

STADIA  
ARENAS

vector foiltec  
CREATE. SUCCESS.



LITTLE CAESARS ARENA,  
DETROIT MI

U.S. BANK STADIUM,  
MINNEAPOLIS MN

STADIUM FAÇADES.

# TEXLON® ETFE SYSTEMS – CREATING THE ULTIMATE FAN EXPERIENCE

## WHEN ENTERTAINING 100,000 PEOPLE, YOU SHOULD HAVE THE RIGHT LIVING ROOM.

When you are inviting people to your home, you always make sure everything is perfect, and your home is inviting no matter how big the event. Things are quite clear when it comes to building a new home for sports teams. Vector Foiltec has created stadia all over the world, for all kinds of sports in a variety of climates. And our clients love them, just as their clients – the fans – love them.

Texlon® ETFE gives architects the freedom to design the iconic masterpieces that make stadia and arena's the new landmarks of their host city. But it is far more than just stunning architecture and spectacular lighting effects that convince our customers. Natural daylight keeps the spirit of an outdoor sport indoors, when it is played in a comfortable, inviting and enclosed environment. Additionally, the possibility to cover areas around the main venue enables owners to establish a whole community with office space, shopping, and dining for a development that is so much more than just a sports venue.

Talking bottom line: You can turn your stadia and arenas into champions from an economical perspective, offering strong value and durability, that is easy to manage and maintain with year-round revenue. If you are looking for the perfect stadium experience, call us and let us show you what being picked in the first round of drafts is like and what an experienced team we are. Only thing that is missing are our cheerleaders and team jerseys – but we are working on it.



Benefits of working with  
Vector Foiltec:

- / Market leader in ETFE application
- / Design and engineering competence in ETFE and structure
- / Deep understanding of construction processes and schedule
- / Support in acoustic, climate and lighting design
- / Largest ETFE fabrication capacity for big-scale projects
- / Worldwide presence



Benefits of ETFE:

- / Design flexibility for iconic architecture
- / Efficient structures with maximum free span
- / Ultra lightweight transparent cladding solutions
- / LED integration for stunning illumination effects
- / Maximum long term system durability
- / Suitable for every climate and environment
- / Perfect for LEED & BREAM and DGNB certifications



# LITTLE CAESARS ARENA DETROIT MI USA

Project:  
Little Caesars Arena

Owner:  
Olympia Development of Michigan

Architect:  
HOK

Texlon® System:  
3 Layers of transparent ETFE foils,  
dot matrix printed outer layer with light  
silver ink (DM4:74)

Structure:  
Steel

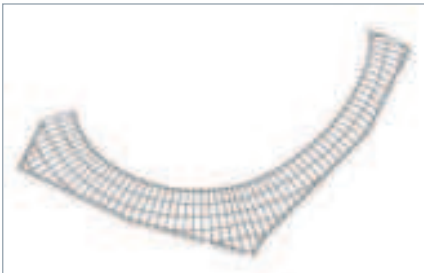
Vector Foiltec Scope:  
Texlon® ETFE system design, fabrication  
and installation, steel structure design and  
engineering.

© Olympia Development of Michigan

## A GAME CHANGER FOR DETROIT.

The Little Caesars Arena is not just a stage for major league hockey and basketball games in Michigan. Municipalities and Investors realized a much bigger plan: The District Detroit, which puts the arena in the middle of a rejuvenation project for the city.

Why build a sports venue as a stand-alone destination on the outskirts when you can embed it into a whole entertainment ecosystem with restaurants, offices, shopping and housing? Detroit had the right idea and carried it out to perfection. Focused on the entertainment hotspot is the light flooded via space around the arena. Vector Foiltec delivered both the transparent cladding solution and the complex steel structure for a space that is used throughout the year. An architectural icon and a go-to place for locals and guests to enjoy, while creating jobs and revenue.



Sixty-five custom built steel trusses span between the arena and the adjacent buildings where they rest on huge slide bearings.



## CHALLENGE 1: A TURN KEY SOLUTION.

Vector Foiltec was a vital part in the design and engineering of the Via Space roof. The contract included the delivery and installation of the Texlon® ETFE system, including the custom-built steel structure.

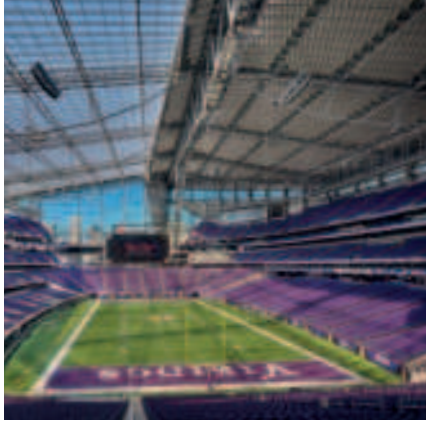
## CHALLENGE 2: MOVEMENT.

The transparent foil cushions and the steel trusses span up to 120 ft between independent buildings. The structure and roofing panels need to cope with 3D movements up to 15 cm.

## CHALLENGE 3: LOCAL REQUIREMENTS.

Working with strict local building codes and the involvement of unions, MWBEs and local contractors are common practice for Vector Foiltec. We are a global player that feels at home wherever our projects land us.





# U.S. BANK STADIUM MINNEAPOLIS MN USA

Project:  
U.S. Bank Stadium

Owner:  
Minnesota Sports Facilities Authority (MSFA)

Architect:  
HKS

Texlon® System:  
3 layers of ETFE foils, dot matrix printed on  
outer layer with light silver ink

Structure:  
Steel

Vector Foiltec Scope:  
Texlon® ETFE system design, fabricati-  
on and installation, assist with structural  
engineering

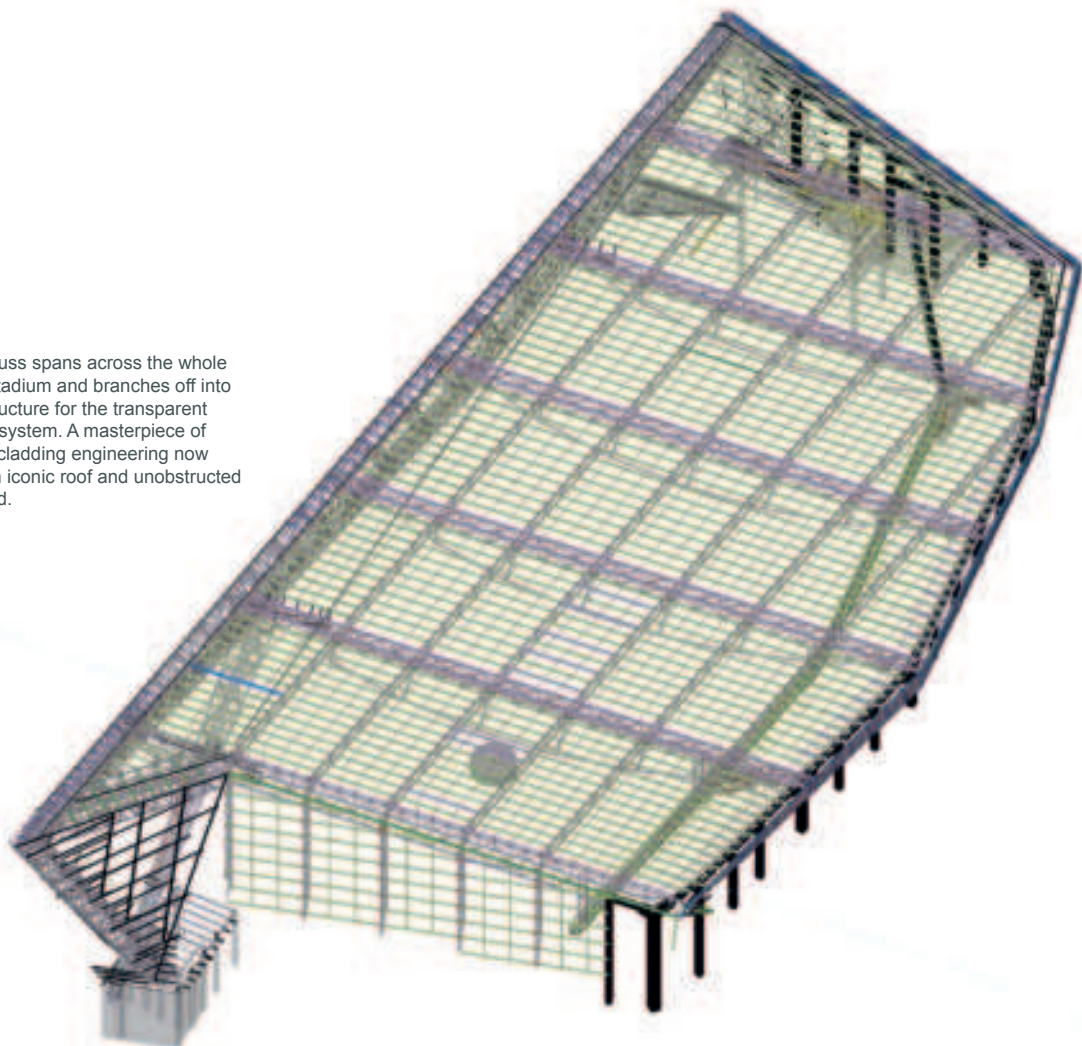
© technical drawing Thornton Tomasetti  
© interior photo Joe Aker  
© aerial night photo Mark Goodman

## TRANSPARENT IS THE NEW RETRACTABLE.

The Minnesota Vikings neither fear their opponents nor the harsh elements in their home state. How do you battle the extremely low temperatures during Minnesota's winters? You build an enclosed stadium to host football games and a lot of other events. Natural light and an open feel were the main goals of the stadium design team at HKS.

The 22.300 m<sup>2</sup> ETFE roof set the bar for the next generation of sports venues, especially in rough climates. The dimensions were already a challenge – but adding alpine snow loads, hurricane grade wind loads and a fast track construction schedule called for experts in all areas of design and engineering.

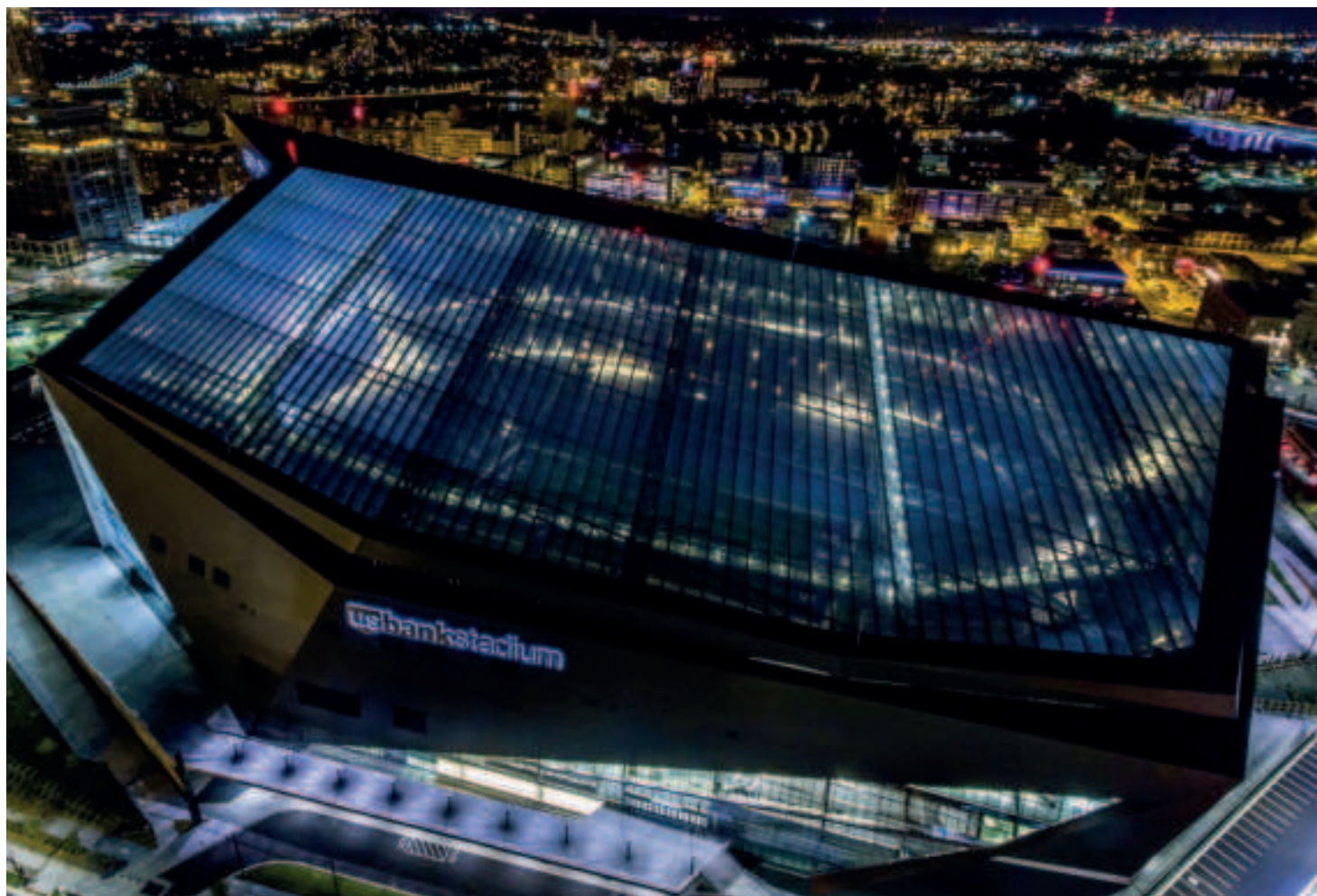
A single roof truss spans across the whole length of the stadium and branches off into the support structure for the transparent Texlon® ETFE system. A masterpiece of structural and cladding engineering now provides for an iconic roof and unobstructed view of the field.



Vector Foiltec joined the design and engineering team early in the process to ensure that the roofing system was designed to endure the environmental loads. This resulted in the longest ETFE cushions ever produced, spanning a breathtaking 100 meters from ridge to eave. This was not just beneficial for insulation and weight. The long unobstructed cushions allow snow to slide easily down the 14-degree pitch into massive snow gutters. Furthermore, this required less framing while leaving insulation values unaffected.

Vector Foiltec carefully thought through the logistics and installation methodology, which were a vital part in an important but rarely seen event: The stadium construction was completed several weeks ahead of schedule.

The largest transparent stadium roof in NFL history was only possible with the lightweight, but Viking-strong, Texlon® ETFE roof. Creating a transparent feel and flooding the interior with natural daylight was part of architect HKS' concept, which features many new technologies and achieved LEED Gold certification.



#### **CHALLENGE 1: ENVIRONMENTAL LOADS.**

High snow loads and hurricane grade wind loads needed to be considered for the vast transparent roof. Sliding snow simulations and customized loadbearing techniques made this giant skylight possible.

#### **CHALLENGE 2: FAST TRACK SCHEDULE.**

The installation schedule was a key element of success. Structure and Texlon® ETFE cladding needed to be completed before the arctic-like winter temperatures made most installation work impossible.

#### **CHALLENGE 3: SITE LOGISTICS.**

Just in time deliveries were necessary to cope with the tight space on site. Offsite warehouses, local delivery specialists and well-coordinated site crews made for perfect construction clockwork.



# STADIUM FACADES

## BAKU NATIONAL STADIUM BAKU, AZERBAIJAN



both daylight photos © Altkat Architectural Photography

Ultimate recognition factor:  
The Texlon® ETFE panels covering  
the stadium façade are both a high  
performance envelope and unique  
design element for this monument.

### BUILDING ENVELOPE? GIANT VIDEO SCREEN!

It is a beauty by day: The Baku National Stadium is a stunning landmark with 600 diamond shaped ETFE panels. But at night, the 38.000 m<sup>2</sup> Texlon® ETFE façade turns into a giant video screen. The excellent compilation of an LED system and the white foil is the dream setup for endless possibilities to tint the whole stadium in all colors of the rainbow – or literally show high-resolution videos on the whole building envelope. The stadium experience just got a whole new dimension!

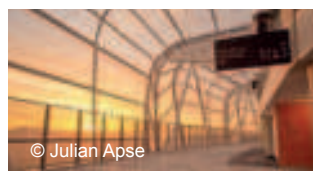


## EDEN PARK STADIUM AUCKLAND, NEW ZEALAND

### A VISUAL REDO AND THE GLOWING CANDY EFFECT.

Transforming a dull concrete wall into a unique and beautiful envelope – this was the goal of giving the Eden Park Stadium in Auckland a new façade. The lightweight transparent Texlon® ETFE system was the solution to outfit the venue with a whole new face. Minimum structure and maximum visual impact - the ETFE system forms the breathtaking exterior of the well-known stadium. Not to miss: Spotlights create the unique illumination throughout the building skin – we call it the glowing candy effect.

A great view from the inside out and  
outside in. The signature Texlon®  
ETFE façade provides shelter for  
fans and turns the stadium into  
eye-candy.



© Julian Apse

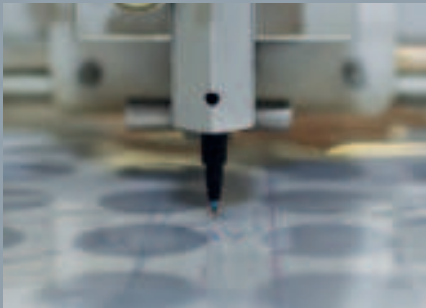


# ONE-STOP-SHOP



## CONCEPT AND DESIGN.

When a project first hits the drawing board, it is vital to have final result in mind. And that does not just go for structure and cladding, but also for the use of the building. With far more than 1,000 references, we have an extensive pool of knowledge that we share with our clients from day one. Getting your project right from the start saves you money and takes away risk.



## THE TEXLON® SYSTEM.

As the inventors of the Texlon® ETFE system, we can humbly say: We know our stuff! An optimized supply chain, the most rigorous quality assurance measures, and our in-house design and engineering team, make the core of our system the best in the industry. And if you have big plans: We've got you covered with our two high performance production facilities that grant on-time delivery, even for the biggest challenges.



## ALL AROUND THE TEXLON® SYSTEM.

Putting together the structure, skin and perimeter interfaces seems easy on paper, but contractors know: The devil is in the details. At Vector Foiltec we believe that the best ETFE system is only one piece of the puzzle. But rest assured, we have the other ones covered as well! An orchestrated arrangement of optimized components is what really creates the overall success.



## PUTTING IT ALL TOGETHER.

Access, hoisting, schedule, local restrictions: There are a lot of challenges on the last mile of a building marathon: The construction / installation. That's why you should choose a partner that knows the ins and outs. So here we are! With 18 offices around the world, connections to local labor unions and the solution to that little detail that no one thought about. In short: Let us put it all together for you!



## YOU'LL NEVER WALK ALONE!

There is not much additional that our Texlon® ETFE system needs. But for the few things that it does need, our Service Team will be there! We care for your system and make sure it serves you well for decades. Our maintenance crews come for regular check-ups. And in urgent cases, we are right around the corner. That is our promise as a true global player.



You will find Vector Foiltec with 18 offices  
all around the world.

Vector Foiltec  
Headquarters  
Steinacker 3  
28717 Bremen  
Germany

[inquiries@vector-foiltec.com](mailto:inquiries@vector-foiltec.com)

[vector-foiltec.com](http://vector-foiltec.com)



STADIA  
ARENAS

vector foiltec  
CREATE. SUCCESS.



LITTLE CAESARS ARENA,  
DETROIT MI

U.S. BANK STADIUM,  
MINNEAPOLIS MN

STADIUM FAÇADES.

# TEXLON® ETFE SYSTEMS – CREATING THE ULTIMATE FAN EXPERIENCE

## **WHEN ENTERTAINING 100,000 PEOPLE, YOU SHOULD HAVE THE RIGHT LIVING ROOM.**

When you are inviting people to your home, you always make sure everything is perfect, and your home is inviting no matter how big the event. Things are quite clear when it comes to building a new home for sports teams. Vector Foiltec has created stadia all over the world, for all kinds of sports in a variety of climates. And our clients love them, just as their clients – the fans – love them.

Texlon® ETFE gives architects the freedom to design the iconic masterpieces that make stadia and arena's the new landmarks of their host city. But it is far more than just stunning architecture and spectacular lighting effects that convince our customers. Natural daylight keeps the spirit of an outdoor sport indoors, when it is played in a comfortable, inviting and enclosed environment. Additionally, the possibility to cover areas around the main venue enables owners to establish a whole community with office space, shopping, and dining for a development that is so much more than just a sports venue.

Talking bottom line: You can turn your stadia and arenas into champions from an economical perspective, offering strong value and durability, that is easy to manage and maintain with year-round revenue. If you are looking for the perfect stadium experience, call us and let us show you what being picked in the first round of drafts is like and what an experienced team we are. Only thing that is missing are our cheerleaders and team jerseys – but we are working on it.



Benefits of working with  
Vector Foiltec:

- / Market leader in ETFE application
- / Design and engineering competence in ETFE and structure
- / Deep understanding of construction processes and schedule
- / Support in acoustic, climate and lighting design
- / Largest ETFE fabrication capacity for big-scale projects
- / Worldwide presence



Benefits of ETFE:

- / Design flexibility for iconic architecture
- / Efficient structures with maximum free span
- / Ultra lightweight transparent cladding solutions
- / LED integration for stunning illumination effects
- / Maximum long term system durability
- / Suitable for every climate and environment
- / Perfect for LEED & BREAM and DGNB certifications



# LITTLE CAESARS ARENA DETROIT MI USA

Project:  
Little Caesars Arena

Owner:  
Olympia Development of Michigan

Architect:  
HOK

Texlon® System:  
3 Layers of transparent ETFE foils,  
dot matrix printed outer layer with light  
silver ink (DM4:74)

Structure:  
Steel

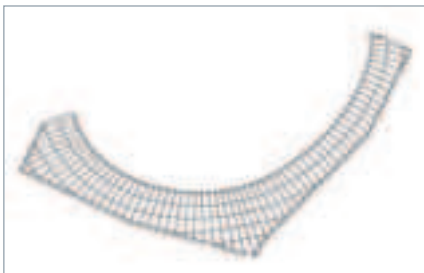
Vector Foiltec Scope:  
Texlon® ETFE system design, fabrication  
and installation, steel structure design and  
engineering.

© Olympia Development of Michigan

## A GAME CHANGER FOR DETROIT.

The Little Caesars Arena is not just a stage for major league hockey and basketball games in Michigan. Municipalities and Investors realized a much bigger plan: The District Detroit, which puts the arena in the middle of a rejuvenation project for the city.

Why build a sports venue as a stand-alone destination on the outskirts when you can embed it into a whole entertainment ecosystem with restaurants, offices, shopping and housing? Detroit had the right idea and carried it out to perfection. Focused on the entertainment hotspot is the light flooded via space around the arena. Vector Foiltec delivered both the transparent cladding solution and the complex steel structure for a space that is used throughout the year. An architectural icon and a go-to place for locals and guests to enjoy, while creating jobs and revenue.



Sixty-five custom built steel trusses span between the arena and the adjacent buildings where they rest on huge slide bearings.



## CHALLENGE 1: A TURN KEY SOLUTION.

Vector Foiltec was a vital part in the design and engineering of the Via Space roof. The contract included the delivery and installation of the Texlon® ETFE system, including the custom-built steel structure.

## CHALLENGE 2: MOVEMENT.

The transparent foil cushions and the steel trusses span up to 120 ft between independent buildings. The structure and roofing panels need to cope with 3D movements up to 6 inches.

## CHALLENGE 3: LOCAL REQUIREMENTS.

Working with strict local building codes and the involvement of unions, MWBEs and local contractors are common practice for Vector Foiltec. We are a global player that feels at home wherever our projects land us.





# U.S. BANK STADIUM MINNEAPOLIS MN USA

Project:  
U.S. Bank Stadium

Owner:  
Minnesota Sports Facilities Authority (MSFA)

Architect:  
HKS

Texlon® System:  
3 layers of ETFE foils, dot matrix printed on  
outer layer with light silver ink

Structure:  
Steel

Vector Foiltec Scope:  
Texlon® ETFE system design, fabricati-  
on and installation, assist with structural  
engineering

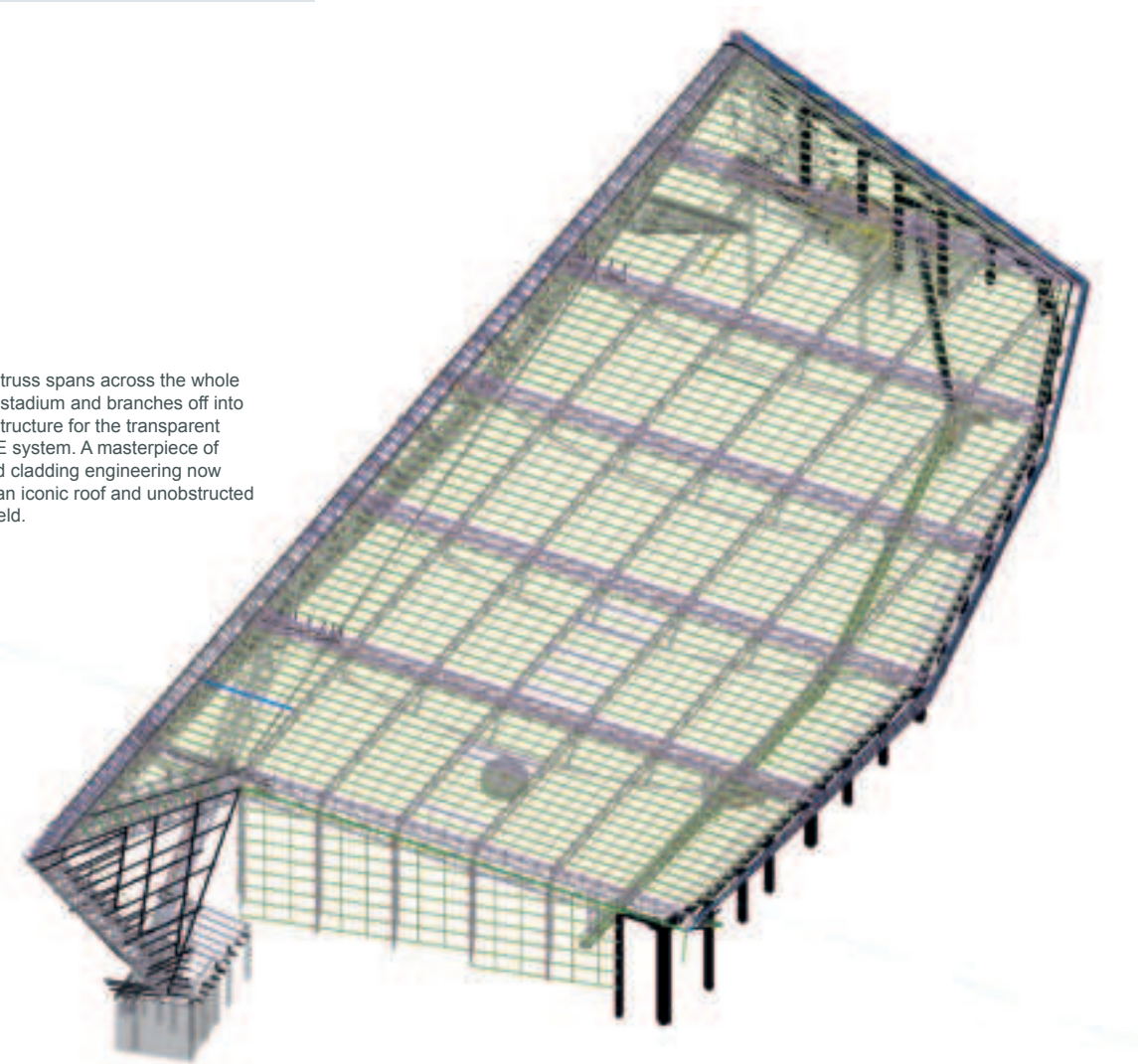
© technical drawing Thornton Tomasetti  
© interior photo Joe Aker  
© aerial night photo Mark Goodman

## TRANSPARENT IS THE NEW RETRACTABLE.

The Minnesota Vikings neither fear their opponents nor the harsh elements in their home state. How do you battle the extremely low temperatures during Minnesota's winters? You build an enclosed stadium to host football games and a lot of other events. Natural light and an open feel were the main goals of the stadium design team at HKS.

The 250,000 sq ft ETFE roof set the bar for the next generation of sports venues, especially in rough climates. The dimensions were already a challenge – but adding alpine snow loads, hurricane grade wind loads and a fast track construction schedule called for experts in all areas of design and engineering.

A single roof truss spans across the whole length of the stadium and branches off into the support structure for the transparent Texlon® ETFE system. A masterpiece of structural and cladding engineering now provides for an iconic roof and unobstructed view of the field.



Vector Foiltec joined the design and engineering team early in the process to ensure that the roofing system was designed to endure the environmental loads. This resulted in the longest ETFE cushions ever produced, spanning a breathtaking 400 ft from ridge to eave. This was not just beneficial for insulation and weight. The long unobstructed cushions allow snow to slide easily down the 14-degree pitch into massive snow gutters. Furthermore, this required less framing while leaving insulation values unaffected.

Vector Foiltec carefully thought through the logistics and installation methodology, which were a vital part in an important but rarely seen event: The stadium construction was completed several weeks ahead of schedule.

The largest transparent stadium roof in NFL history was only possible with the lightweight, but Viking-strong, Texlon® ETFE roof. Creating a transparent feel and flooding the interior with natural daylight was part of architect HKS' concept, which features many new technologies and achieved LEED Gold certification.



#### **CHALLENGE 1: ENVIRONMENTAL LOADS.**

High snow loads and hurricane grade wind loads needed to be considered for the vast transparent roof. Sliding snow simulations and customized loadbearing techniques made this giant skylight possible.

#### **CHALLENGE 2: FAST TRACK SCHEDULE.**

The installation schedule was a key element of success. Structure and Texlon® ETFE cladding needed to be completed before the arctic-like winter temperatures made most installation work impossible.

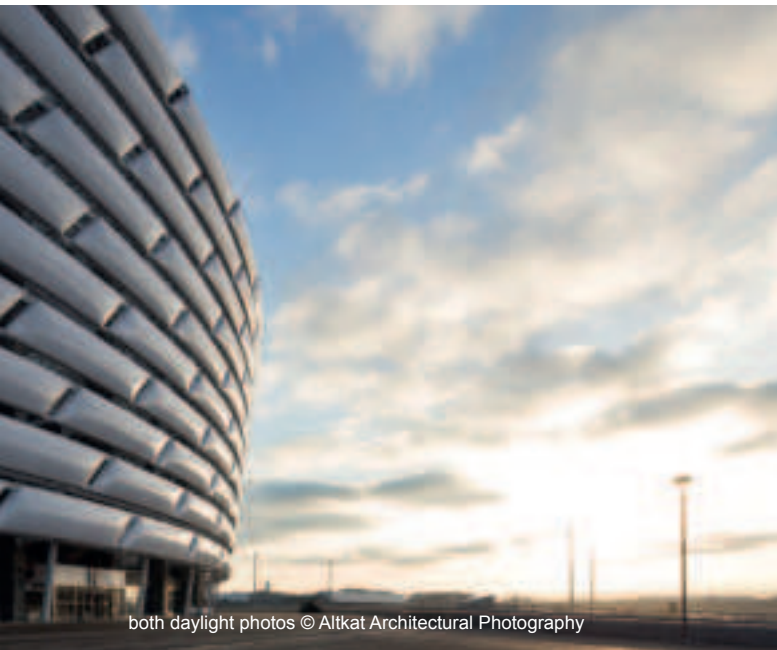
#### **CHALLENGE 3: SITE LOGISTICS.**

Just in time deliveries were necessary to cope with the tight space on site. Offsite warehouses, local delivery specialists and well-coordinated site crews made for perfect construction clockwork.



# STADIUM FACADES

## BAKU NATIONAL STADIUM BAKU, AZERBAIJAN



both daylight photos © Altkat Architectural Photography

Ultimate recognition factor:  
The Texlon® ETFE panels covering  
the stadium façade are both a high  
performance envelope and unique  
design element for this monument.

### BUILDING ENVELOPE? GIANT VIDEO SCREEN!

It is a beauty by day: The Baku National Stadium is a stunning landmark with 600 diamond shaped ETFE panels. But at night, the 410,000 sq ft Texlon® ETFE façade turns into a giant video screen. The excellent compilation of an LED system and the white foil is the dream setup for endless possibilities to tint the whole stadium in all colors of the rainbow – or literally show high-resolution videos on the whole building envelope. The stadium experience just got a whole new dimension!



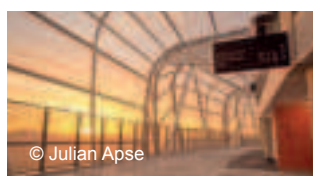
© getty images

## EDEN PARK STADIUM AUCKLAND, NEW ZEALAND

### A VISUAL REDO AND THE GLOWING CANDY EFFECT.

Transforming a dull concrete wall into a unique and beautiful envelope – this was the goal of giving the Eden Park Stadium in Auckland a new façade. The lightweight transparent Texlon® ETFE system was the solution to outfit the venue with a whole new face. Minimum structure and maximum visual impact - the ETFE system forms the breathtaking exterior of the well-known stadium. Not to miss: Spotlights create the unique illumination throughout the building skin – we call it the glowing candy effect.

A great view from the inside out and outside in. The signature Texlon® ETFE façade provides shelter for fans and turns the stadium into eye-candy.



© Julian Apse



© Populous



# ONE-STOP-SHOP



## CONCEPT AND DESIGN.

When a project first hits the drawing board, it is vital to have final result in mind. And that does not just go for structure and cladding, but also for the use of the building. With far more than 1,500 references, we have an extensive pool of knowledge that we share with our clients from day one. Getting your project right from the start saves you money and takes away risk.



## THE TEXLON® SYSTEM.

As the inventors of the Texlon® ETFE system, we can humbly say: We know our stuff! An optimized supply chain, the most rigorous quality assurance measures, and our in-house design and engineering team, make the core of our system the best in the industry. And if you have big plans: We've got you covered with our two high performance production facilities that grant on-time delivery, even for the biggest challenges.



## ALL AROUND THE TEXLON® SYSTEM.

Putting together the structure, skin and perimeter interfaces seems easy on paper, but contractors know: The devil is in the details. At Vector Foiltec we believe that the best ETFE system is only one piece of the puzzle. But rest assured, we have the other ones covered as well! An orchestrated arrangement of optimized components is what really creates the overall success.



## PUTTING IT ALL TOGETHER.

Access, hoisting, schedule, local restrictions: There are a lot of challenges on the last mile of a building marathon: The construction / installation. That's why you should choose a partner that knows the ins and outs. So here we are! With 18 offices around the world, connections to local labor unions and the solution to that little detail that no one thought about. In short: Let us put it all together for you!

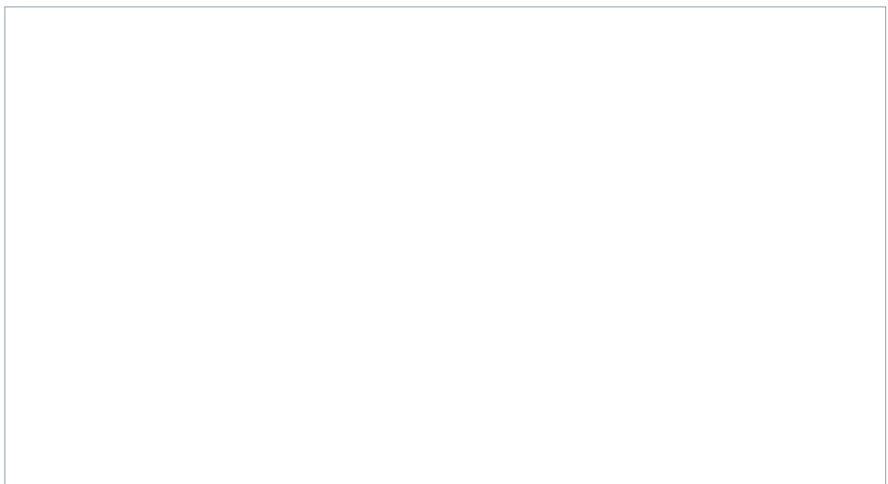


## YOU'LL NEVER WALK ALONE!

There is not much additional that our Texlon® ETFE system needs. But for the few things that it does need, our Service Team will be there! We care for your system and make sure it serves you well for decades. Our maintenance crews come for regular check-ups. And in urgent cases, we are right around the corner. That is our promise as a true global player.



You will find Vector Foiltec with 18 offices  
all around the world.



Vector Foiltec  
Headquarters  
Steinacker 3  
28717 Bremen  
Germany

[inquiries@vector-foiltec.com](mailto:inquiries@vector-foiltec.com)

**[vector-foiltec.com](http://vector-foiltec.com)**

ZOOS  
BOTANIC GARDENS

vector foiltec  
CREATE. SUCCESS.



NEW MANGROVE HALL,  
ARNHEM

GONDWANALAND,  
LEIPZIG

ELEPHANT PARK,  
ZURICH



# TEXLON® ETFE SYSTEMS – IT WON'T GET ANY CLOSER TO NATURE THAN THIS

**TRANSPARENT ROOFS ARE OUR BUSINESS. BUT DELIVERING A HOME FOR YOUR PLANTS AND ANIMALS IS OUR PASSION.**

The beauty of nature is hard to mimic. And creating a manmade environment for plants and animals starts with understanding the fragile ecosystems and their inhabitants. The global elite of those who understand zoos and the best botanic gardens, have been partnering with Vector Foiltec for more than 35 years. Why? Because we understand what it takes to create an artificial space that is as close to nature as it gets. The impact of natural light, temperature and humidity is closely tied to the performance of your building skin.

The Texlon® ETFE system is the transparent roofing solution that covers unique spaces and can be tailored to the exact needs of the project.

Benefits of working with Vector Foiltec:

- / Market leader in ETFE application
- / Most experience with zoos
- / ETFE detail design and engineering competence
- / Expertise in interface management of ETFE and structure
- / In-depth understanding of the interface between cladding and structure
- / Worldwide presence



Natural daylight (also UV!) floods through the lightweight panels with unique shapes. Limitations of the building structure magically disappear to enable owners and architects to make their dreams of large spaces without posts and pillars possible. A place to roam around and feel as comfortable as in nature – with a roof that protects you from the elements, but virtually disappears when you look up at the sky.

Vector Foiltec has completed thousands of projects over last decades, covering spaces for many different applications such as retail, offices, sports stadia and of course zoos and botanical gardens.

Benefits of ETFE:

- / UV transparency for optimal plant growth
- / Self-cleansing under natural acts of rain
- / Low maintenance efforts
- / Durability of the system
- / No limits on architectural creativity
- / Lightweight design allows innovative structures
- / Eco-friendly and green



# NEW MANGROVE HALL ARNHEM NETHERLANDS

Project:  
Burgers' Mangrove

Owner:  
Burgers' Zoo

Architect:  
ABT

Texlon® System:  
3 Layers of transparent ETFE foils

Structure:  
Exterior steel structure

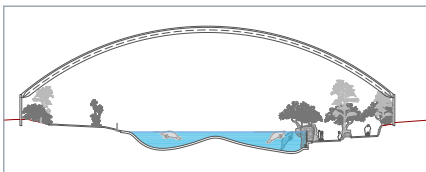
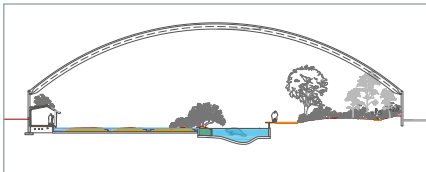
Vector Foiltec Scope:  
Texlon® ETFE system design, fabrication  
and installation, support with steel structure  
design, perimeter connection and gutter  
system

© all images Burgers' Zoo

## TURN AROUND HOW A ZOO WORKS.

In 1982, Antoon van Hooff of Burgers' Zoo had a vision. He wanted nothing less than to completely turn around the concept of how a zoo works. The 'normal' zoo was a chain of cages and compounds where visitors walk from one to the other to gaze at the animals on display. Van Hoff's idea: In his new jungle hall, there would be one big space where all of the animals could live as close to their natural environment as possible. And the people visiting in this space would be surrounded by nature and animals.

In collaboration with Vector Foiltec, Burgers' Zoo created the concept of a large hall without structural pillars, to grant maximum freedom of movement for the animals. The level of transparency chosen provides natural light and enough UV impact to work without artificial lights and pesticides.



Burger's Zoo and Vector Foiltec are long term partners. The Mangrove is the newest addition to the portfolio of Texlon® buildings.



## CHALLENGE 1: SHORT ERECTION PERIOD.

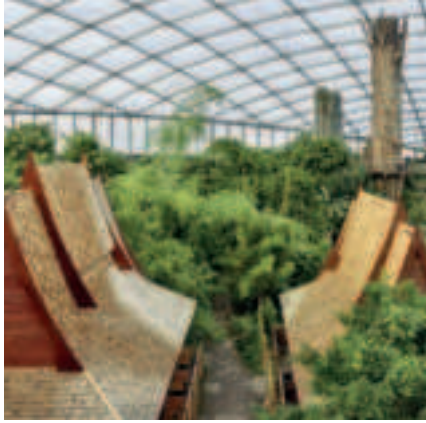
With only 2 months, construction time was cut very short. Vector Foiltec's installation crews worked hand in hand with the steel erectors to ensure an on time opening ceremony.

## CHALLENGE 2: VALUE ENGINEERING.

Several options were drafted and evaluated for optimized cost, architectural intent and the most practical solution for erection and operation.

## CHALLENGE 3: FREE SPANS.

With the chosen setup, the zoo created a hall of 3,000 m<sup>2</sup> floor space with no supporting pillars obstructing the interior with its lake, housing hundreds of different plants and animals.



# GONDWANALAND LEIPZIG GERMANY

Project:  
Gondwanaland

Owner:  
Zoo Leipzig GmbH

Architect:  
Henchion Reuter Architects

Texlon® System:  
3 Layers of transparent ETFE foils

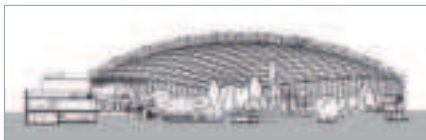
Structure:  
Exterior tubular steel structure

Vector Foiltec Scope:  
Texlon® ETFE system design, fabrication  
and installation, roof surveillance system,  
support with steel structure design,  
gutter system

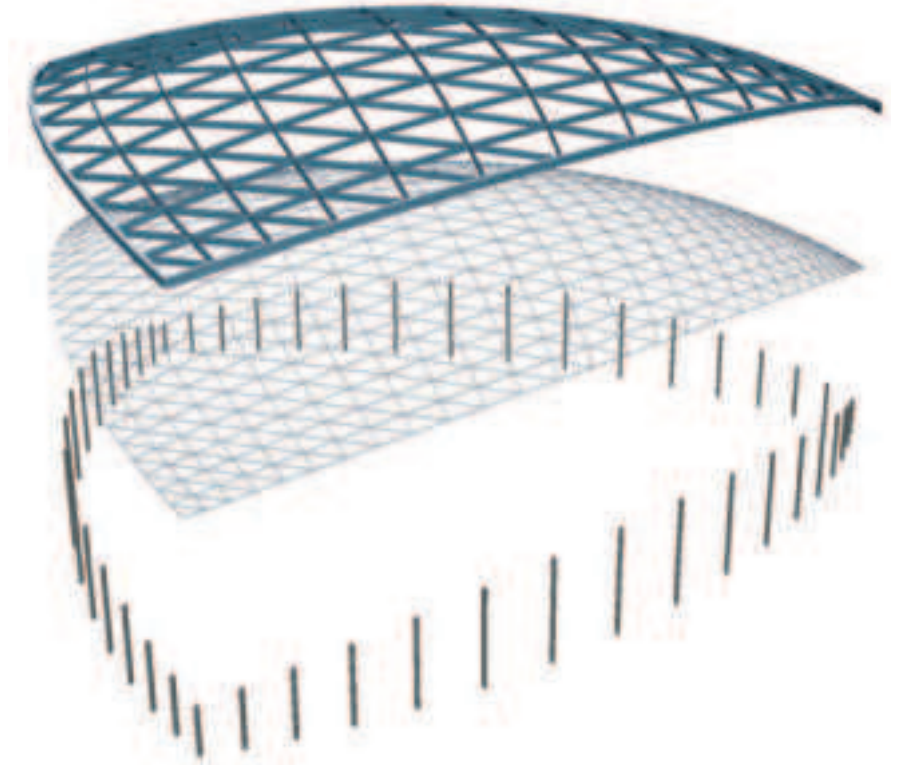
All technical drawings and the aerial view by  
© Henchion Reuter Architects  
Image above © Vector Foiltec  
Image inside hall and title © Werner  
Huthmacher, Berlin

## NOT A COPY: ZOO LEIPZIG BUILT AN ACTUAL RAINFOREST.

Artificially creating a tropical rainforest is not easy. Doing it in the middle of Germany, where the climate is far from the temperature and humidity levels you find close to the equator, made it an even bigger challenge. When the team of Zoo Leipzig, around legendary Prof. Dr. Jörg Junhold, proclaimed that building the new Gondwanaland Hall was “impossible”, this was not an acceptable response for the team of architects, engineers and contractors. The sheer size of the space that needed to be covered was already a challenge with free spans of up to 154 meters. And value engineering was the name of the game in the partly state-funded project that needed to be completed on a tight budget.



Manage the interface between structure,  
gutters and sidewalls and ETFE.



The steel structure carries the 20,000 m<sup>2</sup> Texlon® ETFE shell, consisting of 439 single foil cushions in the roof and 138 foil cushions for the facade, many of them bigger than the footprint of the average 1-family house.



The zoo team had very specific requirements for the interior climate – which required tight specifications for the building skin to ensure the proper climate for animals and plants. This had to be accomplished while minimizing operating costs. The setup of the transparent Texlon® ETFE system was specifically optimized per the requirements of the climate engineering team.

Vector Foiltec was a vital partner in the team of experts and optimized an exterior steel structure, that carries the 20,000 m<sup>2</sup> Texlon® ETFE shell, consisting of 577 single foil cushions for roof and facade.

While the interior climate was the main concern for the operations team, optimization of the complex structure, the interfaces, and the huge gutter system needed to be considered for the construction team. And the deadlines were tight: An erection time of just 3.5 months put additional constraints on the project. Team collaboration was key, and Vector Foiltec was able to design a system within budget, that also met the time constraints of the construction phase. This allowed for an on-time opening of the Gondwanaland Tropics Hall – which has become a landmark in the zoological world.



#### **CHALLENGE 1: CLIMATE DESIGN**

Temperature and humidity are crucial for the survival of more than 140 exotic animals and 500 different plants. The UV-transparent system ensures proper lighting while operable panels control ventilation.

#### **CHALLENGE 2: CUSTOM ENGINEERING**

The exterior structure required a custom designed suspension system for the roofing elements that measure more than 80 m<sup>2</sup> each.

#### **CHALLENGE 3: SNOW LOAD MITIGATION**

Harsh outside climate does not just require good building-skin insulation. The Texlon® ETFE system was equipped with snow sensors that make sure the cushions withstand all possible snow loads.



# ELEPHANT PARK ZÜRICH SWITZERLAND

Project:  
Kaeng Krachan Elephant Park

Owner:  
Zoo Zürich AG

Architect:  
Markus Schietsch Architekten

Texlon® System:  
3 Layers of transparent ETFE foils with  
hail protection layer

Structure:  
Custom shaped wood structure

Vector Foiltec Scope:  
Texlon® ETFE system design, fabrication,  
installation and complex climatic analysis

Copyrights:  
Image above: © Andreas Buschmann  
Technical drawings:  
© Markus Schietsch Architekten

## SOLVING COMPLEX DEMANDS IN A WOODEN BUILDING.

The Elephant Park in Zürich is an architectural gem on the world map of zoo buildings. The intent of Markus Schietsch Architekten and the Swiss zoo operators was to create a structure that resembles the random pattern of trees and leaves in the animal's natural habitat.

The complex 3D-bent structure spans 85 m and holds 271 custom-shaped Texlon® ETFE cushions – a challenge for our designers. Vector Foiltec also supported the client's team in creating a favorable climate for the Asian Elephants, whose well-being was a top priority for the building system design. The impact of sunlight on animals and plants, surface temperatures and humidity were the zoo-keepers concerns. These needed to be tightly aligned with building skin and structure.



The extreme variety of shapes and sizes that made up the shell and skin of the building, required a high level of focus and organization.



### CHALLENGE 1: INTERIOR CLIMATE.

The required humidity levels pose a threat to all building materials. Vector Foiltec helped design systems and interfaces that prevent negative impacts and create the feel-good atmosphere for the animals.

### CHALLENGE 2: LOCAL CODES.

The strict Swiss building codes call for special measure to protect the building and its inhabitants. A dedicated protection system was developed and installed that met all code and insurance requirements.

### CHALLENGE 3: SITE LOGISTICS.

The extremely complex 3D wood structure with the 271 uniquely sized Texlon® cushions needed expert-knowledge in site logistics and installation methodology to make the puzzle fit.

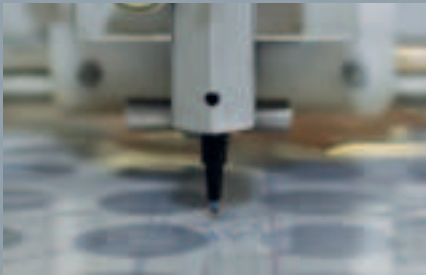


# ONE-STOP-SHOP



## CONCEPT AND DESIGN.

When a project first hits the drawing board, it is vital to have final result in mind. And that does not just go for structure and cladding, but also for the use of the building. With far more than 1,000 references, we have an extensive pool of knowledge that we share with our clients from day one. Getting your project right from the start saves you money and takes away risk.



## THE TEXLON® SYSTEM.

As the inventors of the Texlon® ETFE system, we can humbly say: We know our stuff! An optimized supply chain, the most rigorous quality assurance measures, and our in-house design and engineering team, make the core of our system the best in the industry. And if you have big plans: We've got you covered with our two high performance production facilities that grant on-time delivery, even for the biggest challenges.



## ALL AROUND THE TEXLON® SYSTEM.

Putting together the structure, skin and perimeter interfaces seems easy on paper, but contractors know: The devil is in the details. At Vector Foiltec we believe that the best ETFE system is only one piece of the puzzle. But rest assured, we have the other ones covered as well! An orchestrated arrangement of optimized components is what really creates the overall success.



## PUTTING IT ALL TOGETHER.

Access, hoisting, schedule, local restrictions: There are a lot of challenges on the last mile of a building marathon: The construction / installation. That's why you should choose a partner that knows the ins and outs. So here we are! With 18 offices around the world, connections to local labor unions and the solution to that little detail that no one thought about. In short: Let us put it all together for you!



## YOU'LL NEVER WALK ALONE!

There is not much additional that our Texlon® ETFE system needs. But for the few things that it does need, our Service Team will be there! We care for your system and make sure it serves you well for decades. Our maintenance crews come for regular check-ups. And in urgent cases, we are right around the corner. That is our promise as a true global player.





vector-foiltec.com