THE SINGLE SOURCE SOLUTION FOR LIGHTWEIGHT STRUCTURES
In 2016, Dallas, Texas based FabriTec Structures merged with the PFEIFER Group headquartered in Memmingen, Germany creating the world’s largest and most experienced lightweight structures (LWS) specialty contractor in the world. Over 1,400 employees strong, with offices positioned in 20 countries around the globe, we offer vertically integrated project delivery solutions which uniquely qualifies us to successfully deliver your project.

As we have developed the core of our business, our major objective has always been to surround ourselves with quality, experienced people in tension membrane and lightweight structure design.

As a specialty construction company, it is critical to utilize the experience and dedication necessary to successfully manage and build the type of groundbreaking structures that have earned us numerous industry awards. We believe that it is of the utmost importance to remember that “its people that build companies” and “having the right people gives you the ability to build these kinds of structures and iconic projects.” Over the years, we have assembled a group of exceptionally talented people who represent our unique capabilities in this technically advanced and detail orientated market segment.

Our primary focus is providing superior service to our clients and creating differentiation in the lightweight structures industry. Our dedication to design and commitment to build provide our clients with a sole source resource. This is due to our unique infrastructure that has allowed us to vertically integrate our resources beginning with Design Development & Pre-Construction Services and moving seamlessly into Design & Engineering to Project Management, Manufacturing, Construction, and Service.
ABOUT PFEIFER GROUP

Together with the PFEIFER Group of companies, FabriTec Structures is part of the only international vertically integrated lightweight structure specialist in the world. FabriTec Structures, PFEIFER, and PFEIFER Covertex have tremendous global reach, extensive human capital, and immense scale unrivaled in the lightweight structure industry. Our combined structural and manufacturing expertise in tensile membrane structures, tension fabric buildings, cable structures, retractable/movable structures, lifting products, and building envelopes are unmatched. Our vertical integration spans the scope of the lightweight structure industry from design, engineering, steel fabrication, membrane and cable manufacturing, to project and construction management, and installation. Our depth of knowledge and experience extends over decades.

THE ONLY INTERNATIONAL VERTICALLY INTEGRATED CABLE AND TENSION STRUCTURE COMPANY WITH OPERATIONS IN 20 COUNTRIES

<table>
<thead>
<tr>
<th>20+</th>
<th>150+</th>
<th>300+</th>
<th>800+</th>
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<tbody>
<tr>
<td>FIFA Stadiums</td>
<td>Tensioned Roof Structures</td>
<td>Cable Suspended Bridges</td>
<td>Cable Supported Structures</td>
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Moses Mabhida Stadium

Location: Durban, South Africa
Material Type: PTFE
Project Size: 505,000 sq ft
Owner: Ethekwini Municipality, Durban
Architect: GMP Architekten – von Gerkan, Marg und Partner
Engineer: Schlaich Bergermann und Partner, Stuttgart
General Contractor: WBHO/Group 5 Joint Venture
Completion Date: 2009

The imposing stadium body of Moses Mabhida Stadium is covered with an unconventional roof consisting of a steel arch, which spans the pitch and is stabilized by the cable structure, combined with a membrane roof.

PFEIFER’s involvement was the detailed design, material procurement and erection of the entire roof structure.

The combination of a steel cable structure and a lightweight cable net is quite unique for a wide span roof structure and was a challenging project, for both the planners and engineers as well as our installation team.

This project rightly deserves to be called one of the worlds most sophisticated steel and cable structures.
BC Place Stadium

Location: Vancouver, BC, Canada
Material Type: PTFE
Project Size: 378,960 sq ft (35,205 sq m)
Owner: BC Pavilion Corp (PAVCO)
Architect: Stantec
Engineer: Geiger Engineering
General Contractor: PCL Constructors Westcoast, Inc
Completion Date: 2011

FabriTec Structures completed the installation of 36 outer and 36 inner fixed PTFE fabric panels as part of the integrated roof system at BC Place British Columbia, Vancouver, Canada. The stadium reopened to the Canadian Football League (CFL) fans in the late fall of 2011 where the home team, the BC Lions, took on the Edmonton Eskimos in the season’s opener.

The purpose of BC Place’s roof replacement – part of a 17-month revitalization project for the stadium – was to replace its previously air-supported dome roof with a modern retractable roof to reveal more than 25,000 square feet of blue sky. The retractable roof has turned BC Place into a year-round, open-air facility and serves as an architectural signature for the Canadian province of British Columbia.
Beijing National Stadium (The Bird’s Nest)

<table>
<thead>
<tr>
<th>Location</th>
<th>Beijing, China</th>
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<tbody>
<tr>
<td>Material Type</td>
<td>Single layer ETFE</td>
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<tr>
<td>Project Size</td>
<td>392,885 sq ft (36,500 sq m)</td>
</tr>
<tr>
<td>Architect</td>
<td>Herzog &amp; de Meuron, Basel</td>
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<tr>
<td>General Contractor</td>
<td></td>
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<tr>
<td>Completion Date</td>
<td>2007</td>
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On August 8, 2008, the National Stadium, also nicknamed “The Bird’s Nest,” because of the shape of its structure, hosted the opening ceremonies for the Beijing Olympics. There is approximately 50,000 sf of ETFE filmed used in the construction of this complex cable and tension structure. The product that was ordered is a high-performance fluorosil “Fluon® ETFE film” (trade name “AFLEX®” in Japan). Given its superior properties, such as heat, chemical and weather resistance; superior insulation values; anti-adhesion; excellent up lighting characteristics; and transparency, the film has been used since its launch in 1975 in a wide range of fields, including electronics, aviation/space, photovoltaic cells, sound insulation bags and greenhouses. In recent years, the Fluon® ETFE film has been increasingly used especially in Europe as a building material. ETFE film has several unique features that make it an ideal building material in the construction of stadiums, amphitheaters, and other event centers. ETFE film’s transparency allows for high light transmittance; it is light weight, flexible, durable, and can be colored or even printed to help control solar heat gain.
Mosaic Stadium

Location: Regina, Saskatchewan, Canada
Material Type: PTFE
Project Size: 130,855 sq ft (12,155 sq m)
Owner: City of Regina
Architect: B+H Architects
Engineer: Walter P. Moore
General Contractor: PCL Construction Management Inc
Completion Date: 2016

FabriTec was contracted for design and construction of a fixed PTFE tension fabric structure roof to cover grandstand seating at the new Mosaic Stadium, a 33,000 capacity multi-purpose facility, which is the first phase of the Regina Revitalization Initiative. The new stadium is expandable to 40,000 to accommodate large events such as the Canadian Football League Grey Cup championship game.
Construction of a new showcase stadium in Cape Town was prompted by FIFA's decision to grant 2010 World Cup to South Africa, first-ever host from this continent. But as the city didn’t need a venue of that size, it had numerous opponents from the very start.

German architects Von Gerkan, Marg und Partner were assigned to design it with the biggest challenge being to fit a 70,000-capacity stadium in the selected location. On one hand, Green Point district is a residential district without high-rise architecture, one the other there’s see and Table Mountain in the background, depending on point of view. To make the stadium merge with its surroundings rather than spoil the unique landscape, the simple and elegant form was selected, with facades covered by a membrane.
Florida State University Doak Campbell Stadium

Location: Tallahassee, FL, USA  
Material Type: PTFE  
Project Size: 24,930 sq ft (2,315 sq m)  
Owner: Florida State University  
Architect: EMI Architects  
General Contractor: Childers Construction  
Completion Date: 2016

FabriTec was contracted to design, engineer, fabricate, supply and install two identical tensile membrane canopies supported by steel and cables in accordance with the University’s plans to build a premium club seating section at the south end of Doak Campbell Stadium. The tension structures are PTFE Chukoh Skytop 800 architectural membrane and cantilever out over the stadium seats from columns located on a new club level deck. The new deck area adds 6,000 premium seats and hosted services. The total fabric plan area covers 24,930 sq ft.

Renovations to the Seminoles south end zone were completed in time for the home opener in 2016.
FabriTec Structures was a key player in the design detailing and final engineering of the banner wrap.

The team also furnished the component hardware, steel frames, brackets, and cables and installed the banners on an accelerated schedule. The wrap encircled an area of over 200,010 square feet and included 306 panels; each twisted 90 degrees from top to bottom in the form of a helix, and each spanning 8 ½ feet wide by 80 feet in height. The panels were white from the outside (exterior lighting at night changed their colors) but viewed from the interior, they were colored with all colors of the spectrum arranged to match the color scheme in the stadium.

FabriTec worked on the project as part of a team that included the Dow Chemical Company, the Cooley Group, Rainier Industries and Spartech.

After the conclusion of the Olympic games, Pfeifer FabriTec completed a series of renovations to transform London Stadium into a multi-purpose venue for both Westham United Football Club and British Athletics. A key element was to strengthen the steel structure to provide support for the new tensile roof that covers the stadium’s 60,000 capacity seating areas. With a span of 80 meters, it is the world’s largest cantilevered roof delivered in this technology.
Silesian Stadium – Stadion Slaski

Location: Chorzów, Poland
Material Type: Polycarbonate
Project Size: 484,380 sq ft (45,000 sq m)
Owner: Wojewodztwo Slaskie, Katowice, Voivodship of Silesia
Architect: GMP Architekten – von Gerkan, Marg und Partner
Engineer: SBP GmbH Schlaich Bergermann & Partner, Stuttgart
General Contractor: PFEIFER Group
Completion Date: 2016

The 45000 sq m roof contains two compression rings, one tension ring, and radial cable girders. PFEIFER supplied 600 tons of steel structure, cables, and connections, 45,000 sq m of polycarbonate consisting of 360 sheets and a monitoring system for maintenance reasons.
London Velodrome

Location: London, UK
Material Type: Serge Ferrari-Précontraint 392 S2 NPP
Project Size: 39,370 sq ft (12,000 sq m)
Owner: London Olympic Delivery Authority
Architect: Hopkins Architects
Engineer: Schlaich Bergermann und Partner, Stuttgart
General Contractor: ISG
Completion Date: 2012

In 2012 the London Velodrome hosted the Olympic and Paralympic indoor track cycling events. The venue provides seating for 6,000 spectators around the 250 meter cycling track. A curved, undulating roof floats on a continuous timber and glass wall, which in turn allows views from the raised site right across the park. The primary structure of the roof consists of a double-curved cable net, consisting of pairs of spiral strand cables arranged at 3.5 meters on center. At the location of the roof lights, the cable spacing reduces to 2 meters on center. Galvanized steel nodes clamp the four spiral strand cables together at every location where ridge and valley cables cross. The top part of the node is proportioned to support the corners of the roof cassettes, while the bottom part supports roof hung services, including the lighting containment system.
This steel roller coaster fondly called the TRON Lightcycle Power Run is one of Disneyland Shanghai’s main attractions. The attraction features sinuous, futuristic ETFE structures, which were designed to “coalesce with the natural landscape”.

“We came up with the idea of creating a certain topography; a three-dimensional form where we have ramps and stairs, where movement through the park became almost an experience in its own right,” explains Andrew Whalley, Grimshaw deputy chairman. “The park centerpiece is the lightweight structure and the ETFE foil roof, so we took this idea a step further…”

In addition to shielding guests from the elements, the eclectic ETFE canopy flatters the curves of the ride while also incorporating an array of native plants that periodically breach the attractions unpredictable path; allowing the man-made materials to seamlessly collide with the natural.
Crossrail Place at Canary Wharf

Location: London, UK
Material Type: ETFE Cushions
Project Size: 101,610 sq ft (9,440 sq m)
Owner: Canary Wharf Group PLC
Architect: Foster & Partners
Engineer: Arup
Completion Date: 2015

Crossrail Place is a mixed-use scheme encompassing the over-ground elements of a new station for the Crossrail project at Canary Wharf. Located in the north dock, adjacent to the HSBC tower at Canary Wharf and the residential neighborhood of Poplar, the mixed-use scheme creates an accessible amenity between the two, creating a new shared and open space.

The design of the lattice itself is a fusion of architecture and engineering. To seamlessly connect the straight beams, which rotate successively along the diagonals, the design team developed an innovative system of steel nodes, which resolve the twist. Between the beams, there are ETFE cushions, which are filled with air and lighter than glass. The air cushions, which are a highly insulating material, create a comfortable environment for people to enjoy the gardens all year round, as well as providing a favorable microclimate for some of the plants.
Vitam Centre de Loisirs or Vitam’Parc is a leisure, well-being and sports center complex located in the countryside of Neydens, France. The biggest challenge of this project was accommodating the new development to the area’s natural, rural setting; meaning it had to be done with the greatest respect for the environment.

To make it as environmentally friendly as possible, transparent ETFE membranes were the material of choice for the roof of the dome. The high transparency of the material allows for a significant amount of natural light and for visitors to see and feel as if they are outside. The dome portion of the facility houses a two-story climbing wall along with other “traditionally” outdoor activities like swimming pools and water games. The VITAM’Parc project is France’s first major application of the revolutionary ETFE technology.
Guangzhou South Railway Station

Location: Guangzhou, China
Material Type: ETFE Cushions & Single Layer ETFE
Project Size: 213,345 sq ft (19,820 sq m) Total Envelope, 163,830 sq ft (15,220 sq m) ETFE Cushions, 49,515 sq ft (4,600 sq m) Single Layer ETFE
Owner: Chinese Ministry of Railways
Architect: TP Farrells LTD
Engineer: Schlaich Bergermann
Completion Date: 2010

Guangzhou South was built as one of four new hubs serving China’s rapidly growing high-speed rail network. To accommodate heavy patronage — anticipated to reach 300,000 passengers daily by 2030 — a clear vertical organization strategy was adopted. As mentioned by TP Farrells, at the uppermost level, a linear pedestrian concourse serves as a central unifying element, helping passengers orient themselves within the massive station. In an emphatic display of structural tectonics, the station’s expansive interior concourse is bathed in daylight courtesy of a wide-spanning skylight, flanked on either side by a vaulted roof, equally monumental in scale. The convex structure is broken up by openings that allow soft natural light to filter into the waiting areas and railway platforms.
Centre commercial de Confluence

Location: Lyon, France  
Material Type: ETFE Cushions  
Project Size: 236,810 sq ft (22,000 sq m)  
Owner: Unibail-Rodamco  
Architect: Jean Paul Viguier  
Engineer: ARCORA  
General Contractor: PITANCE (Vinci) / SOLGEC (Eiffage)  
Completion Date: 2011

The site is divided by a railway line parallel to the river, a feature that the architect, Jean Paul Viguier, has used to best effect: to the west of the railway, in the direction of the river, is where the partly open shopping facilities and shopping mall are located; on the eastern, shorter, side there are taller, more compact structures housing leisure facilities such as multiplex cinema, roller dome, indoor climbing arena, etc. Forming a visual link between the two parts is the heart of the design, the enormous illuminated ETFE membrane roof, the two parts of which rise above the complex like an umbrella.
Arvest Ballpark (top), Darling Tennis Center (bottom left), Estadio Chivas (bottom right)
Cynthia Woods Mitchell Pavilion (top), Central Park at Playa Vista Bandshell (bottom left), Capital City Amphitheater (bottom right)
MGM CityCenter People Mover Stations (top left), Rosa Parks Transit Center (top right), El Monte Bus Station (bottom left), Vallejo Transit Center (bottom right)
South San Francisco Ferry (top left), Stockton Waterfront Marina (top right), RTC Sunset Maintenance Facility (bottom left), Transbay Temporary Terminal (bottom right)
San Diego International Airport (top), Austin-Bergstrom International Airport South Terminal (bottom left), Tulsa International Airport (bottom right)
Urban Center Guadalajara (top), Frost Museum of Science (bottom left), Gila River Lone Butte Casino (bottom right)
Abdali Mall (top), The Shops at Summerlin (bottom left), Premium Outlets Las Vegas (bottom right), ASU SkySong Innovation Center (opposite page)