy Entrance Systems.



**12** **Mezzanine Guard**  
 Fall protection on Mezzanine floor areas.

# Combine our systems for unique solutions.

Troax machine guarding systems can be combined and adapted to fit your specific needs. The standard heights of our panels and posts are developed to comply with the required values for safety distances stated in ISO 13857.

#### SYSTEM DIMENSIONS

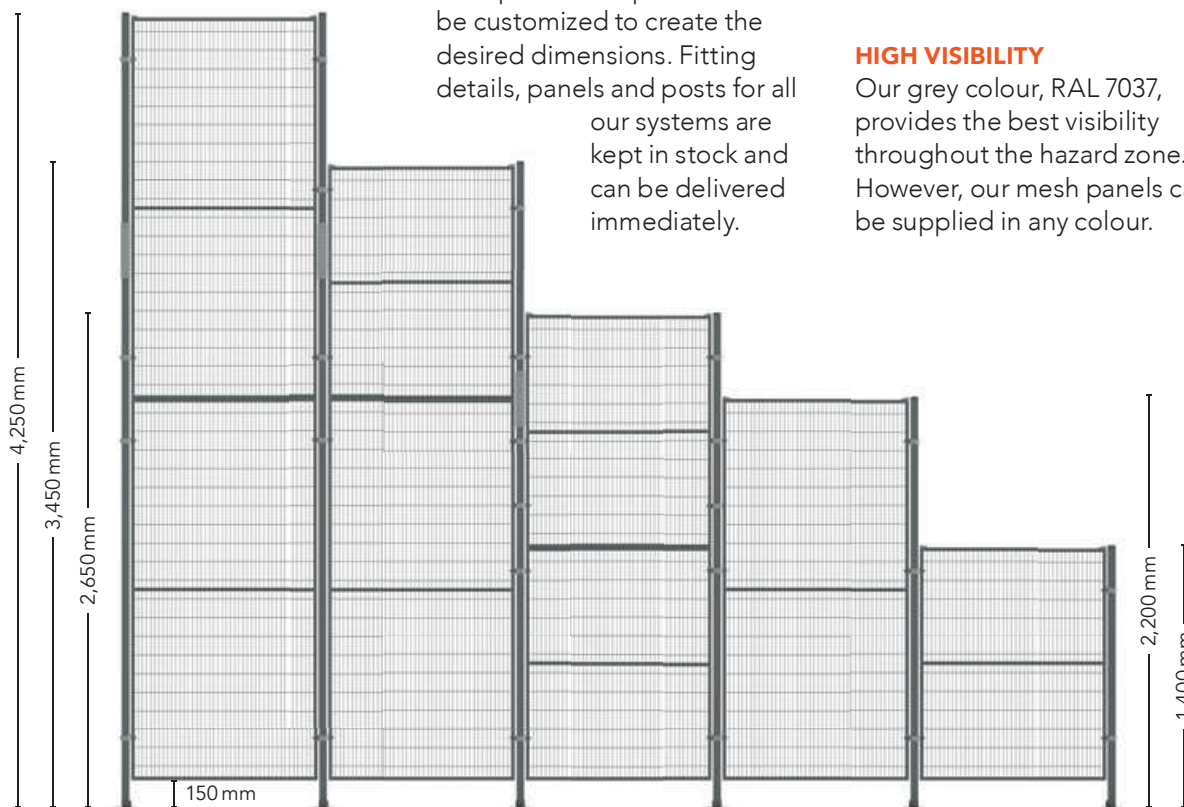
The wall system standard heights are from 1,400 mm to 4,250 mm. The panels are available in eight widths, from 200 mm up to 1,500 mm, and the 150 mm floor gap allows for easy cleaning. Both panels and posts can be customized to create the desired dimensions. Fitting details, panels and posts for all our systems are kept in stock and can be delivered immediately.

#### MESH GUARDS

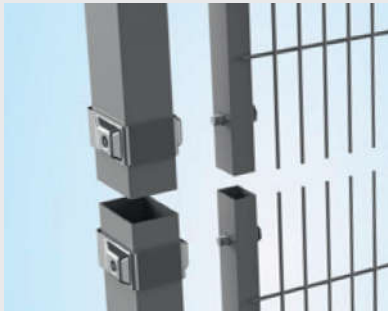
The Troax panel design for ST20 and ST30 mesh panels complies with ISO standards for maintaining a safety distance of 120 mm from the hazard. Vertical wires on the outside of the panel make it difficult to climb.

#### HIGH VISIBILITY

Our grey colour, RAL 7037, provides the best visibility throughout the hazard zone. However, our mesh panels can be supplied in any colour.

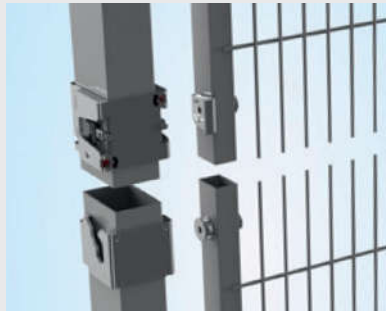


**Smart fixings complete the system.** Our range of fixings, combined with the right panels and posts provide maximum personnel and machine safety.



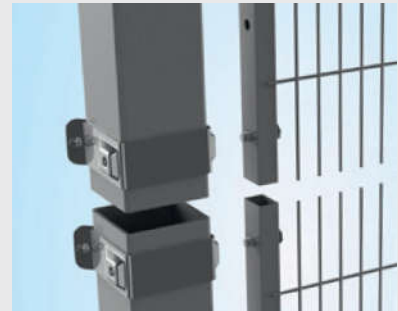
### Smart Fix

Smart Fix is our well-proven safeguard system with many unique properties. The fixings are tightened to the post and can easily be moved up and down to adjust for uneven floors. Based on the 60x40 post and the ST20 mesh panel it's tested to withstand an impact of 1,600 joules.



### Rapid Fix

The Rapid Fix system offers a quick and easy access to the hazard zone. Using a hex key to disassemble the fixing from the inside, the panel is easily lifted out from the lower slots. Put back in the slots again, the locking mechanism snaps the panel back in position.



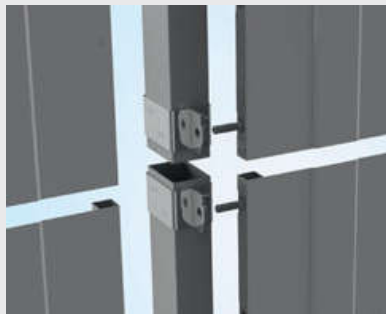
### Strong Fix

Based on 80x80 posts and a strong bracket, the Strong Fix system is the best alternative for harsh environments or when the risk for an impact is high. Together with the ST30 panels the system has been tested to withstand an impact of 2,500 joules.



### Combi Fix

Combi Fix combines the well-proven strong Smart Fix system with the flexible Rapid Fix system. The lower bracket from Rapid Fix makes it easy and quick to re-assemble and the upper Smart Fix bolts are less sensitive to uneven floors.



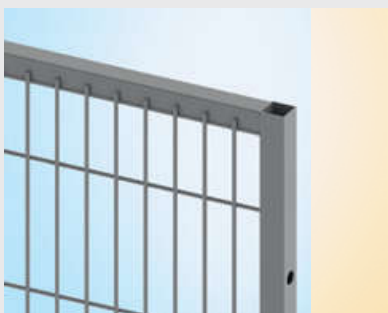
### Safe Fix

The Safe Fix bracket adjoins the panels in front of each post, removing the gap between panels and posts. With the polycarbonate or steel sheet panels you can create fully covered machine guarding for applications with welding or splash risk.



### Base Fix

Use the Base Fix foot to replace the posts – it's best suited for low-height partitioning. The system without posts is quick to assemble and tested to withstand an impact of 309 joules.



### Steel mesh panels

With the classic look of the 3 mm wire with mesh size 20x100 mm on the ST20 frame of 19x19 mm or the ST30 frame of 30x20 mm. Standard widths are: 200, 300, 500, 700, 800, 1,000, 1,200 and 1,500 mm in 2,050 mm height.



### Polycarbonate panels

Transparent polycarbonate panels on a 30x20 mm frame. The new PC panel (Autumn 2017) is a strong 3 mm PC screwed to the panel frame and tested with an impact of 1,600 joules! Standard widths are 200, 300, 500, 700, 800, 1,000, 1,200 and 1,500 mm in 2,050 mm height.



### Sheet metal panels

The full steel, 0,7 mm metal sheet welded to the 19x19 mm frame panels create fully covered cells. Standard sizes are: 200, 300, 700, 800, 1,000 and 1,200 mm in 2,200 mm height.

# Strong and proven.

Smart Fix is our best-selling safeguard system. This versatile machine guard is extremely durable and fits most applications.

Our strong and flexible Smart Fix system is easy to assemble and can be combined with any of the machine guarding panels in mesh, steel or polycarbonate. The bracket is easily mounted to the 60×40 mm posts, tightened to the post with an M8 bolt on the inside of the fence and can easily be moved up and down to adjust for uneven floors. The bolts will be held captive to the panels even when the system is disassembled, fulfilling the requirements and standards for machine guarding.

The Smart Fix system can easily be combined with other systems, such as Rapid Fix and Strong Fix to create unique, suitable solutions. Choose among a wide range of doors, locks and accessories to customize your installation. The Smart Fix system is heat-resistant and it's tested to withstand an impact of 1,600 joules in the most common sold combination with the ST20 mesh panels.



### ST20 mesh panel

The ST20 mesh panel has a classic look with the mesh size of 20×100 mm fixed to a 19×19 mm frame. Available in two standard heights, 1,250 and 2,050 mm in up to 8 widths.



### Post 60×40

Strong post with four holes for flexible fixing to the floor. Standard heights 1,400, 2,200, 2,650 and 3,000 mm plus extension tubes.



### Smart Fix bracket

Fixed in position with a bolt from the backside of the bracket. Move the bolt to the side position to create a corner.

**Combine with Kit Functional**  
**bonding to solve problems**  
**with leakage current.**





# Robust and durable.

Strong Fix is our strongest machine guarding system. It has been developed and tested to endure the harshest environments.

For heavy industrial environments and where there is a high risk for an impact, the Strong Fix system is the perfect solution. Based on the heavy 80×80 mm posts combined with a strong bracket and the ST30 mesh panels, the system is tested to withstand an impact of 2,500 joules.

The brackets are easily mounted to the posts and tightened with an M8 bolt on the inside of

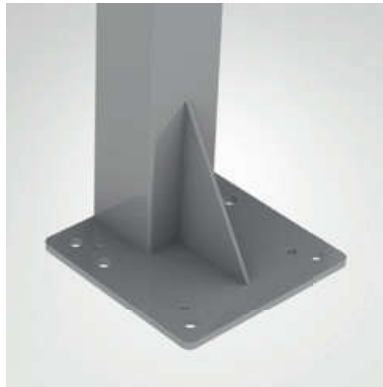
the fence. Move the brackets up and down on the post to adjust for uneven floors, or use the adjustment bolts.

The Strong Fix system can be mounted with double ST30 panels, creating a super strong machine guard – withstanding an impact of 4,350 joules! – depending on the quality of the floor it is fixed to.



## ST30 mesh panel

The ST30 mesh panel has a classic look with the mesh size of 20×100 mm fixed to a 30×20 mm frame. Available in two standard heights, 1,250 and 2,050 mm in up to 8 widths.



## Post 80×80

Our strongest post. Four holes for fixing to the floor and extra holes for alignment adjustment bolts. Standard heights 1,400, 2,200 and 3,000 mm plus extension tubes.



## Strong Fix bracket

Pre-galvanized steel bracket that can be easily moved up and down on the posts.



**Extremely strong**  
**machine guarding.**



# Quick and easy access.

Rapid Fix is a cleverly designed machine safety system that offers quick and easy access to the hazard zone.

Rapid Fix has been developed in response to the customer needs for a quick and flexible access solution, such as when carrying out maintenance. The lower bracket has a slot that the panel hooks into, and the upper bracket has a unique locking mechanism that snaps the panel into the correct position. The system is easily disassembled

from inside the cell, using a hex key to release the panel. The Rapid Fix system meets the requirements of the Machinery Directive, and all components are held captive in the guard even when the system is disassembled. Rapid Fix can be combined with other Troax systems, such as Smart Fix and Strong Fix.



#### Post 60x40

The standard post available in heights 1,400, 2,200, 2,650 and 3,000 mm plus extension tubes.



#### Rapid Fix lower bracket

Easily slide the panel into the lower fixing position.



#### Rapid Fix upper bracket

Secure the panel with ease using the built-in click function.

**Can be combined  
with Smart Fix  
system.**









### Single Hinged Door

500–1,500 mm

**Locking options:** Magnetic Lock, Euro cylinder Lock, Safe Lock, MGB or AZM200.



### Double Hinged Door

1,000–3,000 mm

**Locking options:** Magnetic Lock, Euro cylinder Lock, Safe Lock, MGB or AZM200.



### Folding Door

2,100–4,500 mm

**Locking options:** Safe Lock, MGB or AZM200.



### Single Sliding Door (Single rail)

700–1,500 mm

**Locking options:** Magnetic Lock, Euro cylinder Lock, Safe Lock, MGB or AZM200.



### Double Sliding Door (Double rail)

700–1,500 mm

**Locking options:** Magnetic Lock, Euro cylinder Lock, Safe Lock, MGB or AZM200.



### Double Sliding Door (Single rail)

1,400–3,000 mm

**Locking options:** Magnetic Lock, Euro cylinder Lock, Safe Lock, MGB or AZM200.



### Telescopic Doors

(Single / Double / Hinged)

800–1,500 mm / 1,600–3,000 mm / 1,800–2,700 mm

**Locking options:** Euro cylinder Lock, Safe Lock, MGB or AZM200.



### Linear Sliding Door

1,800–4,000 mm

**Locking options:** Euro cylinder Lock, Safe Lock, MGB or AZM200.



### Sliding Door on Wheels

1,100–6,000 mm

**Locking options:** Euro cylinder Lock, Safe Lock, MGB or AZM200.

# Safe and sound with doors and locks.

Troax offers several types of doors to fit your machine guarding demands. Our door solutions include hinged, sliding, telescopic and linear doors, as part of our modular systems.

Our selection of doors is available in standard widths from 700 mm up to 6,000 mm, and in heights up to 4,100 mm. The door construction is based on panels, posts and fixings, and is built with our metal mesh, sheet metal and polycarbonate panels. The hinged doors can be delivered fully assembled with your preferred lock solution for fast installation on site. Larger doors can be prepared for installation on site. Locks are adapted to your security level. There are several options,

such as magnetic locks, euro cylinder locks and our own Safe Lock, that can be fitted with many variants of safety switches.

All doors can be supplemented with brackets for easy mounting of electric safety switches. Comprehensive assembly instructions are included with each door solution and lock combination – watch the assembly movies on Troax's YouTube channel. All door solution parts are kept in stock for fast delivery.



**Euro Cylinder Lock with handle**



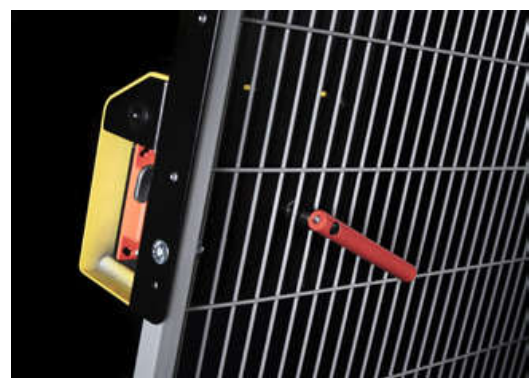
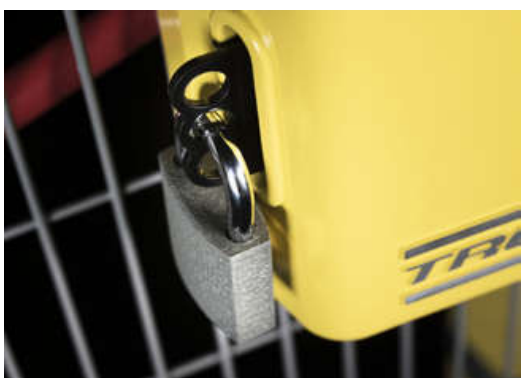
**Safe Lock fits various switches**



**Handle with Magnetic Lock**



**Euro Cylinder Lock with knob and handle**



# Get a closer look at our Safe Lock.

We think of safety in terms of keeping people, property, and processes safe, and our Safe Lock is designed accordingly. It will protect your personnel and keep your production running, and as basic as it may seem, it will make it easier to keep your personnel safe at all times.

Your choice of Safe Lock is dependent on the performance level required for the specific machine guarding process, as well as your preferred switch supplier. Troax offers a broad

variety of solutions to suit most switches, and you can choose to have the Safe Lock supplied with or without the switch included.

## Performance Level d

For low, medium to high risk applications where the machine stops immediately when the door is opened.

### Switch options:

Guardmaster Trojan 5, Telemecanique XCS-A702, Schmersal AZ16-12 ZVRK, Euchner NZ1VZ-2131D.

## Performance Level d GL

For low, medium to high risk applications. The safety switch locks the actuator until the machine is in a safe state for the door to be opened.

### Switch options:

Guardmaster TLS1-GD2\*, TLS2-GD2\*, TLS3-GD2\*, SICK i200\*, Telemecanique XCS-E7412 +7312\* +7512\*, Euchner TZ1, Schmersal AZM 161\*, Siemens 3SE5312.

*\*an escape release button must be added.*

## Performance Level e

For medium, high to very high risk applications where the machine stops immediately when the door is opened.

### Switch options:

Guardmaster Sensaguard 440N-Z21SS2HN, ABB/Jokab Eden, PilzPSEN cs 3.1, Euchner CES-AP-CL/CR2, Schmersal RSS260.

## Performance Level e GL

For medium, high to very high risk applications. The safety switch locks the actuator until the machine is in a safe state for the door to be opened.

### Switch options:

Guardmaster TLS-Z GD2, Euchner CTP.

# Smart accessories complete the overall picture.



## Kick Plate

Use the kick plate to fill out the gap between the panels and the floor.



## Snapper

The Snapper adjoins two panels and can be used to replace a post.



## Cable ladder

Troax cable ladder kit is used to fix various cable ladder systems to our posts.



## PC holder

The PC holder fix a polycarbonate infill sheet to the mesh panel, to withhold liquids and small parts.



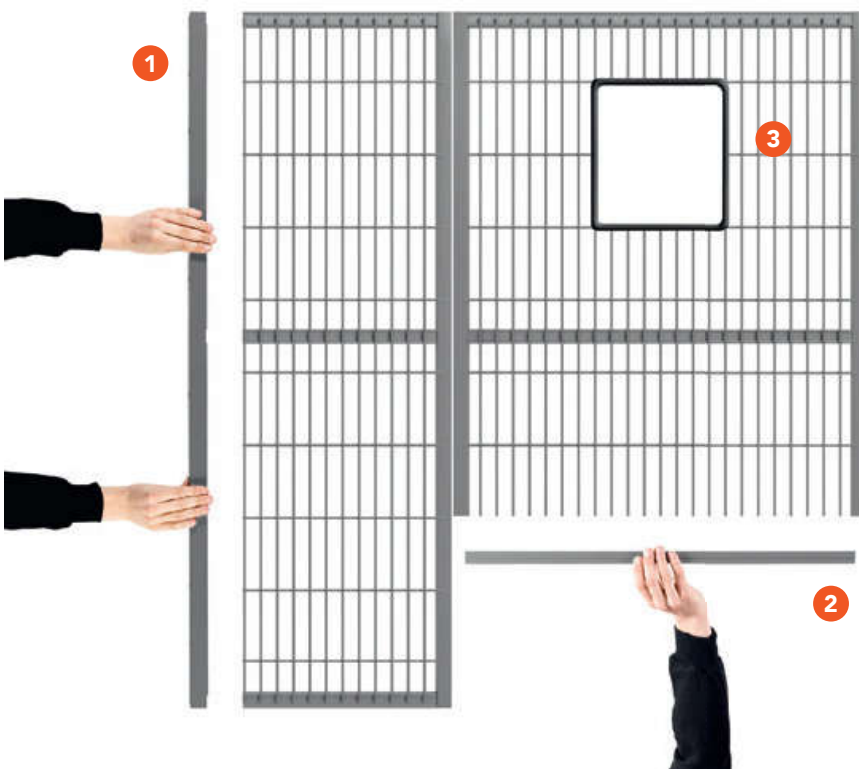
## Extension bracket

The extension bracket is used to build higher walls and extend the standard posts of 2,200 mm and 3,000 mm.



## Earthing

The kit functional bonding creates an electrical bonding between panels and posts, solving problems with leakage current.



## TRIM KITS

### 1 End profile

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

### 2 Cut profile

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

### 3 Edge cover

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



### Automatic sliding door

We offer automatic sliding door solution in combination with the 80x80 posts and PC panels. The Besam motor is supplied from ASSA ABLOY Entrance Systems.



### Roller door

We offer high quality Albany machine guard roller doors from ASSA ABLOY Entrance Systems.



### Stainless steel

We offer hygienic stainless steel machine guard systems from NTF Aalborg, available in both AISI 304 and AISI 316.

# Our strength is in the details.

Troax's automated production process ensures a high quality for every panel produced. The stable mesh panels have a well-knit structure making the panel very strong and impact resistant.



### Strong welding method

All horizontal wires are welded into the panel frame, joining the wires and frame to form a strong mesh panel.



### Unique profiled tubing

The horizontal tubes on our mesh panels have a unique profiled tubing designed to make the welding stronger and the mesh flatter.



# Show your true colours.

What is your favourite colour? Perhaps baby blue, lemon or jungle green? Our mesh panels and systems are available in any colour you would like, although grey is the preferred colour.

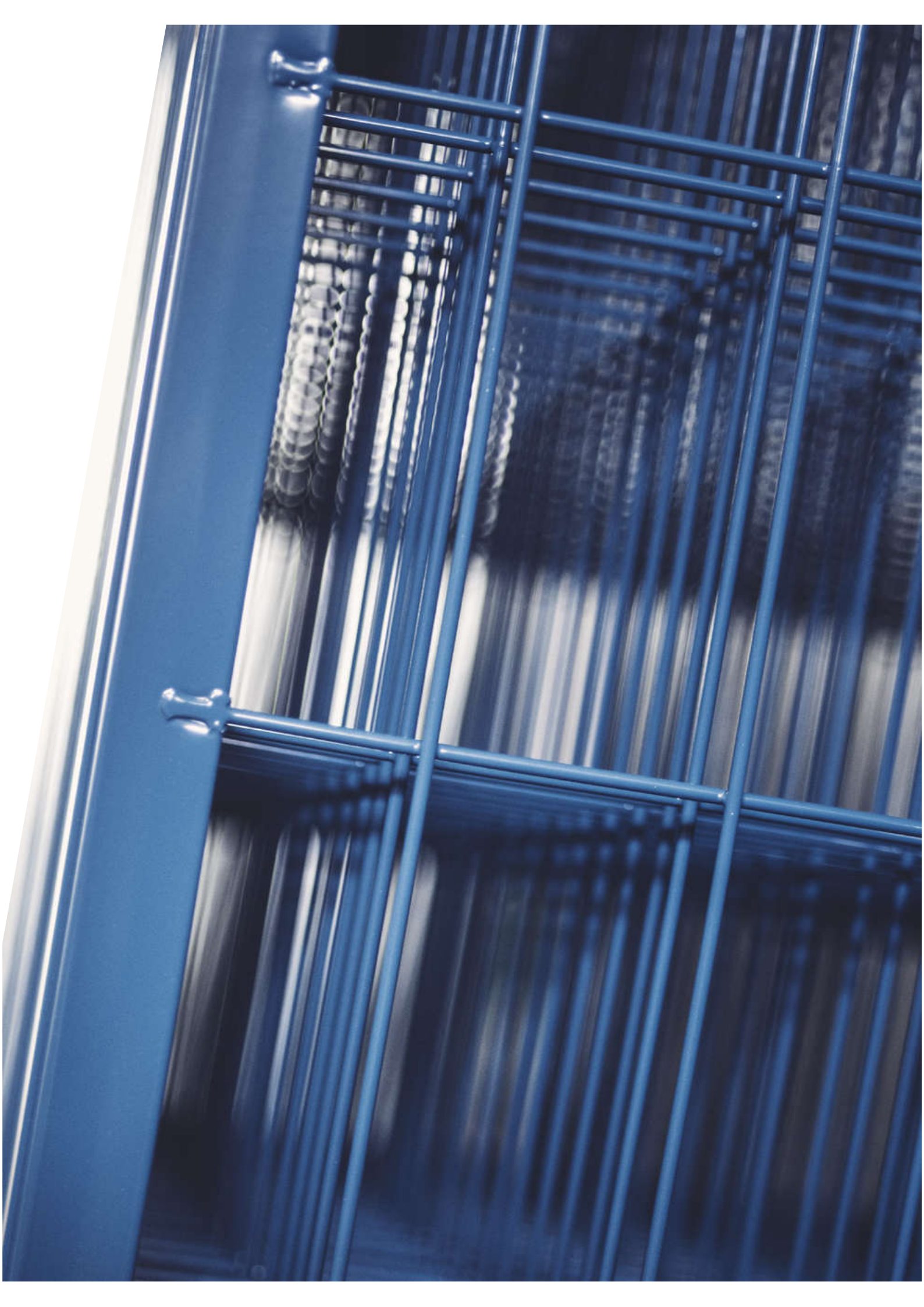
An increasing number of Troax customers are choosing non-standard colours for their mesh panels and systems. Having a specific colour on safety walls in production and warehouse areas can be an important part of the company profile. Troax paints all products inhouse in any RAL colour – from strong signal colours to harmonized colour palettes.

Keep in mind that rules and safety requirements for industrial settings with machines and automated processes are stringent. The colour of mesh panels surrounding a robot or machine must allow good supervision. This is why most customers still choose our standard colour grey, as it is the easiest to see through. Panels and posts in the standard colours are kept on stock for immediate delivery.

## STANDARD COLOURS.





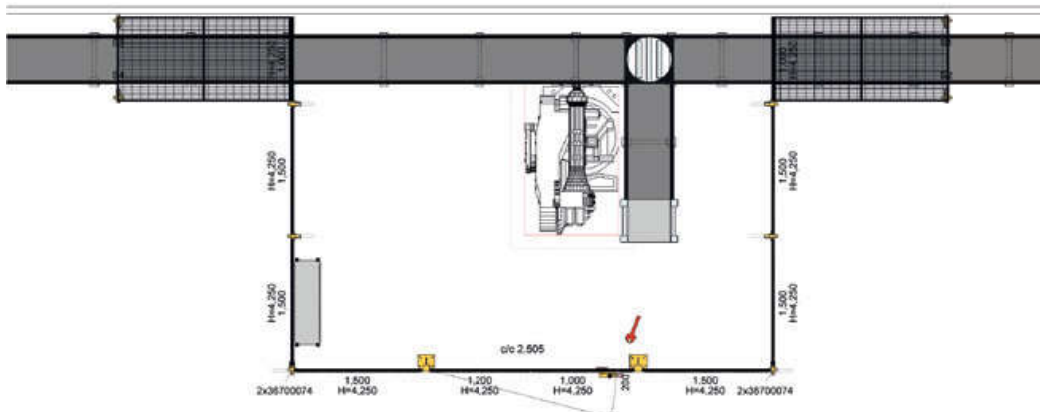
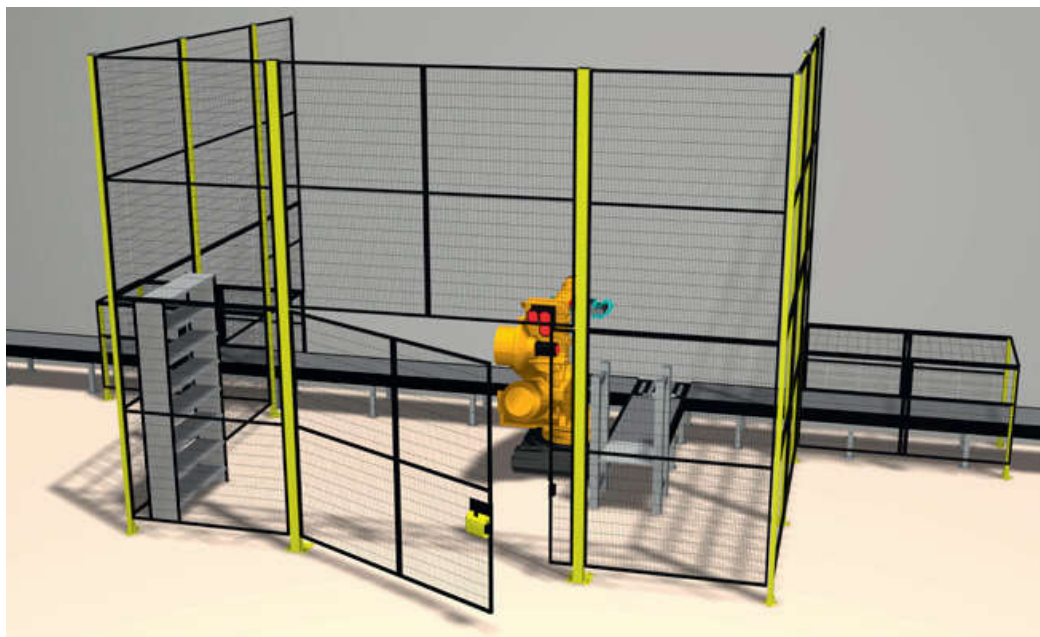


# View your Troax solution before ordering.

It can be difficult to imagine what your machine guarding system will look like before it has been delivered and assembled. At Troax, we use a comprehensive drawing and rendering program, called Configura, which allows you to view our proposal as 2D and 3D-generated drawings before placing your order. For our CAD support, we work with both Solid Components and Trace Parts,

who are digital 3D content companies that provide CAD part libraries.

Read more about Troax CAD at [www.troax.com](http://www.troax.com) and download our products as for example STEP or DWG files. You can also download your own version of our drawing program as Configura Light.





# Local & global presence.

Troax is represented in more than 30 countries and has 24 sales companies of its own. We aim to strengthen our position worldwide and expand our business on each continent.

At Troax, 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.

#### **STRONG MARKET SEGMENTS**

Our systems are marketed in three segments: Machine guarding, Warehouse partitioning and Property protection.

#### **1. MACHINE GUARDING**

Today's modern industry, with its advanced processes, places

significant demands on safety. In particular, there is a great need for controlled access for authorized personnel. Our mesh panels are based on a carefully developed modular system that also includes special adaptations.

#### **2. WAREHOUSE PARTITIONING**

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.

#### **3. PROPERTY PROTECTION**

Whether 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."



## Making your world **safe.**

There are dangers for people, property, and processes in the world.  
But there is no need to worry. Because we always strive to make it safe.  
We are there, at your workplace, at your friends' and families' workplaces, at your home,  
and at your friends' and families' homes. You may not always see us or think about us,  
but we are always there, protecting and making your world safe, wherever you are.

**Read more at [troax.com](https://troax.com)**

