













EJOT® SOLAR

Solar Fastening Systems

Fastening technology for the building industry

The EJOT Building Fasteners Division caters for selected segments of the building industry with expert applications on facades. EJOT offers a wide product range and special fastening know-how.

The pursuit of highest quality products is not an end in itself for EJOT. The customer benefits from our screws and anchors. Reliable processing also means low failure costs. Durable quality joints provide the best protection against expensive customer complaints. This is why we will continue to produce our strategic product range in our plants that are certified according to ISO/TS 16949 standards.

Our service range covers outstanding logistics and availability of products, qualified advice for product selection as well as their professional use. We provide our customers with specialised expert knowledge regarding the application of our products. Whenever needed we support our customers with all their fastening queries. Further services include advice over the telephone, application advice on site, initial sizing, component tests in the EJOT test centre and a comprehensive training programme for architects, specifiers and assemblers.

Innovative products are the key to success. We leave nothing to chance. We identify the customer requirements on site under real-time conditions. Regular meetings of our international building application experts make sure that we can observe technological trends and are able to support our customers. This is the basis for new and innovative product solutions for clear additional benefit and satisfied customers.



Expert knowledge and innovations

Qualification and expertise are needed for complicated building projects. Whether it is the construction of the highest tower or the southernmost polar station in the world – you can profit from over 30 years of experience in the building industry.

One thing applies to all EJOT products:

They have been developed by fastening technology experts, supported by a strong team of developers, product managers and application engineers. Our claim is to find solutions for your requirements. The results are reliable product solutions to simplify your job at the construction site. Everyone can sell products – but we can meet your needs.



Our areas of application:



Solar Fastening Systems

Fastening technology for photovoltaic installations



Industrial Lightweight Construction

High-quality fasteners for fixing profiled sheets and sandwich panels in the industrial light-weight construction



Rear Ventilated Facades

Screws and anchors for fixing substructures and facade cladding of rear ventilated systems



External Thermal Insulation Composite Systems

Special anchors for fixing insulation on external wall systems



Industrial Window and Facade Technology

High quality fasteners for the window and door production and the use in aluminium/glass facade systems



Flat Roofing

Fasteners and installation tools for the efficient attachment of insulation and waterproofing membrane to flat roofs and slightly sloping





Solar Fastening Systems for pitched industrial roofs.

The Solar Fastening System was the first stainless steel fastening element, building authorities approved by the DIBT (German Institute for Construction), to fix photovoltaic installations to trapezoidal steel profiles and sandwich panel roofs. The Solar Fastening System is also suitable for use on fibrous cement corrugated sheet roofs.



For fastening elevated solar and photovoltaic installations. With general building authorities approval Z-14.4-537







The solar fastener is directly fastened into the rafters, purlins or trusses of the substructure. Linear expansion of the joint, as well snow loads, can be absorbed in a lasting and reliable way. The roofing is not loaded and the number of roof perforations is minimised.

For an existing roof the screws are simply exchanged with a Solar Fastener. Using common adaptors the prominent thread is compatible with all rail systems and offers the possibility to compensate differences in height.







Suitable for various applications depending on roof structure:

JA3 thread for timber substructures:



EJOT® JA3-SB-8.0xL

with FZD sealing for fibre cement roof covering



EJOT® JA3-SB-8.0xL

with sealing washer E16 + ORKAN storm washer for sandwich elements



EJOT® JA3-SB-8.0xL

with sealing washer E16 + ORKAN storm washer for trapezoidal sheet metal

JZ3 thread for steel substructures:



EJOT® JZ3-SB-8.0xL

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EJOT® JZ3-SB-8.0xL

Jwith sealing washer E16 + ORKAN storm washer for trapezoidal sheet metal







For highest stability on flat roofs

EJOT recommends the use of the fastening system for flat roofs, consisting of the Solar Fastener FD in combination with the EJOT flat roof support. This system reliably transmits transverse loads at slope flat roofs as well as tensile loads by wind suction.

The EJOT Flat roof support even can be used as a stand-alone fastening system. The base plate, attuned to the respective substructure, is fastened to the load-bearing shell underneath the insulation. Whether it is a trapezoidal profile or a concrete construction, the installation is always completed with the suitable fastening elements. The insulation material and the sheeting are completely unloaded up to the top of the insulation, due to the solid mounting system. This way the interplay between pressure and tensile load due to weight and weather influences will not leave a lasting impression.

Two flat roof experts in combination:

The EJOT flat roof support to absorb the shear forces and the EJOT Solar Fastener FD to absorb the wind suction.











Flat roofs offer enormous potential for solar installations on industrial roofs, but an adapted solution for the load bearing is necessary.

Advantages of the Fastening System:

- Low additional weight of the fastening elements
- No additional ballast necessary
- Reliable transfer of the tensile and shear forces into the substructure
- Control over the occuring forces
- Prevention of misalignment or slipping of the PV installation
- Reliable sealing of the roof membrane
- Easy and efficient installation





Installation situation:

EJOT flat roof support and EJOT Solar Fastener FD





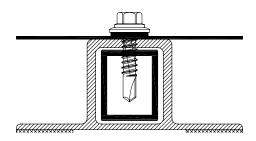


EJObar - the versatile flat roofing carrier system

The new simple-fix solution for carrying accessories over single ply!

EJOT EJObar is a multi-purpose single ply membrane support system which creates a fixing base for a wide range of applied systems – typically Mechanical & Electrical equipment – to be secured to the flat roofing system. EJOT EJObar is supplied in a range of practical lengths and comprises of a PVC profile casing a strong aluminium insert – all sealed tight by two endcaps. EJOT JT3 self-drilling fasteners completes the package!





EJObar is incredibly versatile and very cost-effective!

- EJObar makes a clean, tidy easy to maintain roof
- No penetration of the roofing membrane required
- EJObar is versatile multi-purpose and practical
- In some situations, can even be freestanding
- Ideal for carrying mechanical & electrical equipment, walkway systems, applied cladding systems – and many solar applications
- Direct fix or Strut fix options make EJObar very adaptable and easy to use

Industrial flat roofs EJOT





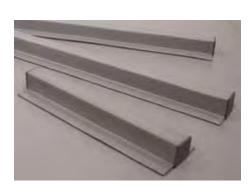


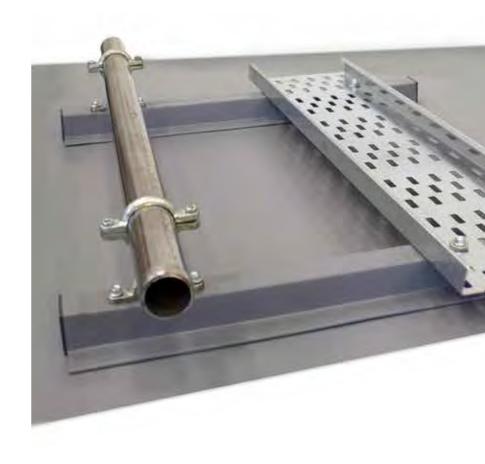


Simple to use and easy to install

- EJObar can be easily hot welded
- or a liquid applied PVC fix can be used
- EJObar can even be used free standing











Solar i-Clip® – the single solution for fixing solar PV frames to residential roofs

The EJOT Solar i-clip is easy to install. It has been designed to be versatile and solve many of the common installation problems, associated with installing solar PV systems on tiled roofs.

Solar i-clip Rafter Fix

- Self drilling timber stainless steel fastener
- No pilot hole required
- Meets eurocode 5 criteria for 35mm wide roof trusses
- Fully A2 Austenitic stainless Steel

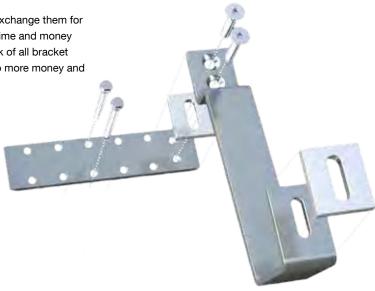


Initial roof assessment is generally made from ground level. System recommendation includes what is thought to be the required bracket, based on manufacturer data for slate, clay or concrete tiles. The result is that installers are usually onsite and ready to start when difficulties arise, leaving them to either:

 a) 'make brackets fit' by cutting too much from the tile – risking compromise to the waterproofing

b) go back to supply and exchange them for another type – wasting time and money

 c) carry and transport stock of all bracket sizes available – tying up more money and transport i-clip has been developed with solar installers who have realtime experience. The concept originated as an objective to resolve these problems for an established PV installation company by creating a universal fixing system to take to any site, knowing that whatever the roof type or whatever was under the tiles, the bracket would fit.







EJOT® Solar Flashing for Asphalt Shingle Roofs

The EJOT Solar Flashing system is specifically designed for waterproof installations on THREE TAB strip asphalt shingle roofs with a standard 5" to $5\frac{1}{2}$ " row course. With this fastening system, photovoltaic- and solar thermal racking systems, as well as other installations can securely be anchored on existing or new roofs.



- Simple, easy and fast installation
- Only two components one fastener, one flashing
- Secure sealing in three different layers!
- No need to use additional liquid sealants
- Optimal installation preparation through use of EJOT click-and-drill-hole saw
- Transmission of the axial pressure from the fastener into the flashing
- Secure transmission of all loads into the rafters
- Easy calculation of force transfer and required fastener quantity
- Installation even between the shingles without shimming





Product solution for the US-american market:

EJOT® Solar Flashing for Asphalt Shingle Roofs





EJOT® SUPER-SAPHIR self-drilling screws for reliable module installation

High-quality bi-met self-drilling screws are used for PV installations for private homes.

The SUPER-SAPHIR self-drilling screw JT3-2-6.5 was developed for the demanding use in the industrial hall construction. The screw fixes profiled steel and aluminium sheet as well as sandwich panels – for many years. The bi-met A2 self-drilling screw with hardened drill point has been increasingly used for the private house sector as well. For example this 29.7 kWp installation in Brandenburg, Germany: Adapters are fastened to the substructure, in preparation for the following module installation.



App

Approval

Features

- ETA-10/0200
- ETA-13/0177

Technical data

Drilling capacity t _i + t _{ii} 2.0	mm
Drivehexagon	A/F8

Stainless steel A2 with hardened drill point

Stainless steel sealing washerPre-assembled sealing washer

SUPER-SAPHIR self drilling screw

JT3-2-6.5x65-E16







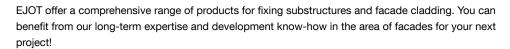
Facades EJOT





PV installations as design element on the facade

Photovoltaic installations are fixed on facades when the roof cannot be used due to static restrictions. Facade design with PV installations has also an aesthetic appeal and it is visible for everyone.















Harvesting energy from the solar field

The 75.000m2 photovoltaics field produces 3.1 million kWh energy per year with a maximum output of 3.3 MW. Over 30,000 EJOT JT4-6-5,5x30 SAPHIR stainless steel self-drilling screws have been installed.

The Renewable Energy Law (Erneuerbare-Energien-Gesetz / EEG) allows various locations for open-space photovoltaic installation. In addition to open fields along highways and railroad tracks, the open space installations can also be planned in industrial or commercial parks. This installation has been built in a so called transitional area. The area is a gravel quarry that has been filled with excavated earth.









Value creation for the environment:

A neglected grassland field, rich with different species and plants, as a natural resource for many different animal species evolves. Water holes, rock piles and earth walls create small biotopes for amphibians and reptiles.

The supporting structure, an in-house development by Wagner & Co Solartechnik from Cölbe, is the open space installation system TRIC Flex for ground mounting. The foundation is pile-driven.

The used EJOT SAPHIR stainless steel self-drilling screws are particularly suitable for fixing aluminium profile to aluminium substructure ≤ 4 mm.

Technical Data

For further technical details see the general building authorities approval Z-14.1-537 and the building authorities test certificate P-043609.





Self-drilling screws for special requirements:

Stainless steel self-drilling screws SAPHIR of the JT4 family made of A2 stainless steel to fasten aluminium profile to aluminium substructure









Thin sheet solar applications

The EJOFAST® thin sheet metal screw is part of the latest screw generation at EJOT. It is a self-drilling screw without the usual cutting bit.

Due to the innovative pierce-point geometry, the EJOFAST® thin sheet metal screw fastens sheet metal fast and without creating any swarf, and it also features excellent clamping properties. It has been specifically engineered to fix components to thin-walled metal profiles.

Speed of installation and exceptional clamp load performance make the EJOFAST® JF3-2-5.5xL-E16 the perfect product for an almost unlimited list of solar applications.

JF3-2-5.5xL-E16 comes with general building authorities approval.



Special solutions EJOT



Application

Fixing components and brackets to thin-walled metal profiles for photovoltaic installations:

- Fixing trapezoidal sheet flashings, clips for for fixing standing seam systems or pre-punched retainers to thin-walled steel substructure (e.g. profiled sheets)
- Fixing wind deflector sheets to profiled elements

Properties

- A2 stainless steel with innovative point geometry
- Stainless steel sealing washer
- Pre-assembled sealing washer
- Precise positioning
- Fastening without swarf and without pre-drilling
- Excellent clamping properties

Technical Data

Available thread length 25 or 35 mm
Fixing to thin sheet metal (steel) 0.4-1.25 mm
Max. clamping-range 10 or 15 mm
Drive hexagon A/F 8

Approval

Z-14.4-426 ETA-10/0200



EJOFAST® thin sheet metal screw JF3-2-5.5xL-E16

















EJOT® ATB-Plus for Trapezoidal Roof Sheet Profiles

EJOT ATB-Plus is possibly the most versatile bracket for trapezoidal profiles on the market, fitting all popular trapezoidal sheet profiles – with or without intermediate insulation.

EJOT ATB-Plus has a base attachment that is fully adjustable and offers and multiple solar module options accommodating varying widths and heights. Installation is quick and clean – ATB-Plus comes with ready applied, adhesive EPDM to ensure quick installation and a weather-proof fit.

Mounting is directly onto the crown of the panel, across the profile - just wipe away excess oil and debris, align, and apply. Fixing is through prepunched holes, using EJOFAST® JF3 screws.

In conjunction with PV Kit, EJOT ATB-Plus provides a solar attachment solution that is both cost-effective, quick to install, and addresses any concerns of cold-bridging!



EJOFAST® thin sheet metal screw JF3-2-5.5xL-E16







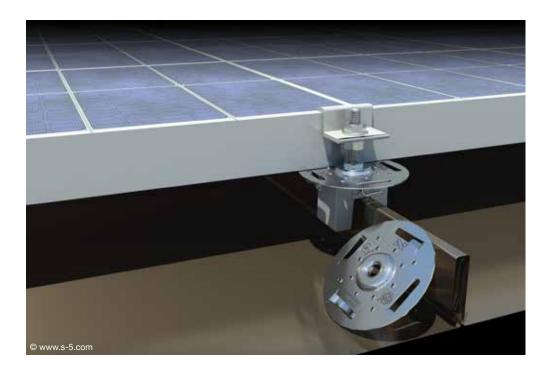




Properties

- Fully adjustable
- Fits all trapezoidal sheets
- Suits multiple solar modules
- Quick to install
- Mounts directly to crown
- Eliminates cold bridging







S-5! clamps for standing seam roofs

Attach anything to standing seam metal roofs without piercing the panel!

S-5! clamps attach to the panel seam by the tightening of two "round-nosed" stainless steel setscrews against the seam material. (This is usually done with an industrial grade screwgun.) The setscrews compress the seam material against the opposite wall of the clamp. They will "dimple" the seam material, but will not penetrate it. Threaded holes in the clamp (and stainless hardware provided) enable the easy attachment of various ancillary items to the clamps.



S-5 B Clamp mini

- S-5-B mini designed for copper standing seam roofs
- S-5 PV kit compatible
- ONLY to be used with the Stainless Steel PV Kit



S-5 E Clamp

- S-5-E designed especially for double-folded standing seam roofs
- S-5 Drive bit to be ordered separately



S-5 Z Clamp mini FL

- S-5-Z mini FL Flanged clamp designed for 'bulb' seam zip up type standing seam roofs
- S-5 PV kit compatible
- S-5 Drive bit to be ordered separately



S-5 PV Kit

• S-5-PV Kit for solar attachment to S-5 mini clamps



Please do not hesitate to contact us!

The result of our close connections to application experts and developers, are the best possible fastening solutions for the building envelope of today and of tomorrow. Use this advantage for your building project! Experience our proven know-how for trouble-free and fast installations.

Hotline 262-612-3550

Some of our service examples:

- Personal customer service representative also at the construction site
- Anchor pull-out tests at the construction site
- Expert advise over the phone
- Support for bidding
- Fast and reliable delivery service
- In-house training

Your advantages:

- Application oriented solutions you can rely on
- Our proven know-how
- Planning safety

EJOT is a member of several professional associations.



Fachverband Baustoffe und Bauteile für vorgehängte hinterlüftete Fassaden e.V. www.fvhf.de



Deutscher Schraubenverband e.V. www.schraubenverband.de



Fachverband Dübel- und Befestigungstechnik www.bv-bausysteme.de



Fachverband Werkzeugindustrie e.V. www.werkzeug.org



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im Metallleichtbau e.V. www ifhs de



Fachverband Wärmedämm-Verbundsysteme e.V. www.heizkosten-einsparen.de



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With over **30 years of experience**, development and **technical expertise**, EJOT understands the requirements for a fastener and its application on building envelopes. Our knowledge provides the base and source of our products and EJOT's solutions offer our customers real benefits.

The quality of our products **surpasses planning laws and legal requirements**. Our aim is to ensure quick and easy assembly.

EJOT USA's and supply base is complemented with **EJOT's global sales and service network** as well as project support teams **ready to help our customers at any time**, nationally and internationally.











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