



Irish Icon Reinvents Spectator Comfort and Excitement

Acclaimed \$457 Million **Aviva Stadium** Wows Soccer and Rugby Fans Under a Spectacular Corrugated Polycarbonate Roof



Its swooping, soaring curvilinear structure reminds some of an enormous, elegant crystal bowl, gently encasing passionate sports fans and concert goers in a shimmering, breathtaking melding of sky with earth.

Welcome to **Aviva Stadium**, the iconic 51,700-seat, \$457 million soccer and rugby arena that has come to symbolize 21st century Dublin, Ireland since its May 2010 opening. Key to the stadium's elegant yet complex geometry ("... a building no one thought possible" says Buro Happold Engineering) is the structure's sheltering, transparent roof that boldly transforms the spectator experience.

Challenge

The joint architectural team of London-based **Populous** (formerly HOK Sport) and Dublin-based **Scott Tallon Walker** faced a daunting riddle: How do you replace an existing 23,000-seat stadium with a 51,700-seat world-class facility without disrupting the surrounding neighborhood? Their now-famous answer has earned more than two dozen architectural design awards.

Central to their vision was the wave-like roof. Given the light, freeform aesthetic, the chief challenge was how to safely span

the stadium with a ribbon of transparent material that wouldn't obstruct sightlines, diminish daylight, or compromise spectator comfort during harsh Irish weather or times of intense UV rays.

Roof weight, of course, was a concern. Even the design team's idea to clad the roof in 8mm polycarbonate panels, long-used as a transparent roofing material, was calculated to add 200 tons of weight to the encircling horseshoe truss. What could the designers do to cut panel weight without crippling the design vision and jeopardizing long-term structural performance and durability?

Solution

Palram engineers carefully examined the question, too, and proposed an alternative rooflight strategy that removed structural, performance, and aesthetic concerns from the table.

Palram determined their **Suntuf® corrugated polycarbonate sheet** in a 3mm SS: custom profile could slash roof panel weight to just 80 tons, shaving load by 120 tons. Not only would Suntuf safely address weight concerns, but also

offered a design solution that would flood the playing field with daylight, withstand extreme wind, rain and snow loads, and maximize spectator comfort while protecting them from weather and UV exposure.

The complex roof geometry was another challenge met. The curvilinear form required no less than 4,251 individually-sized and shaped polycarbonate panels across 215,278 square feet of surface area. Precisely manufacturing each panel to the demanding tolerances the 3D design software required was one thing. How to transport and install each panel in the exact location? Palram solved that with a unique coding and labeling system that made on-site assembly fast, accurate, and foolproof.

Result

Palram saved the owners an estimated \$3.5 million in material, labor, and accessories. The owners also benefit from a 20-year warranty on the Suntuf roofing panels.

Today the gleaming Suntuf roof has lived up to its name, showing no sign of discoloration or wear and offering Dubliners an ever-changing exterior light show of mirrored sky conditions. Inside, spectators enjoy unimpeded daylight and a sheltering roof. Populous and Scott Tallon Walker received the British Construction Industry Awards - International, among many other honors worldwide. ●

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sms.hanleywood.com

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Website
palramprojects.com

Email
projects@palram.com

About Palram Americas, Inc.

Based in Kutztown, Pa., Palram is a respected producer of polycarbonate panels, helping outfit scores of small, mid- and large-scale projects worldwide.