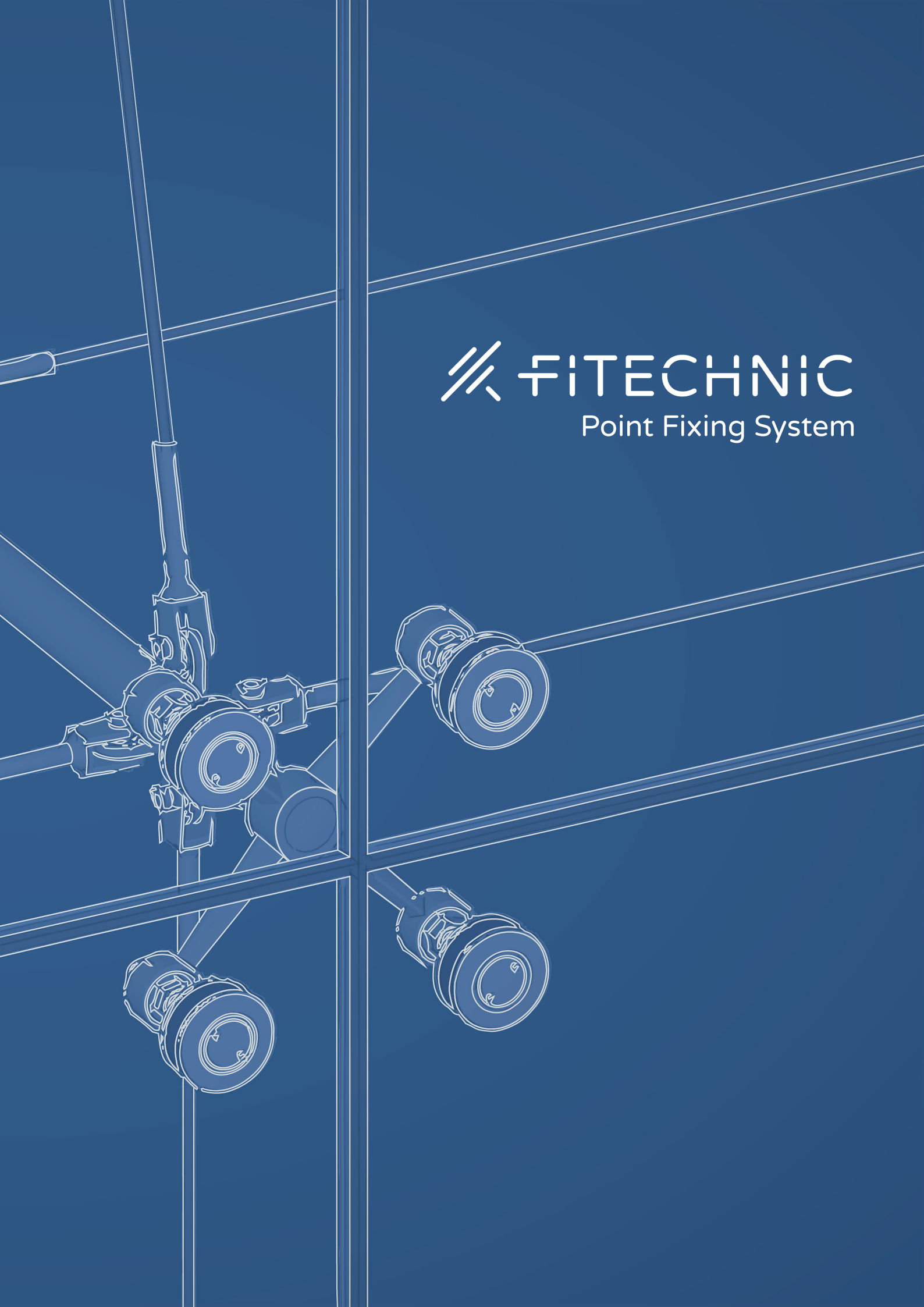


The background of the entire page is a technical line drawing in white on a dark blue background. It depicts a complex mechanical assembly, likely a point-fixing system for a glass or metal structure. The drawing shows various components like bolts, nuts, washers, and structural beams intersecting at different angles. The FITECHNIC logo is positioned in the upper right quadrant of the image.

FITECHNIC

Point Fixing System

O que fazemos?

what we do?

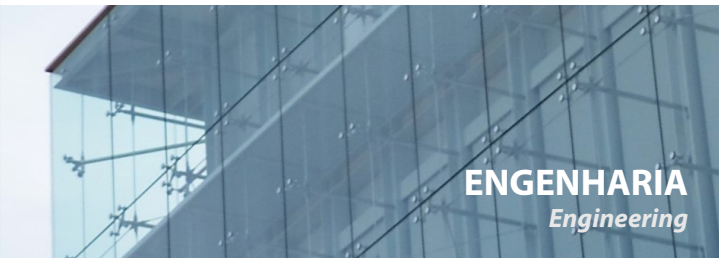


ARQUITECTURA

Architecture

Desenvolvimento de soluções técnicas em estreita colaboração com arquitectos e projectistas, para a definição de materiais, prescrição de sistemas e suporte técnico incluindo desenhos e cálculos técnicos.

Development of technical solutions in close collaboration with architects and designers, for the definition of materials, systems prescriptions and technical support including drawings and technical calculations.



ENGENHARIA

Engineering

Desenvolvimento de sistemas estruturais de vidro. Consultoria de projeto e entrega de projeto de engenharia. Cálculo de vidro e estruturas metálicas.

Development of structural glass systems. Consulting of design and delivery of engineering project. Calculation of glass and metal structures.



PRODUÇÃO

Production

Definição e coordenação do processo de todos os elementos compósitos dos sistemas agrafado FITECHNIC, com controlo de qualidade e processos de certificação dos mesmos. Desenho, concepção e produção de peças especiais de acordo com cada projeto.

Definition and coordination of the process of all composite elements of structural glazing FITECHNIC systems, with quality control and certification processes. Design, conception and production of special pieces according to each project.



CONSTRUÇÃO

Construction

Gestão de toda o processo de fornecimento e logística. Supervisão de instalação com a coordenação e suporte de todo o processo de montagem em obra. Serviços de manutenção sob consulta.

Management of the entire supply and logistics process. Supervision of the installation with the coordination and support of all assembly process on site. Maintenance services on request.

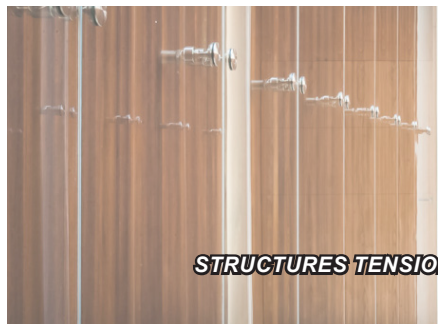
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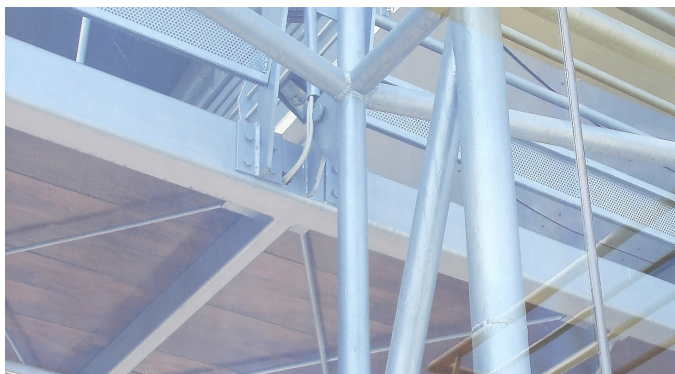
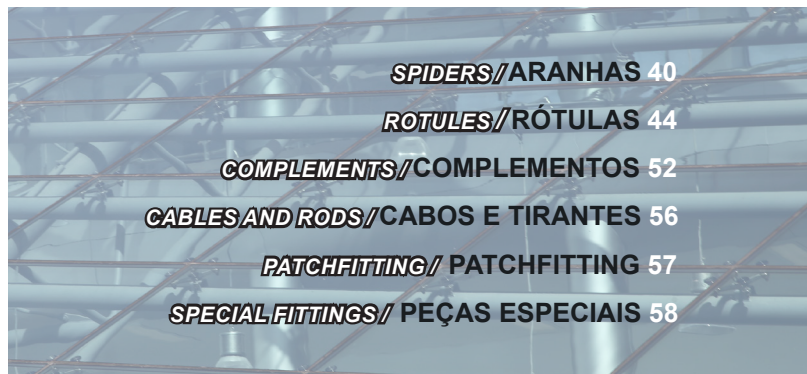
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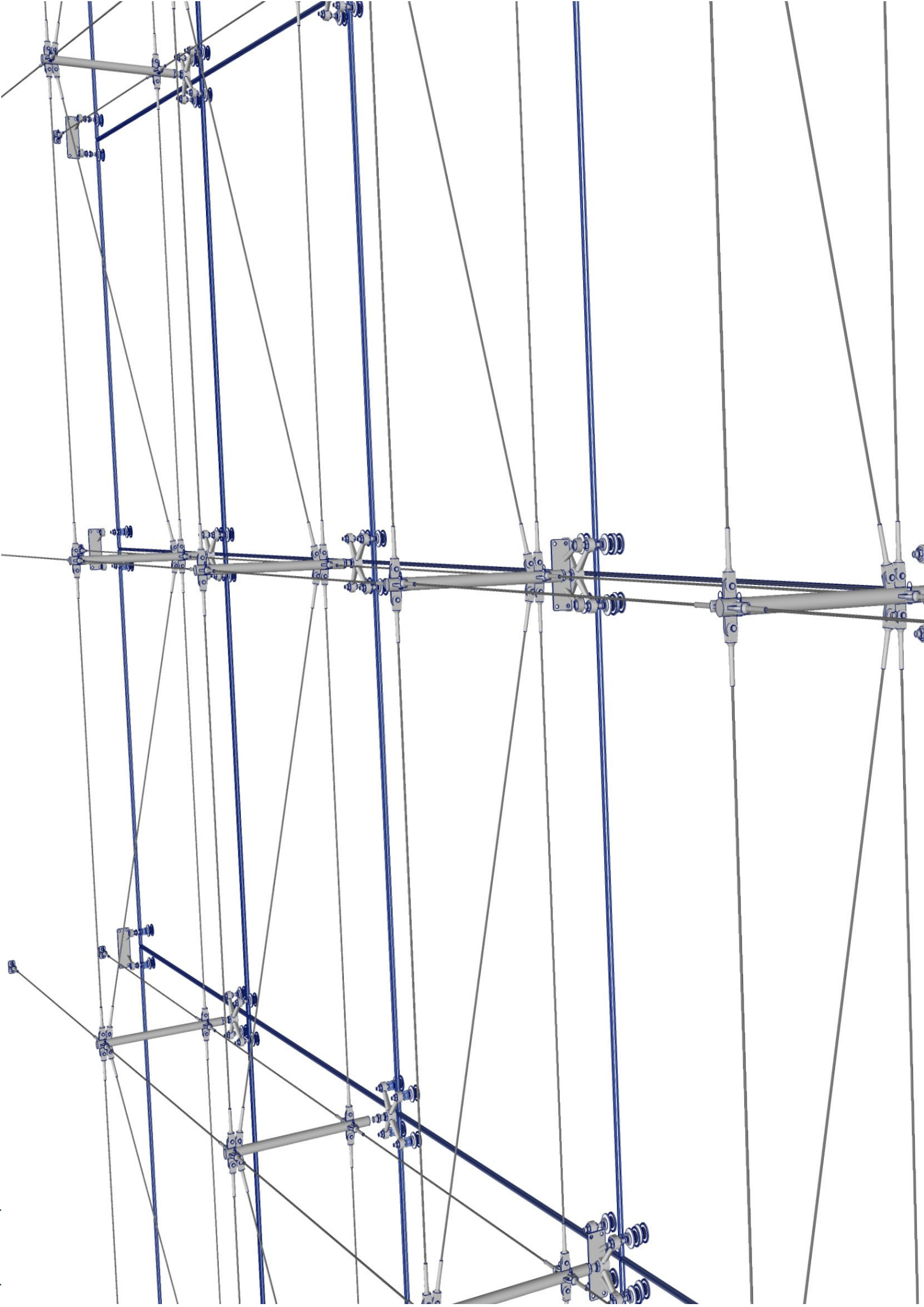
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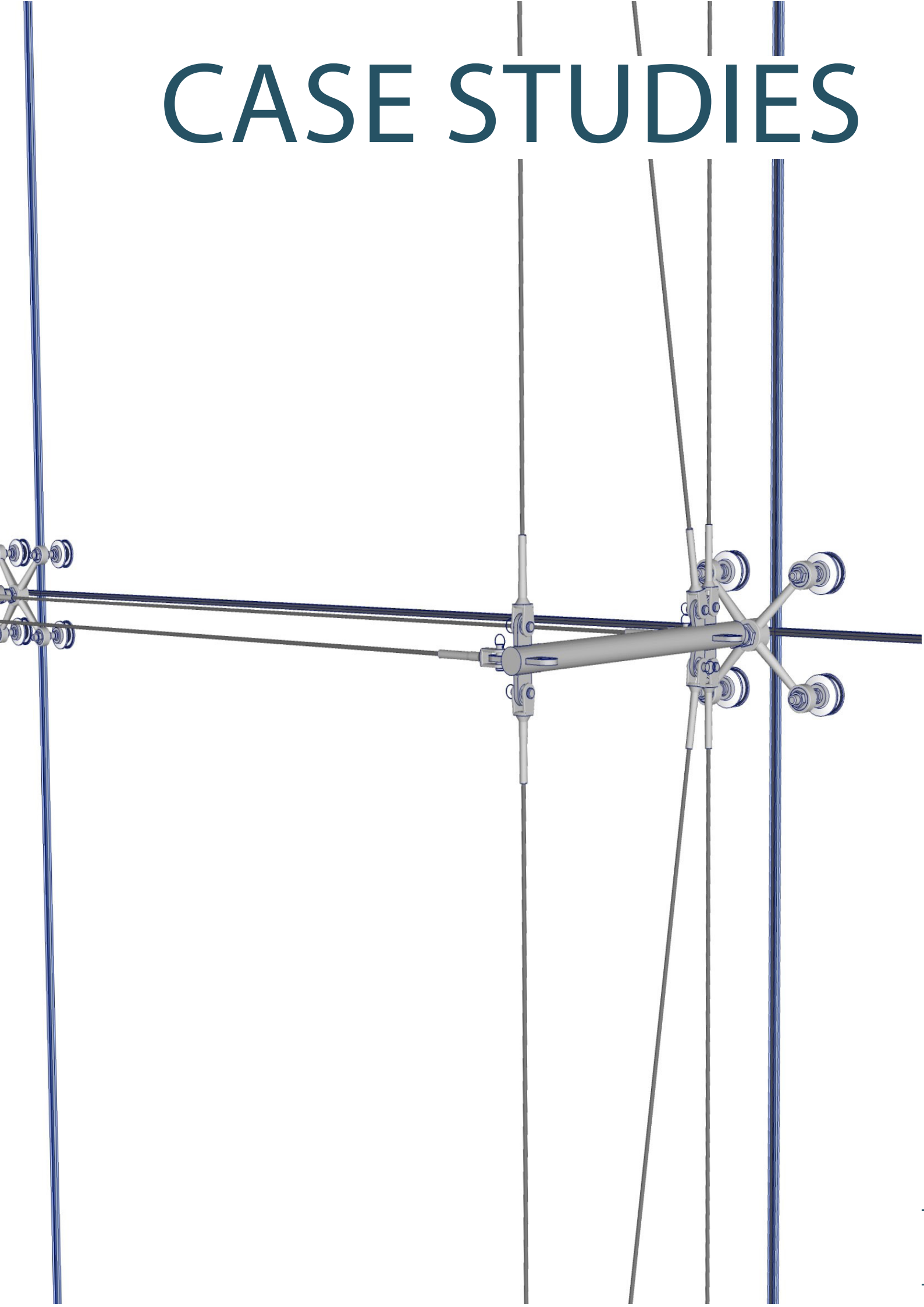
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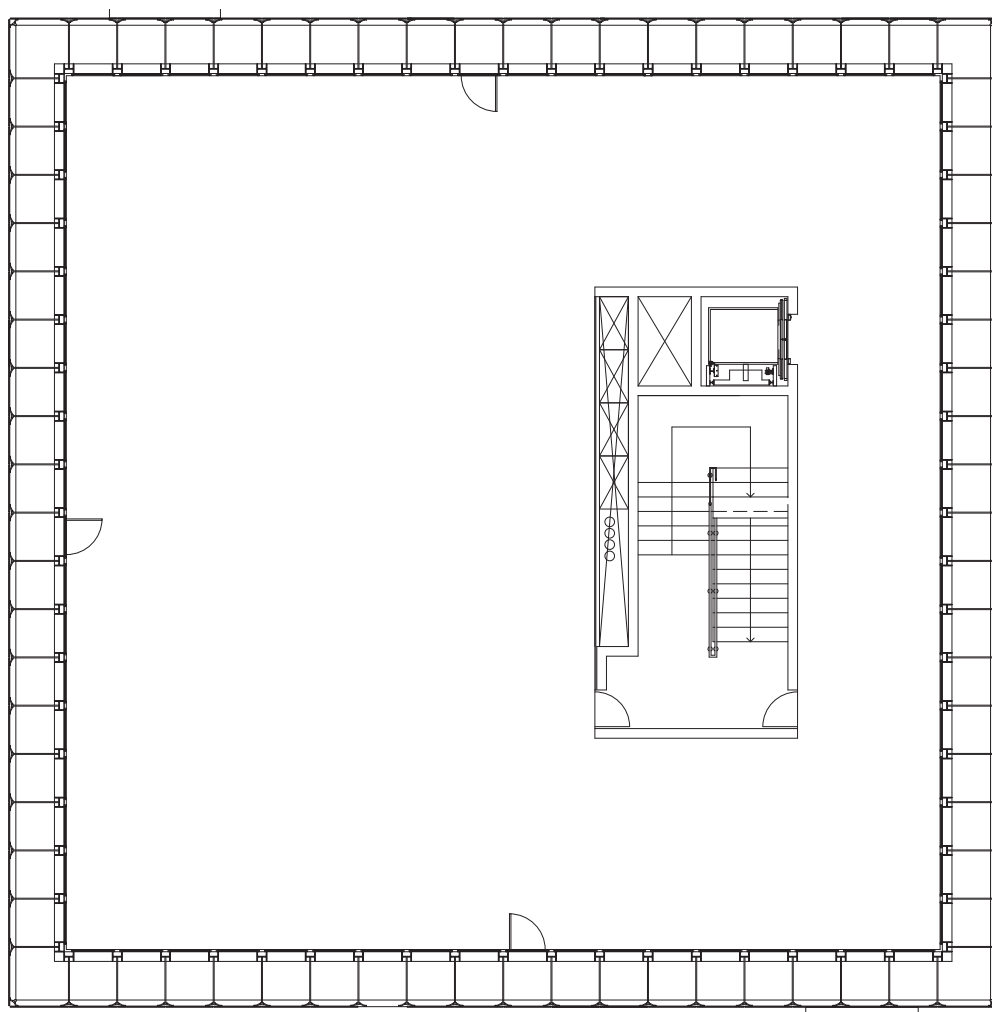
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CASE STUDIES

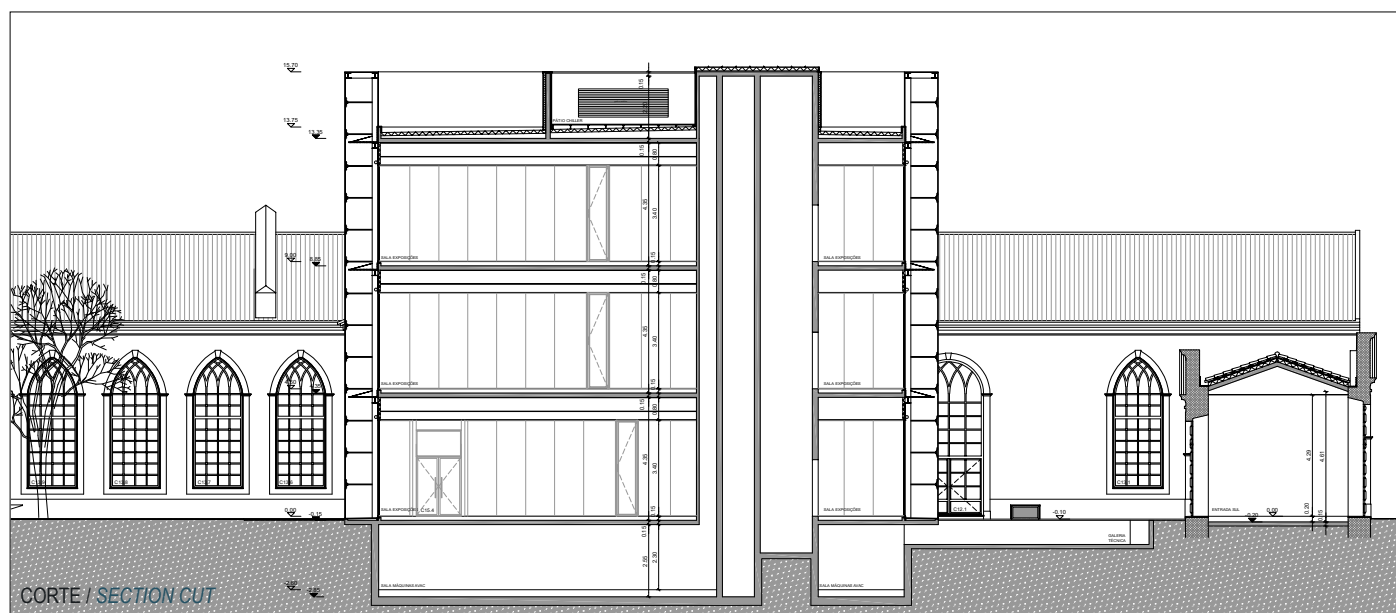




PLANTA / PLANT

Projecto de reabilitação da antiga fábrica de resinação da Marinha Grande que contou com a edificação de um novo museu, um cubo em vidro. Esta fachada foi realizada com o Sistema agrafado FITECHNIC .

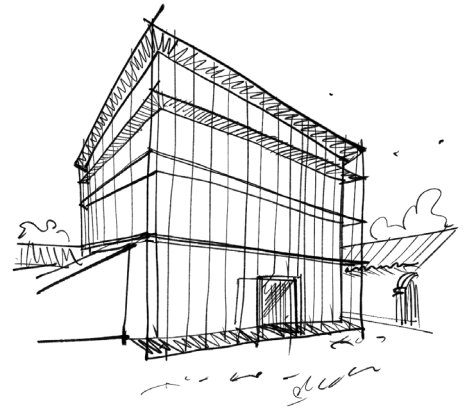
Rehabilitation project of the old resin factory of Marinha Grande, which included the construction of a new museum, a cube in glass. The glass façade was performed with the FITECHNIC glass fitting system.

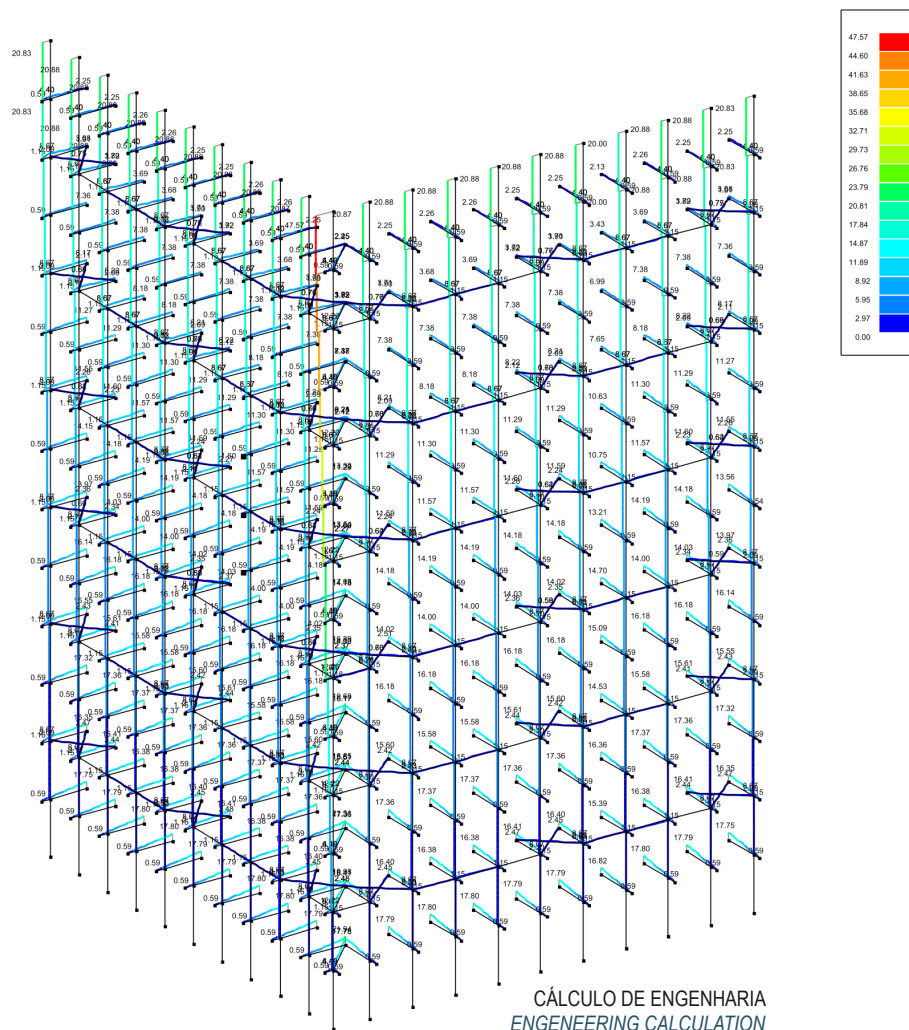
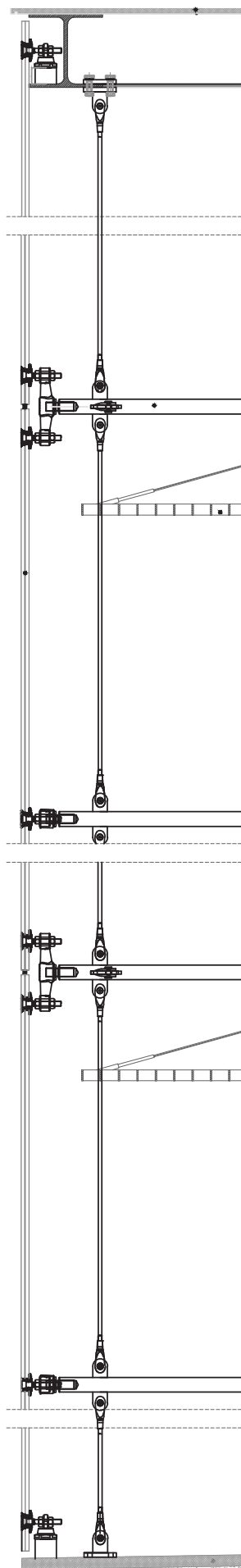


CORTE / SECTION CUT

MUSEU NAC

Marinha Grande, Portugal





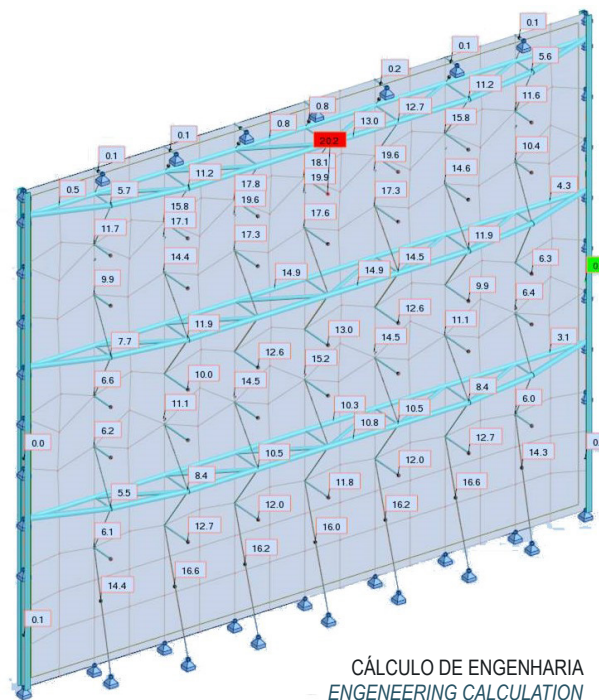
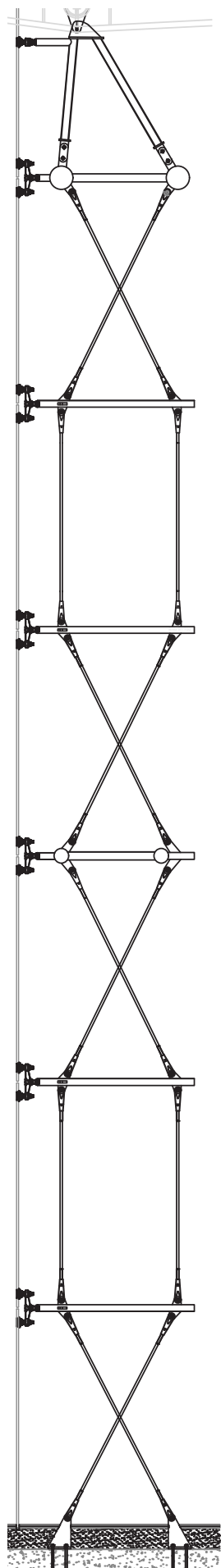
Concebeu-se um sistema de fachada ventilada que tem um afastamento considerável relativamente à primeira “pele” do edifício, estando suportada na estrutura envolvente do mesmo por meio de bielas e varões tensionados e produção de peças especiais pela FITECHNIC.

A ventilated façade system was developed with a considerable distance relative to the first “skin” of the building, being supported in the surrounding structure of the same building by rods and tensioned rods and produced special pieces this system were designed by FITECHNIC.

MUSEU NAC

Marinha Grande, Portugal





O estudo de engenharia das fachadas foi realizado pelo departamento técnico da PENTAGONAL-FITECHNIC para criar um sistema de estrutura “leve”.

O sistema utilizado FIX-ROD em aço inox 316 é uma estrutura tensionada de bielas e varões que através das aranhas FIX-170 com respectivas rótulas RE1221-M14 .

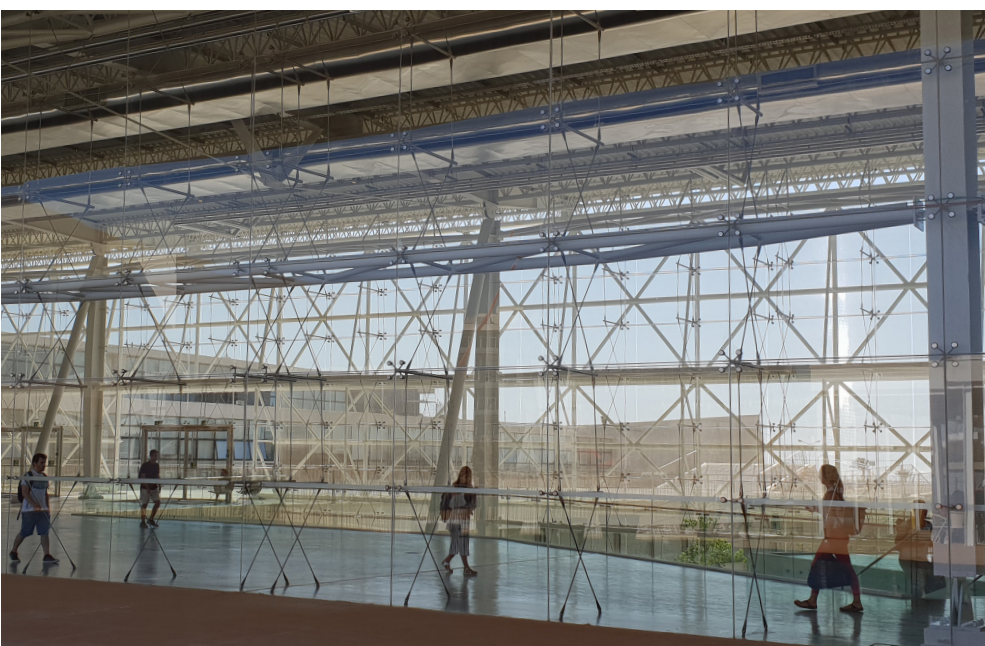
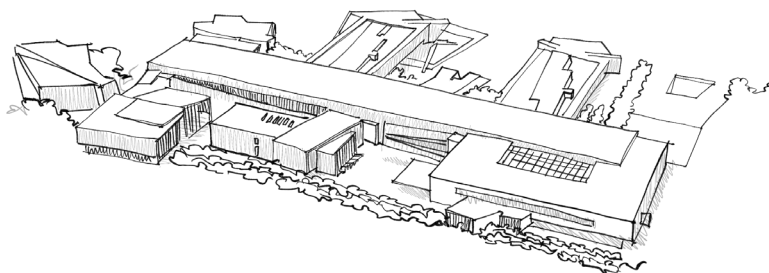
The development of façade engineering was carried out by PENTAGONAL-FITECHNIC technical department, to create a system with “lightweight” structure.

The system used FIX-ROD in 316 stainless steel is a tensioned structure of rods that through the spiders FIX-170 with respective articulated bolt RE1221-M14.



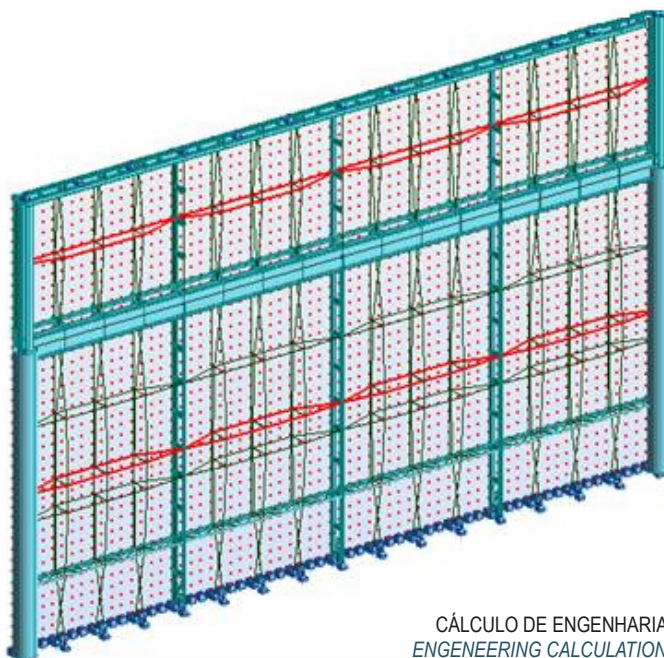
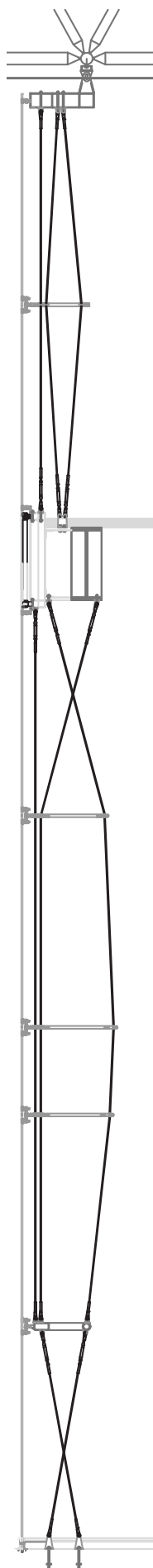
BUSINESS SCHOOL OF ECONOMICS

Carcavelos, Portugal



A Universidade NOVA Business School of Economics em Carcavelos distingue-se como uma das maiores obras de um campos universitário a qual tem cerca de 4.000m² de fachada em vidro agrafado Foi projectada pelos arquitectos Vitor Carvalho e o atelier Tetractys.

The University Business School of Economics in Carcavelos stands out as one of the greatest works of a university campus that has about 4.000m² of facade in structural glazing It was designed by the architects Vitor Carvalho and the Tetractys studio.



CÁLCULO DE ENGENHARIA
ENGINEERING CALCULATION

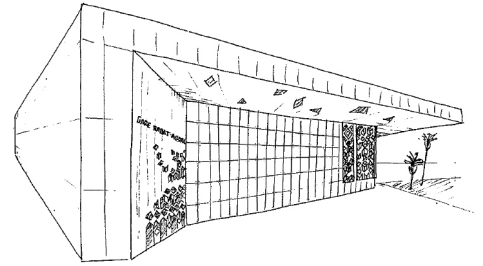
O sistema tem ensaios realizados de acordo com o Avis Technique em organismo notificado pela EOTA. Foram adicionalmente realizados ensaios de segurança de carga de vento e impacto assim como ensaios de estanquicidade de ar e água segundo a norma das fachadas leves EN13830.

The system has tests performed according to the Avis Technique in an organization notified by EOTA and also carried out wind load and impact safety tests, as well as air and water tightness tests according to the standard of the light façades EN13830.



GARE LGV RABAT

Agdal, Marrocos

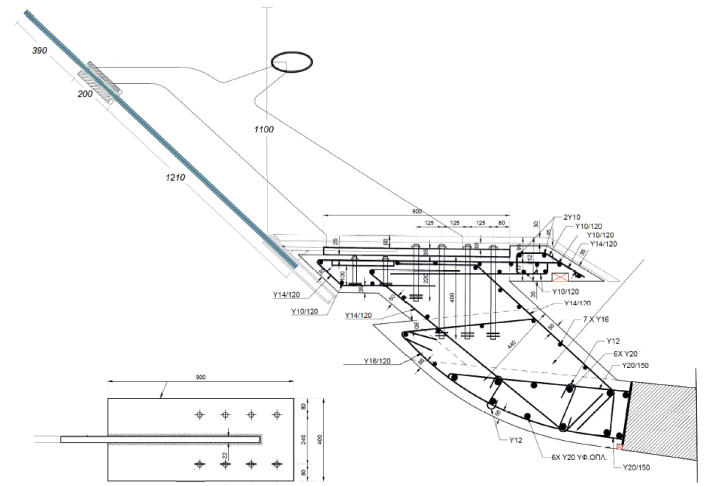


A nova estação de comboio Rabat-Agdal de alta velocidade (TGV) em Rabat-Marrocos é um projecto do arquitecto Youssef El Melehi com cerca de 16000m².

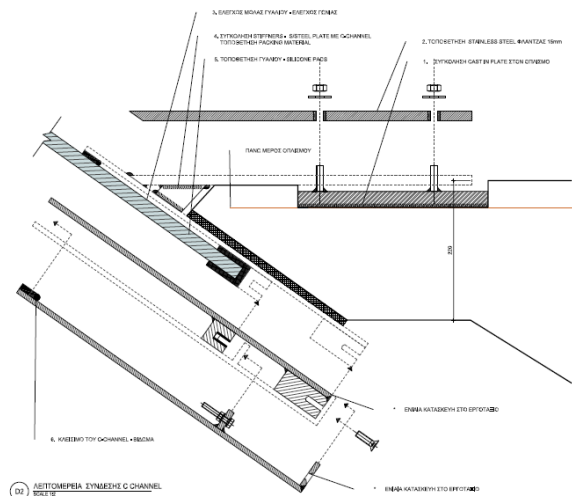
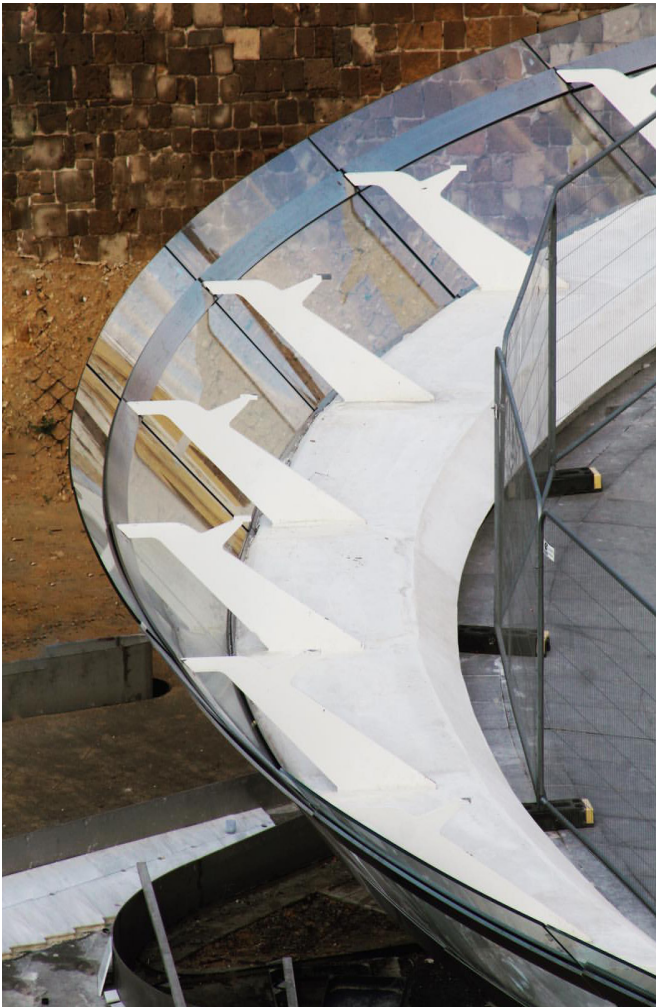
As fachadas das entradas principais e da esplanada têm uma área de cerca de 800m². O sistema FI-CAB com aranhas FIX-170 e rótulas articuladas foi usado de forma a cumprir com a pretensão de total transparência da fachada.

The new Rabat-Agdal high-speed train station (TGV) in Rabat-Morocco is a project of the architect Youssef El Melehi with about 16000m². The façades of the main entrances and the esplanade have an area of about 800m².

The FI-CAB system with FIX-170 spiders and articulated bolts was used to comply with the main purpose of total transparency.



PORMENOR / SECTION DETAIL



PORMENOR / SECTION DETAIL

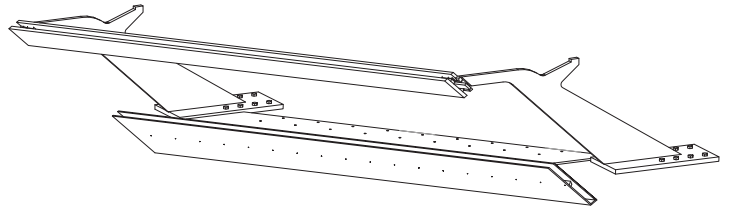
Os elementos estruturais de vidro e modelagem de software foram especificamente desenvolvidos, simulados e testados para garantir não apenas o seu desempenho estrutural, mas também enquadrar-se na estética estrutural, de acordo com o design proeminente e futurista da Zaha Hadid Architecture.

The glass structural elements and software modeling have been specifically developed, simulated and tested to ensure not only their structural performance but also to fit the structural aesthetics, according to the prominent and futuristic design of Zaha Hadid Architecture.



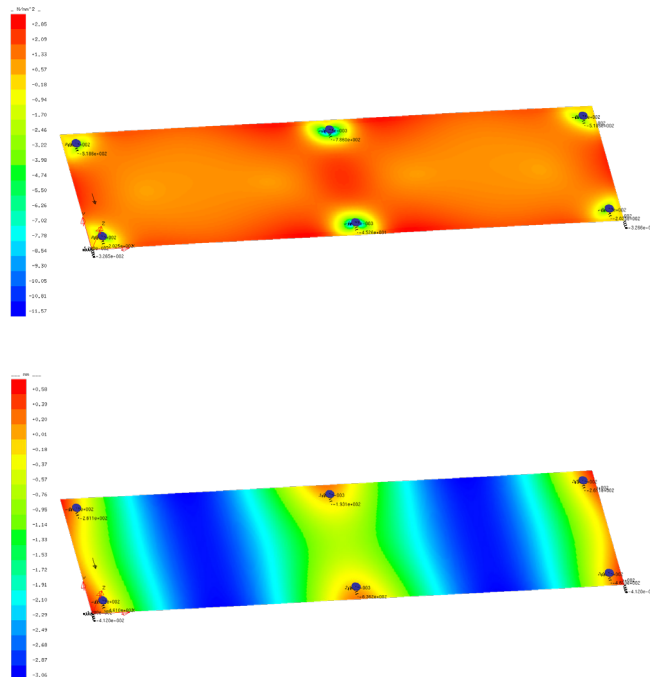
ELEFThERIA SQUARE

Nicósia, Chipre



Na Praça Eleftherias Nicosia, Chipre, a PENTAGONAL desenvolveu um sistema especial de balaustrada FITECHNIC, este foi desenvolvido através de modelagem 3D e com peças personalizadas e produzidas à medida das exigências do projecto. Esta balaustrada de vidro tem uma inclinação de 42,5° ao longo do seu comprimento com uma geometria curva, não regular.

At Eleftherias Square in Nicosia, Cyprus, PENTAGONAL developed a special FITECHNIC balustrade system, which was developed through 3D modeling and with custom pieces and produced to the requirements of the project. This glass balustrade has a slope of 42.5 ° along its length with a curved, non-regular geometry.



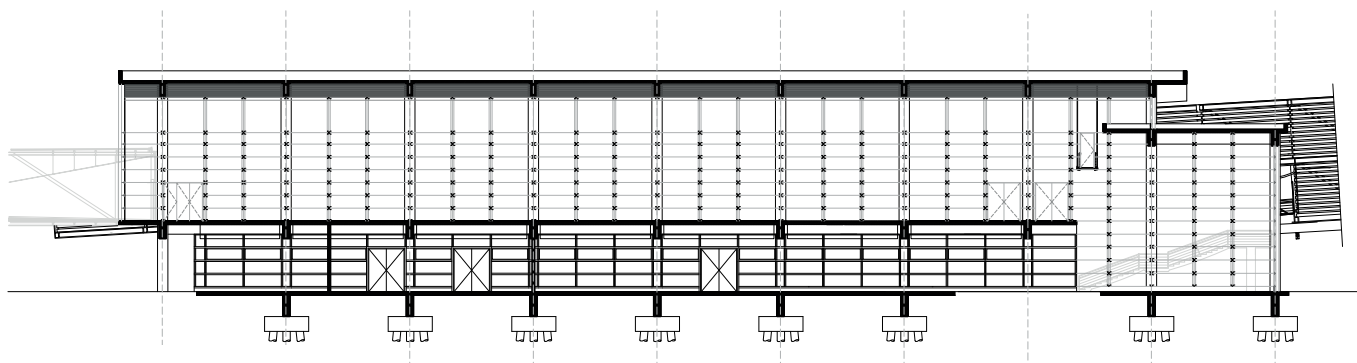
CÁLCULO DE VIDRO
GLASS CALCULATION

O estudo das fachadas da expansão do novo edifício #Seathefuture foram realizadas pelo departamento técnico PENTAGONAL-FITECHNIC de forma a realizar a fachada com a vista mais limpa possível para a área circundante.

The engineering study of the facades of the expansion of the new #Seathefuture building was carried out by the technical department PENTAGONAL-FITECHNIC in order to make the facade with the clearest view possible for the surrounding area.

O sistema utilizado FIX-ROD de bielas e varões em aço inox 316 fixas à estrutura através das aranhas FIX-204 modelo 1 com respectivas rótulas RT1225-M14 suporta o vidro laminado temperado, dimensionado para resistir às cargas de vento e de utilização associadas ao projecto.

The FIX-ROD System of 316 stainless steel rods are fixed to the structure through the spiders FIX-204 model 1 with respective articulated rotules RT1225-M14 that supports the tempered laminated glass, dimensioned to resist wind loads and usage associated with the project.



ALÇADO / SIDE ELEVATION

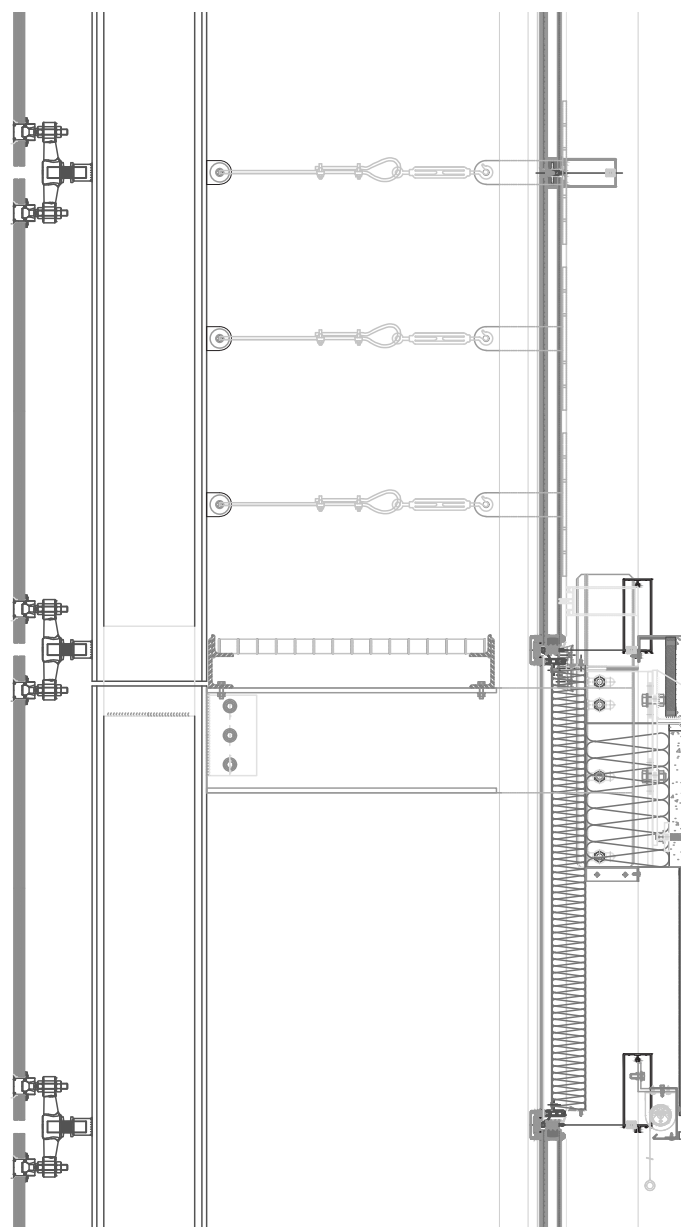
OCEANÁRIO

Lisboa, Portugal



Oceanário de Lisboa é um aquário público e instituição de pesquisa sobre Biologia marinha e Oceanografia e é o segundo maior oceanário da Península Ibérica. O design conceitual de arquitetura e de exibição são do arquitecto norte-americano Peter Chermayeff.

Lisbon Oceanarium is a public aquarium and research institution on Marine Biology and Oceanography and is the second largest oceanarium in the Iberian Peninsula. The conceptual design of architecture and exhibition are by the American architect Peter Chermayeff.



PORMENOR / SECTION DETAIL

O projecto de arquitectura do atelier L35 criou um edifício com dupla pele na fachada ventilada em vidro criando a protecção térmica e acústica .

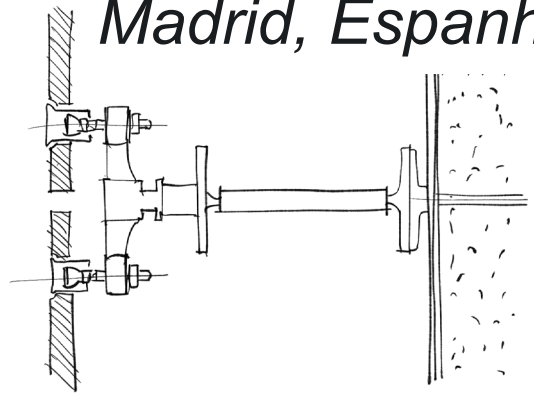
A equipa PENTAGONAL-FITECHNIC calculou e dimensionou o vidro laminado temperado 10+12mm com 4 furos para resistir às acções de utilização e do vento, com sistema de aranhas FIX-170 modelo 1 com respectivas rótulas RT1221-M14 .

The L35 atelier's architectural project created a building with double skin on the ventilated facade in glass creating the thermal and acoustic protection.

The PENTAGONAL-FITECHNIC team calculated and sized the Tempered Laminated 10 + 12mm glass with 4 holes to withstand the actions of use and the wind, the spiders system FIX-170 model 1 with respective articulated rotules RT1221 -M14.

AXA PRADO BUSINESS PARK

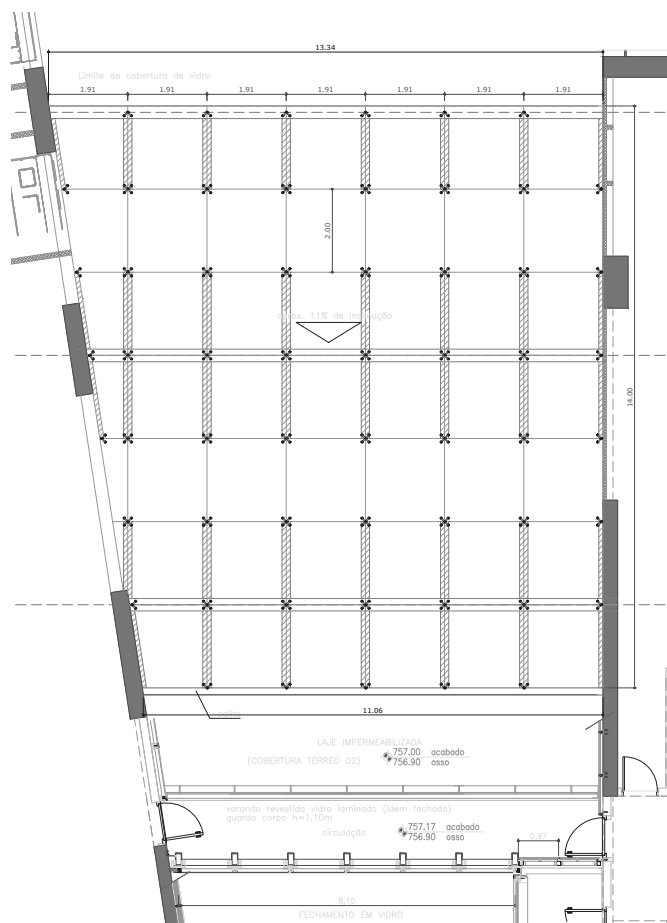
Madrid, Espanha



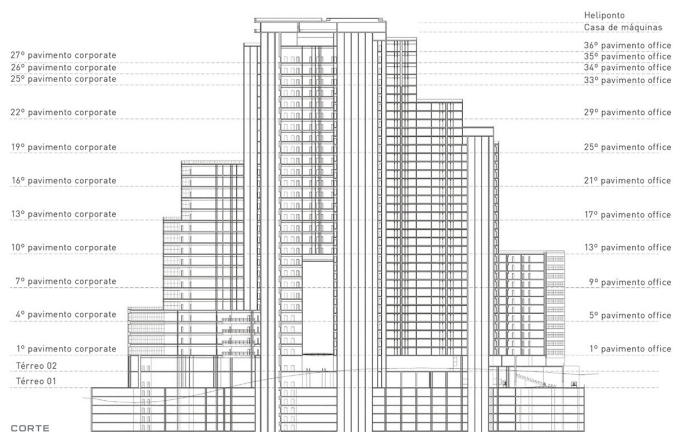
O projecto de reabilitação total de um dos edifícios industriais históricos Ramirez del Prado do princípio do século XX chamado Ensanche Sur-Manzanares em Madrid, Espanha tinha o objectivo de adaptar-se às necessidades dos espaços de trabalho actuais, mantendo e reforçando as qualidade intrínsecas das edificações históricas do edifício.

The project of total rehabilitation of one of the industrial buildings Ramirez del Prado of the beginning of the 20th century called Ensanche Sur-Manzanares in Madrid, Spain had the objective of adapting them to the needs of the present workspaces but maintaining and reinforcing the intrinsic quality of historic buildings.





PLANTA / PLANT



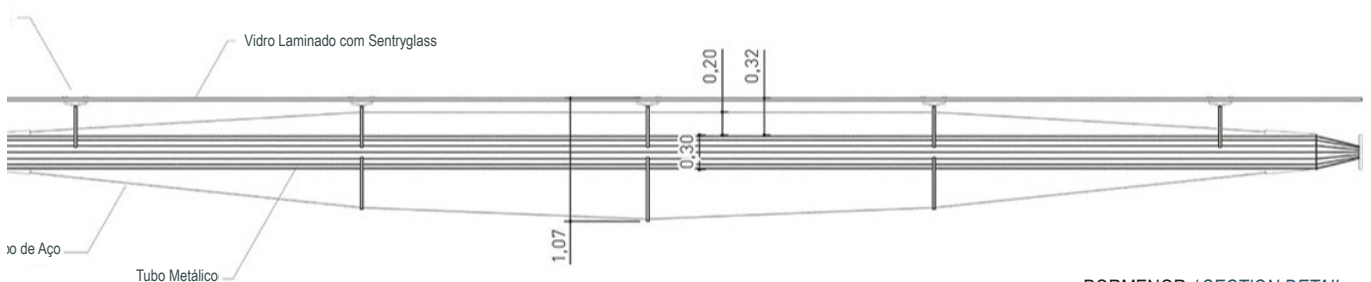
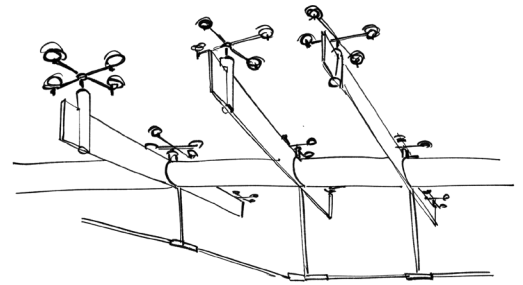
ALÇADO / SIDE ELEVATION

Para protecção do lobby existente entre a receção do complexo e a área de comunicação do shopping, foi projetado uma cobertura de vidro com máxima transparência e leveza visual. A Pentagonal foi responsável pelo Projecto e cálculo de engenharia dos painéis de vidros, estes eram suspensos com o apoio de estruturas rígidas e estruturas tensionadas e fixos com Sistema Agrafado Fitechnic®.

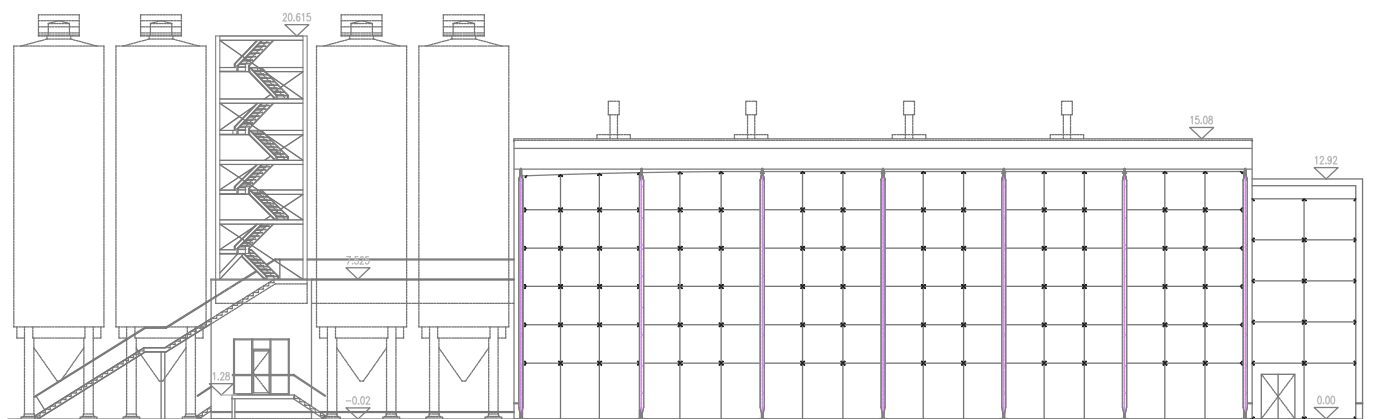
For protection of the lobby between the reception of the complex and the area of communication between the mall, a glass cover was designed with maximum transparency and visual lightness. Pentagonal was responsible for the design and engineering calculation of the glass panels, these were suspended with the support of rigid structures and tensioned and fixed with Fitechnic® Glass fixing System.

ALPHAVILLE

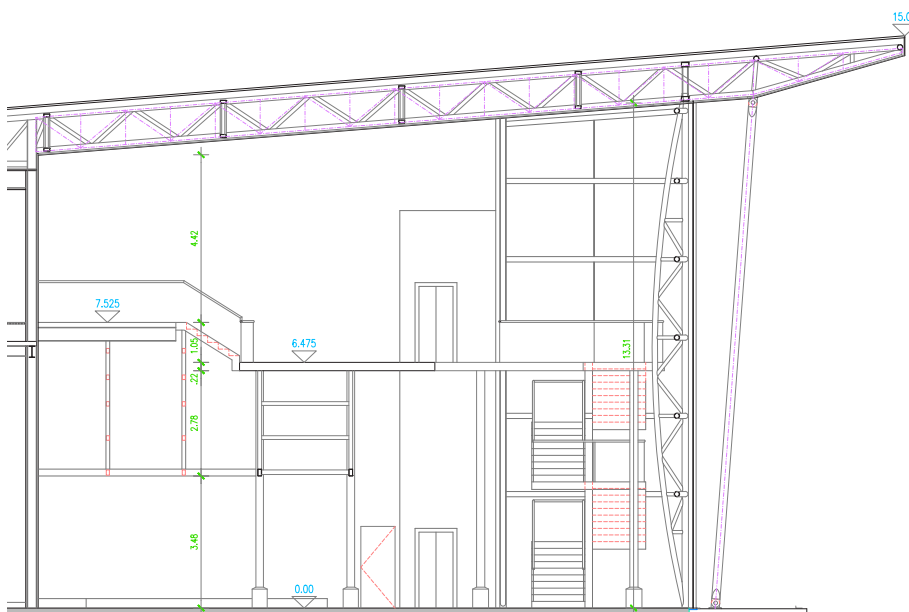
São Paulo, Brasil



PORMENOR / SECTION DETAIL



ALÇADO / SIDE ELEVATION



CORTE / VERTICAL SECTION

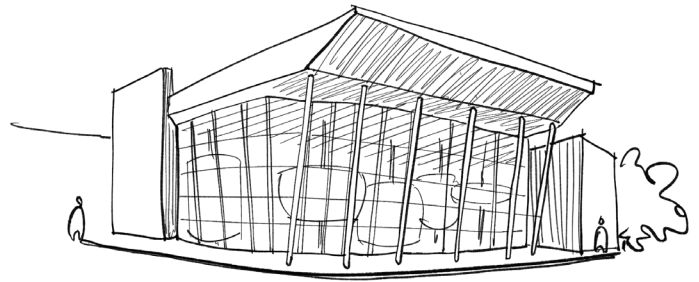
O projeto conta com uma fachada em vidro agrafado FITECHNIC, usando o modelo 1 que permite a regulação de distâncias através de um conector ajustável.

The project has a FITECHNIC Spider glass façade, using model 1 that allows the adjustment of distances through an adjustable connector.



REFRIANGO

Luanda, Angola



A fábrica de cerveja da Refriango é um dos projetos realizados pela FITECHNIC em Angola, da autoria da Tall & Taller arquitectos e inaugurado em 2016. Este projecto destaca-se pela sua incrível transparência e pela sua comunicação com o exterior, através da sua fachada, apresentando assim o processo de produção deste complexo industrial.

The Refriango brewery is one of the projects carried out by the FITECHNIC in Angola, authored by Tall & Taller architects and opened in 2016.

This project stands out for its incredible transparency and its communication with the outside, through its façade, thus presenting the process of production of this industrial complex.

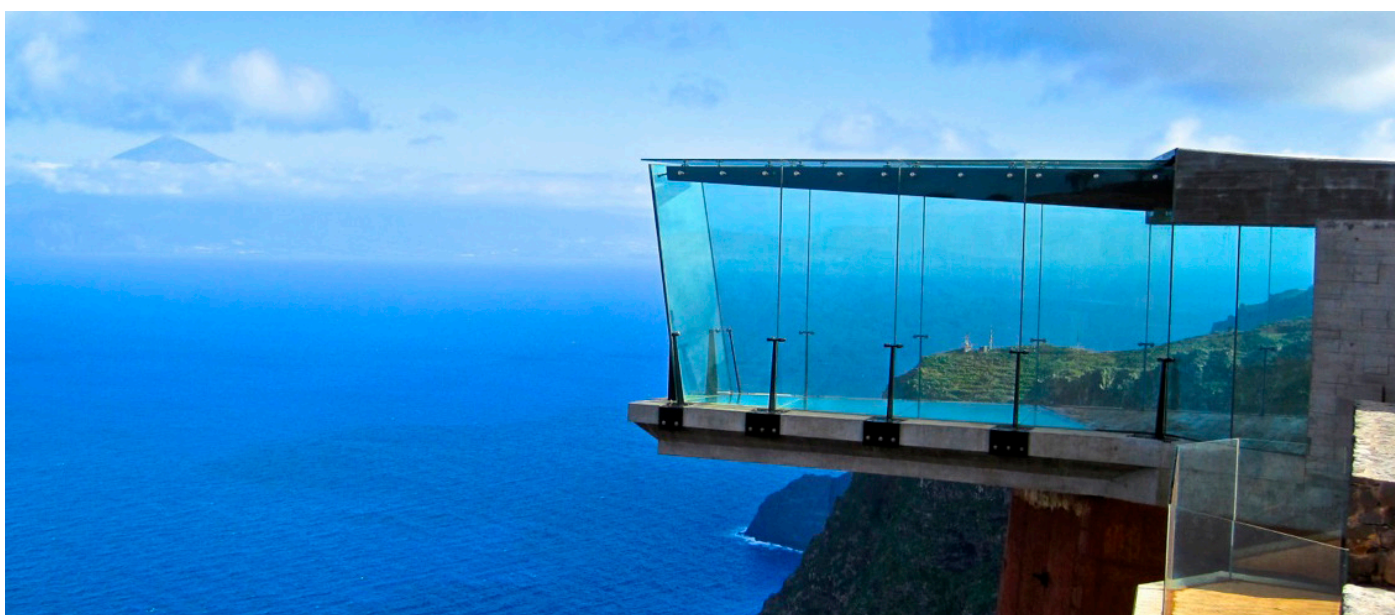


Mirador de Abrante é um ícone de referência turística para a ilha Santa Cruz de Tenerife. A localização no topo da serra do Abrante, apresentou-se como um verdadeiro desafio para a execução da obra.

O sistema de fixação da fachada e balaustrada foi desenvolvido em conjunto com a nossa equipa de engenharia, resultando no desenvolvimento de peças especiais à medida do projecto.

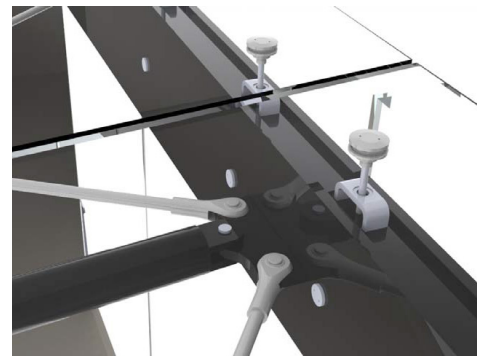
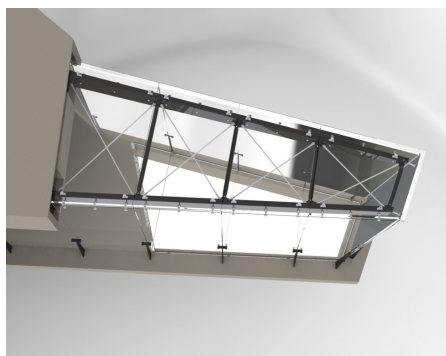
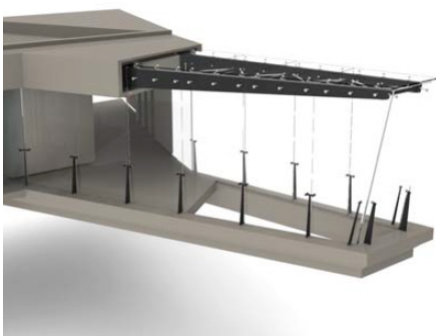
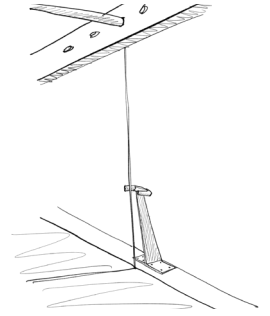
The Abrante gazebo is an icon for tourist reference for the island Santa Cruz de Tenerife. Its location at the top of the Sierra of Abrante, presented as a real challenge for the execution of the work.

The facade and balustrade fixation system was developed jointly with our engineering team, resulting in the development of special pieces to fit the project.



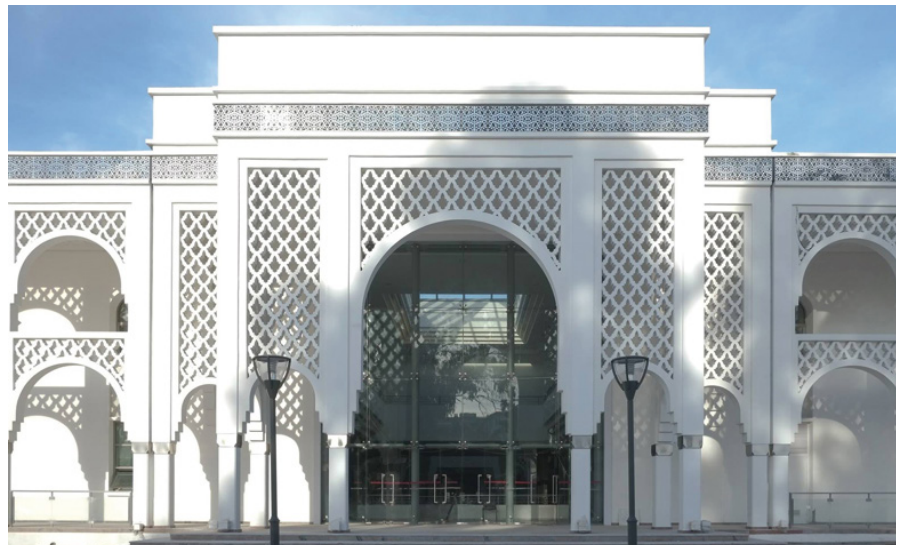
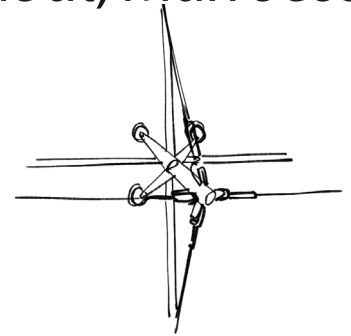
MIRADOR ABRANTE

La Gomera, Ilhas Canárias



MUSEU MOHAMED VI

Rabat, Marrocos

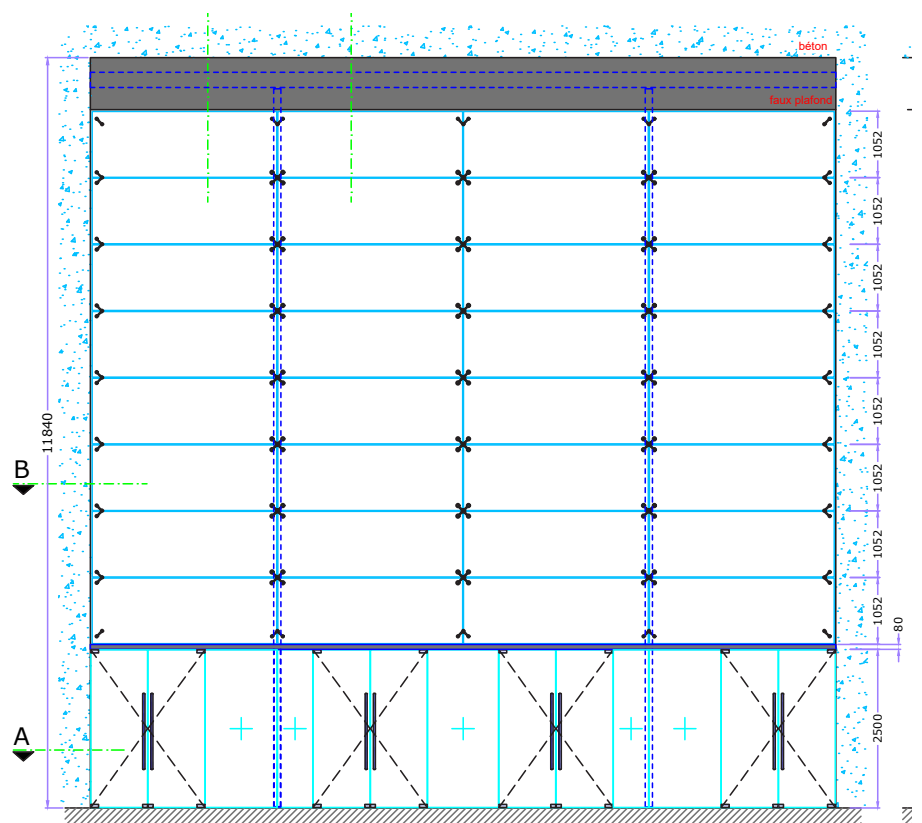


Museu de Arte Moderna e Arte Contemporânea Mohammed VI é um edifício moderno, com muita luz natural e espaçosas salas de exposição remodeláveis.

A fachada principal foi desenvolvida e estudada pela nossa equipa de engenharia, com estruturas tensionada e sistema agrafado Fitechnic® FIX-ROD.

Museum of Modern Art and Contemporary Art Mohammed VI is a modern building with plenty of natural light and spacious exhibition halls.

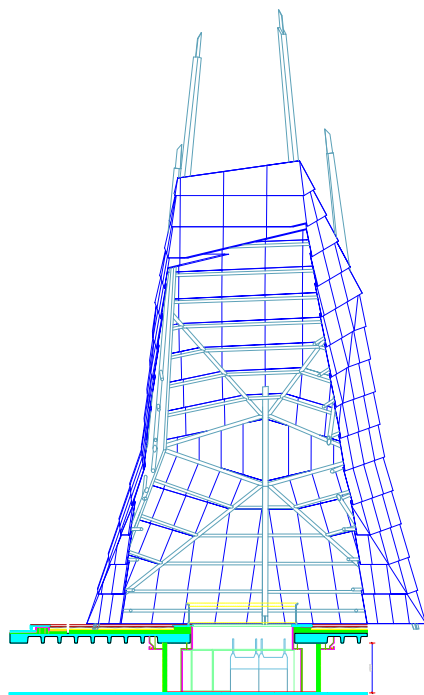
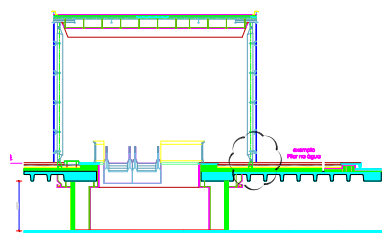
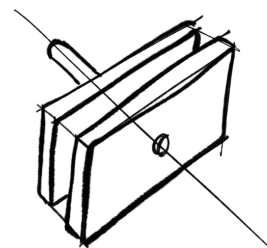
The main façade was developed and studied by our engineering team, with tensioned structures and Fitechnic® glass fixing system FIX-ROD.



ALÇADO / SIDE ELEVATION

ALEGRO SHOPPING

Setúbal, Portugal

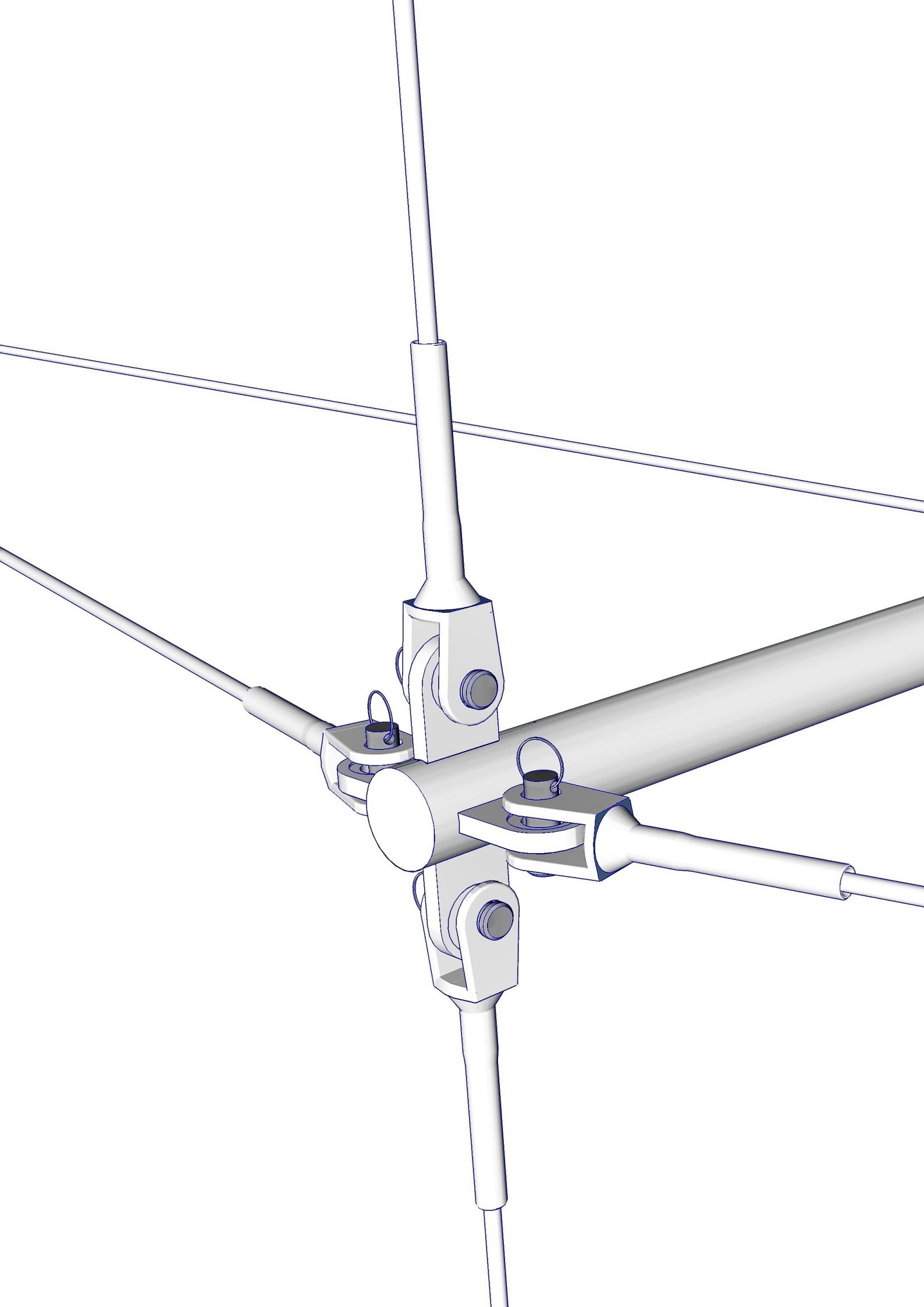


O Centro Comercial Alegro em Setúbal realizado em 2014 foi um projecto de referência para a FITECHNIC: foram desenvolvidas varias soluções técnicas para diferentes aplicações com vidro, todas inseridas num projeto de elevada exigência técnica. O projeto é da autoria dos Sua Kay Arquitectos.

Destaca-se a execução da Torre de entrada, onde o foi utilizado o sistema agrafado FITECHNIC para o revestimento em vidro.

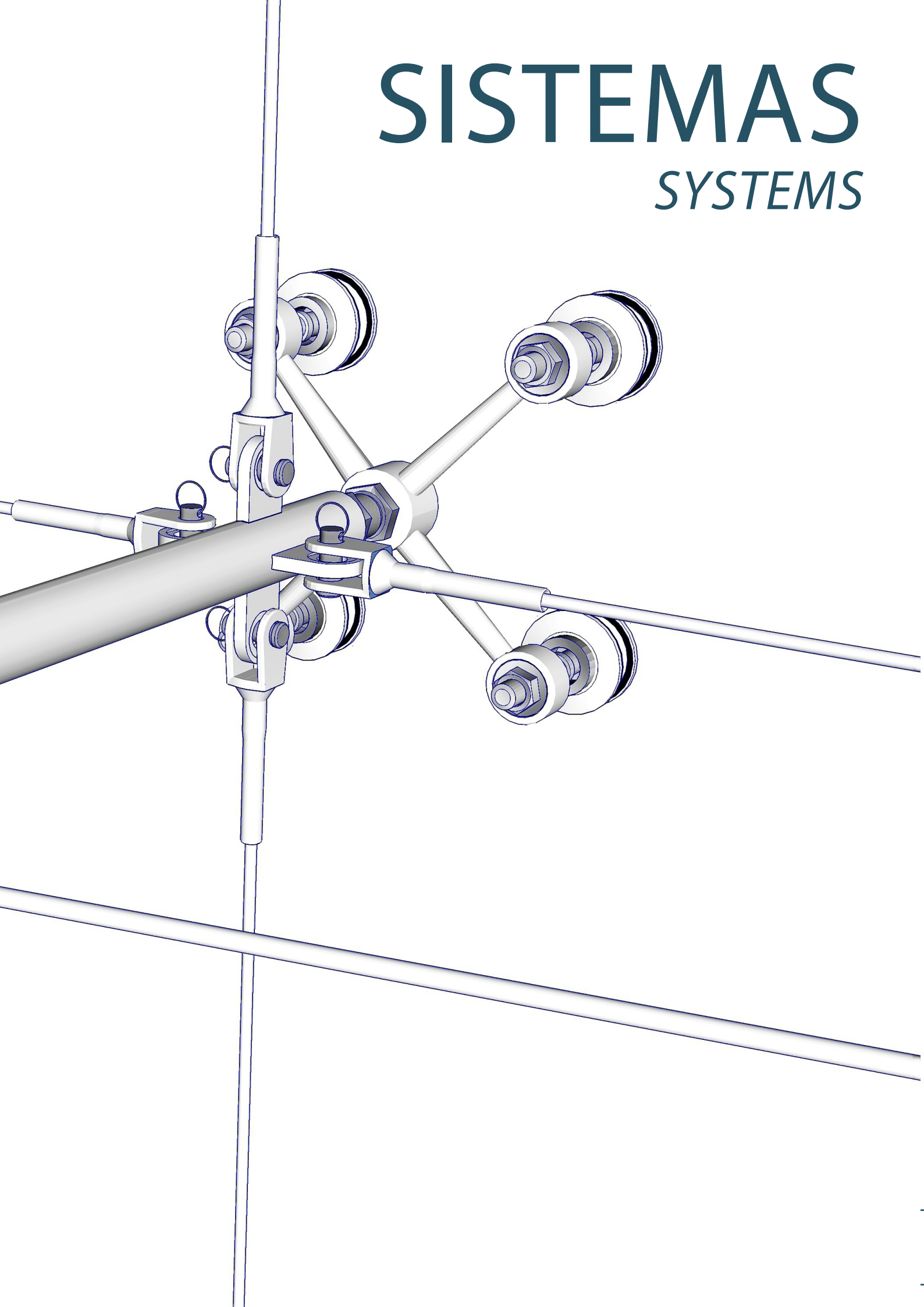
The Alegro Shopping Center in Setúbal was carried out in 2014 and is a reference project for FITECHNIC: several technical solutions for different applications with glass, all inserted in a project of high technical requirements. The project is authored by Sua Kay Architects.

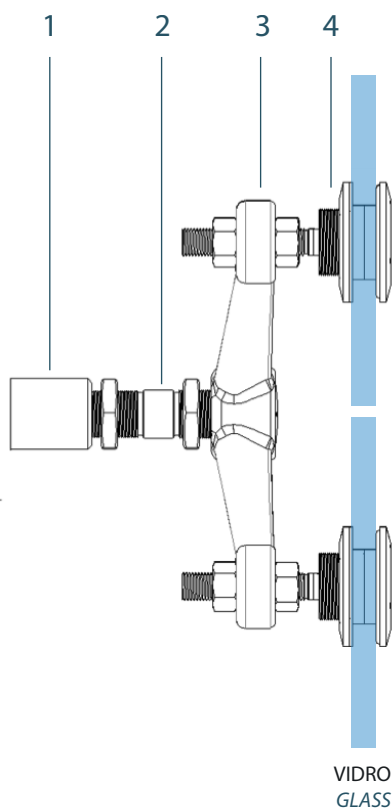
The main Tower stands out with different glass coatings supported with FITECHNIC system.



SISTEMAS

SYSTEMS





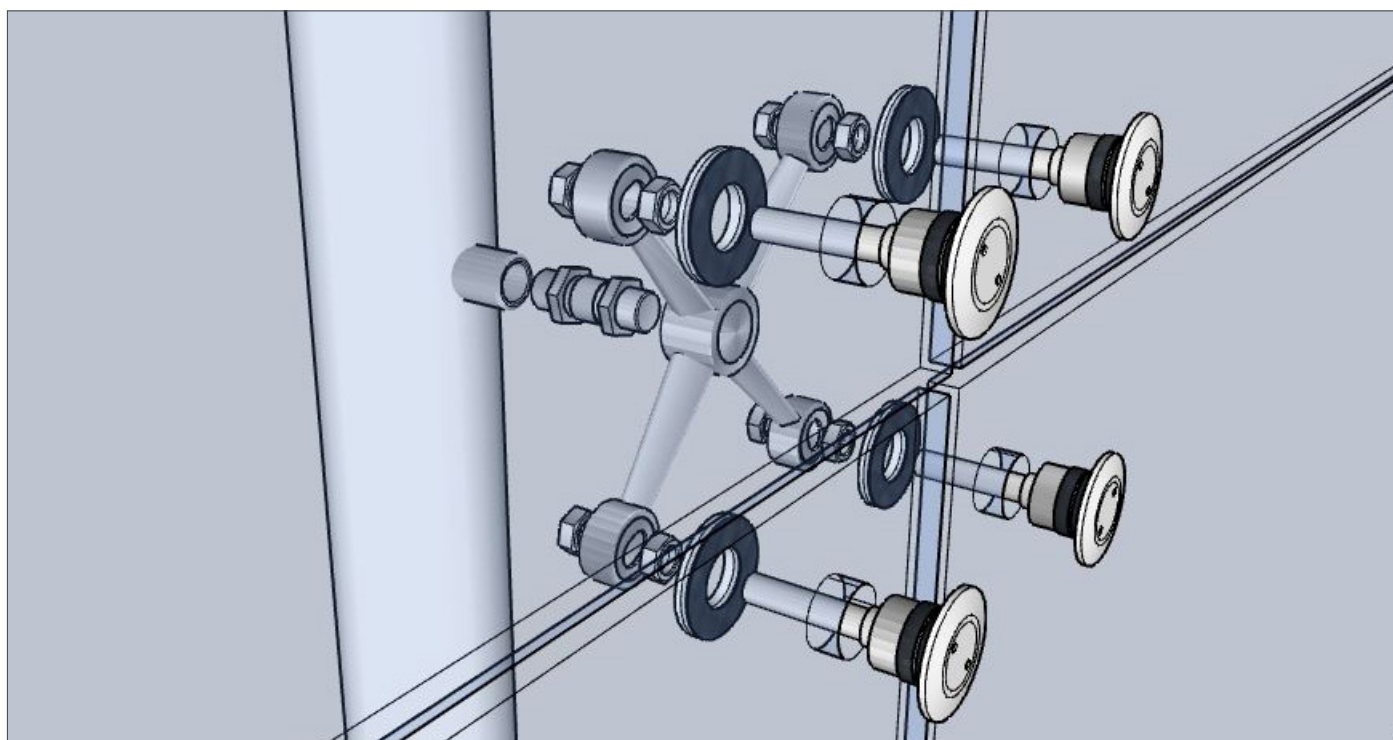
COMPOSIÇÃO DO SISTEMA / SYSTEM COMPOSITION

1. BASE DE SUPORTE (REF. FI-TT) / *BASE SUPPORT (REF. FI-TT)*
2. CONECTOR (REF. FIC-71) / *THREAD UNION SCREW (REF. FIC-71)*
3. ARANHA FITECHNIC / *SPIDER FITECHNIC*
4. RÓTULA ARTICULADA FITECHNIC / *ARTICULATED BOLT FITECHNIC*

VIDRO / GLASS

O sistema articulado Fitechnic® está patenteado e foi estudado e desenhado por meio de análise não linear com elementos finitos e posteriormente comprovadas através de ensaios de resistência mecânica em laboratórios independentes.

The Fitechnic® articulated system is patented and has been developed and designed by non-linear analysis with finite elements and later proven through mechanical strength tests in independent laboratories.



SISTEMA SPIDER

Modelos de Instalação

SPIDER SYSTEM: MODELS



CERTIFICAÇÕES DO SISTEMA FITECHNIC

- Permeabilidade ao ar classe A3 (EN 12152:2000)
- Estantiquidade à água classe R6 (EN12208:2000)
- Resistência à acção do vento de fachadas cortina em serviço e segurança (EN13116:2001)
- Resistência ao impacto de fachadas cortina classe E5 (EN 14019)
- Ensaio de resistência mecânica (tração/compressão e corte) aos componentes de acordo com o procedimento Avis Technique Cahier 3574-V2 do CSTB
- Certificado por organismo notificado pela EU.

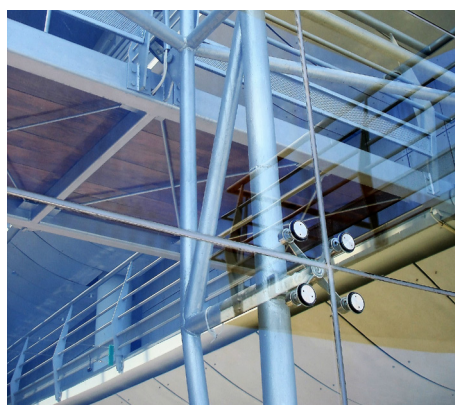
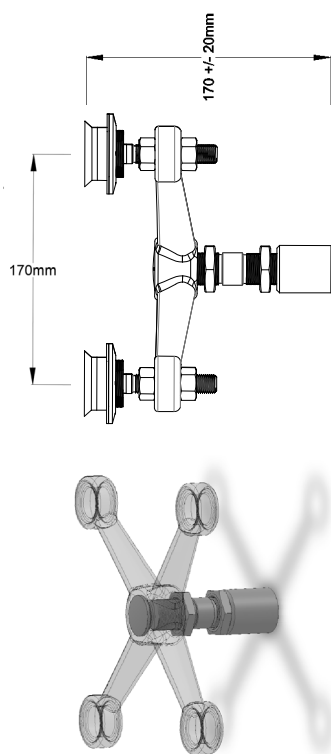
Os componentes são em aço inox 316 com marcação CE certificados segundo as normas EN10283:2010 e EN10088-3:2014 com certificado de inspecção de acordo com EN10204.

FITECHNIC SYSTEM CERTIFICATIONS

- Class A3 Air Permeability Tests (EN 12152: 2000)
- Watertightness class R6 (EN12208: 2000)
- Resistance to the wind action of curtain facades in service and safety (EN13116: 2001)
- Impact resistance of curtain facades class E5 (EN 14019)
- Tests of mechanical strength (tensile / compression and shear) to the components according to the procedure Technique Cahier 3574-V2 of the CSTB
- Certified by a notified body by the EU.

The components are in 316 stainless steel with CE marking certified according to EN10283: 2010 and EN10088-3: 2014 with inspection certificate according to EN10204.

MODELO 1



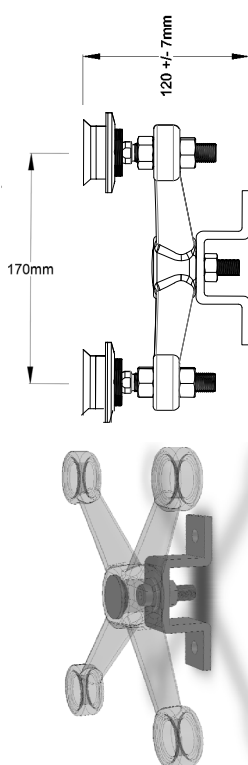
MODELO 1 / MODEL 1

O sistema Modelo 1 de fixação consiste num conector de dupla rosca M24 (ref. [FIC-71](#)) que faz a ligação entre a aranha e o teton M24 (ref. [FI-TT](#)), que serve de base de suporte.

The fixing system Model 1 using a M24 threaded connector (ref. [FIC-71](#)) which connects the spider to the M24 base support (ref. [FI-TT](#)) that serves as a connection to the main structure.

Componentes p.53

MODELO 2



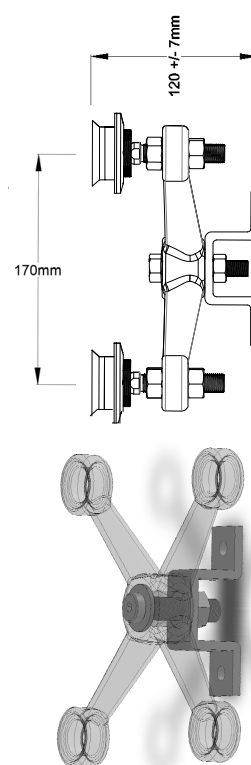
MODELO 2 / MODEL 2

O sistema Modelo 2 de fixação consiste numa base Omega (FI-OMG) ou base FICTM14 e um adaptador (FI-AR) que se insere no interior da aranha e um parafuso especial (FIEM14, posteriormente oculto) que fixa a aranha à base.

The fixing system Model 2 consists of an Omega base (FI-OMG) or FICTM14 base and an adapter (FI-AR) that is inserted inside the spider and a special screw (FIEM14 hidden by a cap) that fixes the Spider to the base.

Componentes p.54-55

MODELO 3



MODELO 3 / MODEL 3

O sistema Modelo 3 de fixação consiste numa base Omega (FI-OMG) ou base FICTM14 fixa com parafuso e anilha de fixação (FIEM14/M16) da aranha à base Omega. A base é aparafusada à estrutura.

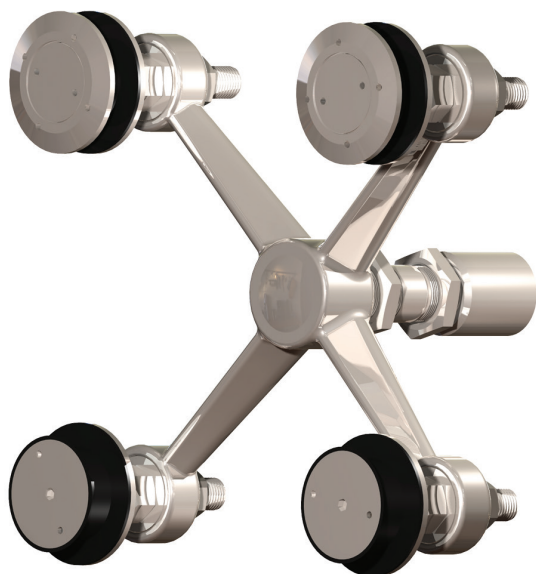
The fixing system Model 3 consists of an Omega base (FI-OMG) or FICTM14 base this is fixed by a screw and washer nut (FIEM14/M16) that fixes the spider to the Omega base. The base is bolted to the main structure.

Componentes p.54-55

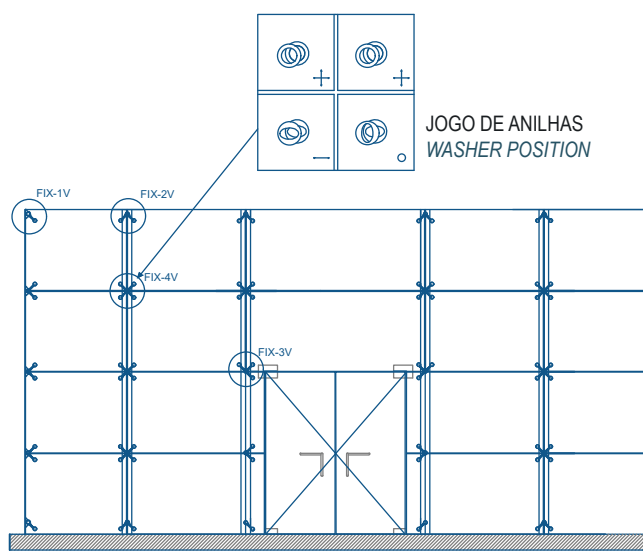
SISTEMA SPIDER

Modelo de Instalação 1, 2 e 3

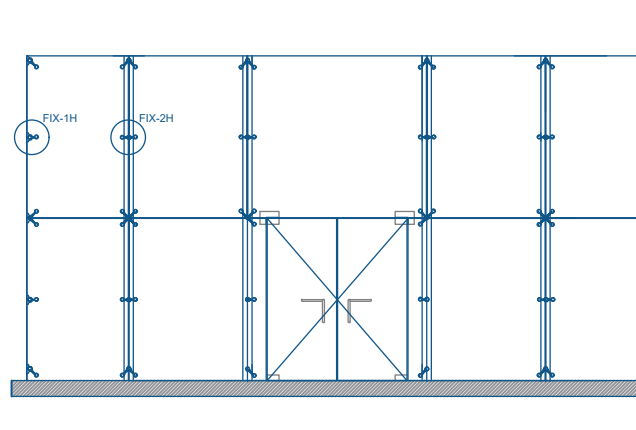
SPIDER SYSTEM: MODELS 1, 2 AND 3



SISTEMAS DE MONTAGEM - PONTOS DE FIXAÇÃO INSTALLATION POINT SYSTEMS



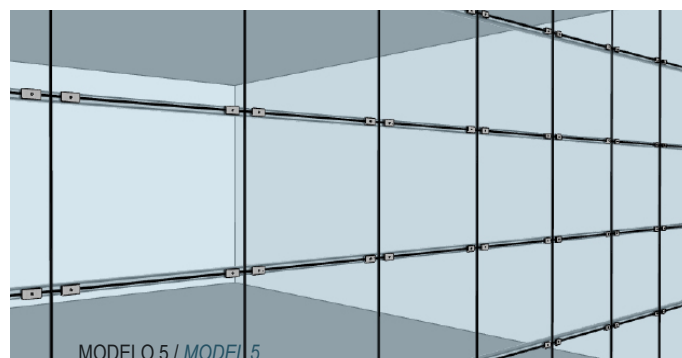
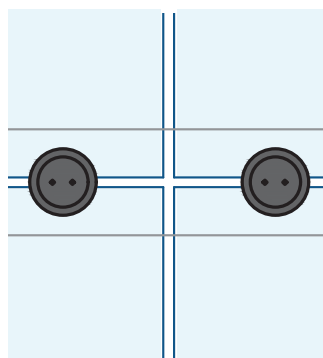
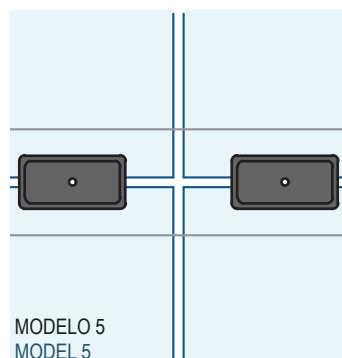
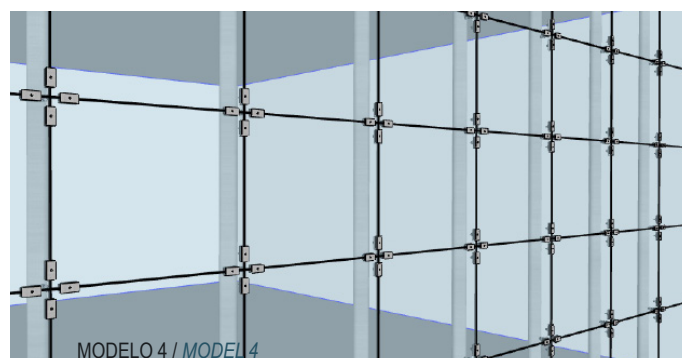
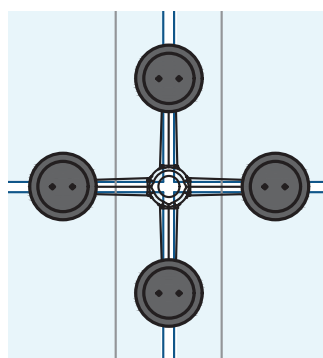
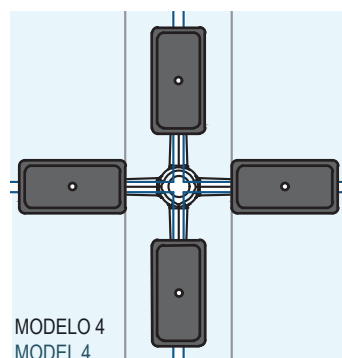
SISTEMA DE 4 PONTOS / 4 POINT SYSTEM



SISTEMA DE 6 PONTOS / 6 POINT SYSTEM

SISTEMAS DE MONTAGEM FACHADA

MOUNTING POINT SYSTEMS / FACADE



SISTEMA DE MONTAGEM MODELO 4

MODEL MOUNTING SYSTEM 4

O sistema de montagem Modelo 4 consiste na aplicação de peças patchfitting com Aranhas através do seu parafuso M16, e respectivas anilhas e porcas.

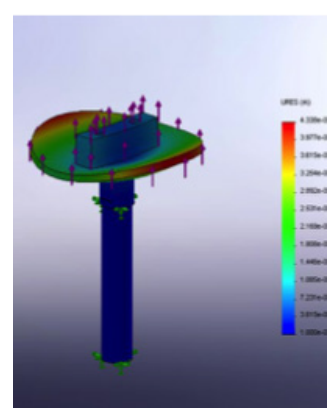
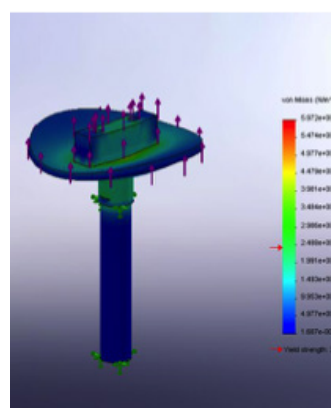
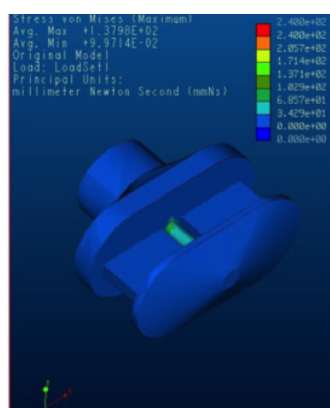
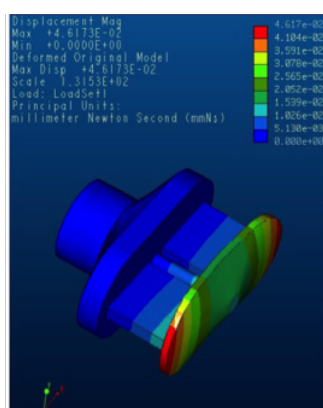
The Model 4 mounting system consists of installing patchfitting with spider arms through its M16 screw, and their washers and nuts.

SISTEMA DE MONTAGEM MODELO 5

MODEL MOUNTING SYSTEM 5

O sistema de montagem Modelo 5 consiste na instalação do patchfitting na estrutura através do seu parafuso M16, e respectivas anilhas e porcas.

The Model 5 mounting system consists of installing the patchfitting to a frame through its M16 screw, and its washers and nuts.



CARGA LOADS	FORÇA FORCE	DEFORM. MÁXIMA DEFLECTION MAX	ESFORÇO MÁXIMO STRESS MAX
VENTO PRESSÃO POSITIVE WIND	2kN	0,46mm	240 MPa
VENTO SUCÇÃO NEGATIVE WIND	2kN	0,43mm	240 MPa

CARGA LOADS	FORÇA FORCE	DEFORM. MÁXIMA DEFLECTION MAX	ESFORÇO MÁXIMO STRESS MAX
VENTO PRESSÃO POSITIVE WIND	2kN	0,44mm	240 MPa
VENTO SUCÇÃO NEGATIVE WIND	2kN	0,43mm	240 MPa

SISTEMA PATCHFITTING

PATCHFITTING SYSTEM

Os Patchfitting são pinças de aperto em aço inox AISI316 , para vidro laminado e temperado. Existe a possibilidade de aplicar com aranhas FITECHNIC® sem necessidade de furar o vidro.

Patchfitting are tightening clamps in stainless steel AISI316 for laminated or tempered glass. Possible to use in any Spider Fitechnic. No drilling necessary.



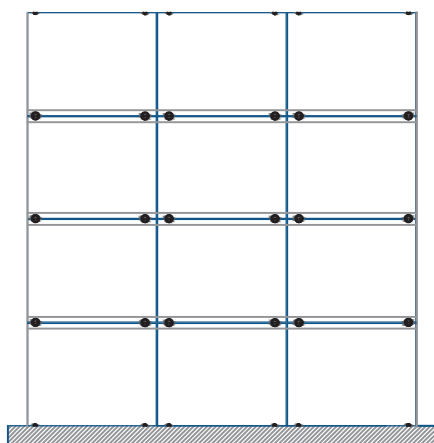
PF - R



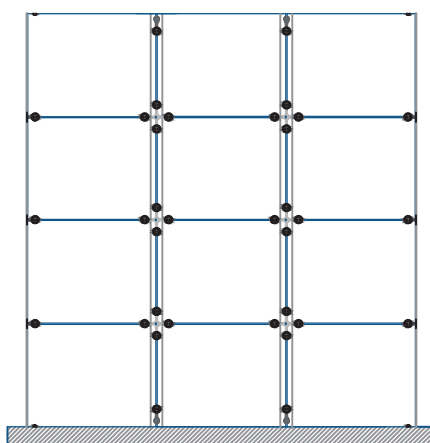
PF - H



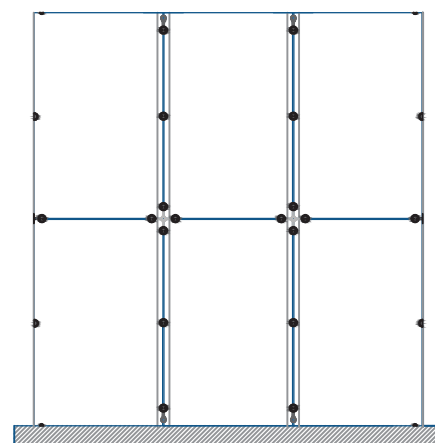
PF - C



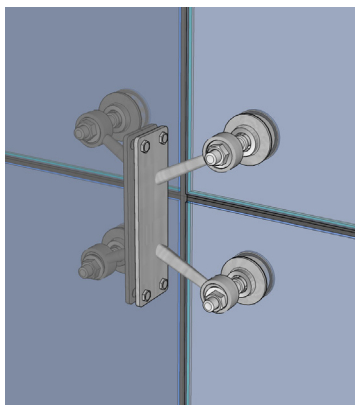
SISTEMA DE 4 PONTOS / 4 POINT SYSTEM
(PF-R / PF-H / PF-C)



SISTEMA DE 8 PONTOS / 8 POINT SYSTEM
(PF-R / PF-C)



SISTEMA DE 10 PONTOS / 10 POINT SYSTEM
(PF-R / PF-C)



ARANHAS FI-1HL / FI-2VL 170 / SPIDERS FI-1HL / FI-2VL

Aranhas aço inox AISI316 para fixação lateral a parede/viga de vidro. Adapta-se a qualquer rótula do catálogo Fitechnic. Distância entre eixos 80mm (FIHL) e 170mm (FI2VL).

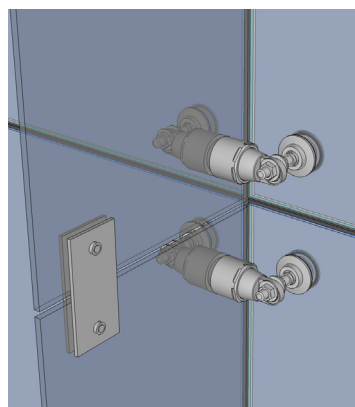
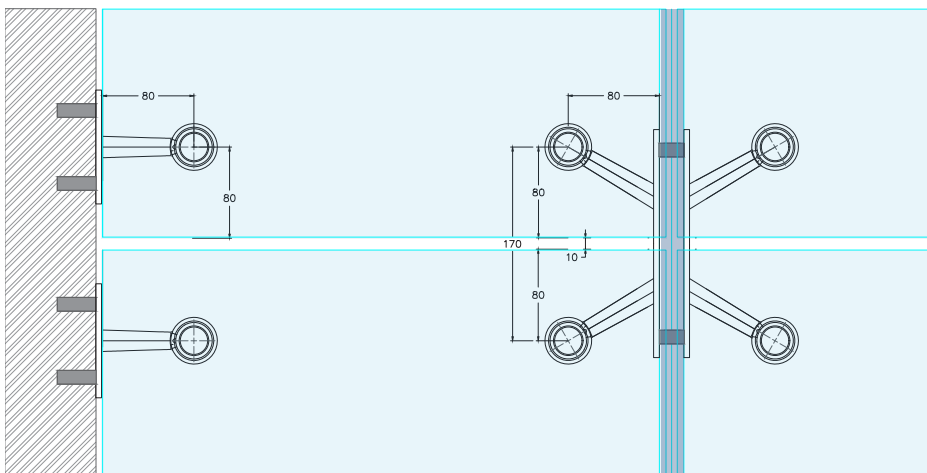
Spider FI-2HL and FI-2VL in stainless steel 316, for sideways connection to glass fins or wall. Arm distance between arms center 170mm. To adapt any rotule from FITECHNIC catalogue.



FI-2VL 170 p. 43



FI-1HL p. 43



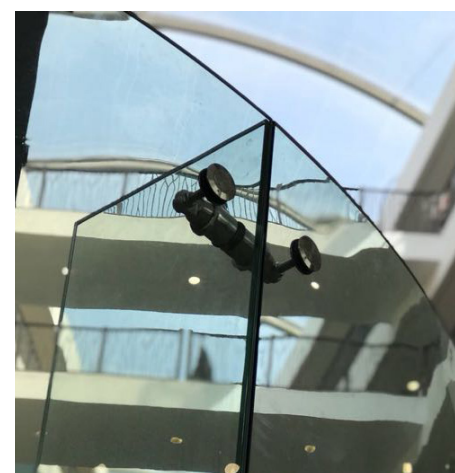
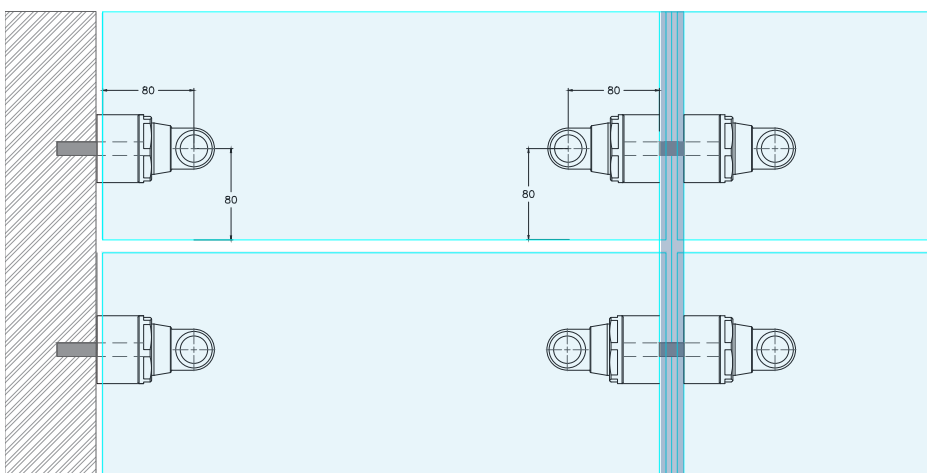
ARANHA LATERAL FI-SR / SIDE ADAPTOR SPIDER FI-SR

Aranha / Adaptador em aço inox AISI316 para ligação lateral a estrutura. Possibilidade de usar qualquer rótula FITECHNIC. A Aranha / Adaptador FI-SR é fixa à estrutura através de parafuso M12 a uma base de conexão de dimensão variável e pode ser adaptada aos diversos tipos de estrutura.

Spider / Adapter in AISI316 stainless steel for lateral connection to the frame. Possibility to use any FITECHNIC rotule. The spider / adapter FI-SR is attached to the structure by screw M12 to a connection base of variable size that can be adapted to the various types of structure.

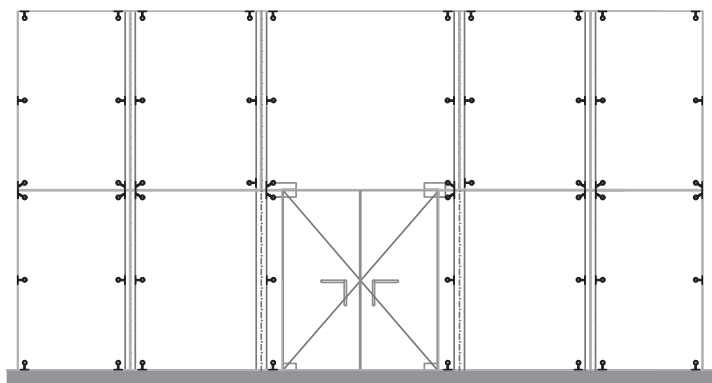


FI-SR p. 43

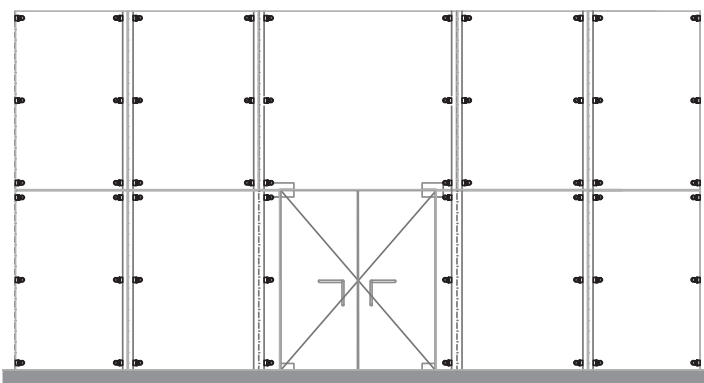


SISTEMA GLASS FINS

GLASS FINS SYSTEM



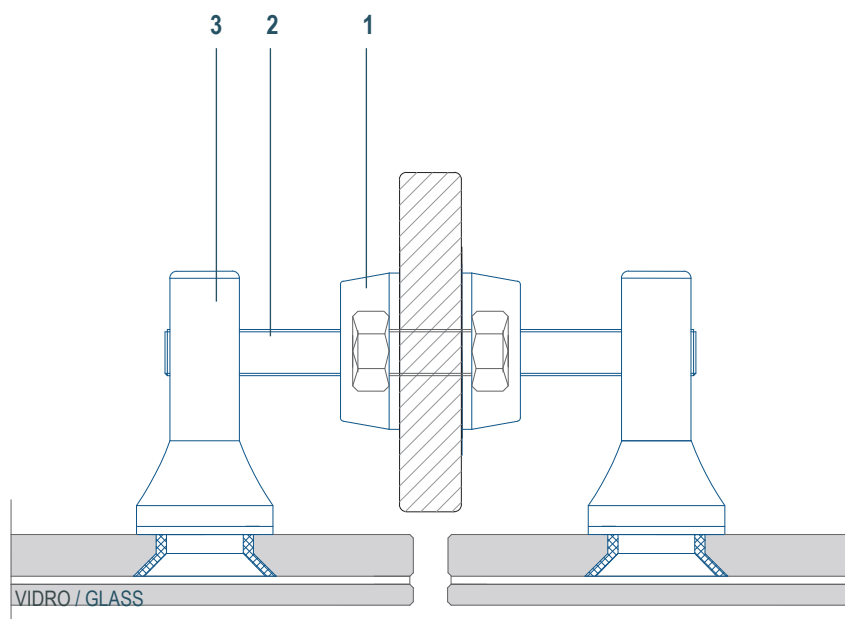
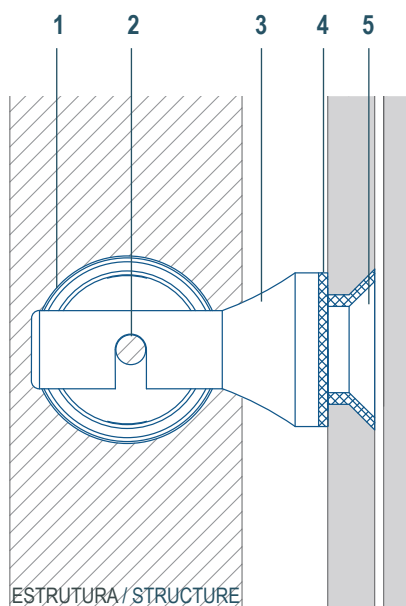
SISTEMA COM ARANHAS FI-1HL E FI-2VL
SPIDERS SYSTEM WITH FI-1HL AND FI-2VL



SISTEMA COM ARANHAS LATERAIS FI-SR
SIDE ADAPTOR SPIDERS SYSTEM WITH FI-SR

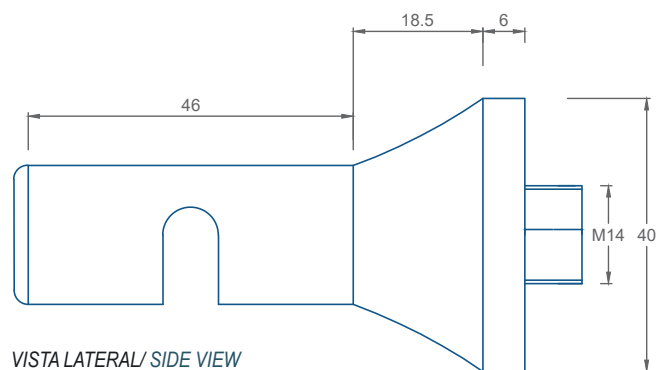
COMPOSIÇÃO / COMPOSITION

1. Adaptador /Fixador AISI316 / Adapter/Fitting AISI316
2. Pin Interno para fixar /Inner screw to fix spider
3. Hook RSEF / RSEF Hook
4. Anilha em nylon / Contact washer polyethylene
5. Tampa SS AISI316 / Cap SS AISI316

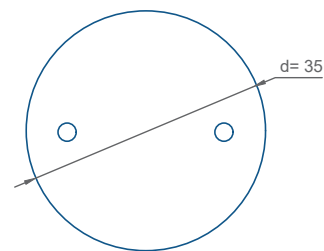
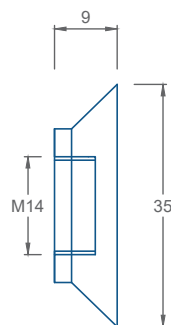


DIMENSÕES RSEF / RSEF DIMENSIONS

OUTRAS DIMENSÕES DISPONÍVEIS / OTHER DIMENSIONS AVAILABLE



VISTA LATERAL/ SIDE VIEW

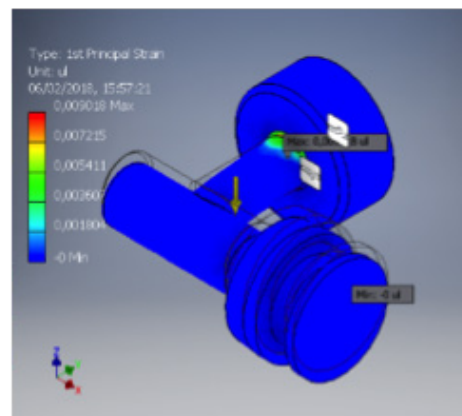
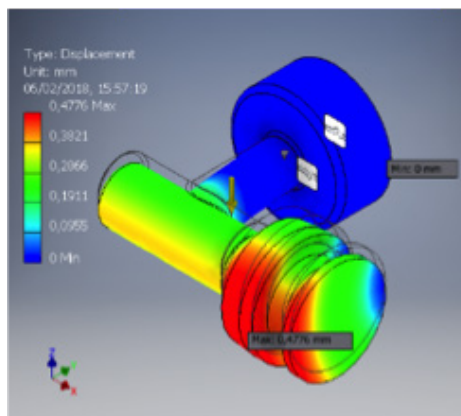


VISTA FRONTAL/ FRONT VIEW

CÁLCULOS RESISTÊNCIA MECÂNICA / MECHANICAL RESISTANCE CALCULATIONS

	PERFORMANCE
BENDING STRENGTH 1 mm	12.000N
BENDING STRENGTH 2mm	22.000N
PULL FORCE	34.000N

	PERFORMANCE
YELD POINT Rp0,2	185 MPa
TENSILE STRENGTH Rp1,0	210 MPa
ELONGATION AT RUPTURE	30%
ENERGY ABSORPTION	60J
CHEMICAL COMPOSITION	SS 1.4408



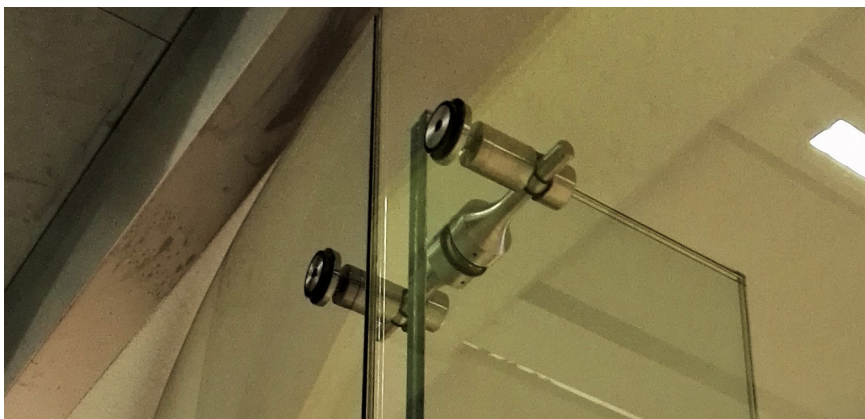
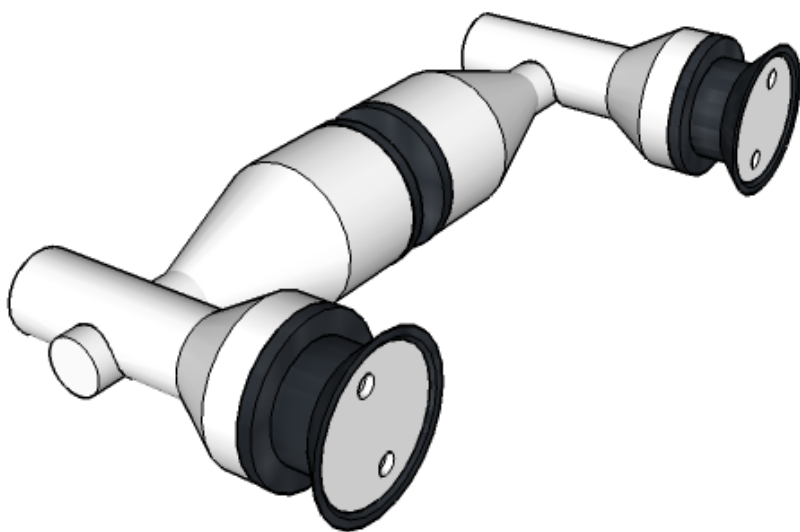
SISTEMA HOOK AND PIN

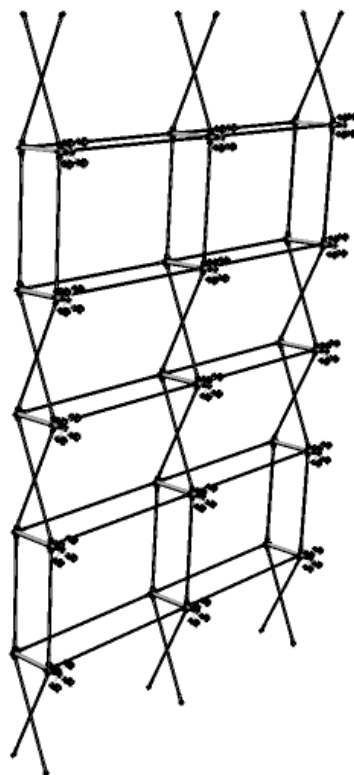
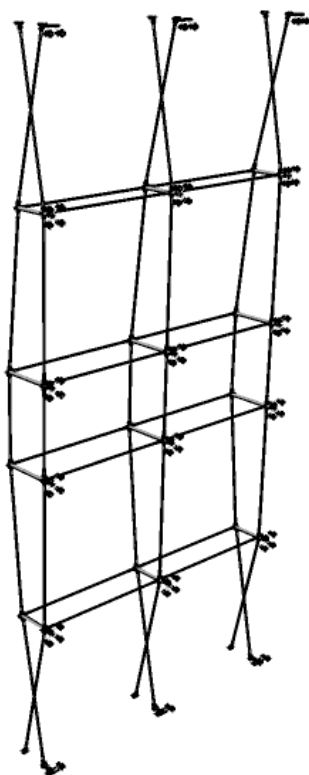
HOOK AND PIN SYSTEM

SISTEMA HOOK AND PIN - HOOK RSEF HOOK AND PIN SYSTEM - HOOK RSEF

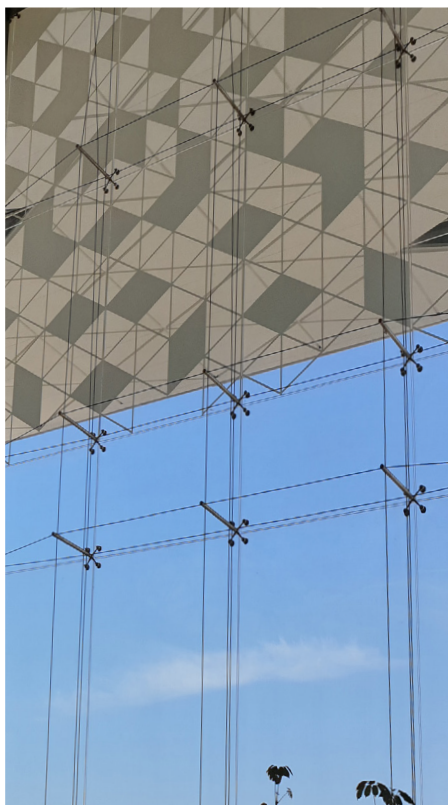
Adaptador /Fixador em aço inoxidável AISI 316 para fixação lateral de vidro ou estrutura de aço. Hook (RSEF) com pin interno para fixar no adaptador. O adaptador/fixador de suporte permite que a rótula tenha ajuste lateral. Para aplicação em vidro laminado e vidro duplo.

Adapter/Fitting in stainless steel AISI 316 for sideways fixing to glass fins or steel structure. Hook (RSEF) with inner screw to fix on adapter. The support adapter allows the rotule to have lateral adjustment. For laminated glass and double glazing.





SISTEMA F12H- ROD
F12H-ROD SYSTEM



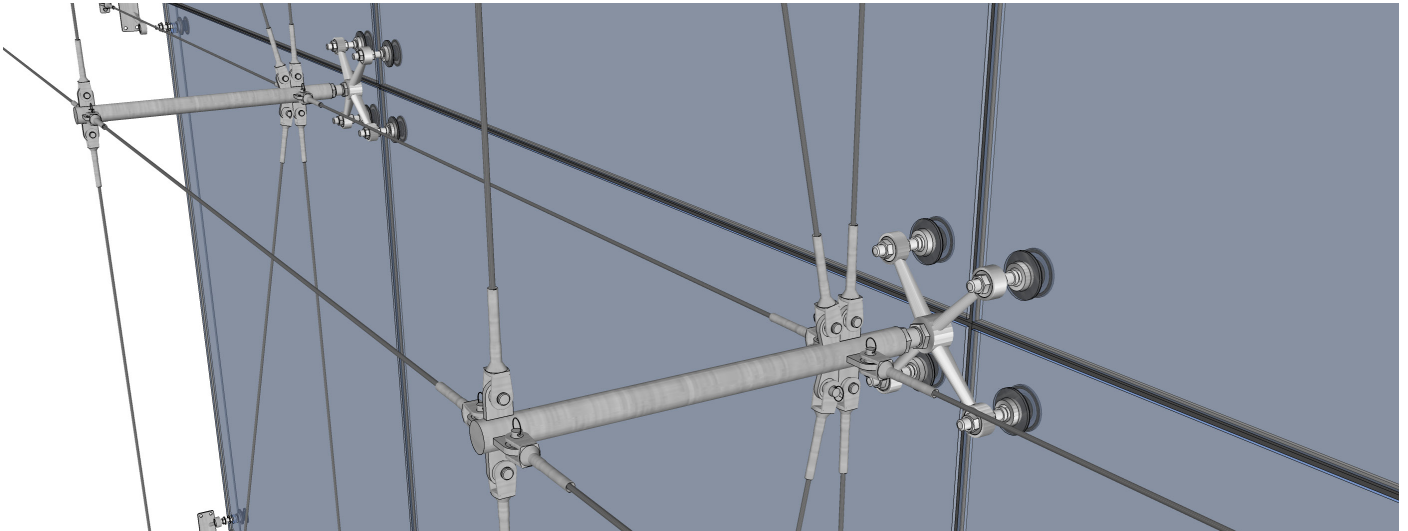
SISTEMA F14V- CAB
F14V-CAB SYSTEM



SISTEMA F14V- ROD
F14V-ROD SYSTEM

ESTRUTURAS TENSIONADAS

TENSIONED STRUCTURES



Fachadas Estruturais com cabos em aço inox AISI 316 permitem vencer vãos sem recurso a estruturas montantes. Através de aranhas ligadas a bielas e por sua vez entrelaçadas por cabos rígidos tensionados obtém-se a máxima transparência e óptima aparência estética.

A structural glazing facade with stainless steel cables allows cleaner facades without metallic structures. Using spiders connected with rod and connected through the tensioned cables we can obtain maximum transparency and optimum visual aesthetical appearance.



FI-BR

Cabos e Tirantes / Cables and Rods p. 56



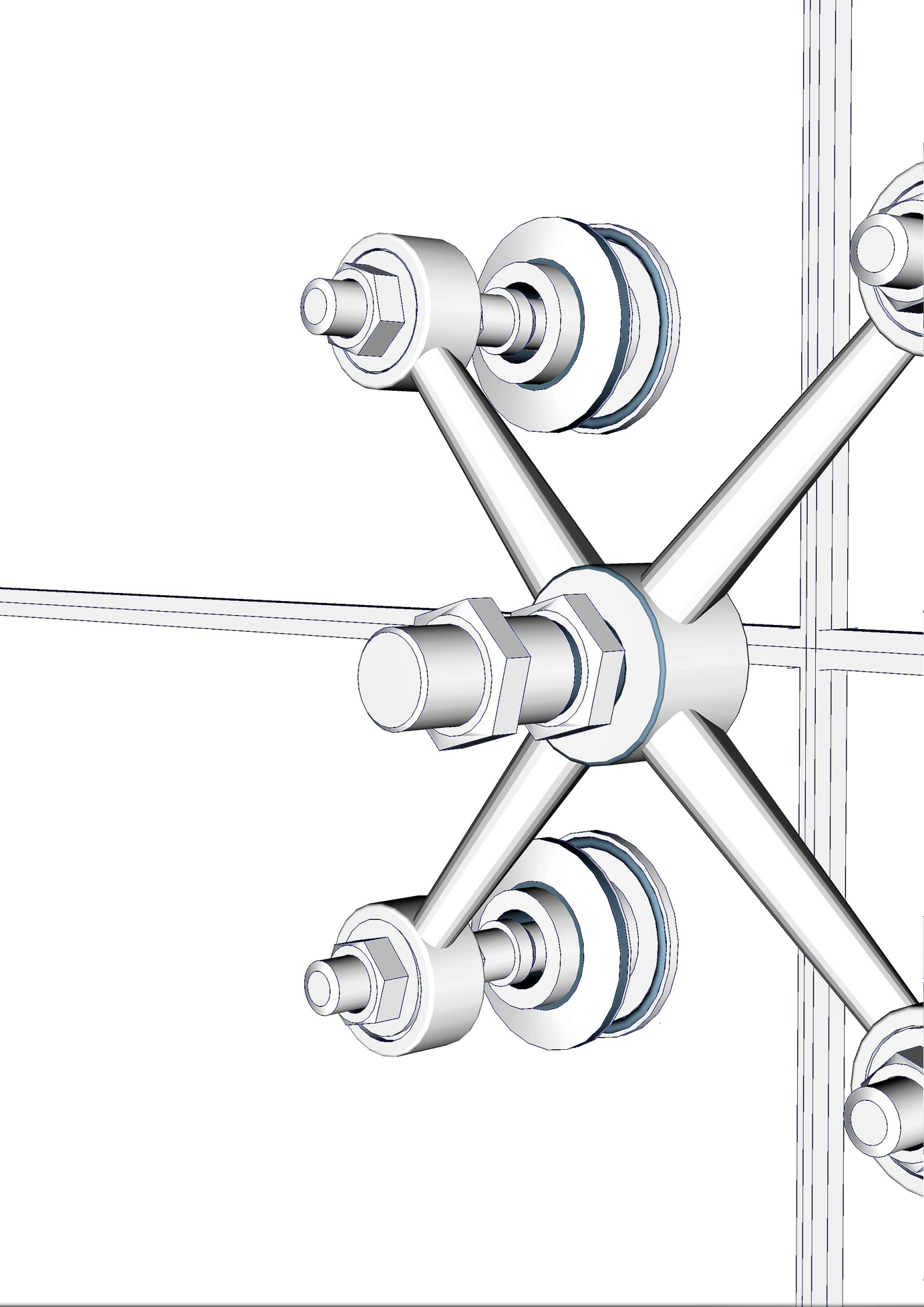
FI-VAR

Cabos e Tirantes / Cables and Rods p. 56



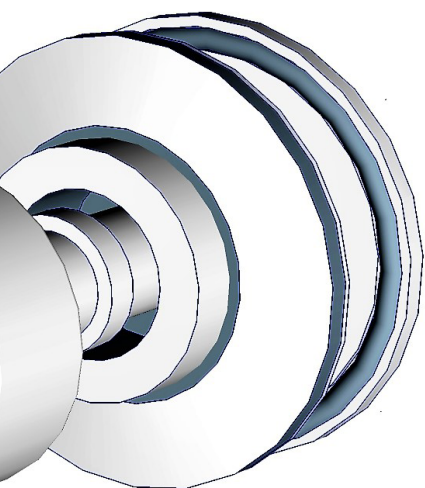
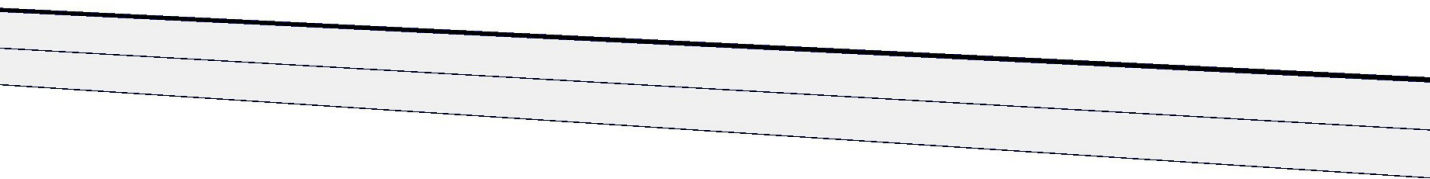
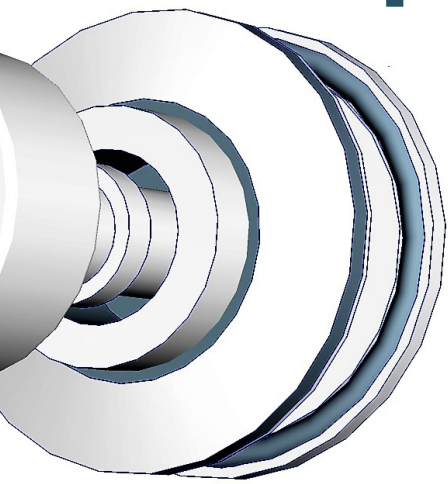
FI-CAB

Cabos e Tirantes / Cables and Rods p. 56

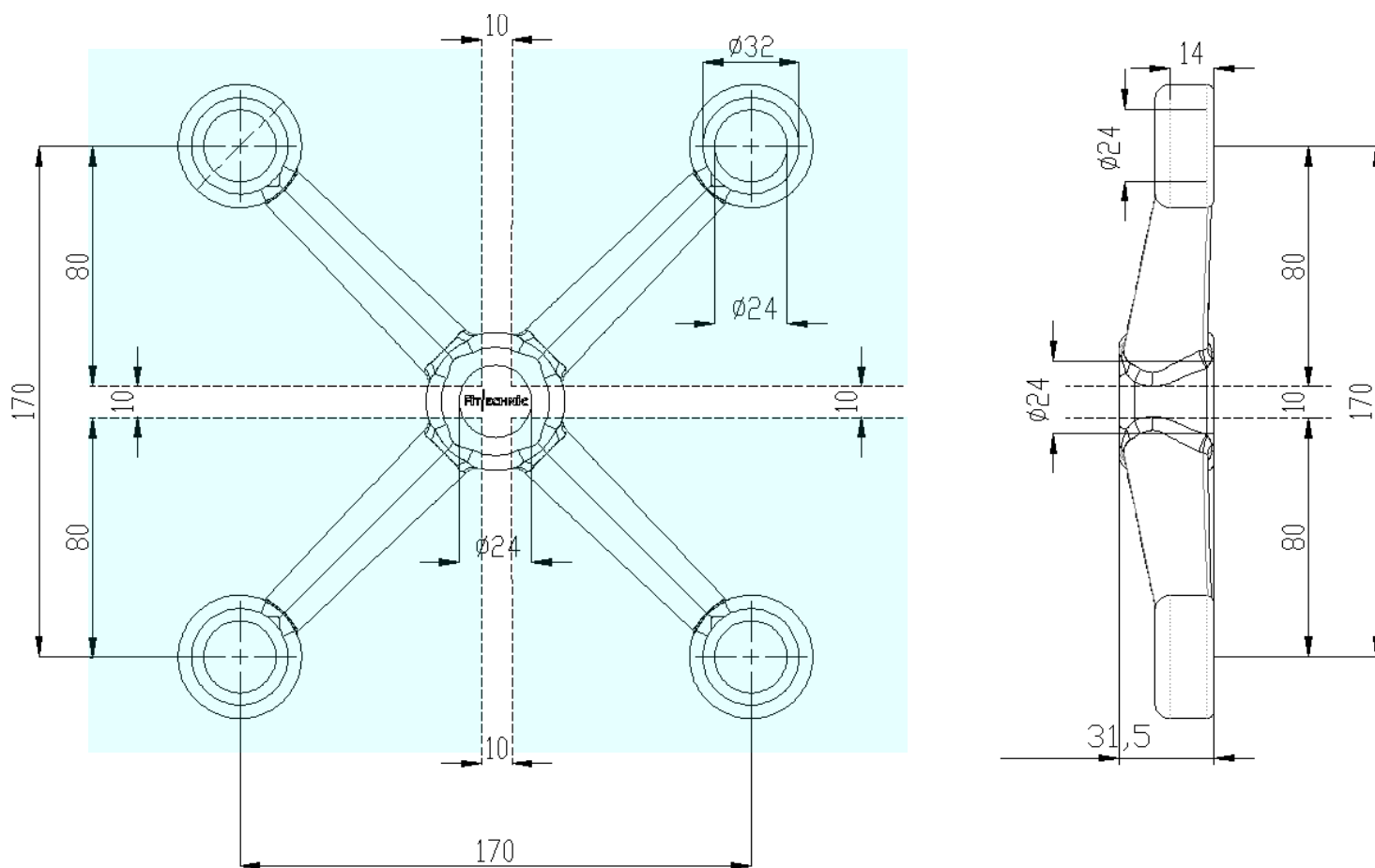


PRODUTOS

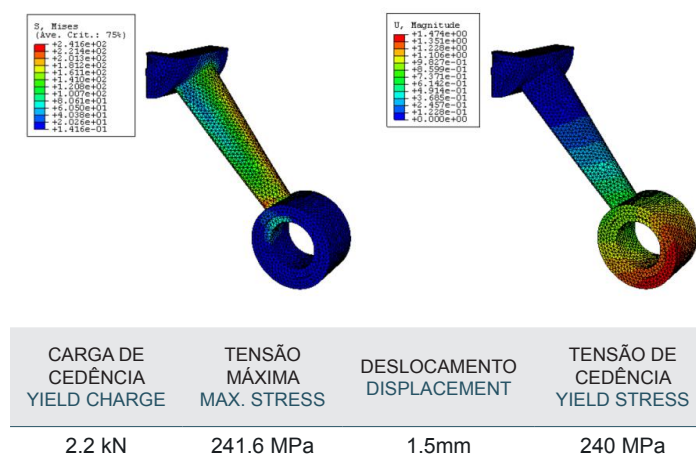
PRODUCTS



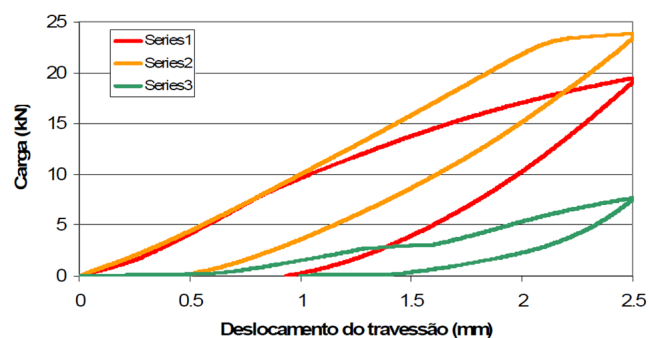
DIMENSÕES ARANHAS FIX-170 / DIMENSIONS SPIDER FIX-170



CÁLCULOS RESISTÊNCIA MECÂNICA / MECHANICAL RESISTANCE CALCULATIONS



Tensão Von Mises (Mpa) e deslocamento (mm) para H1=2.2KN
Tension Von Mises (Mpa) e displacement (mm) for H1=2.2KN



Ensaio de Flexão através de um movimento de travessão correspondente ao dos ensaios de compressão convencionais.

Flexion test by means of a traverse movement corresponding to that of conventional compression tests

ARANHAS

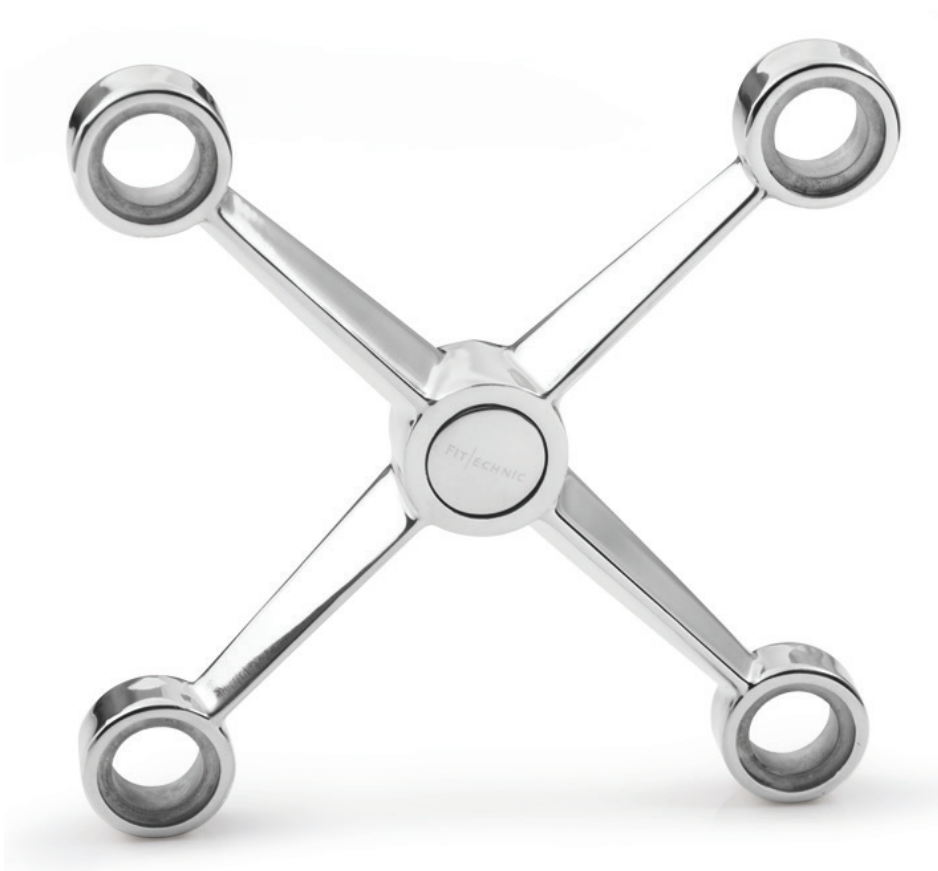
SPIDERS

ARANHAS FIX-170 / SPIDERS FIX-170

Aranhas para união de vidros em aço inox AISI 316 fabricada em microfusão a cera perdida com acabamento superficial polido brilhante-espelho e mecanizada em linha CNC. Disponível nos tamanhos: 170mm, 204 mm ou 220mm (distância entre eixos).

Spiders for joining glass panels in stainless steel AISI 316, made in microfusion process, with polished finishing and mechanized CNC line. Arm distance between hole and central axis 170mm.





FIX 4V.



FIX 3V



FIX 2V



FIX 1V



FIX 2H



FIX 1H



FIX 2VL



FIX 1HL

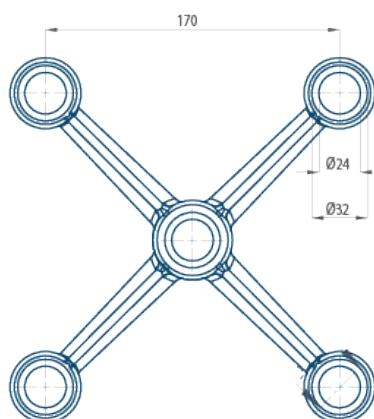


FIX-SR

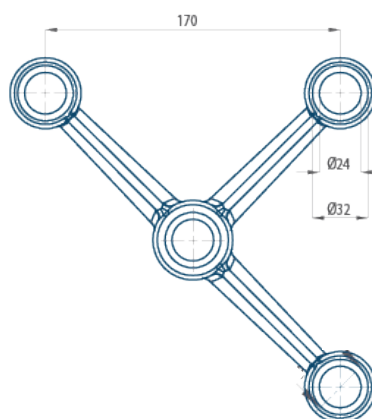
ARANHAS

SPIDERS

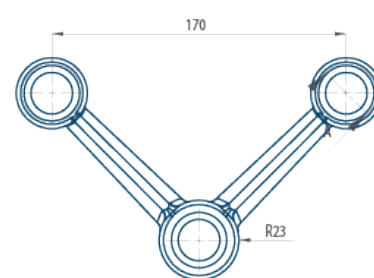
DIMENSÕES ARANHAS FIX-170 / DIMENSIONS SPIDER FIX-170



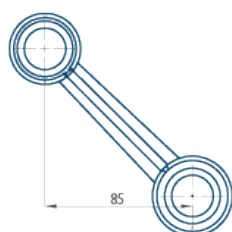
FIX 4V



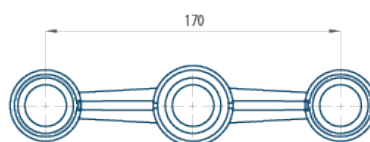
FIX 3V



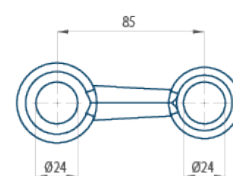
FIX 2V



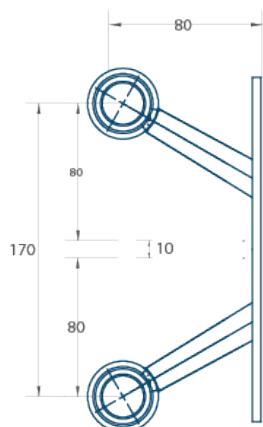
FIX 1V



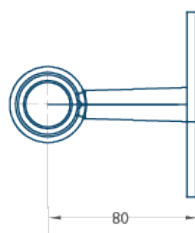
FIX 2H



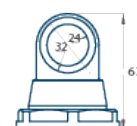
FIX 1H



FIX 2VL



FIX 1HL

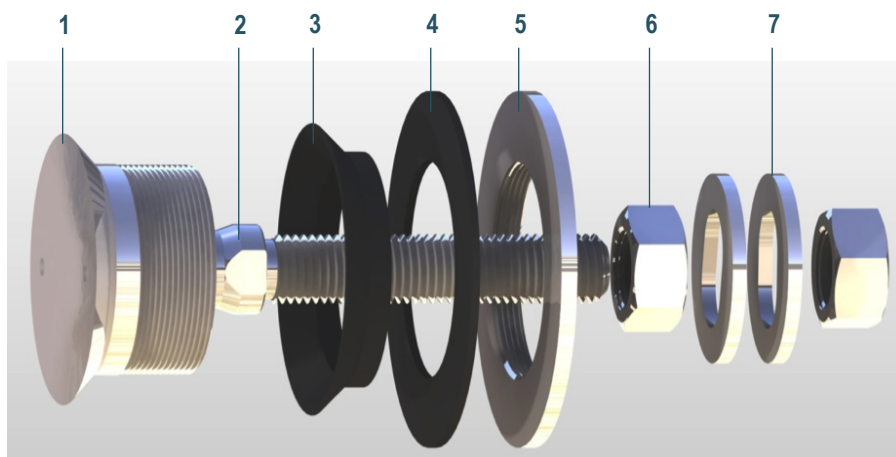
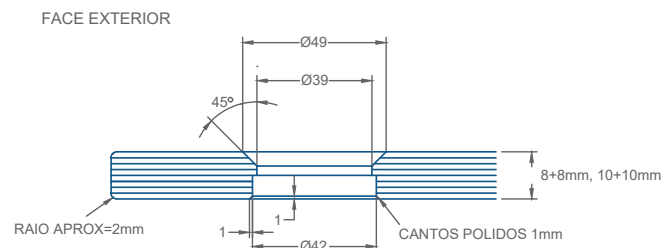
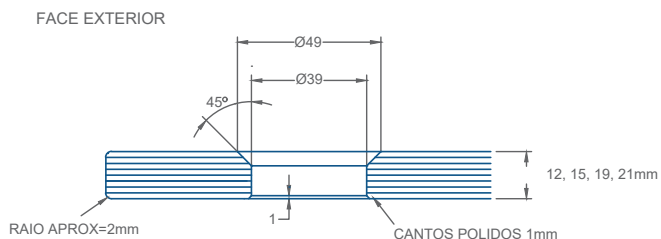
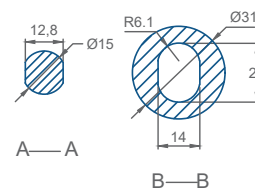
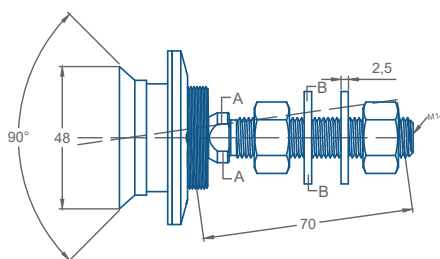
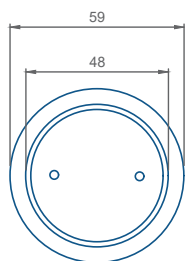


FIX-SR

RE12-21

Rótula em aço inox AISI316 para fachadas de vidro temperado entre 12 e 21mm – furo tronco cônico /escareado, M14, para aplicação pelo interior.

Articulated Bolt in stainless steel AISI316 for facade in monolithic tempered glass 12 to 21mm – Conic Hole, M14 for interior applications.



COMPOSIÇÃO / COMPOSITION

- 1 – Corpo SS AISI316 / SS AISI316 body
- 2 – Parafuso articulado M14 / M14 rotulated thread
- 3 – Anilha em nylon / Contact washer Polyethylene
- 4 – Anilha em nylon / Contact washer Polyethylene
- 5 – Anilha roscada interior SS AISI316 - Ø60mm (aperto aprox.10~15N/m) / SS AISI316 Washer interior cap Ø60mm (tighten aprox.10~15N/m)
- 6 – Porca DIN 934 A4 / Nut DIN 934 A4
- 7 – Anilha SS AISI316 / SS AISI316 Washer

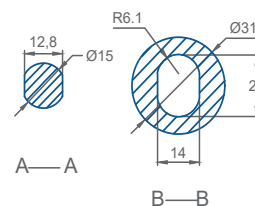
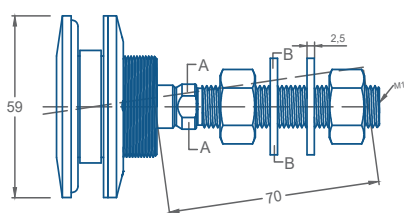
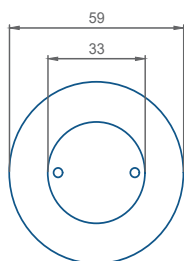
RÓTULAS

ROTULES

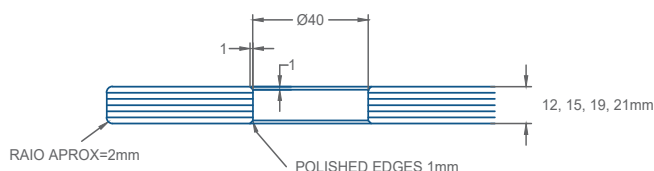
RT12-21

Rótula em Aço Inox AISI316 de Tampa para fachadas/ Cobertura em Vidro Laminado e Temperado entre 12 e 21mm – Furo Cilíndrico, M14, para aplicação pelo interior.

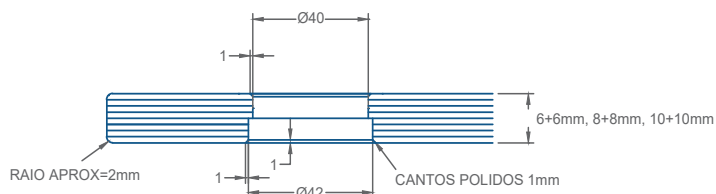
Articulated Bolt in stainless steel AISI316 with cap for facade/ roof glazing in laminated tempered glass 12 to 21mm – Cylindrical Hole, M14 for interior applications



FACE EXTERIOR

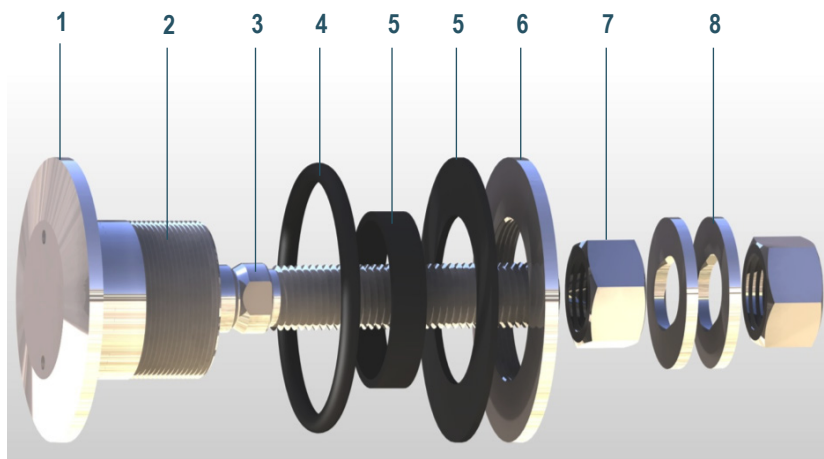


FACE EXTERIOR



COMPOSIÇÃO / COMPOSITION

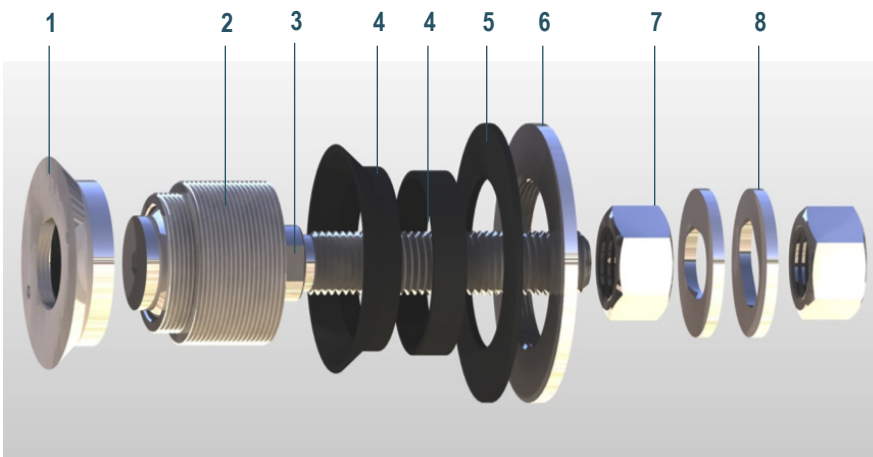
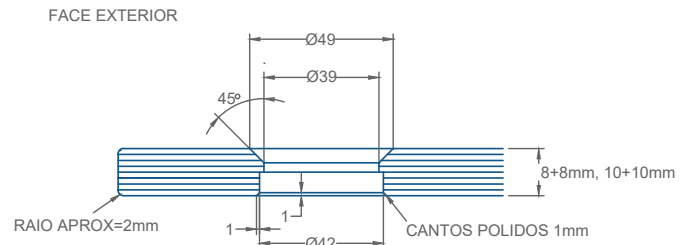
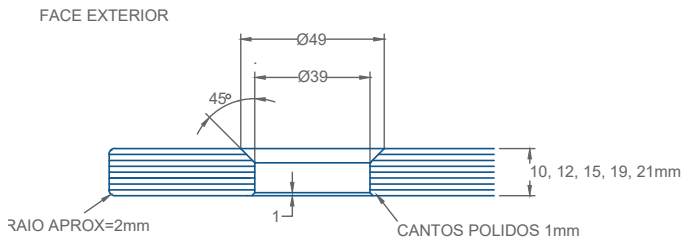
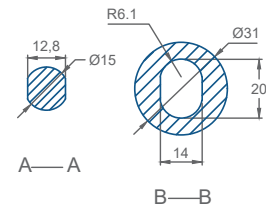
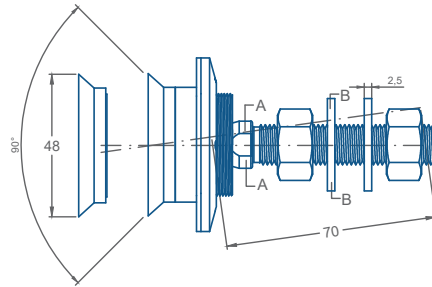
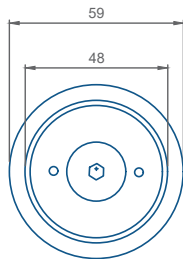
- 1 – Tampa SS AISI316 - Ø60mm / SS AISI316 Cap
- 2 – Corpo roscado SS AISI316 / SS AISI316 body
- 3 – Parafuso articulado M14 / M14 rotulated thread
- 4 – O'ring em nylon / O'ring washer Polyethylene
- 5 – Anilha em nylon / Contact washer Polyethylene
- 6 – Anilha roscada interior SSAISI316 - Ø60mm (aperto aprox.10~15N/m)/ SSAISI316 Washer interior cap Ø60mm (tighten aprox.10~15N/m)
- 7 – Porca DIN 934 A4 / Nut DIN 934 A4
- 8 – Anilha SS AISI316 / SS AISI316 Washer



RCE10-21

Rótula em aço inox AISI316 de tampa cônica de aperto exterior para fachadas em vidro temperado 10 e 21mm – tronco cônico/ escareado, M14, para aplicação pelo exterior.

Articulated bolt rotule in stainless steel AISI 316 with conical cap for exterior installation for facades in tempered or laminated tempered glass 10 to 21mm - conical hole/ Countersunk, M14, for exterior application.



COMPOSIÇÃO / COMPOSITION

- 1 - Tampa cônica SS AISI316 – Ø49mm (aperto aprox.10~15N/m) / SS AISI316 conic cap Ø50mm (tighten aprox.10~15N/m)
- 2 - Corpo roscado SS AISI316 / SS AISI316 body
- 3 - Parafuso articulado M14 / M14 rotulated thread
- 4 - Anilha em nylon / Contact washer Polyethylene
- 5 - Anilha em nylon / Contact washer Polyethylene
- 6 - Anilha roscada interior SS AISI316 - Ø60mm (aperto aprox.10~15N/m) / SS AISI316 washer interior cap Ø60mm (tighten aprox.10~15N/m)
- 7- Porca DIN 934 A4 / Nut DIN 934 A4
- 8- Anilha SS AISI316 / SS AISI316 washer

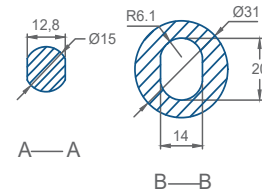
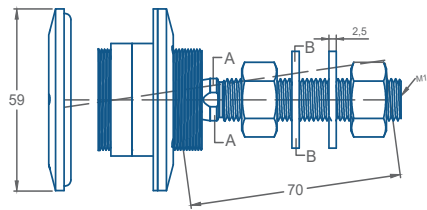
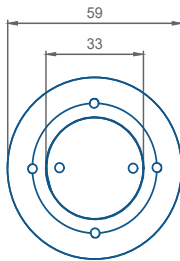
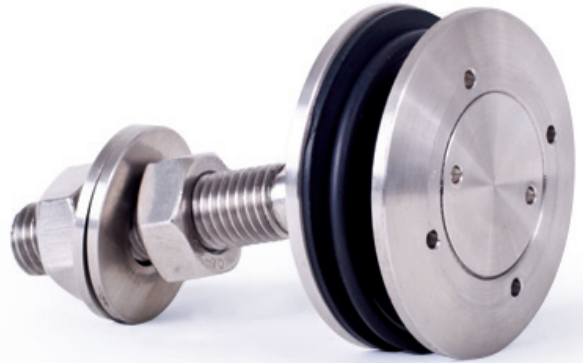
RÓTULAS

ROTULES

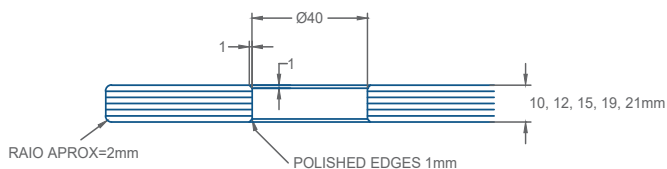
RCT10-21

Rótula em aço inox AISI316 de tampa de aperto exterior para fachadas/coberturas em vidro laminado e temperado entre 10 e 21mm – furo cilíndrico, M14, para aplicação pelo exterior.

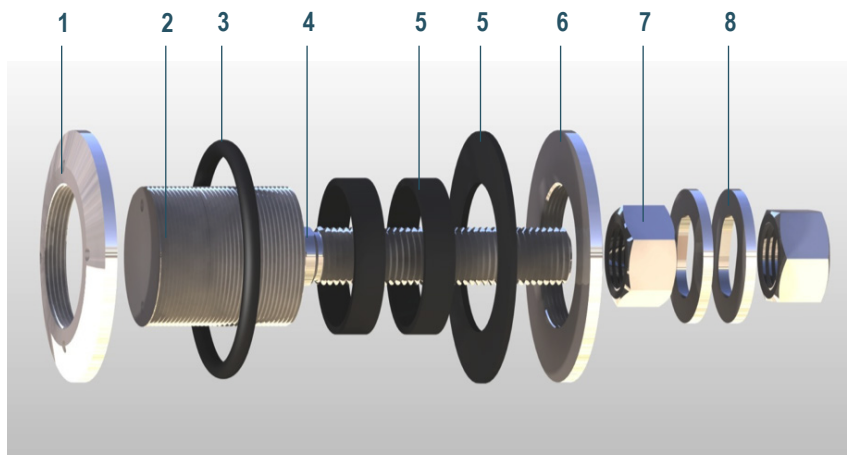
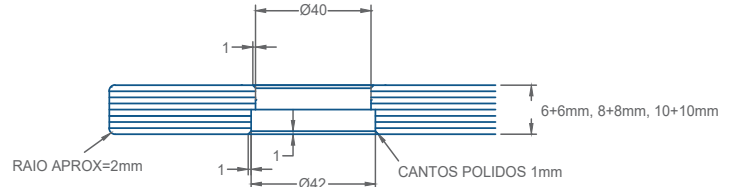
Articulated bolt rotule in stainless steel AISI 316 with cap for exterior installation facades/roofs glazing in tempered laminated glass 10 to 21mm, cylindrical hole, M14, for exterior application.



FACE EXTERIOR



FACE EXTERIOR



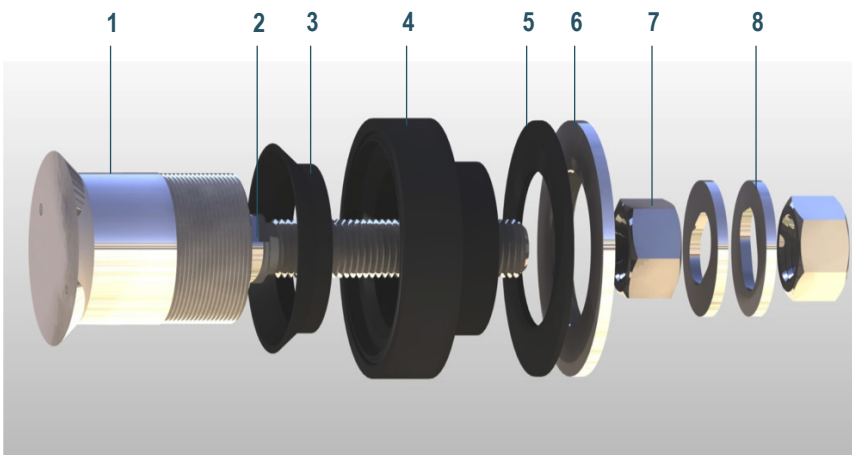
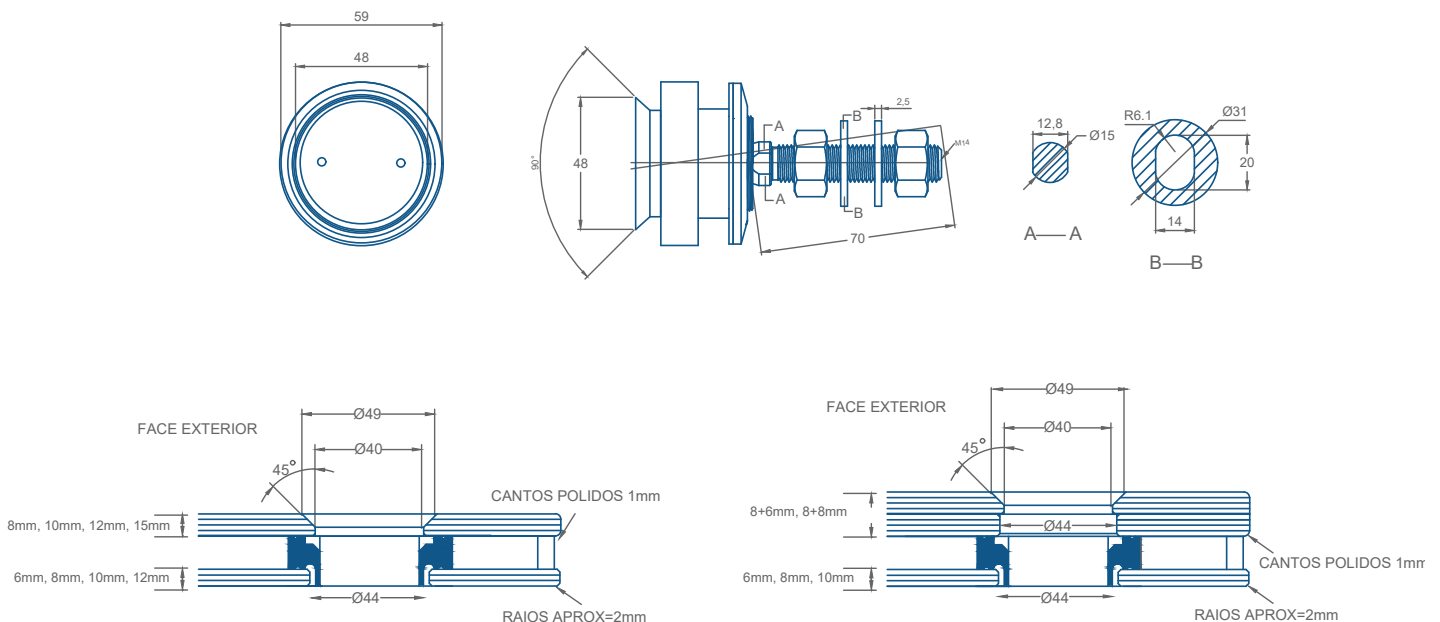
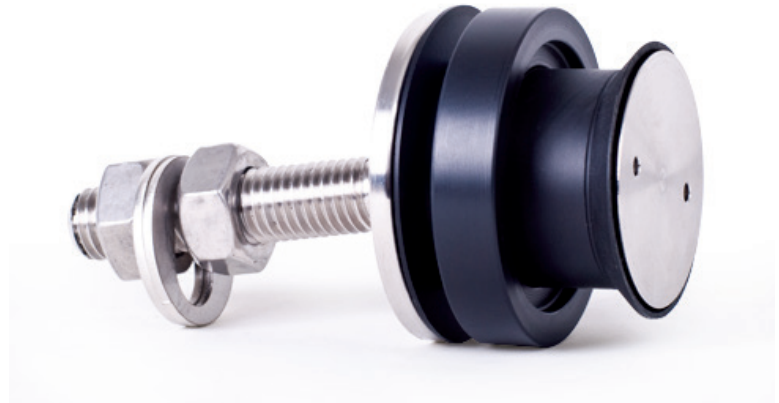
COMPOSIÇÃO / COMPOSITION

- 1 – Anilha rosca exterior SS AISI316 - Ø60mm (aperto aprox.10~15N/m) / SS AISI316 Washer exterior cap Ø60mm (tighten aprox.10~15N/m)
- 2 – Corpo SS AISI316 / SS AISI316 body
- 3 – O'ring em nylon / O'ring washer Polyethylene
- 4 – Parafuso articulado M14 / M14 rotulated thread
- 5 – Anilha em nylon / Contact washer Polyethylene
- 6 – Anilha rosca interior SS AISI316 - Ø60mm (aperto aprox.10~15N/m) / SS AISI316 Washer interior cap Ø60mm (tighten aprox.10~15N/m)
- 7 – Porca DIN 934 A4 / Nut DIN 934 A4
- 8 – Anilha SS AISI316 / SS AISI316 Washer

RD28-36

Rótula em aço inox AISI316 para fachadas em vidro duplo temperado 28 e 36mm – tronco cônico/ escareado, M14 ou M16, para aplicação pelo interior.

Articulated bolt rotule in stainless steel AISI 316 for double glazing facade in tempered glass 28 to 36mm, conical hole/ Countersunk, M14 or M16, for interior application.



COMPOSIÇÃO / COMPOSITION

- 1 – Corpo roscado SS AISI316 / SS AISI316 body
- 2 – Parafuso articulado M14 / M14 rotulated thread
- 3 – Anilha em nylon / Contact washer Polyethylene
- 4 – FISEP separador em nylon para câmara / Contact washer Polyethylene for interior double glazing
- 5 – Anilha em nylon / Contact washer Polyethylene
- 6 – Anilha rosca interior SS AISI316 - Ø60mm (aperto aprox.10~15N/m) / SS AISI316 washer interior cap Ø60mm (tighten aprox.10~12N/m)
- 7 – Porca DIN 934 A4 / Nut DIN 934 A4 (tighten aprox.15~20N/m)
- 8 – Anilha SS AISI316 / SS AISI316 washer

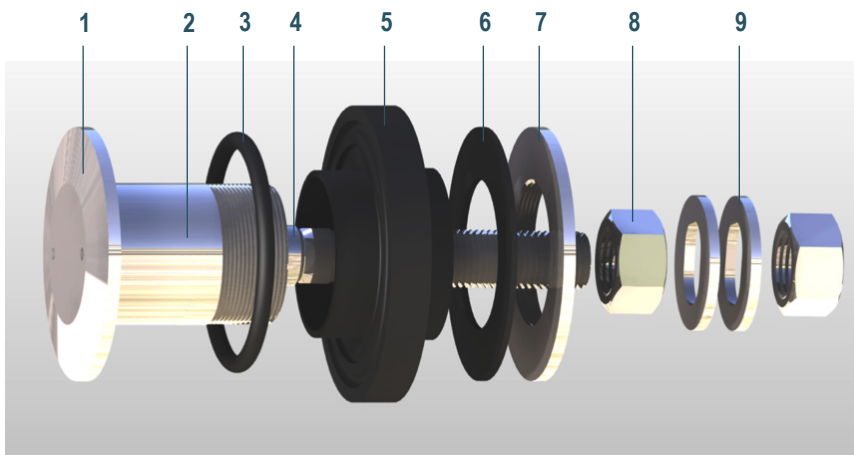
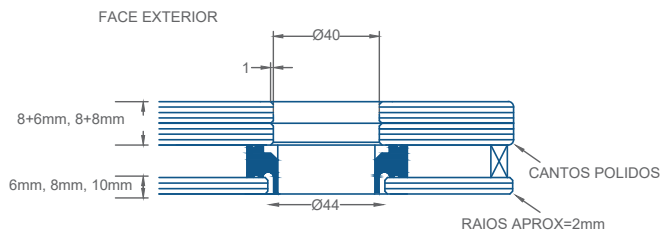
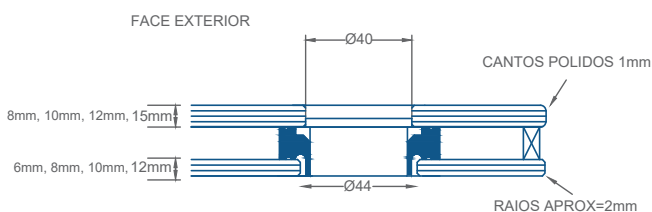
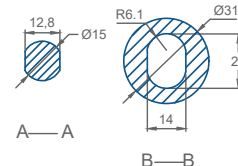
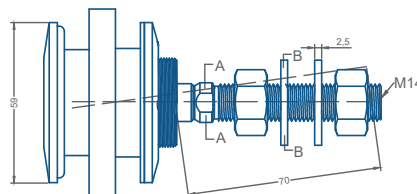
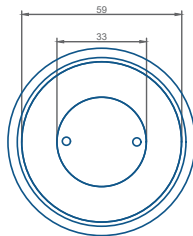
RÓTULAS

ROTULES

RDT28-36

Rótula em aço inox AISI316 de tampa para fachadas/ coberturas em vidro duplo temperado 28 e 36mm – furo cilíndrico, M14 ou M16, para aplicação pelo interior.

Articulated bolt rotule in stainless steel AISI 316 for double glazing facade and roofs in tempered glass 28 to 36mm, cylindrical hole, M14 or M16, for interior application.



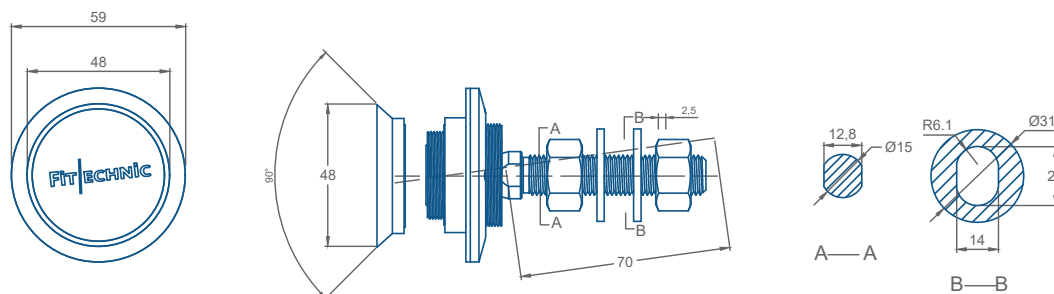
COMPOSIÇÃO / COMPOSITION

- 1 – Tampa SS AISI316 - Ø60mm / SS AISI316 cap Ø60mm
- 2 – Corpo SS AISI316 / SS AISI316 body
- 3 – O'ring em nylon / O'ring washer polyethylene
- 4 – Parafuso roscado M14 / M14 rotulated thread
- 5 – FISEP separador em nylon para câmara / Contact washer polyethylene for IGU double glazing
- 6 – Anilha em nylon / Contact washer polyethylene
- 7 – Anilha roscada interior SS AISI316 - Ø60mm (aperto aprox.10~15N/m) / SS AISI316 washer interior cap Ø60mm (tighten aprox.10~15N/m)
- 8 – Porca DIN 934 A4 / Nut DIN 934 A4
- 9 – Anilha SS AISI316 / SS AISI316 washer

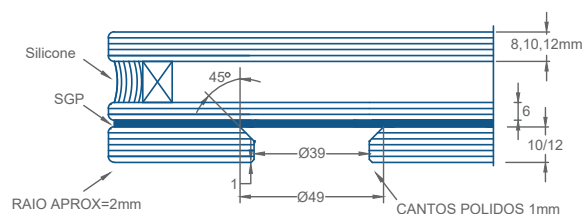
RCE-FTL

Rótula em aço inox AISI316 de tampa cônica para embutir em vidro laminado ou em vidro duplo – furo tronco cônico no vidro interior de 10/12mm, escareado, M14, para aplicação pelo interior para vidro duplo.

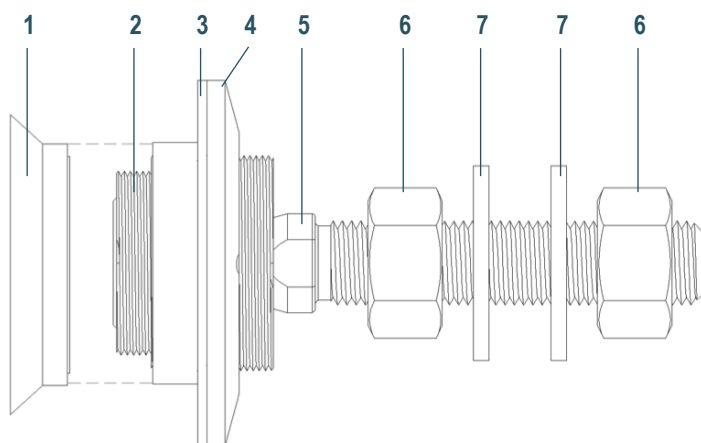
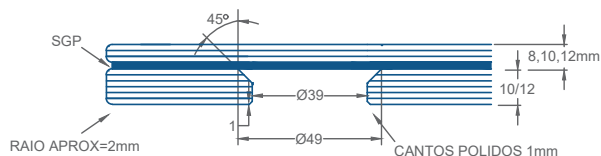
Articulated bolt rotule in stainless steel AISI 316 with conical cap to embedded in laminated glass or double glazing IGU, conical hole in the inner glass of 10/12mm, Countersunk, M14, for interior application.



FACE EXTERIOR



FACE EXTERIOR



COMPOSIÇÃO / COMPOSITION

- 1 – Tampa cônica SS AISI316 para laminar no vidro – Ø49mm (aperto aprox. 10~15N/m) / SS AISI316 Washer Exterior Conic Cap Ø50mm (tighten aprox. 10~15N/m)
- 2 – Corpo roscado SS AISI316 / SS AISI316 body
- 3 – Anilha em nylon / Contact washer Polyethylene
- 4 – Anilha roscada interior SS AISI316 - Ø60mm (aperto aprox. 10~15N/m) / SS AISI316 Washer interior cap Ø60mm (tighten aprox. 10~15N/m)
- 5 – Parafuso articulado M14 / M14 rotulated thread
- 6 – Porca DIN 934 A4 / Nut DIN 934 A4
- 7 – Anilha SS AISI316 / SS AISI316 Washer

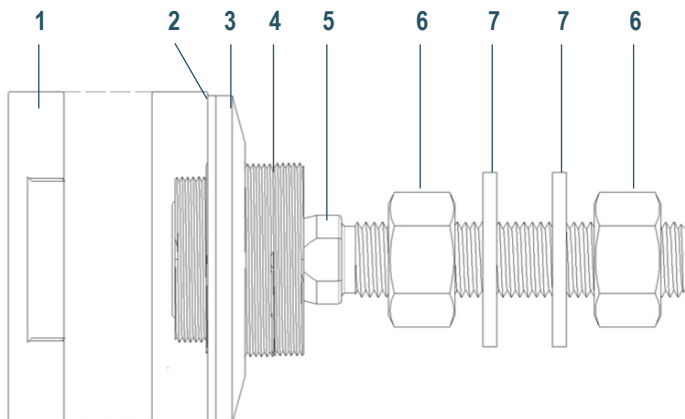
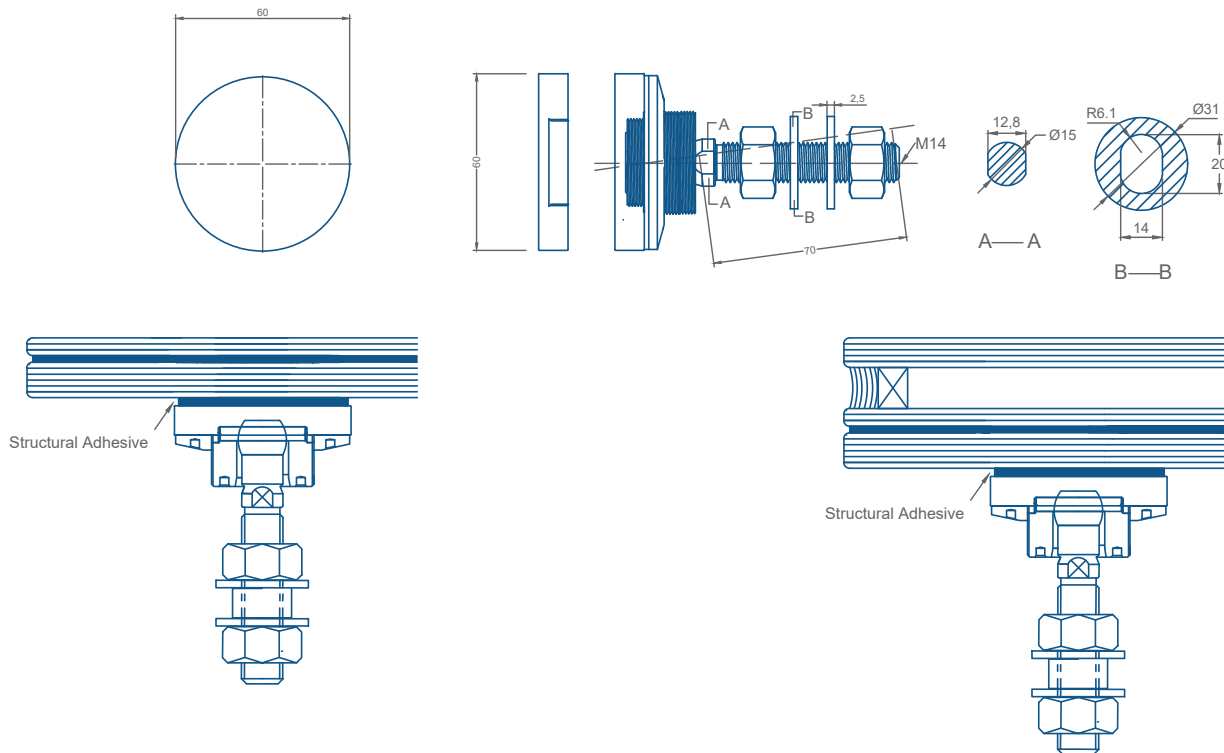
RÓTULAS

ROTULES

RCE-GL

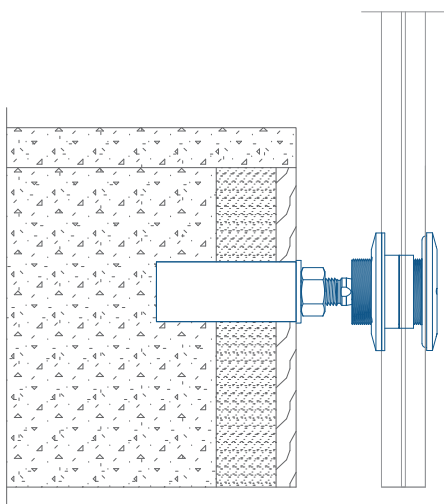
Rótula em aço inox AISI316 para aplicação com adesivo estrutural tipo DP490 ou TSSA (sob consulta). Sem necessidade de furo. M14, para aplicação pelo interior.

Articulated bolt rotule in stainless steel AISI 316 for structural adhesive application as SIKA, DP490 ou TSSA (to consult). No drilling necessary.



COMPOSIÇÃO / COMPOSITION

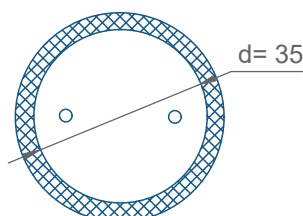
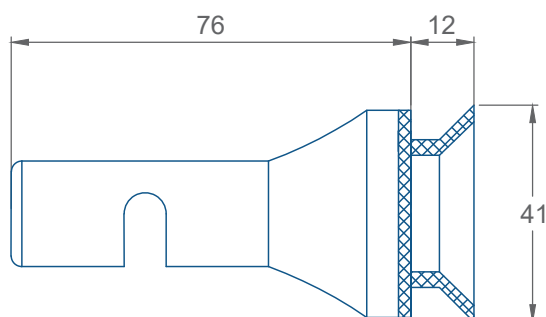
- 1 - Tampa para adesivo SS AISI316 – Ø49mm (aperto aprox.10~15N/m) / SS AISI316 Washer Exterior Conic Cap Ø50mm (tighten aprox.10~15N/m)
- 2 - Anilha em nylon / SS AISI316 body
- 3 - Anilha roscada interior SS AISI316 - Ø60mm (aperto aprox.10~15N/m) / Contact washer Polyethylene
- 4 - Corpo roscado SS AISI316 / SS AISI316 Washer interior cap Ø60mm (tighten aprox.10~15N/m)
- 5 - Parafuso articulado M14 / M14 rotulated thread
- 6 - Porca DIN 934 A4 / Nut DIN 934 A4
- 7 - Anilha SS AISI316 / SS AISI316 Washer



RCTF + FITT100

Rótula fixa aço inox AISI316 de tampa para aplicação de fachadas interiores /guardas de vidro a betão ou aço. Furo cilíndrico, M14 ou M16, para aplicação pelo exterior.

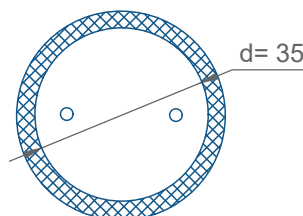
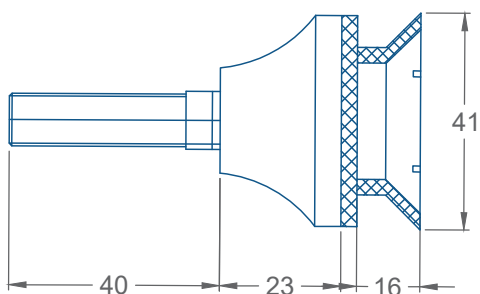
Fixed bolt rotule in stainless steel AISI 316 with cap for interior facades applicattion or glass balustrades application to concrete or steel. Cylindrical hole, M14 or M16, for exterior installation.



RSEF - ADAPTER + ROTULE
(HOOK AND PIN)

Adaptador /Fixador em aço inoxidável AISI 316 para fixação lateral em vidro ou estrutura de aço. Rotula com pin interno para fixar. O adaptador de suporte permite que o rotule tenha ajuste lateral.

Adapter/Fitting in stainless steel AISI 316 for sideway fixing to glass fins or steel structure. Rotule with inner screw to fix . The support adapter allows the rotule to have lateral ajustement.



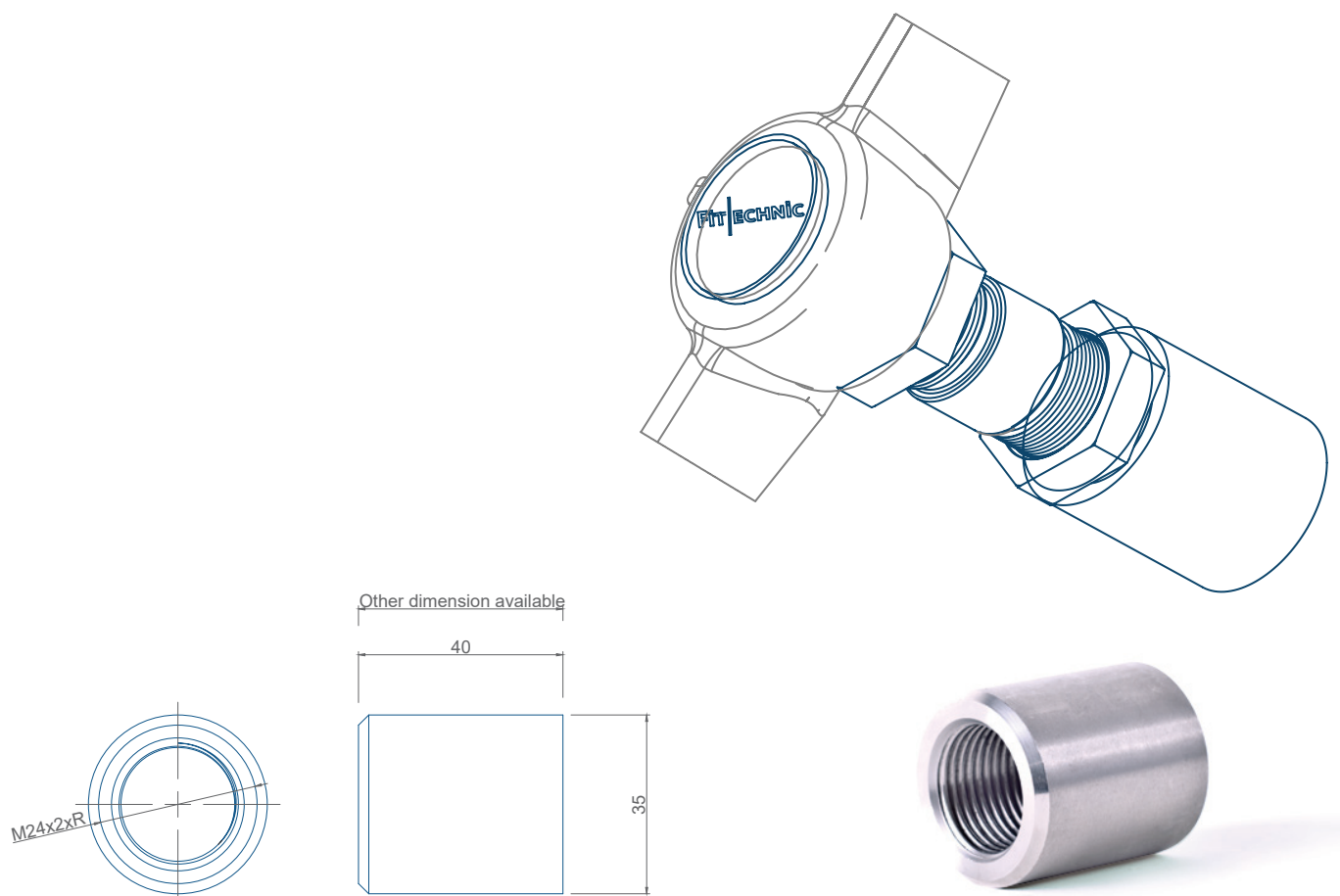
RSE12-21

Rótula fixa em aço inox AISI316 de aperto exterior para aplicação interior de vidro temperado 12 a 21 mm furo tronco cónico / escareado, M10, para aplicação pelo interior.

Fixed bolt rotule in stainless steel AISI 316 for exterior intalation in tempered glass 12 to 21mm, conical hole/Countersunk, M10, for interior application.

COMPLEMENTOS

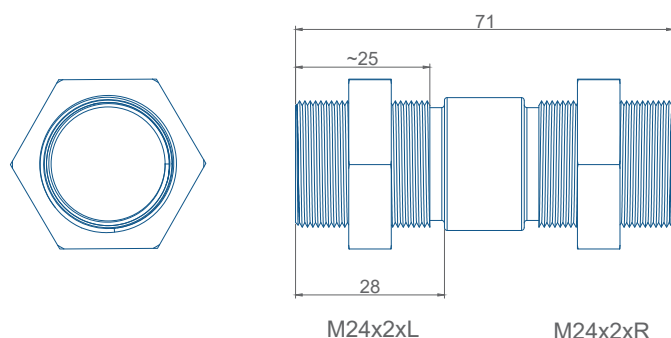
COMPLEMENTS



TETON FITT

Teton para soldar em aço inox AISI316 M24, L= 40mm complemento para ligação do conector FIC-71 e aranha a estrutura montante para sistema de instalação modelo 1.

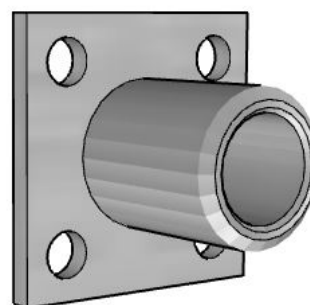
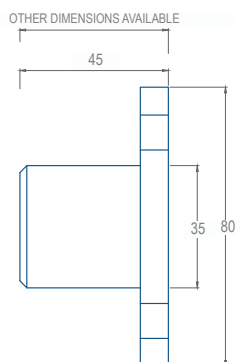
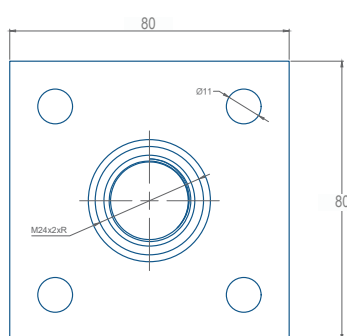
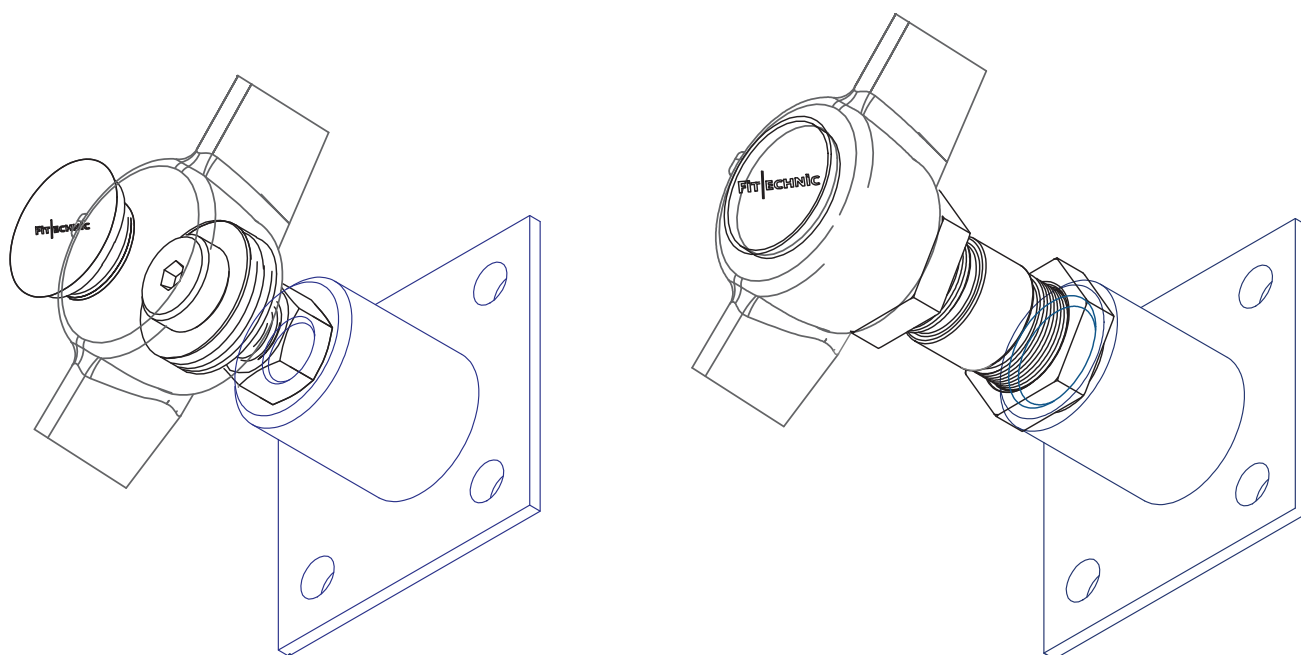
Base support for welding in stainless steel AISI316 M24, L = 40mm complement for connection of FIC-71 connector and spider to main structure for installation system model 1.



FIC71

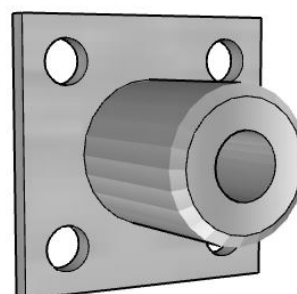
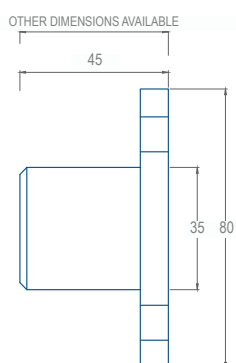
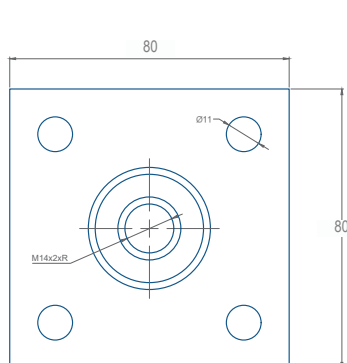
Conector em aço inox AISI316 M24, dupla rosca, 2 porcas bloqueantes, complemento de regulação e para ligação da aranhas, a FI-TT e a estrutura montante, para sistemas de instalação modelo 1.

Thread union screw in stainless steel AISI316, M24, double thread, 2 locking nuts, adjustment complement and connection to the spider, the FI-TT and the main structure, for installation system model 1.



BASE FICTM24

Base de suporte em aço inox 316 M24 para aplicação de conector FIC71 para sistema modelo 1.
Support base in 316 M24x2xD stainless steel for FIC71 connector application for model 1 system.

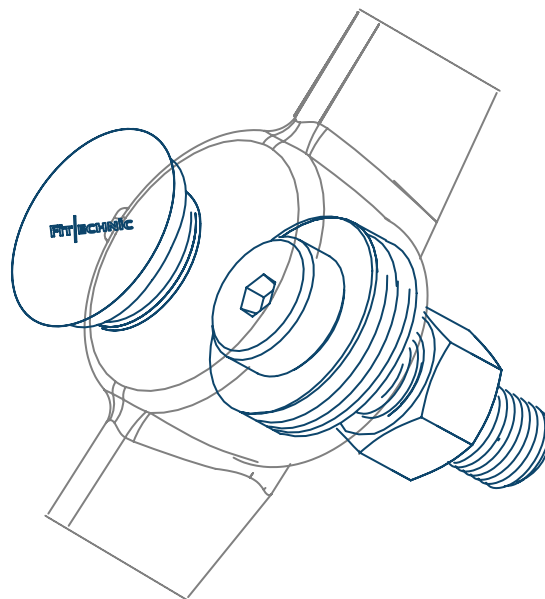
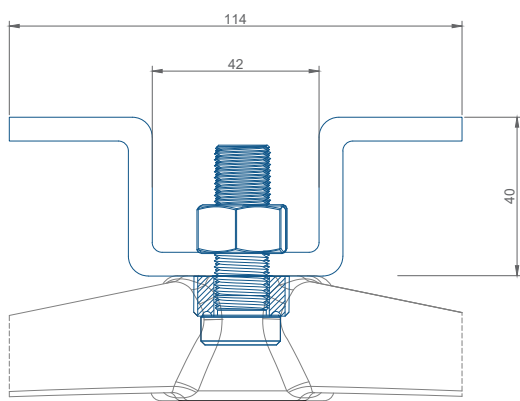


BASE FICTM14

Base de suporte em aço inox 316 M14 para aplicação de aranha directa através de FIEM14 para sistema modelo 2 ou 3.
Support base in 316 M14 stainless steel for direct spider application through FIEM14 for model 2 or 3 system

COMPLEMENTOS

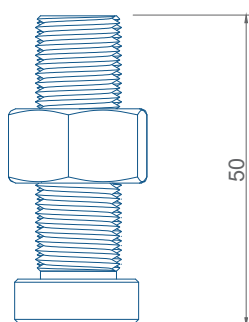
COMPLEMENTS



FI-OMG

Base Ómega em aço inox AISI316 , para ligação aparafusada M14 da aranha a estrutura montante para sistema modelo 2 e modelo 3

Omega base in stainless steel AISI316 , for screw connection M14 of the spider to the main structure for instalattion system model 2 and model 3.



M24x2xLEFT screw in spider



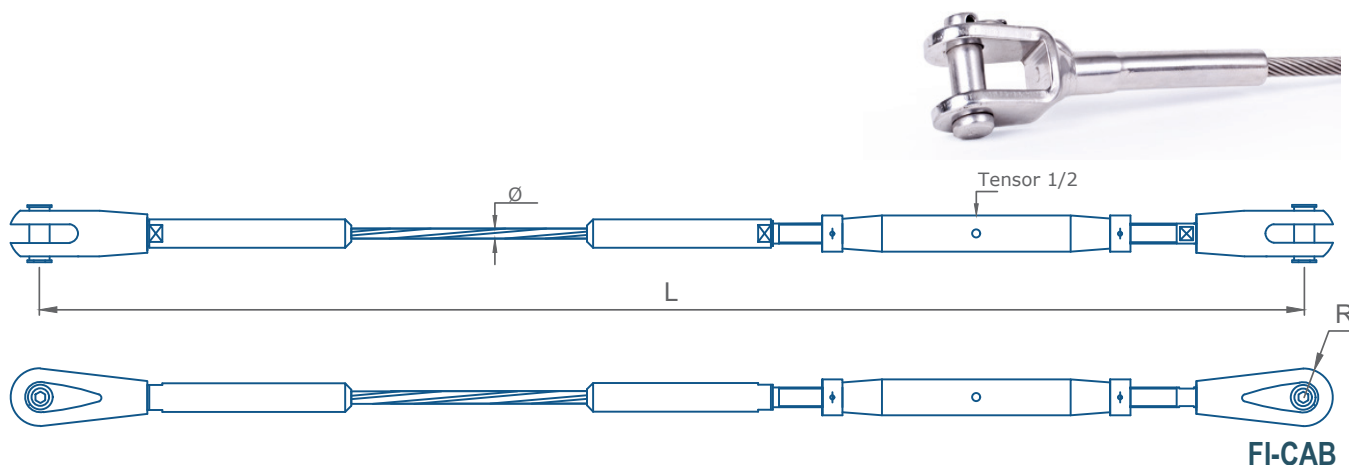
FIX-AR

Complementos e adaptadores em aço inox AISI316 para sistema de instalação modelo 2 fixação oculta. Inclui Parafuso especial M14 e anilha roscada M24 para interior da aranha.

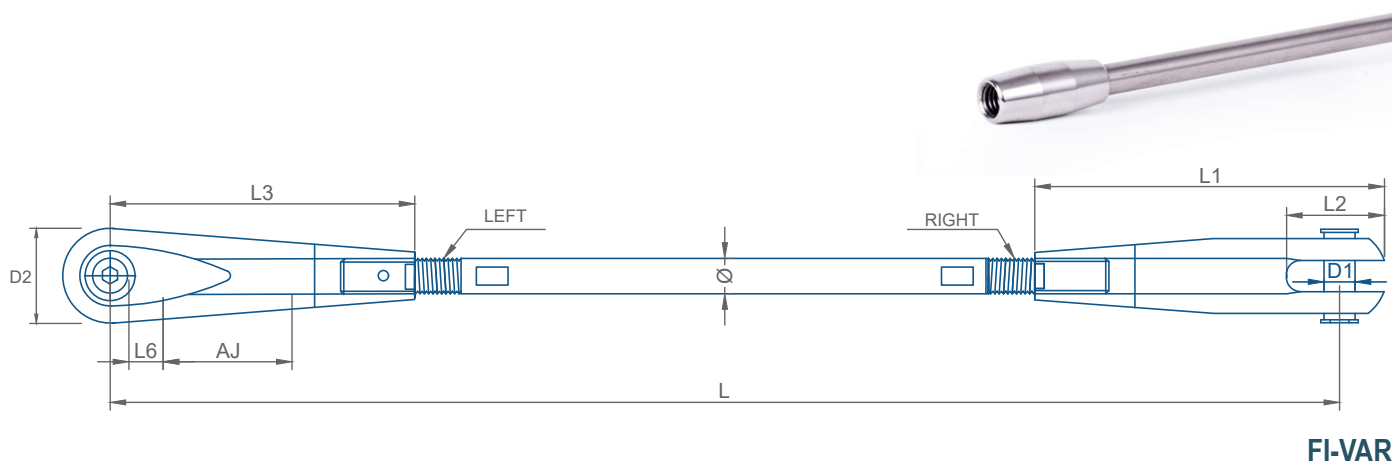
Complements and adapters in stainless steel AISI316 for installation system model 2 hidden fixing. Includes M14 special screw and M24 threaded washer for spider interior.

CABOS E TIRANTES

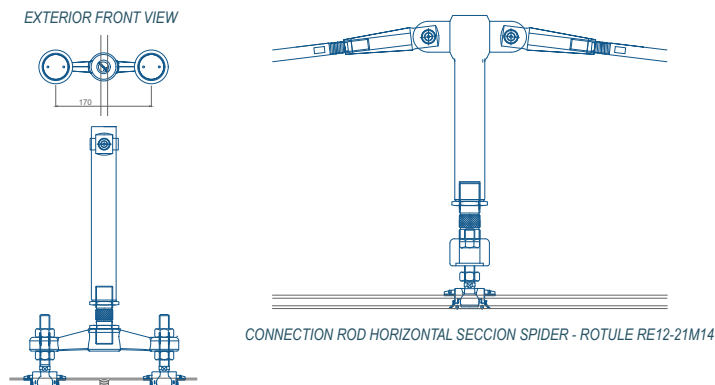
CABLES AND RODS



Cabo rígido 1x19 em aço inox AISI 316 com tensor e 2 garfos de diâmetro variável.
Cable in stainless steel AISI 316 with turnbuckle and 2 forks variable diameter.



Varão roscado em aço inox AISI 316 com tensor e 2 garfos de diâmetro variável.
Rod in stainless steel AISI316 with turnbuckle and 2 forks variable diameter



Biela em aço inox AISI 316 com orelhas para ligação a FI-VAR ou FI-CAB.
Connecting Rod in stainless steel AISI316 with steel plates for forks, for the connection of spiders and cables/rods.

PATCHFITTING

PATCHFITTING

PF-C

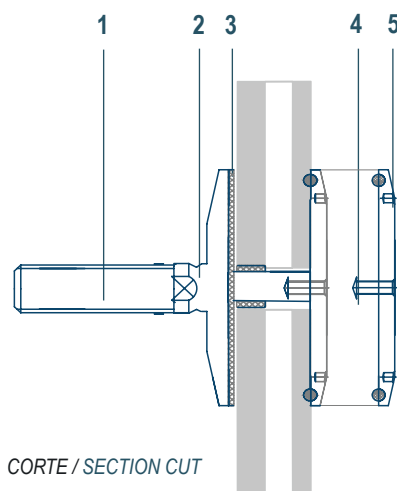
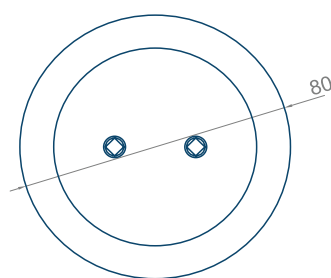
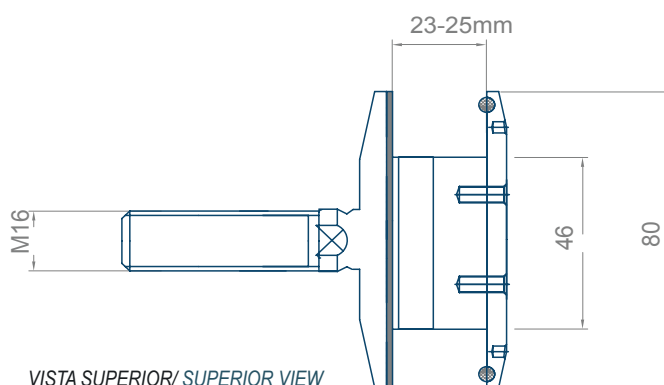
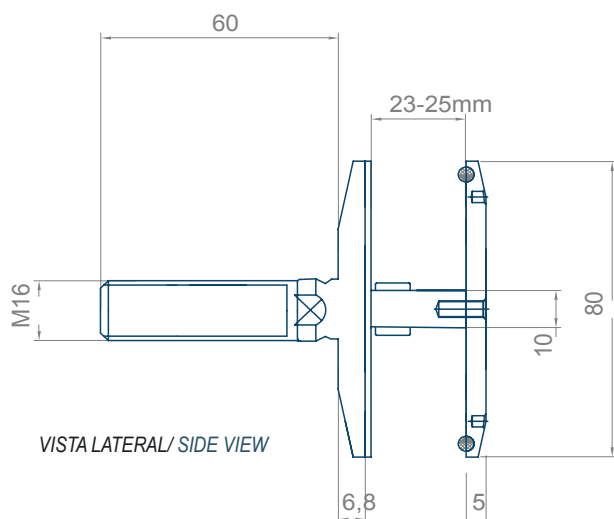
Pinça de aperto em aço inox AISI316 , M16, para aplicação em fachadas, balaustradas, revestimento de vidro laminado e temperado. Possibilidade de aplicar em Aranhas FITECHNIC. Sem necessidade de furo no vidro.

Tightening clamp in stainless steel AISI316, M16, for application on facades, balustrades, cladding in laminated and tempered glass. Possibility to apply in FITECHNIC® Spiders. No need for drilling the glass.



DIMENSÕES / DIMENSIONS

RODUTO PERSONALIZADO (SOB CONSULTA) / CUSTOMIZED PRODUCT



COMPOSIÇÃO / COMPOSITION

- 1 - Parafuso M16 DIN 912 / Screw M16 DIN 912
- 2 - Tampa interior / Interior Cap
- 3 - Borracha separadora / Contact Polyethylene
- 4 - Parafuso M10 DIN 912 / Screw M10 DIN 912
- 5 - Tampa exterior / Exterior Cap

PATCHFITTING

PATCHFITTING PF-R

PF-R

Pinça de aperto em aço inox AISI316 , M16, para aplicação em fachadas, balaustradas, revestimento de vidro laminado e temperado. Possibilidade de aplicar em Aranhas FITECHNIC. Sem necessidade de furo no vidro.

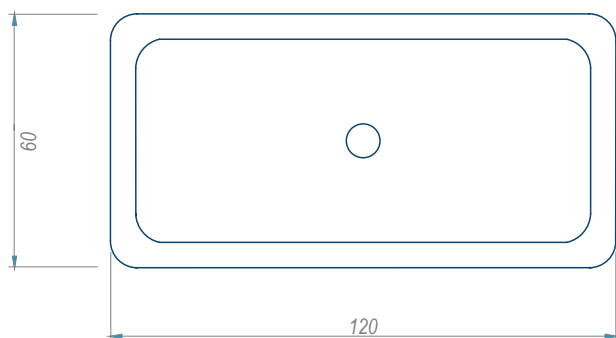
Tightening clamp in stainless steel AISI316, M16, for application on facades, balustrades, cladding in laminated and tempered glass. Possibility to apply in FITECHNIC® Spiders. No need for drilling the glass.



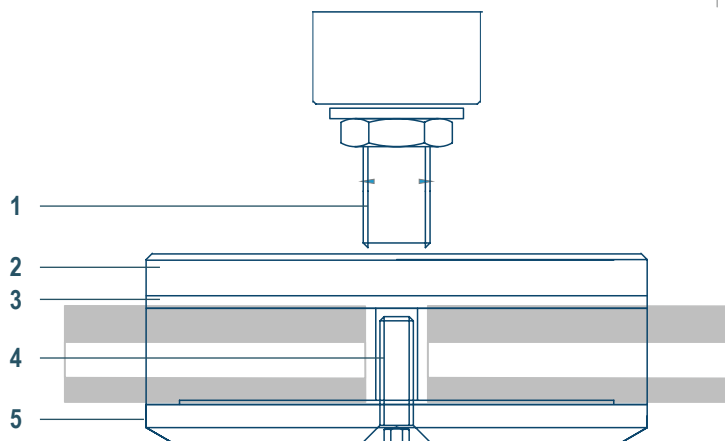
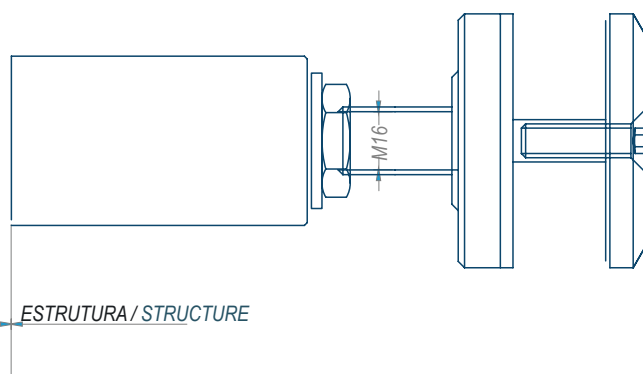
DIMENSÕES / DIMENSIONS

PRODUTO PERSONALIZADO (SOB CONSULTA) / CUSTOMIZED PRODUCT

VISTA FRONTAL / FRONT VIEW



VISTA LATERAL/ SIDE VIEW



CORTE / SECTION CUT

COMPOSIÇÃO / COMPOSITION

- 1 - Parafuso M16 DIN 912 / Screw M16 DIN 912
- 2 - Tampa interior / Interior Cap M24x2
- 3 - Borracha separadora / Contact Polyethylene
- 4 - Parafuso M10 DIN 912 / Screw M10 DIN 912
- 5 - Tampa exterior / Exterior Cap M24x2

PATCHFITTING

PATCHFITTING PF-H

PF-H

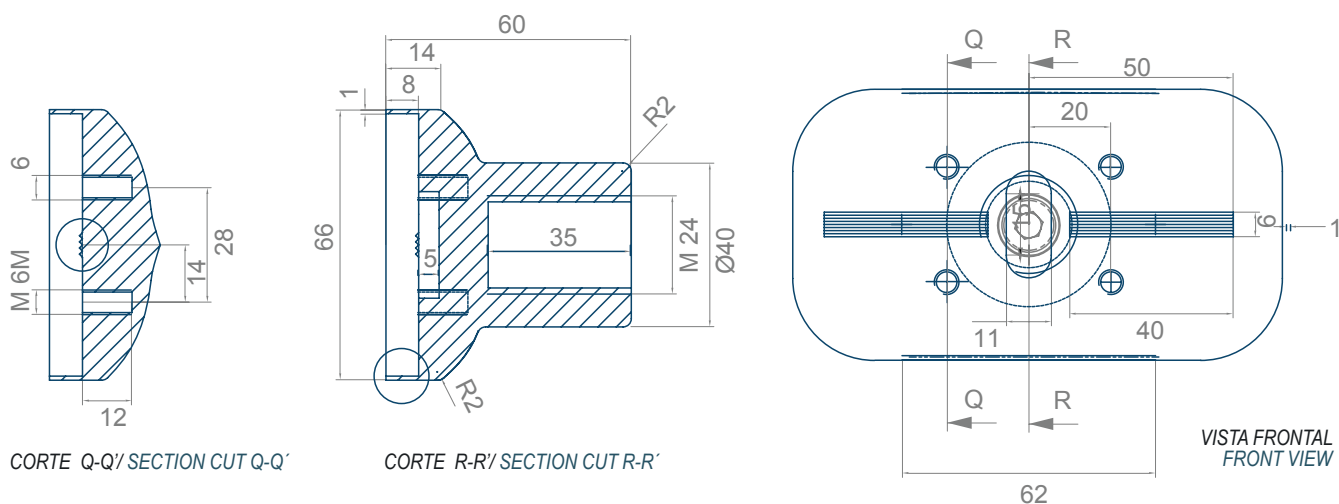
Pinça de aperto regulável em aço inox AISI316 , M24, para aplicação em fachadas de vidro laminado ou duplo até 40mm. Sem necessidade de furo no vidro. Sistema de instalação Modelo 1 com complementos FI-TT e FIC-71.

Adjustable Tightening clamp in stainless steel AISI316, M24, for application in facades of laminated glass or double glazing up to 40mm. No need for drilling the glass. Installation system Model 1 with complements: base support FI-TT and Thread union screw FIC-71.



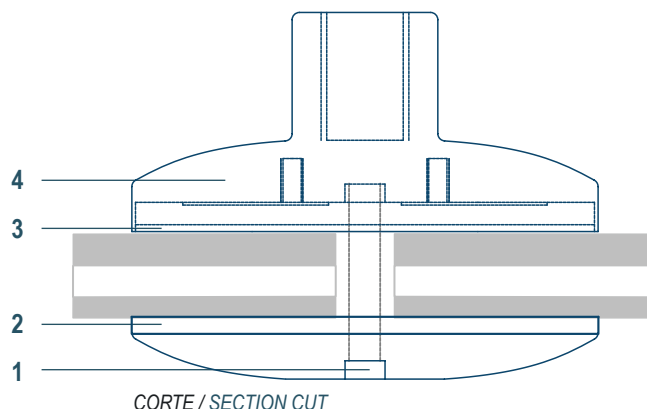
DIMENSÕES / DIMENSIONS

RODUTO PERSONALIZADO (SOB CONSULTA) / CUSTOMIZED PRODUCT



COMPOSIÇÃO / COMPOSITION

- 1 - Parafuso M10 DIN 912 / Screw M10 DIN 912
- 2 - Tampa exterior / Exterior Cap
- 3 - Borracha separadora / Contact Polyethylene
- 4 - Tampa interior M24x2 / Interior Cap M24x2



PRODUTOS ESPECIAIS

SPECIAL PRODUCTS

FIX-2VL90

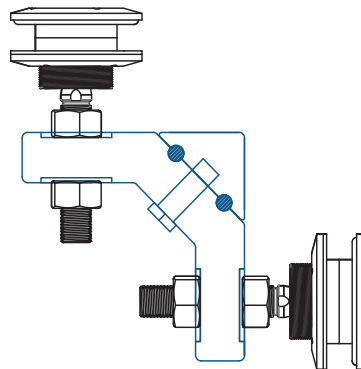
Aranha especial de canto com 2 braços em aço inox 316 ou alumínio, pode ser utilizados em cabos.

Special corner spider with 2 arms in 316 stainless steel or aluminum, can be used in cables.

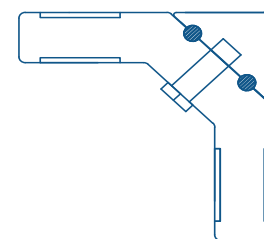


DESENHO / DRAWINGS

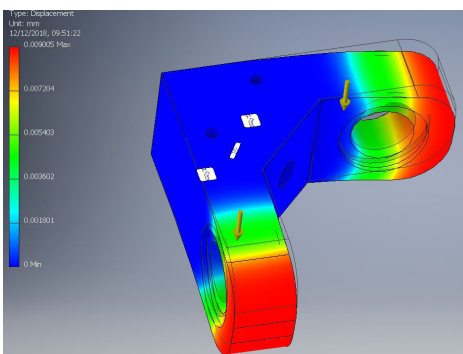
PRODUTO PERSONALIZADO (SOB CONSULTA) / CUSTOMIZED PRODUCT



VISTAS LATERAIS/ SIDES VIEW



VISTA SUPERIOR/ SUPERIOR VIEW



CARGA LOADS	FORÇA FORCE	DEFORM. MÁXIMA DEFLECTION MAX	ESFORÇO MÁXIMO STRESS MAX
VENTO PRESSÃO POSITIVE WIND	2kN	0,46mm	240 MPa
VENTO SUCÇÃO NEGATIVE WIND	2kN	0,43mm	240 MPa

PRODUTOS ESPECIAIS

SPECIAL PRODUCTS

FIX-STEP

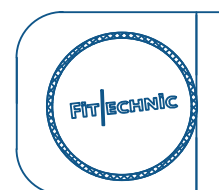
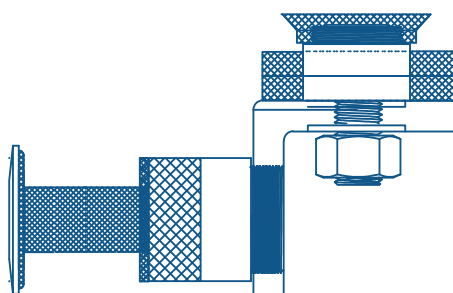
Peça de Fixação em Aço inox 316 para degraus e guardas em vidro para escadas.

Fixation piece in 316 stainless steel for step glass and glass balustrades for stairs

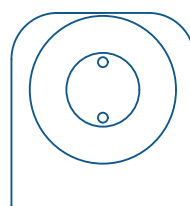


DESENHO / DRAWINGS

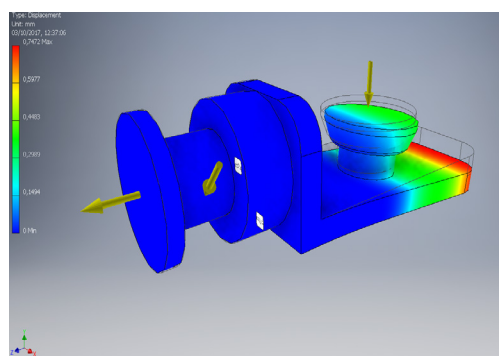
PRODUTO PERSONALIZADO (SOB CONSULTA) / CUSTOMIZED PRODUCT



VISTA SUPERIOR/ SUPERIOR VIEW



VISTA LATERAL/ SIDE VIEW



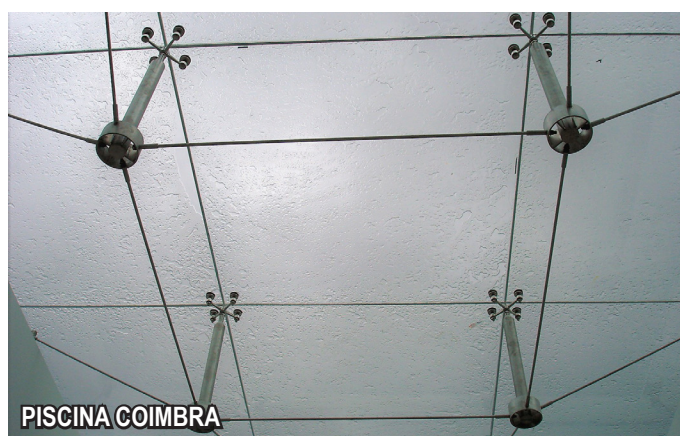
CARGA LOADS	FORÇA FORCE	DEFORM. MÁXIMA DEFLECTION MAX	ESFORÇO MÁXIMO STRESS MAX
VENTO PRESSÃO POSITIVE WIND	2kN	0,46mm	240 MPa
VENTO SUCÇÃO NEGATIVE WIND	2kN	0,43mm	240 MPa



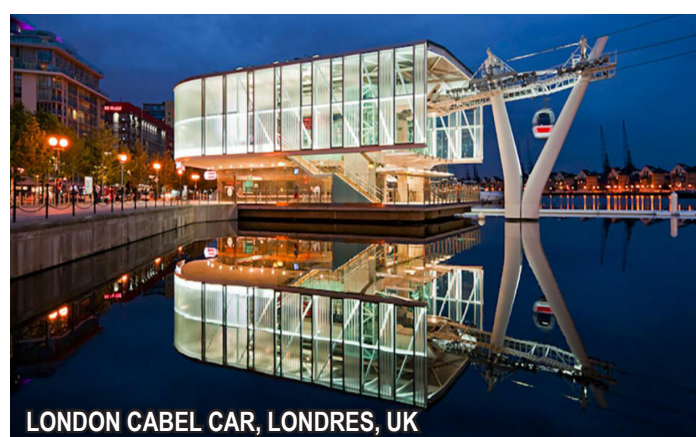
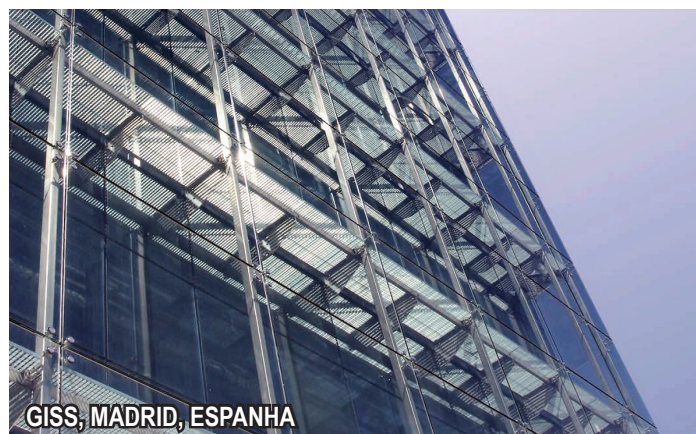
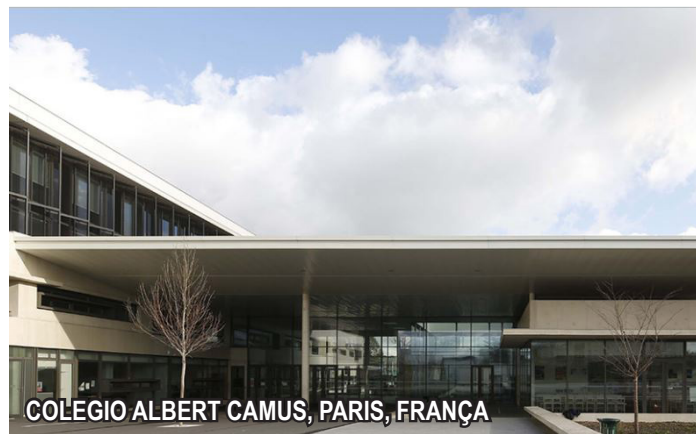
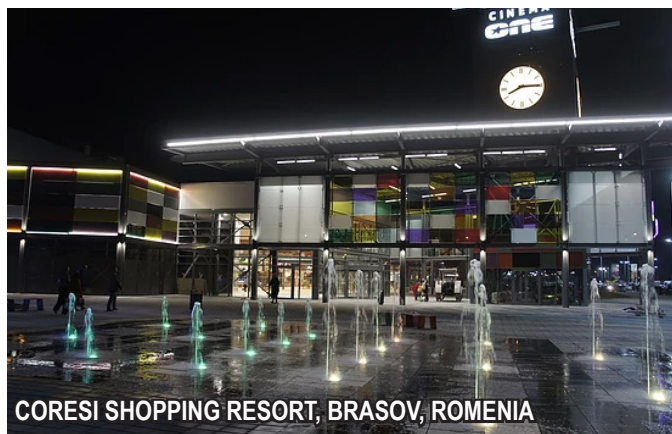
REFERÊNCIAS

PROJECTS

OBRAS DE REFERENCIA PORTUGAL
PORTUGAL REFERENCE PROJECTS



OBRAS DE REFERENCIA INTERNACIONAIS
INTERNACIONAL REFERENCE PROJECTS



OBRAS DE REFERENCIA INTERNACIONAIS
INTERNACIONAL REFERENCE PROJECTS



AUDITORIO BORDEAUX, FRANÇA



AUDITORIO SEVILHA, ESPANHA



BANDEIRANTES MALZONI, SÃO PAULO, BRASIL



EDÍFICIO FRED OLSEN, CANARIAS, ESPANHA



ESTAÇÃO BIRMINGHAM NEW STREET, UK



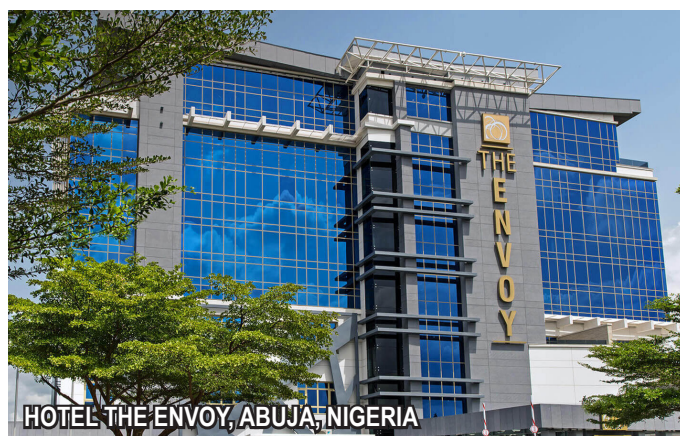
TORRE AQUARELA, URUGUAI



FACULDADE DE MEDICINA CASABLANCA, MARROCOS



UNIVERSIDADE RABAT, MARROCOS





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