



Axelent **X-Tray**[®]

A unique concept for smart cable management

Version
2.0
English





Made in Sweden. Works global.

Axelent has grown into an international group with a workforce of over 200. Our products are sold in 60 countries and our focus is on continued expansion.



Axelent Team X-Tray develops, manufactures and markets a complete cable routing system built around cable trays under the brand name of X-Tray. We have created a premium brand based on ultimate design, functionality, materials and service, and we work closely with our customers to meet their needs. We appreciate customers with high standards from which we can continue to develop special solutions. Being in close proximity to our design team and production plant, coupled with our passion for innovative and smart solutions, enables us to move quickly and seamlessly from the concept stage to the finished product.

Our products are sold all over the world, mostly in the energy, infrastructure, food, machinery, offshore and telecom & data industries.

Premium brands for your ultimate safety

Today, there is an ever-growing need for telecom and data solutions. Axelent's X-Rack (installation), X-Tray (cable routing system) and X-Guard (partitions and guards) ranges offer complete solutions for these industries.

Efficient production processes

Axelent's head office is in Hillerstorp, Sweden. All product development, production, storage and packaging is carried out here. Our production is high grade automated to manage high volumes and speedy deliveries.

All our standard products are in stock so we can usually ship your order the same day as we receive it.

A safe choice

Axelent has a wealth of experience in safety solutions for industry, storage and construction. Consult us to find out more about the ultimate safe and secure work environment.

Instant quote

We will give you a quote, a drawing and same day delivery. If you are looking for a special solution we will tailor the product to your needs.

X-Tray®

Cable management
offering endless
possibilities

A smart, flexible system

Our state-of-the-art machinery enables us to customise cable trays for each individual project. You are no longer limited to standard cable tray sizes. Consult us to find a solution with optimum function tailored to your needs.

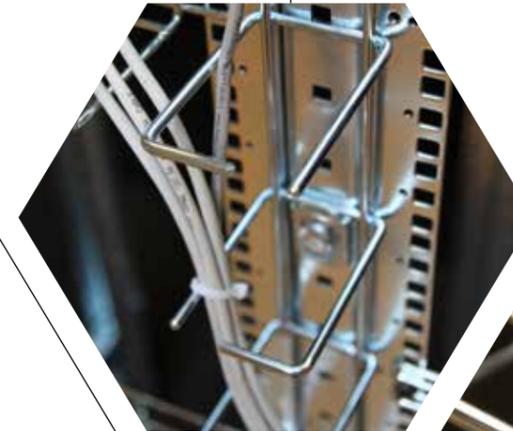
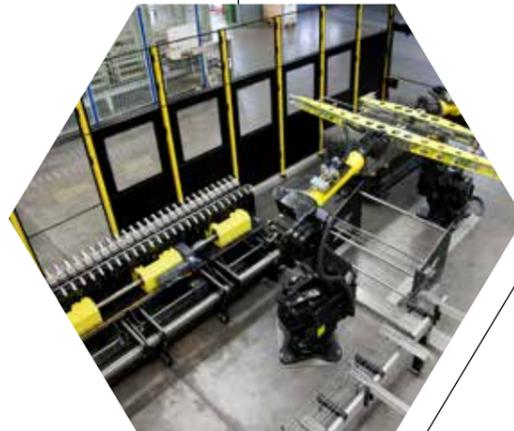
X77 – A fitter's best friend

X-tray is designed for speedy installation without sacrificing product quality. Our easy to use wire cutting machine will help you cut your cable trays to suit your installation.

The installation makes all the difference

For a product to reach what we call premium brand level, it must be quick and easy to install. We leave no stone unturned in our efforts to improve our products down to the finest detail in order to make things easier for our customers.

One example is the square holes we have introduced in X-Tray to speed up installation using carriage bolts. It makes fitting that much easier and saves time compared to round holes. X-Tray also has the longest bracket spacing on the market, which simplifies fitting and reduces costs.



Psst...

Even our packaging is smart! Our bags are specially designed to stand up and keep all the parts in the bag where they belong.

Cost-effective quality

We put quality first in every part of our X-Tray range. We never cut corners! If we state that our wire is 5 mm thick then it is 5 mm thick. They say that quality is expensive, but that is not the case with X-Tray. Fewer brackets, fewer parts and the longest bracket spacing on the market brings the total cost down.

Standard range in stock

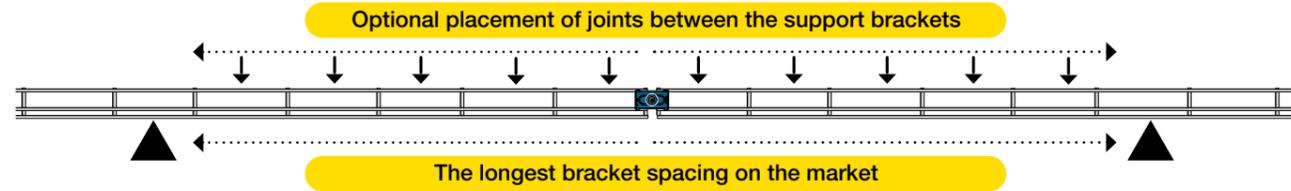
Our standard range is small, but so flexible that it may be all you need for a complete installation. When standard solutions cover your needs, we naturally stock them in a wide variety of materials and coatings. Sturdily and cost-effectively packaged for speedy delivery.

X5 – The strength is in the fine detail

A small and barely noticeable item boasting many excellent features. Simply click X5 onto a cable tray then bolt it in place for a secure and lasting construction. We would go as far as to say it is the strongest joining fitting on the market.

Tested and approved

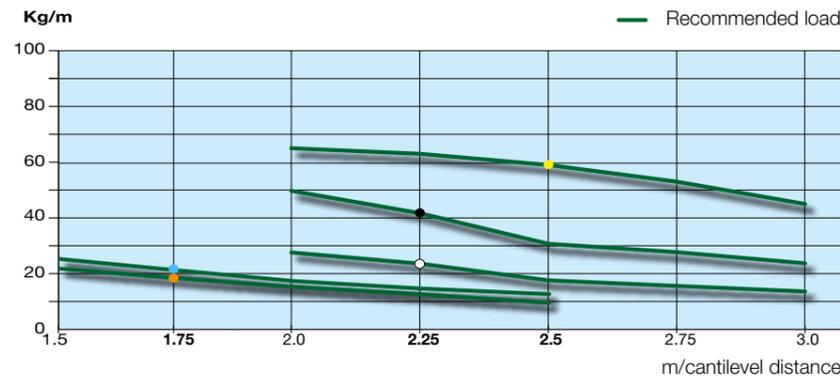
X-Tray complies with the highest demands on cable routing systems in accordance with IEC 61537.



Load diagram

Our diagram shows the recommended load in accordance with IEC 61537. 1.7 times these values gives the maximum permitted load. Equally divided load. Optional placement of joints between the support brackets.

- **X-Tray® height 110 mm**
59 kg/m. Recommended bracket spacing 2,5 m.
- **X-Tray® height 60 mm with 5 mm wire**
41 kg/m. Recommended bracket spacing 2,25 m.
- **X-Tray® height 60 mm with 4 mm wire**
24 kg/m. Recommended bracket spacing 2,25 m.
- **X-Tray® height 30 mm with 5 mm wire**
21 kg/m. Recommended bracket spacing 1,75 m.
- **X-Tray® height 30 mm with 4 mm wire**
18 kg/m. Recommended bracket spacing 1,75 m.



Tested and approved



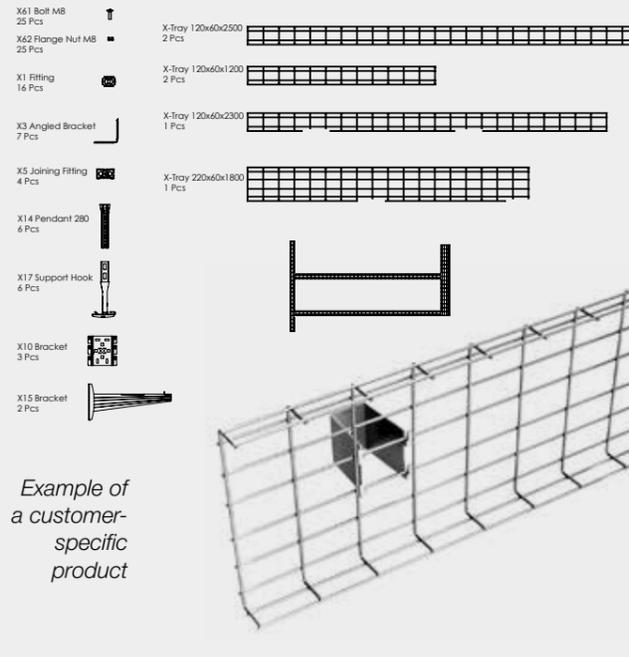
X-Tray complies with the highest demands on cable routing systems in accordance with IEC 61537.

Cable management – IEC 61537 – Cable tray systems and cable ladder systems

“This International Standard specifies requirements and tests for cable routing systems designed to support and accommodate cables and other electrical equipment in electrical and/or communication systems installations”. The strength of the cable ladders and mountings makes installation simple, strong and cost-effective. Bracket spacing can be increased, therewith reducing the amount of installation work and overall costs.

Our diagram shows the recommended load in accordance with IEC 61537. 1.7 times these values gives the maximum permitted load in compliance with IEC 61537.

Example of a customised product kit.



X-Tray covers all corrosion classifications

Corrosivity classifications according to SS-EN ISO 12944-2

Corrosivity classification	C1	C2	C3	C4	C5	CX
Environmental corrosivity	Very low	Low	Moderate	High	Very high	Extreme
Outdoors	-	Low concentrations of air pollution, rural areas	Moderate amounts of air pollution. Urban areas and light industry areas	Considerable amounts of air pollution or moderate amounts of salt, industry and coastal regions.	Industrial areas with harsh climates and high humidity. Coastal and offshore areas with large amounts of salt	Extreme industrial, coastal and offshore areas in subtropical and tropical climates with salt and contamination, lap zones
Indoor	Heated areas with dry air and insignificant amounts of contaminants. E.g., offices, stores, schools, hotels	Non-heated areas with fluctuating temperatures and humidity. E.g., sports arenas, storage premises	Moderate humidity and certain amounts of air pollution. E.g., breweries, dairies, laundries, heated ice skating arenas	High humidity and large amounts of air contamination. E.g., chemical industries, indoor swimming pools, shipyards unheated skating arenas	Permanent moisture condensation and large amounts of air pollution	Extreme humidity condensation and extremely harsh climate
Recommended material/coating	Zinc Plated – Fzb	Sendzimir	Hot Dip galv. / Zinc-nickel Fzv	Stainless 304L	Stainless 316L	Stainless 316L

Selection of material



The selection of material/coating is affected by several factors. Humidity and salt in the air have a major impact, and in certain environments, there may even be substances that

have properties that considerably shorten the lifespan of the coating, which must be taken into account. That is why it is important to establish the corrosivity and corrosivity class according to SS-EN ISO 12944-2 in order to select the coating.

Recommended material/coating is a guide for choosing a material/coating that has a long lifespan as cost-effectively as possible.

Zinc plating

Zinc plating involves the application of a thin layer of zinc that provides a basic level of protection.

According to standard: SS-EN ISO 2081:2008, DIN 50961, DIN-EN 12329

Sendzimir

A method for hot dip galvanising of sheet metal. Often called galvanised steel.

According to standard: SS-EN 10327:2004

Hot dip galvanisation

Involves the application of a thick layer of zinc by dipping the steel into a heated zinc bath. If damages occur to the surface, the zinc has the capacity to repair itself.

According to standard: SS-EN ISO 1461:2009, DIN 50976

Zinc/Nickel

Zinc/nickel is a thin coating that contains 12-15% nickel and has the same qualities as or somewhat better qualities than hot galvanised.

Used on many of the accessories where it is important that narrow tolerances will be maintained, for example for screws and nuts.

According to standard: SS-EN ISO 11997-1, DIN 50979

Stainless 304L

Material is 304L, EN-no 1.4307, acid. X-Tray has no accessories in 304L; rather, they are always 316L.

According to standard: SS 2352 / AISI 304L

Stainless 316L

Material is 316L, EN-no 1.4404, and is pickling by dipping it into an acid bath, this creates a surface without contamination that is easy to clean. Appropriate for use in environments with high demands on hygiene, for example the pharmaceutical and food industries.

According to standard: SS 2348 SF / AISI 316L

X-Tray®

Tested and certified

As well as IEC 61537, we have also tested and certified our trays in the following areas: material, welding, load, identification, EMC, surface treatment, vibrations and fire.

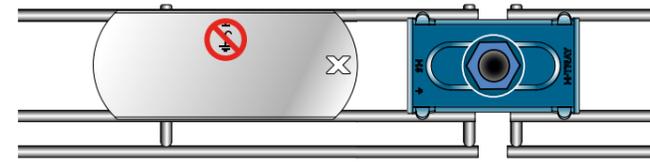
Find out more about our tests at www.axelent.com



*Our UL certification also gives us NEMA APPROVAL.



Tested for equipotential bonding in compliance with IEC61537



In some installations the cable tray needs to be equipotentially bonded. This is to secure protective bonding or functional bonding.



Protective bonding

The main reason for protection bonding is to protect against electrical points of contact that could be caused by faults in the electrical system. This is remedied by connecting the cable tray to the main earth terminal in the building.

Functional bonding

This is done to minimise the impact of electrical and magnetic fields (EMC). It is carried out in the same way as with protective bonding, i.e. by connecting the cable tray to the main earth terminal in the building.

Requirements and tests

The IEC 61537 standard lays down the requirements placed on a cable tray to ensure electrical continuity. Among other things, the impedance must not exceed 50 mOhm over joints or 5 mOhm X number of metres of cable tray. X-Tray has been tested and complies fully with IEC 61537. The tests were conducted by the Research Institute of Sweden (SP) with test report numbers PX16030 and 5F015879.

NB. X-Tray cable trays must never be used as protective bonding conductors, earth conductors or any other type of protective conductor.

Axelent is a member of the European Hygienic Engineering and Design Group (EHEDG).



Axelent is one of the 1,300 members of the European Hygienic Engineering and Design Group. EHEDG (founded in 1989) is a European non-governmental organisation aimed at promoting hygienic design and food technology to ensure safe consumer products.



E90 Fire test

When a fire breaks out it is vital that certain things carry on functioning. This could involve the activation of alarm systems, emergency lighting, sprinkler systems and smoke detectors, or other things that could save lives during a fire. This could be a long list.

It is always a good thing for cable trays to withstand a fire for as long as possible.

The German DIN 4102-12 standard is used for testing this, a standard that is designed to test complete systems of cable trays, accessories and cables.

Cable trays and cables are put in an oven and heated for 90 minutes until the temperature has reached 1000°C.

To be approved, the cables must still be in a usable condition.

Approval comes in three classes: E30, E60 and E90 or for how many minutes the cable trays and cables are still functional.

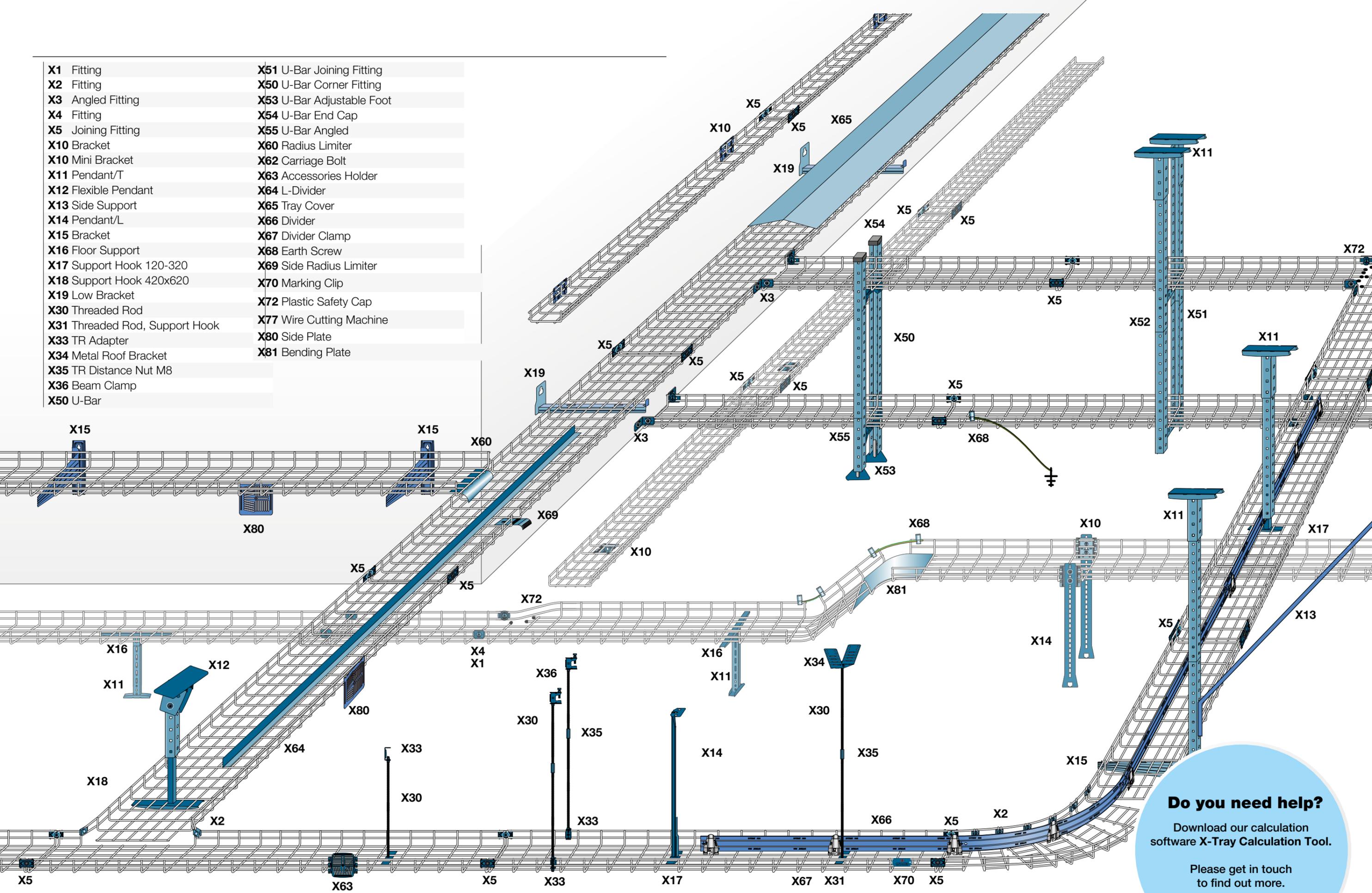
X-Tray has been approved at the highest class, E90.

We carried out the test at IBMB (Institut für Baustoffe, Massivbau and Brandschutz) in Braunschweig, Germany. IBMB is a prestigious, independent testing institute that issued the approval in accordance with the DIN 4102-12 standard.

The trays, brackets and cables were approved together. We have tested several batches of cable trays in combination with several different cables.



- X1 Fitting
- X2 Fitting
- X3 Angled Fitting
- X4 Fitting
- X5 Joining Fitting
- X10 Bracket
- X10 Mini Bracket
- X11 Pendant/T
- X12 Flexible Pendant
- X13 Side Support
- X14 Pendant/L
- X15 Bracket
- X16 Floor Support
- X17 Support Hook 120-320
- X18 Support Hook 420x620
- X19 Low Bracket
- X30 Threaded Rod
- X31 Threaded Rod, Support Hook
- X33 TR Adapter
- X34 Metal Roof Bracket
- X35 TR Distance Nut M8
- X36 Beam Clamp
- X50 U-Bar
- X51 U-Bar Joining Fitting
- X50 U-Bar Corner Fitting
- X53 U-Bar Adjustable Foot
- X54 U-Bar End Cap
- X55 U-Bar Angled
- X60 Radius Limiter
- X62 Carriage Bolt
- X63 Accessories Holder
- X64 L-Divider
- X65 Tray Cover
- X66 Divider
- X67 Divider Clamp
- X68 Earth Screw
- X69 Side Radius Limiter
- X70 Marking Clip
- X72 Plastic Safety Cap
- X77 Wire Cutting Machine
- X80 Side Plate
- X81 Bending Plate



Do you need help?

Download our calculation software X-Tray Calculation Tool.

Please get in touch to find out more.

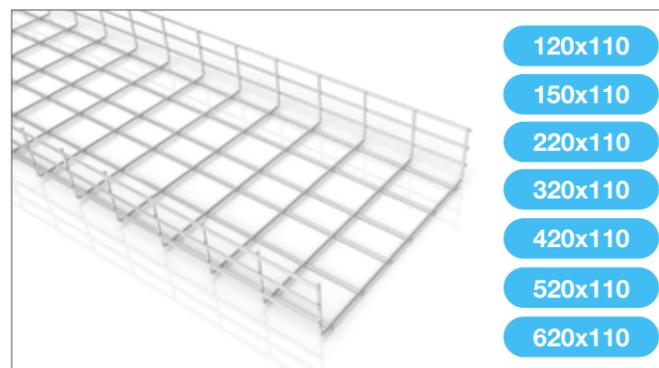
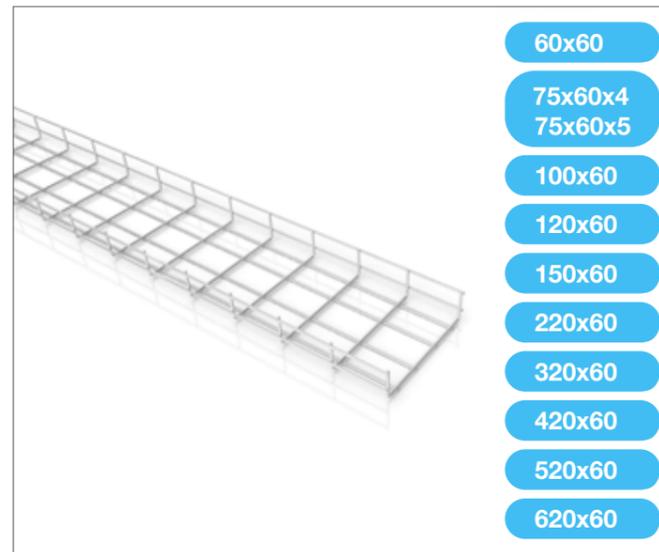
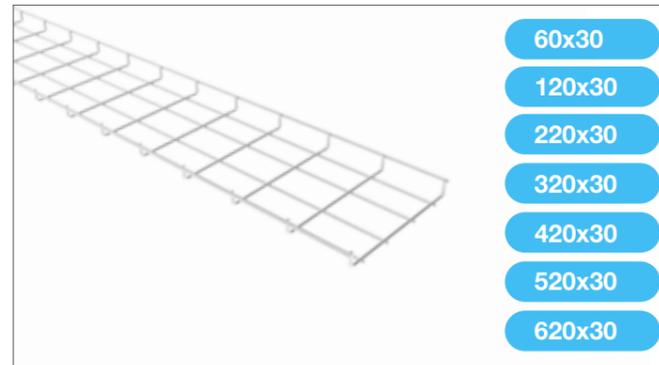
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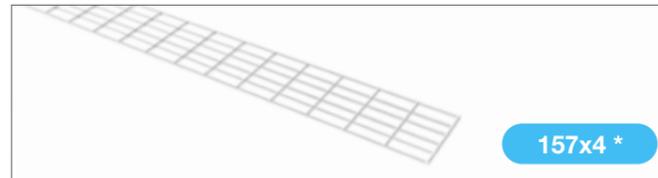
Overview, X-Tray cable trays

Even when using the standard range, there will always be times when you need customer-specific solutions. The standard length is 2500 mm, but everything can be tailored to suit customer needs. X-Tray has no limitations.

U-Trays Height 30-110 mm



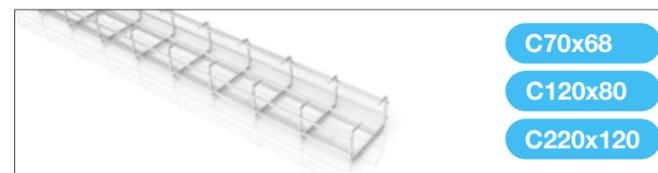
Flat Trays



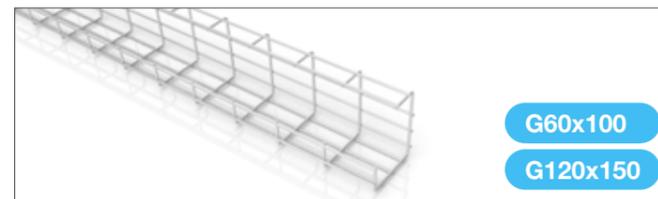
Mini Trays



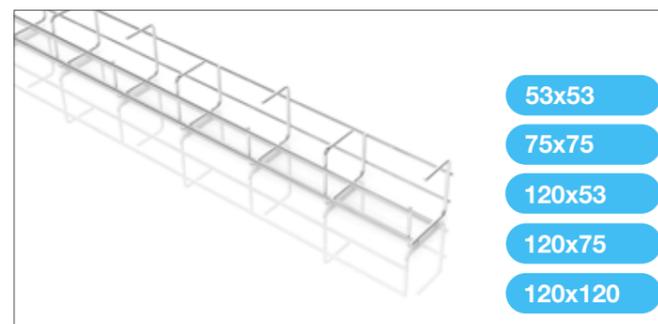
C-Trays



G-Trays



Z-Trays



* Can be adapted to desired width and length. Additional delivery time.

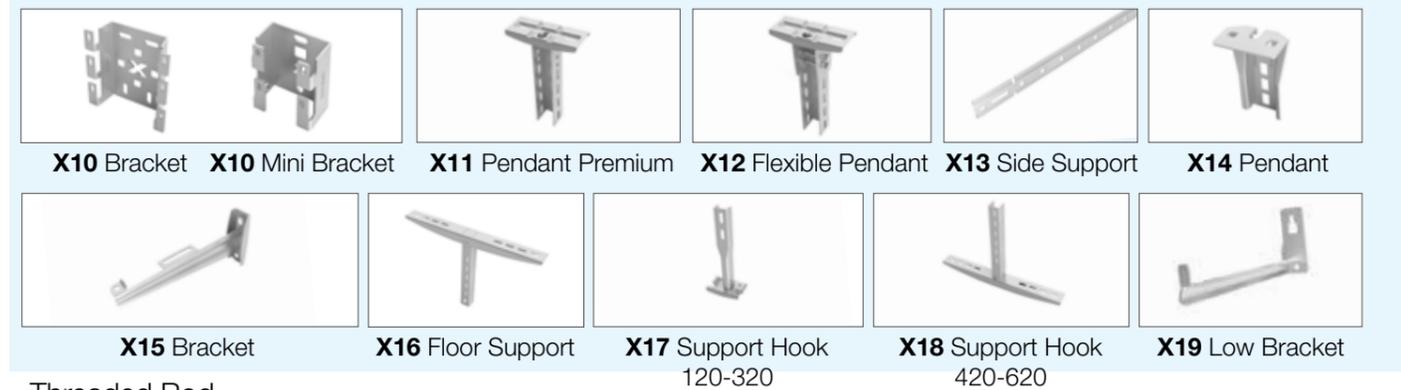
Overview, X-Tray accessories

The accessories are design protected. Subject to change without prior notice.

Mountings



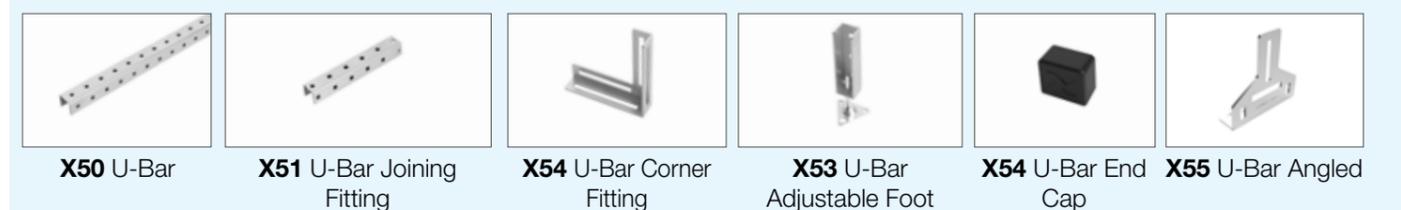
Mounting



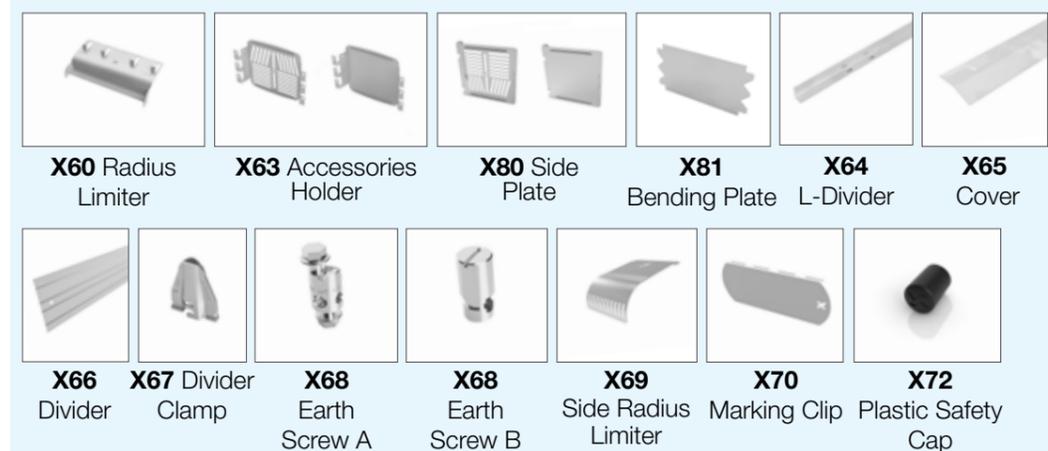
Threaded Rod



U-Bar



Other accessories



Tools





Food & Pharmaceuticals



X-Tray for premises with hygiene demands

To meet the high demands put on the food industry and other clean rooms, together with the industry we have developed the perfect cable routing system. The system is also designed for the fitting of hoses and pipes.

Cable trays are well suited for use in clean rooms. The trays have very few surfaces where dust could settle and no cavities where bacteria could thrive. The support brackets and parts are designed to eliminate surfaces where grime and dust could settle. They are easy to vacuum and clean with water.

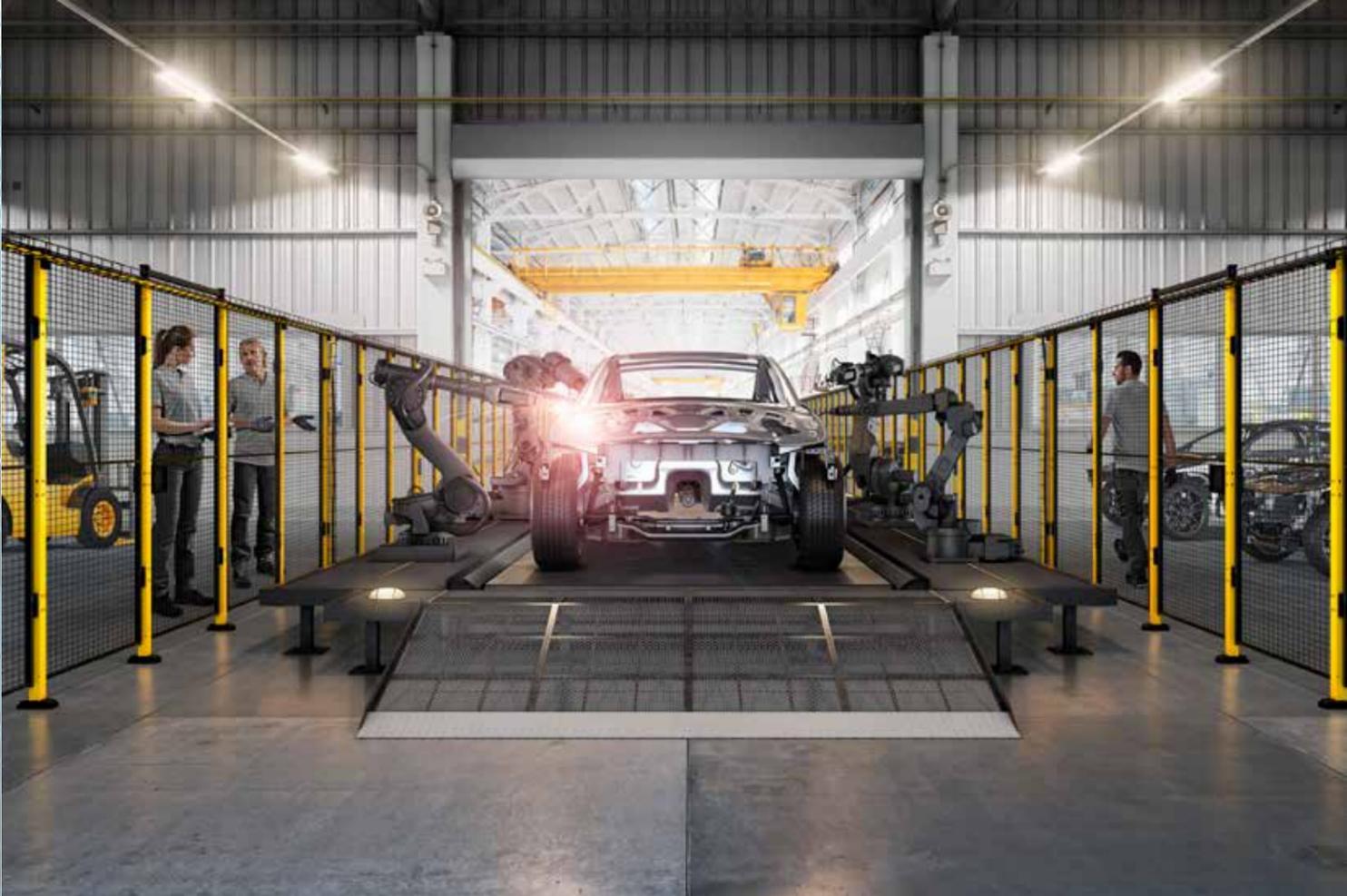
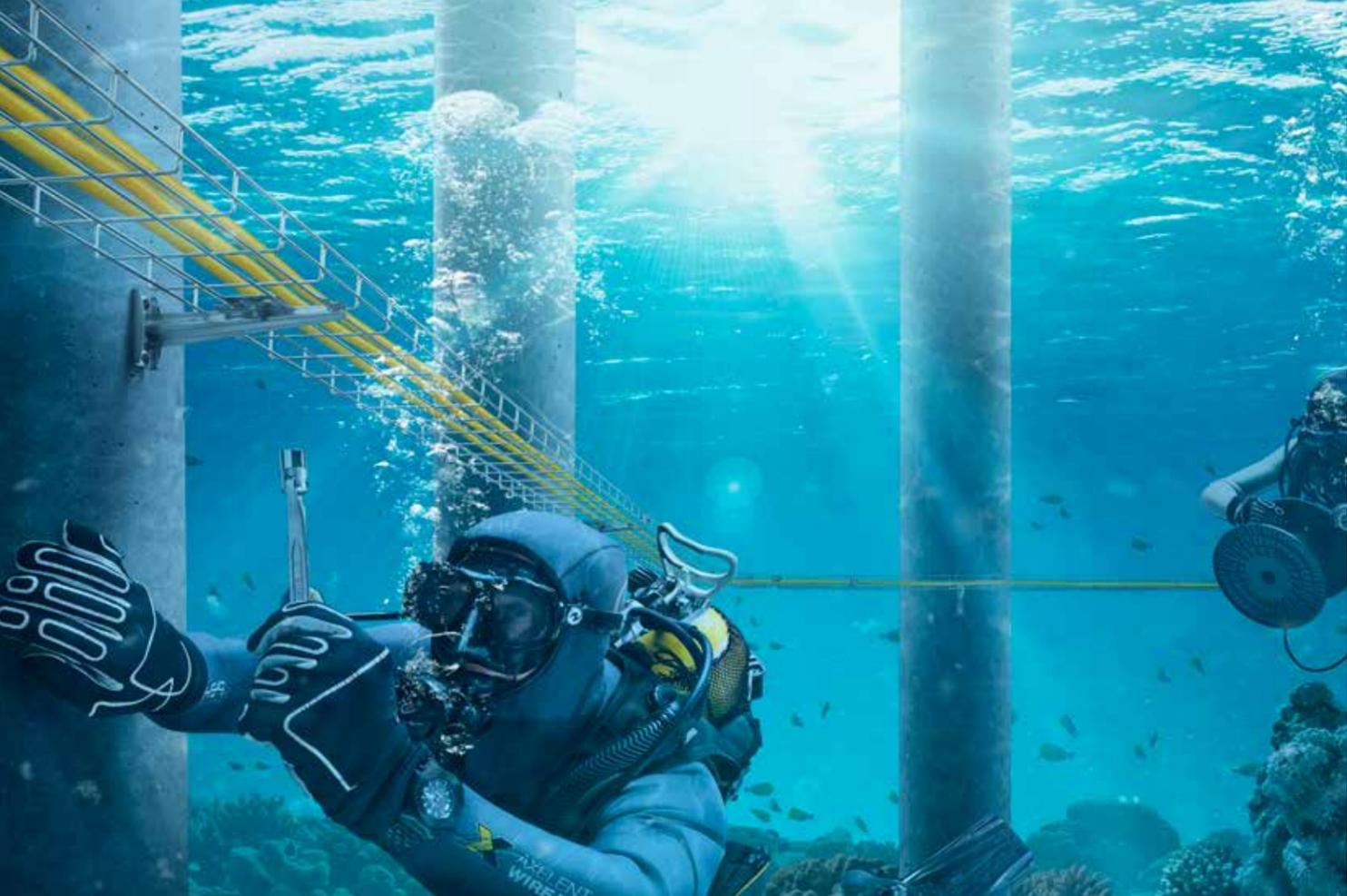
- Project support with specialist knowledge of clean rooms
- Tailored clean room products and solutions
- Long bracket spacing, up to 3 m, gives fewer brackets to clean and a cost-effective installation
- Cable trays 304L and 316L are always in stock
- Tailored products for fitting hoses and pipes
- Specially designed brackets welded on site when required

Read more about our specific product range for the food industry at www.axelent.com/x-tray.

Tips/Regulations for fitting in high/medium/low hygienic zones.

- Two methods are permitted for fitting cable trays:
 - **Vertical** (side of the tray upwards) in medium/high hygiene zones.
 - **Horizontal and vertical** in low hygiene zones and service rooms.
- The fitting of wire trays over production machinery is **not** permitted.
- Only **one** layer of cables or pipes/hoses is permitted in high hygiene zones. If possible, use separate cable trays for different types of cables. Where the same tray is used for both signalling and power cables, they should be kept well apart. Where possible, the space between power cables and signalling cables could be filled with pipes and hoses.
- Parallel trays must be mounted at a minimum of 100 mm spacing to allow cleaning.
- Pipes and hoses should first hand be fitted in trays carrying power cables. No extra trays for pipes and hoses unless unavoidable.
- Equipotential bonding/EMC:
 - All trays must be earthed at both ends using copper cable. See separate instructions.
- Choice of material/surface treatment in different hygiene zones:
 - High hygiene zone, dry installation = Electrogalvanized.
 - High/medium/low hygiene zone, wet installation = 304L or 316L depending on the types of chemicals in the room and when washing the trays.
 - Service rooms and outdoors = Hot Dip Galvanized.





Offshore



- Project support with specialist knowledge of offshore
- Tailored products and solutions for oil platforms, ships and ports
- Long bracket spacing, up to 3 m, gives fewer brackets to fit and a cost-effective installation
- Hot dip galvanized and stainless material 304L and 316L is always in stock
- Tailored products for fitting hoses and pipes
- Approved by DNV for use within global offshore

Fitting tips

Installation is simplified by a small number of standard products that can be used in a variety of ways. Complex logistics solutions are used to deliver material to an oil platform. If you lack a product when working on a platform or ship this can often be remedied using the products you have with you. X-Tray is a 'field pack' and the job will nearly always get done. The bracket spacing of up to 3 m makes it easy to mount the trays onto existing constructions on platforms and ships. Strengthened trays for bracket spacing of up to 6 m are available.

The trays are easy to cut and shape using bolt cutters. No 'hot work' is required. This is a great advantage on platforms and ships where there is a great risk of fire. There is equipment available to fasten instrumentation lines to the wire trays.

Process Machinery



- Project support with specialist knowledge of process machinery
- Tailored products and solutions for process machinery
- Long bracket spacing, up to 3 m, gives fewer brackets to fit and a cost-effective installation
- Tailored products for fitting hoses and pipes

Fitting tips

A small number of standard products that can be used in a variety of ways simplifies the installation.

The lack of space around machinery and production lines calls for complex installations. When machines are designed, not much consideration is given to the cable routing. X-Tray is simple to shape and cut to the required fit. Bolt cutters, a 13 mm spanner and a few brackets are all that is needed. The X-Tray beam clamp system makes it easy to build constructions in which to fix cable trays and other equipment.





Infrastructure



- Project support with specialist knowledge of infrastructure
- Tailored products and solutions for infrastructure
- Long bracket spacing, up to 3 m, gives fewer brackets to fit and a cost-effective installation
- Tailored products for fitting hoses and pipes

Fitting tips

For installations that require fire safety, X-Tray has E90 certification.

X-Tray has been tested and approved for equipotential bonding. Our cable trays are also perfectly suited for use in EMC-sensitive areas.

In tunnels, mines and places that require an extra strong routing system, our C and G trays provide extra cable protection. These trays also guard against falling rocks and other objects.

If wider bracket spacing is required, we have extra strong C trays that cope with up to 6 m between the brackets.

X-Tray is the perfect solution for hospitals, airports, railway stations, schools, sports halls, etc. We have the products and the skills for fitting them.



Energy



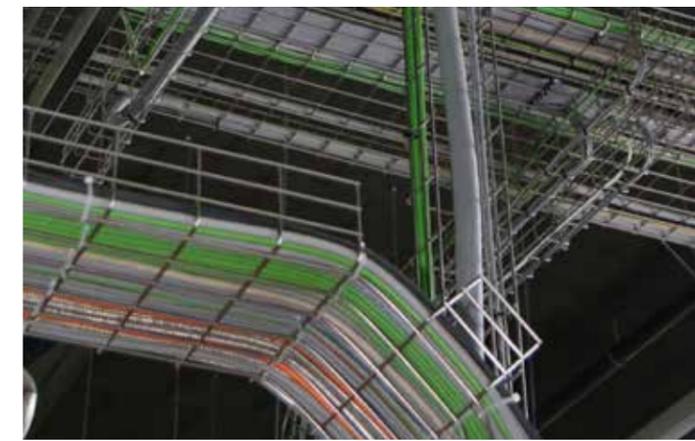
- Project support with specialist knowledge of energy production
- Tailored products and solutions for energy production
- Long bracket spacing, up to 3 m, gives fewer brackets to fit and a cost-effective installation
- Beam clamp system for smooth and stable fitting of solar cells

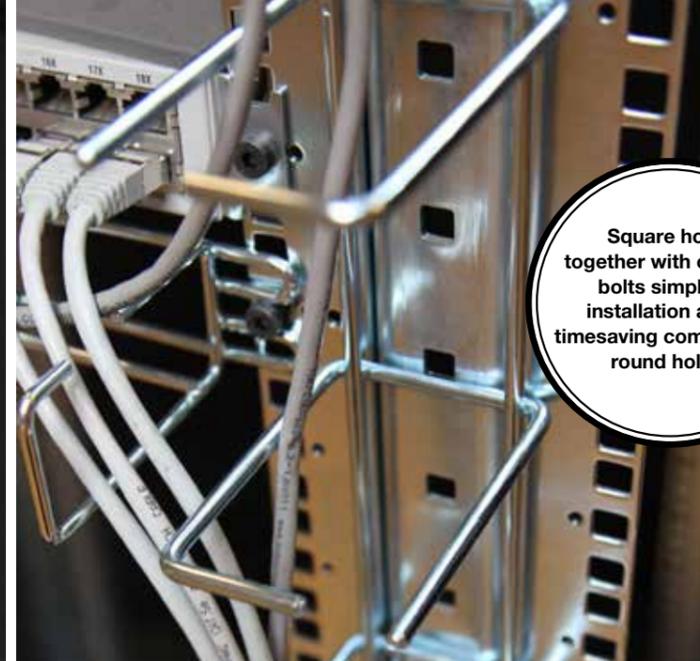
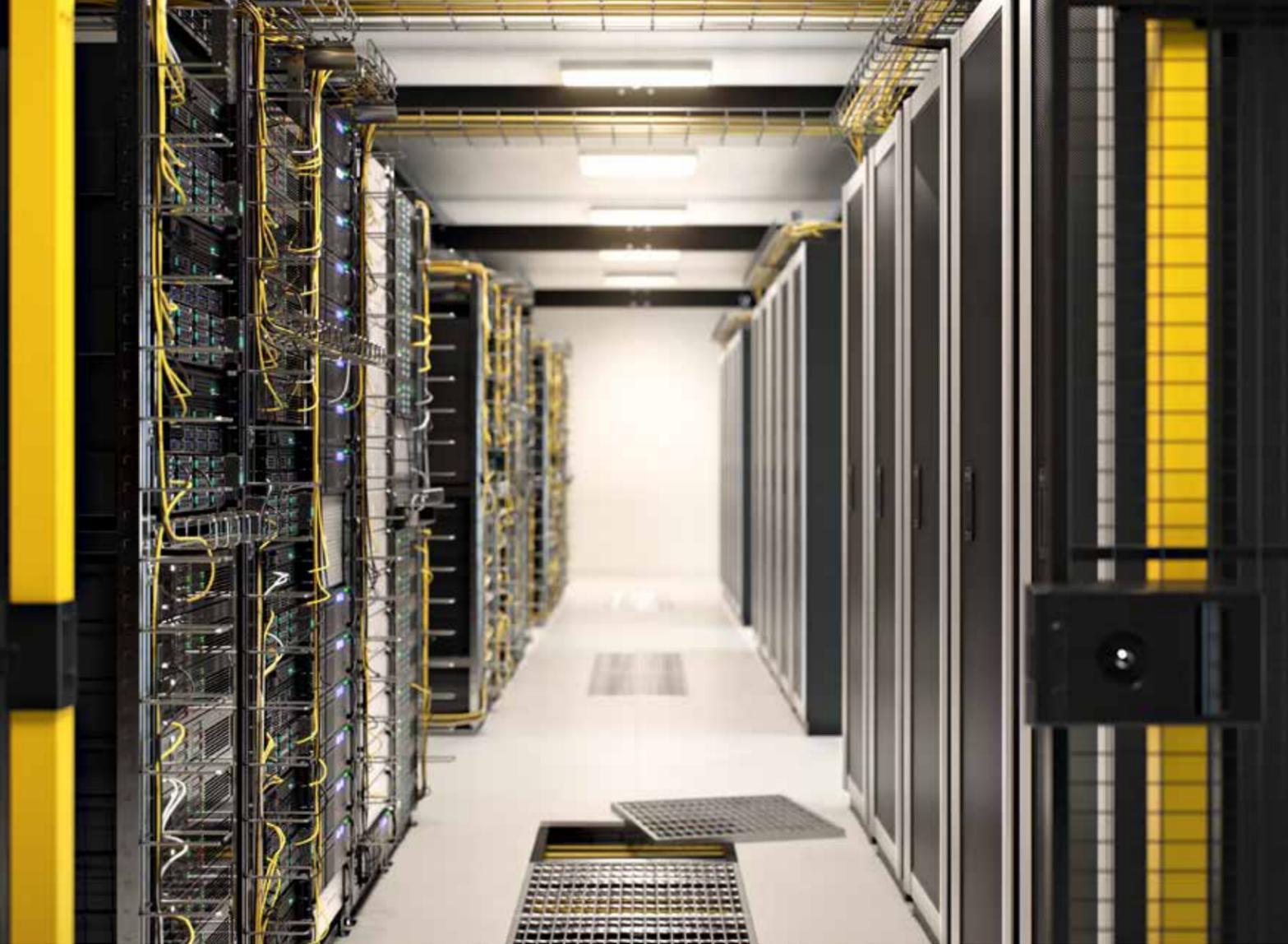
Fitting tips

Energy production puts great demands on materials. X-Tray has a strong basic construction and lasting quality. Wind power and nuclear power require extra safety. X-Tray products are tested for vibration and earthquakes. Approved by DNV for global use.

Wind generators do not have an awful lot of space to work in. It is a tough environment, often at sea, and the construction is subjected to constant vibrations. This is where cable trays come to the fore with their slim design, conformability, extra strong welds and low weight. We supply products that are perfectly suited for the job at hand.

Nuclear power stations put high demands on quality and durability. There are often demands for earthquake-resistant constructions. This is where X-Tray comes in with its strong basic construction and secure welds that guarantee lasting quality.





Square holes together with carriage bolts simplifies installation and is timesaving compared to round holes.



Telecom & Data



- Project support with specialist knowledge of telecom & data
- Tailored products and solutions for telecom & data
- Long bracket spacing, up to 3 m, gives fewer brackets to fit and a cost-effective installation

Fitting tips

A telecom and data centre is packed with cables. Electrical equipment generates a lot of heat so there are requirements for open cable routing systems to allow cooling air to pass through freely. Electrical equipment and cables are changed continuously. There are high demands on space and accessibility around the racks and cabinets. Orderliness is crucial in this environment.

X-Tray can offer a unique system together with sound knowledge of the requirements of telecom & data centres and server rooms. Our cable trays, in combination with our beam clamp system, provide solutions that meet the requirements.

X-Tray enables you to install cable routing at different levels to separate the various types of cables. Above the server rack as well as under the raised floor.



Our unique beam clamp system offers limitless combinations. We have solutions and equipment for building your own 19" rack. Accessories like horizontal and vertical cable trays give you an open rack with ample working space and free passage for cooling air. All the system parts are compatible with each other and it is easy to screw the installation together into one unit.

We possess the expertise and the products for installing in small terminals specially designed for the distribution of telecom and broadband in small communities and rural areas. With accessories like radius limiters, separating plates and telecommunication chutes, we can offer a turnkey solution for cable routing and server racks.

X-Rack – one of the strongest and most flexible open rack systems on the market

With the help of Axelent's U-Bars and a few accessories you can build a data rack tailored to your needs. You can design it for the equipment to be fixed on the front edge, the middle, or both front and back edge. The depth and height of the rack is determined by the length of the U-Bars.

X-Rack comes in several standard sizes, but can also be cut or ordered to the required size.

All the parts are ordered separately, making it easier to adapt to your needs. It is also quick and easy to transport, and assembles in a matter of minutes. It is even simpler using the pre-mounted racks that we also supply.

Customer-specific product kits can also be made to simplify future ordering and installation.

One advantage with this is that the wire trays can be fitted directly on X-Rack without the need for brackets and pendants.

We also have accessories like radius limiters and cable trays that allow cables to be installed neatly, securely and easily.

Read more in the separate X-Tray and X-Rack for Telecom & Data folders or download at www.axelent.com



X-TRAY®

The natural choice for X-Guard®

X-Tray cable trays integrate smoothly with Axelent's X-Guard machine guards. Together they are the optimum choice.

Our cable trays are strong, flexible and easy to fit. You can create elegant solutions without the need for special tools. Just like X-Guard, only a few brackets and tools are required. Combine X-Tray & X-Guard to get maximum flexibility from a minimum amount of material. Simple and smart. Thanks to the almost endless possibilities, despite few components, you do not need to spend time and money on additional orders to complete your project.

Easy to combine

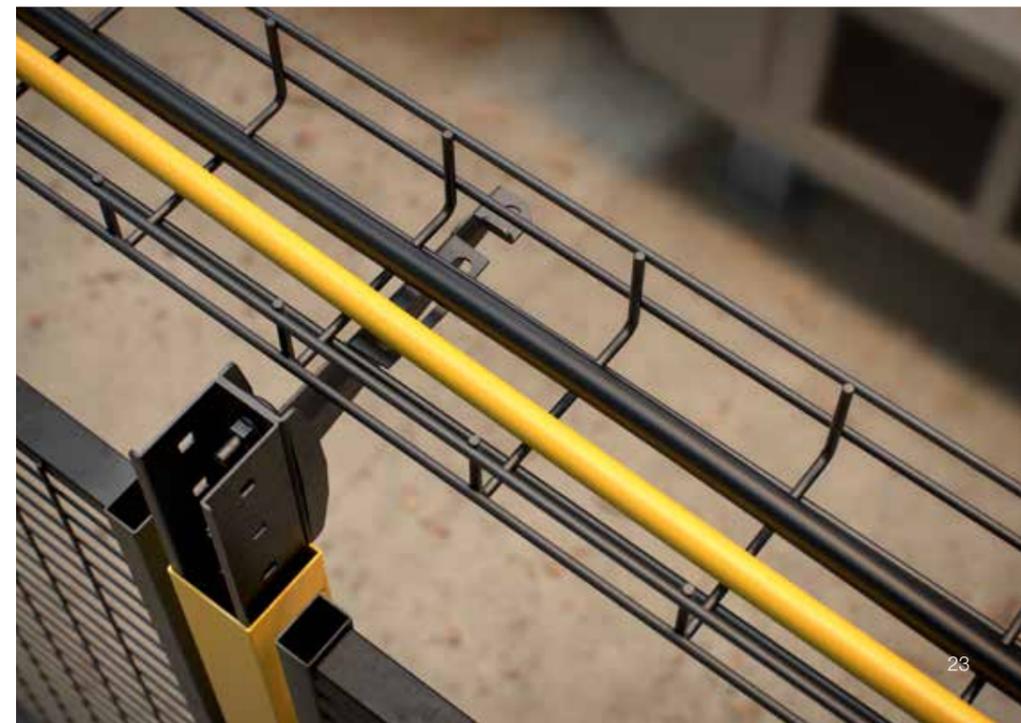
Axelent's X-Tray is the perfect solution for cable trays together with X-Guard machine guard.

No special tools required

The combination is easy to assemble without the need for any special tools.

One supplier

Turnkey solutions from one supplier makes project implementation quick and easy.

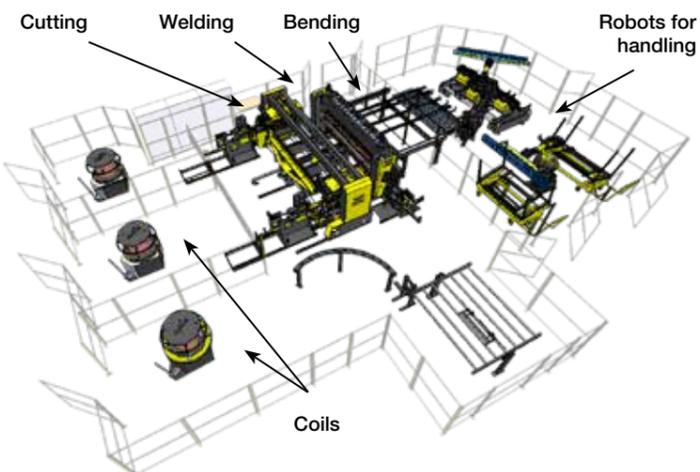




Perfection, from production to delivery

Wire welding is nothing new to us at Axelent. We have been welding wire since 1979 and designing our own welding plants since 1999. We know all about welding.

It was therefore obvious to us that no standard welding plant on the market could fulfil our prime quality demands. When cable trays are used in critical applications, a high weld quality is an absolute must. We have therefore designed and built our own production plant with the focus on prime quality, efficiency and flexibility. Our plant has the capacity for producing more than 10 km a day without sacrificing flexibility. The possibility to customise products in length, width, breadth, height and shape is the hallmark of Axelent and X-Tray. Welds are individually welded and inspected to guarantee the strongest tray on the market. The wire ends are softly rounded to remove all sharp edges and protect hands and cables.



X-Tray® – a premium brand

From the day it first left the drawing board, the development of X-Tray has focused on creating a premium brand within cable routing systems. We deliver a solution that is tailored to your needs.

Guaranteed prime quality

We designed and built our product plant ourselves so as to live up to our prime quality pledge. Quality and flexibility are our guiding lights, and nowhere does this shine through more than in our ability to test and approve each individual spot weld.

We are proud of our origins and the expertise that abounds in our region, which is why we never think twice about engaging local suppliers. This gives us a bird's eye view of

the quality levels and a greater opportunity to develop new products, adaptations and other solutions. In us you have a team who not only have a wealth of experience in cable trays, but also the expertise to find the perfect solution to meet your needs. The close cooperation between our design and sales teams enables us to find rapid adaptations and solutions outside our standard range.

Tested, packaged and delivered

Every day we piece together customer-specific solutions, adaptations and tailor-made kits. In our top modern warehouse we can also customise the packaging.

Our design and product development department carry out tests on our standard products and new customer-specific solutions on a daily basis to uphold our quality pledge.



Axelent AB

Axelent AB is a leading and rapidly growing company that produces mesh panel systems for machine guarding and partitioning for industry, storage and construction. The head office is in Hillerstorp, Sweden. All product development, production, storage and packaging is carried out here. Axelent has sales offices in more than 60 countries and subsidiaries in ten.

www.axelent.com

Axelent Engineering AB

Axelent Engineering AB provides automation products and services to predominantly Nordic production industries. The core activities are specialist machinery and robot solutions with the emphasis on profitable flows for the entire lifecycle. Through a partnership agreement with Dassault Systèmes, world leader in 3D and Product Lifecycle Management (PLM), we also provide products and services within PLM as well as CATIA, 3DVIA, DELMIA and ENOVIA. This combination makes Axelent Engineering your complete partner in the industry with regard to innovative and profitable flows.

www.axelentengineering.com

Axelent Software AB

Axelent Software develops and markets user licences to their in-house software SnapperWorks, SafetyWorks and X-Tray Calculation Tool. The programs are based on distributed platforms and standards that ensure a long life, continuous development and easy connectivity to other systems. Axelent Software products are founded on simplicity and user-friendliness. The original versions were developed for Axelent's products, but are today applicable to most industries with standardised products.

www.axelentsoftware.com

Axelent Safe-X AB

Safe-X has compiled a range of safety products for industry, warehousing and construction. The range includes cycle racks, litter bins, speed ramps, mesh shelves and collision bars. Safe-X products come under Axelent's X-Tra range, and includes products from well-known brands Moravia and McCue.

www.safexonline.com

Axelent
Group





AXELEN

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