Award

The Porsche Sculpture at the 2023 Goodwood Festival of Speed

PROJECT TEAM

Artist:
Gerry Judah Ltd

Structural Engineer:
Diales

Main Contractor:
Littlehampton Welding Ltd

Client:
Goodwood Festival of Speed

The Porsche Sculpture at the 2023 Goodwood Festival of Speed was a 25 metre high steel structure installed at Goodwood House in West Sussex. Designed to commemorate 75 years of Porsche sports cars, the sculpture supported six original vehicles, including priceless historic models, on three soaring, interconnected hoops. This cantilevered steel structure exemplified the fusion of engineering precision, material efficiency, and artistic vision, delivering a visually striking centrepiece that captivated festival-goers and met the highest technical standards.

The sculpture's form was inspired by the dynamic motion of racing and the elegance of Porsche's design legacy. Three interconnected hoops support six Porsche vehicles ranging from a 1951 Porsche 356 to a contemporary model. Steel was chosen to add to the expressive form of the sculpture, to meet the project deliverables and allow for future reuse through demountable connections. Currently disassembled and in storage, the components were designed for future reinstallation at another UK location, with an anticipated service life of 25 years when in its permanent configuration.

Twelve structural members converged at a central hub, requiring precise geometric coordination and a dodecahedral configuration with five-fold axial symmetry to maintain connection clarity. A monocoque-shell system was initially considered but rejected for aesthetic reasons, as opposing pentagons on the dodecahedron rotate 36° relative to each other, resulting in awkward lines that wouldn't provide the desired aesthetics.

The design and fabrication schedule ran simultaneously, which meant that critical decisions had to be finalised early in the process, yet allow for later adjustments and fine-tuning. The hoops, initially conceived as free-form shapes, were rationalised into constant-radius curves to balance visual intent with fabrication feasibility. The final design was delivered within a compressed 28 week timeline, from concept sketch to installation, with the first steel ordered just four weeks after the initial artistic concept was shared on Christmas Day 2022. There was a hard deadline of July, only a few months later.

Engineering challenges centred on achieving a stable cantilevered structure with dynamic performance and minimal mass distribution at height. The sculpture's off-vertical orientation positioned the centre of gravity over the existing foundation, improving its stability and enabling the foundation reuse. Variable thickness steel fins, ranging from 20mm plate at critical junctions to 4mm at elevated positions, were used to optimise weight distribution. An integrated computational workflow was used on the project, enabling rapid assessment of deflections, frequencies and stress distributions throughout an iterative design process.

Fabrication was carried out just 15km from the installation site, minimising transport impacts prior to installation on site. The size of the hoops prevented transportation of them intact, so they required segmentation and test assembly in the workshop. They were then disassembled for on-site rewelding.

The installation sequence was developed to maintain structural integrity during each phase, with particular attention to temporary stability during the attachment of the suspended elements. The base and hub were installed first, followed by the arms with the pre attached vehicles and suspended hoops. Bolted connections at the central hub eliminated the need for welding at height, and custom rigging systems with twin coordinated cranes enabled precise six-degree-of-freedom positioning of the arms and hoops during installation.

Delivery was constrained by the immovable festival deadline and the need to coordinate with other events at Goodwood House. Safety protocols were rigorously applied, particularly during lifting operations involving valuable vehicles. The sculpture was installed on time and performed flawlessly throughout the festival, becoming a central gathering point and visual highlight.

The project's environmental impact was minimised through several key strategies. Iterative design reduced steel usage by approximately 33% from initial estimates. The reuse of an existing foundation eliminated the need for a new concrete base and excavation. Bolted connections enabled disassembly and future reinstallation, extending the sculpture's service life beyond its initial temporary application.

The sculpture's success was confirmed by Porsche's commission to reinstall a modified version permanently. Beyond satisfying the corporate client, the structure resonated with the public, offering a dramatic and memorable experience. Public engagement included previews, a fireworks-lit unveiling ceremony, social media campaigns, and online videos documenting the assembly process.

Collaboration was central to the project's success, which was demonstrated through an integrated approach to structural engineering that balanced technical performance requirements with physical constraints. The most innovative aspect was the implementation of a single comprehensive design model that served multiple functions from concept development through to fabrication, which created a collaborative approach to the project and ensured alignment across disciplines. The project demonstrated how temporary structures can be engineered for long-term use through thoughtful design, efficient fabrication, and strategic planning.

The Porsche Sculpture at Goodwood stands as a testament to what can be achieved when structural steel is used not only as a material of strength and stability, but also as a medium for storytelling and celebration. It is a bold, elegant, and technically accomplished structure that honours Porsche's legacy while pushing the boundaries of temporary installation design.

Judges' comment

The sculpture, which displays a number of original Porsche sports cars on cantilevered arms, exemplifies the extraordinary flexibility of steel as a material. It is a visually exciting, dynamic form that has been cleverly engineered, carefully detailed and skilfully fabricated - the result of a true team effort.