



A Tata Steel Enterprise



Case study

Estadio de Futbol Monterrey, Mexico

Client: Club de Futbol Monterrey

Architects: Populous & VFO
(formerly HOK Mexico)

Project Mangers: PMP Consultores

Roofing Contractors: Metcon del Norte S.A. & Termacero Construcciones Metalicas Prefabricadas

Kalzip® products: 55,000m² Kalzip® 65/333 x 1.0mm standing seam roof in stucco embossed finish.

Year: 2013-15

A prestigious and technically demanding project saw Kalzip® successfully deliver a major contract for the envelope of an iconic new football stadium, working in Mexico for the first time and satisfying the design brief of a world renowned architectural partnership.

Not just the scale of the Estadio de Futbol in Monterrey, but its form – designed to reflect both the region's history and its mountainous scenery – demanded the highest aesthetic and performance standards for the standing seam roof.

With Club de Futbol Monterrey as the client for the massive stadium, Kalzip® in the UK

was assisted in delivering the contract by the department for UK Trade & Investment, as well as its established international network of design and delivery partners.



SETTING THE BENCHMARK FOR MODERN STADIA



The challenge

The Stadio de Futbol is one of the largest sports arenas in the region, commissioned by Club de Futbol Monterrey – with the design team being led by two internationally regarded architectural practices: Populous and VFO. In addition to the scale, the concept for the structure presents a very complex, asymmetrical form which was to be constructed within a relatively tight timeframe; requiring careful planning of the erection phases. Furthermore, with no two sections of cladding being identical in size or geometry, this would create an unusually high demand in terms of detailed design work and the preparation of cutting schedules to facilitate fabrication; much of which had to be carried out on site.

Given the climate and location, the stadium is exposed to extremes of weather, including high winds, driving rain and very high temperature cycling: all of which impose demands on the cladding system. As the

design process progressed, there would be multiple technical and logistical challenges to overcome in relation to special interface and weathering details, as well as maintenance access and other considerations to ensure the structure's long term functionality.

The project was tendered under a design and supply model which helped convince the client of Kalzip's ability to respond to the project team's requirements: maximizing the benefits for them in terms of technical support and the capacity to respond to fresh or different market conditions in the international arena.

After Dan Vinet (Kalzip's North American Sales Director) secured the original design contract for the roof the manufacturer involved a number of key colleagues including Alberto Argenti from its European organisation, who was fluent in Spanish, to help liaise with the client and consultants in Mexico.

“Kalzip® has the unique ability to offer architects and designers great freedom and flexibility of design. We offer a range of materials, finishes and shapes – virtually limitless design potential and advanced roll forming techniques that combine proven functionality with stunning aesthetics.”

Tony Mills, General Manager,
Kalzip UK

The solution

As a major manufacturer, active across the continent and beyond, Kalzip® has the experienced personnel as well as the physical resources to interpret client or consultant's briefs, and deliver bespoke product packages in response. This includes conforming to regional construction codes and other requirements, local to the project, and also manage all necessary logistics such as shipping and import licences so that contracts can run to schedule.

“Despite the complexity of the project, derived from its size, geometry and asymmetry, only in Kalzip® did we find a system that was practical and flexible; that allowed us to achieve the highest requirements demanded by the building envelope. Compared to other systems we believe that Kalzip® offered the best conditions for manufacturing, storage, control and assembly: thus obtaining savings in time and cost.”

Cristino Ceballos, PMP Consultores.

Members of Kalzip's design team in the UK were closely involved with creating the free-flowing geometry, finessing the design to simplify the fabrication and installation process, without compromising the architectural integrity. This included paying special attention to the hip areas and also designing the distinctive 'gills' which punctuate the aluminium envelope. Also manufactured in the UK and shipped to Mexico were bespoke high level and low level aluminium gutters, and prefabricated hip flashings formed in a custom blue colour. In addition Kalzip® shipped out all the aluminium walkways, access hatches and fall arrest systems which were used during the construction and will continue facilitating future maintenance activity.

As part of its contractual responsibilities and commitment to safe working practices wherever it is involved, Kalzip® additionally provided the two Latin American cladding installation companies – Metcon del Norte S.A. and Termacero Construcciones Metalicas Prefabricadas - with two weeks of bespoke training, employing purpose-built rigs replicating the curved form they were to enclose using the standing seam roof and its many accessories.

In total, Kalzip® shipped more than 40 containers in 16 consignments, setting up its own fabrication yard on site from which to feed adjacent bays of the building. With a project team which included a project manager, production manager and several on site fabricators, Kalzip® used BIM collaboration techniques and CAD to generate cutting schedules to manufacture batches of material in sequence, which were then supplied to the two installation sub-contractors.

“One of the main factors to achieve and even improve our programme was the support offered by the technical staff in the field – designing and manufacturing – who always had the will to identify improvements and solutions to the unavoidable problems on a project of this magnitude.”

Cristino Ceballos, PMP Consultores.

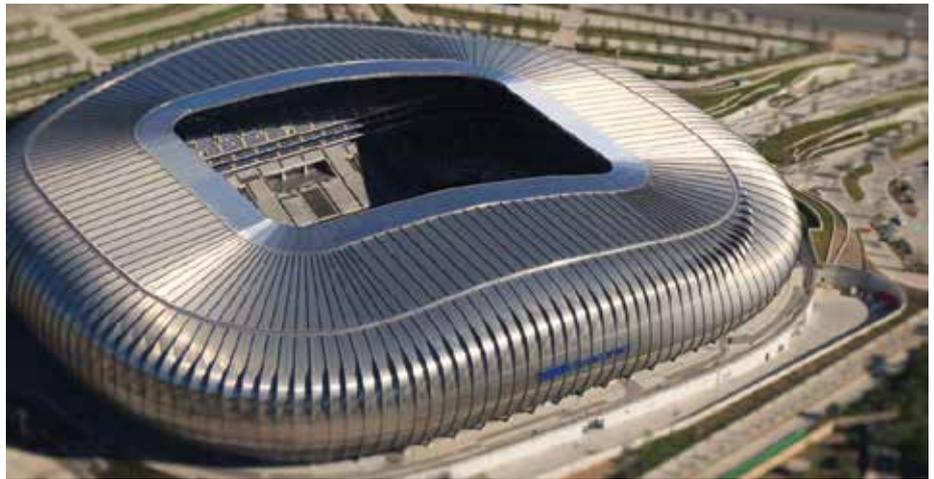


Case study Estadio de Futbol Monterrey, Mexico

"After several years of planning and construction, today the football stadium BBVA Bancomer has become one of the icons of the city of Monterrey and also of Mexico. Home of one of the teams most representative of the Mexican Soccer League, it has established itself as one of the most modern works and has up to now won several awards for its technology and architectural design.

"The most difficult aspect to planning such a unique project, is to identify materials, procedures and the most efficient systems. Kalzip® was most supportive during this stage: always sharing with us its experience. We had the willingness to find a global solution for the façade system, and working together alongside Kalzip®, with architectural and structural direction, generated models that helped identify and solve the smallest issues with the system.

"Football is about spectacle and passion, we've located spectators as close to the pitch as possible, creating the most atmospheric modern stadium in Latin America. Certainly Estadio de Futbol with its imposing roof design executed in Kalzip® standing seam will set the new benchmark for modern stadia in Latin America, and will become the iconic destination for Rayados* fans and the people of Monterrey." Christopher Lee, Project Designer and Senior Principal - Populous



Tata Steel products:

Over 55,000m² of Kalzip® aluminium standing seam roofing system in profile 65/333 with a 1.0mm gauge and stucco embossed finish was supplied for this project.

The Kalzip® roof system in its entirety has successfully achieved third party certification in the United Kingdom through the BBA and is globally recognised by the German Zulassung, French Avis Technique and Factory Mutual (FM) quality standards. Furthermore the Kalzip® aluminium roof is certified to FM Class 1 – 190 and utilises ASTM testing.

The Kalzip® standing seam profiles offer virtually unlimited application potential, available as both an insulated and single skin product, while being suitable for warm or cold roof constructions. U-values down to below 0.1 W/m²K are achievable, while the system can also

be configured to suit any size or geometry of a building, with sheet lengths of over 160 metres being possible from site rolling.

In terms of their very high resistance to wind uplift, Kalzip® roofs rely on its patented range of halter clips. Essential in a climate such as Monterrey's, the clips are also designed to permit smooth thermal cycling of the external skin as the temperature climbs from the cool early morning to baking in the midday sun. Sophisticated detailing options are also available to accommodate service penetrations or other features. Kalzip® systems are low in weight compared to many alternative roof coverings, being manufactured from aluminium which is not only produced from one of the world's most abundant ores – bauxite – but it is also commonly recycled. Kalzip® systems are also fully demountable at the end of a building's life.

* Rayados is the popular name for CF Monterrey.

For technical advice on the application of Kalzip® for your project, please contact our Kalzip Technical Team:
T: +44 (0) 1942 295500
E: enquiries.uk@kalzip.com
W: www.tatasteelconstruction.com

Tata Steel

Shotton Works, Deeside
Flintshire CH5 2NH

T: +44 (0) 1244 892199
F: +44 (0) 1244 892121

www.tatasteelconstruction.com

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