Case Study: National Stadium
Warsaw, Poland
Capture the world’s attention with Traxon’s dynamic lighting solutions

Category: Architectural
Location: Warsaw, Poland
Client: Narodowe Centrum Sportu Sp.z.o.o.
Architect: GMP Architekten / JSK Architects
Lighting Designer: Lichtvision
General Contractor: Alpine Constructions Polska Sp.zo.o.
Distributor and Local Director: OSRAM Poland
Programmer: LUXMAT Telecom Sp. z o.o.
Installer: Elektrobudowa S.A.
Completion Date: April 2012
Region: Traxon Europe

Background
Built to host the 2012 European Championship, National Stadium has captured the world’s attention. A first class venue and the pride of Poland, National Stadium has exceeded all expectations.

Project Goals & Requirements
Located in a parkland on the banks of the River Vistula, the 58,500-seat venue was built on a raised mound, giving it added prominence on the Warsaw skyline. National Stadium features a distinctive facade of angled mesh panels of the red and white which represent the national flag.

German-based Lichtvision Design & Engineering were asked to create a dynamic scheme for this facade, one that would not only underscore the two-coloured design, but also allow low-resolution imagery to scroll around the exterior.
Lichtvision proposed the use of an adjustable LED luminaire with different optics and colours that could be adapted to suit the two geometries of the mesh panels and their respective red and white surfaces. The 6m x 2m panels run in rows around the stadium, supported by columns, angled so that they weave in and out. Each is lit by a fully controllable Liner Shield AC XB-36.

These fixtures were mounted behind the support columns using custom designed brackets that could be adjusted to accommodate the panel angle. Four different variations of the fixture were used. After on site testing, it was decided 5000K white LED should be used and the “red” LED fixture should actually be comprised of a mixture of one-third and two-thirds white LED sources within them. The result is more than 1,700 custom fixtures, which illuminate the stadium’s exterior. With special visor to avoid blinding the visitors while going around the stadium.

An additional 72 Wall Washer Shield AC XB-36 Cold White were installed atop 72 columns surrounding the venue, and dim on and off as if there are sparkling stars floating above the stadium. The simple connection system and long run length capability of up to 32 Wall Washer Shield AC XB-36 fixtures enables easy installation for large-scale lighting projects.
National Stadium’s façade is controlled by e:cue Lighting Control Engines (LCEs) and Butlers, which interface with the stadium’s building management system. The intelligent control system transforms the static façade into a dynamic palette of sequenced shows of bold, moving patterns and graphical announcements.

There are eleven rows of panels, so each column holds 22 of the linear LED fixtures, plus an additional Wall Washer Shield AC XB fixture, to illuminate the inside of the hollow head of each column, which is cut diagonal like the nib of a quill pen. These are all linked in a series back to one of eight e:cue Butler DMX512 engines integrated in four control racks. Each rack operates a quarter of the stadium’s facade -- eighteen columns in each quarter -- and turns feedback to a central control room where two LCEs are housed. It allows a number of sequencens be activated from panel in the control room.

On another crucial note, the relation between Traxon’s team and the lighting designer was strong due to very open communication. A high level of trust resulted in solid customer satisfaction from the beginning when Traxon’s proposal was able to offer the full technical solution.
First Look

The stadium’s façade is characterized by its semi-transparent white and red structural mesh panels, each slightly different from the other in shape, size, and mounted angle. This distinctive façade element’s architectural and visual integrity was preserved by concealing, in specially designed housing on 72 beams around the stadium, the more than 1,700 custom Traxon Liner Shield AC XB-36 red/white fixtures which illuminate the stadium’s exterior.

The fixtures were customized with various beam angles and aimed precisely during installation to allow uniform illumination of the individual façade panels.

Additionally, the fixtures consist only of red and neutral white LEDs—the colors of Poland’s flag—to enhance the rich saturation of the already red and white panels.

When the whistle blew at the opening match of the 2012 European Soccer Championship on June 8, 2012, Warsaw’s National Stadium shined brightly, enhanced by the latest LED lighting and control technology.

The combined lighting effects echo one another under one control system and make the stadium a stunning centerpiece, which dominates Warsaw’s skyline and elevates excitement of world class events.