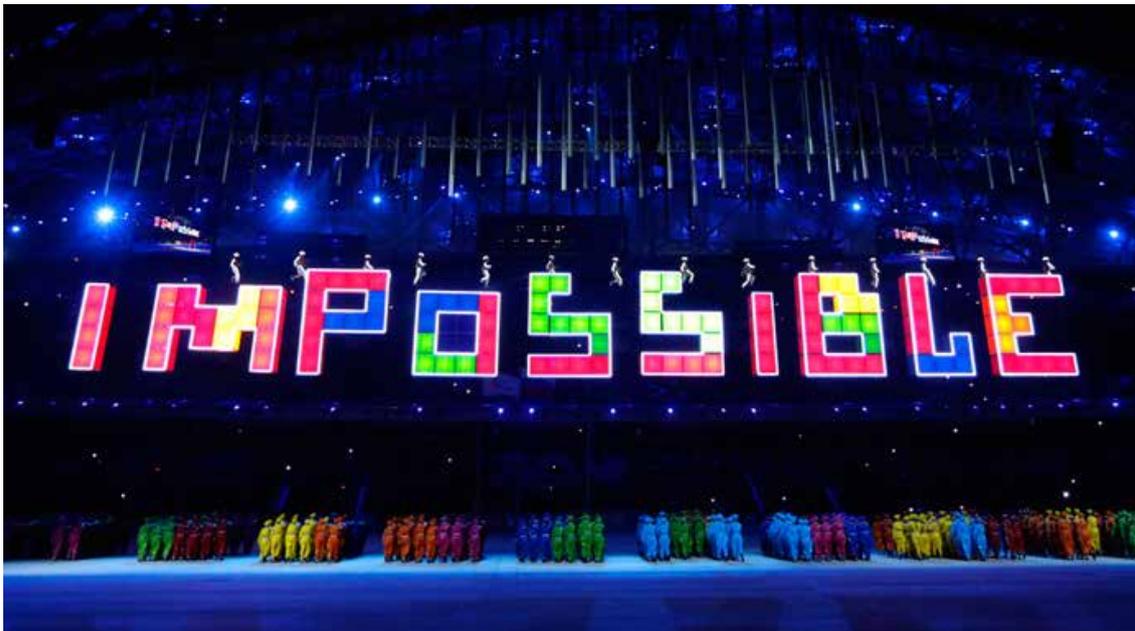


# Sochi 2014 Winter Olympics Paralympic Ceremonies

The Sochi Winter Olympic and Paralympic Games were afforded the unusual logistical advantage of having a single stadium dedicated to hosting all four ceremonies. With no time consuming get-outs, the complete show infrastructure could remain in situ, meaning that each of the four spectacles were free to employ unprecedented levels of creativity and technical complexity.

Our ground-breaking aerial track system was used throughout the Paralympic Opening and Closing ceremonies, contributing to complex and memorable set pieces involving the precise coordination of multiple flown items and performers. Notable flying sequences included the transition of giant Tetris lettering from IMPOSSIBLE to I'M POSSIBLE, the apostrophe being added by Paralympic athlete Alexey Chuvashov. The most majestic moment, however, was provided by the entrance of the vast yet extraordinarily accurate scenic Ice Breaker, 'Mir'.



**MEMORABLE SET PIECES:** Our aerial track system was used throughout the ceremonies

## The Mir

This stunningly realistic and vast scenic ship was not only the largest single item of scenery we have ever built, but also the single largest object we have ever flown. At 42 metres long and reaching 20 metres at its highest point, its graceful journey across Sochi's Fisht stadium was a highlight of the 2014 Paralympic opening ceremony.

Designed by Academy Award winning production designer, Eugenio Caballero, the ice breaker 'Mir' was run on our track system installed in the stadium roof. As a flown item, the primary consideration was weight, with solutions being sought wherever possible to reduce the overall payload of the ship, without compromising its highly realistic appearance.



**CAMERA READY:** Astonishing detail on an extraordinary scale

### Lightweight & Detailed

The materials and manufacturing methods chosen reflected the need to cut back on weight wherever possible. The deck and superstructure frames were constructed from aluminium, using stock truss and also some bespoke elements manufactured specifically to mimic the unusual geometry of the ship's features. Thin-wall polycarbonate sheeting was used to clad the superstructure frame, providing rigidity in a lightweight form. To create the highly realistic features such as cleats, bollards, doors, capstans, life boats and life raft pods we used our 5 axis CNC machine to mill patterns around which we vacu-formed a hollow cast of each individual feature.

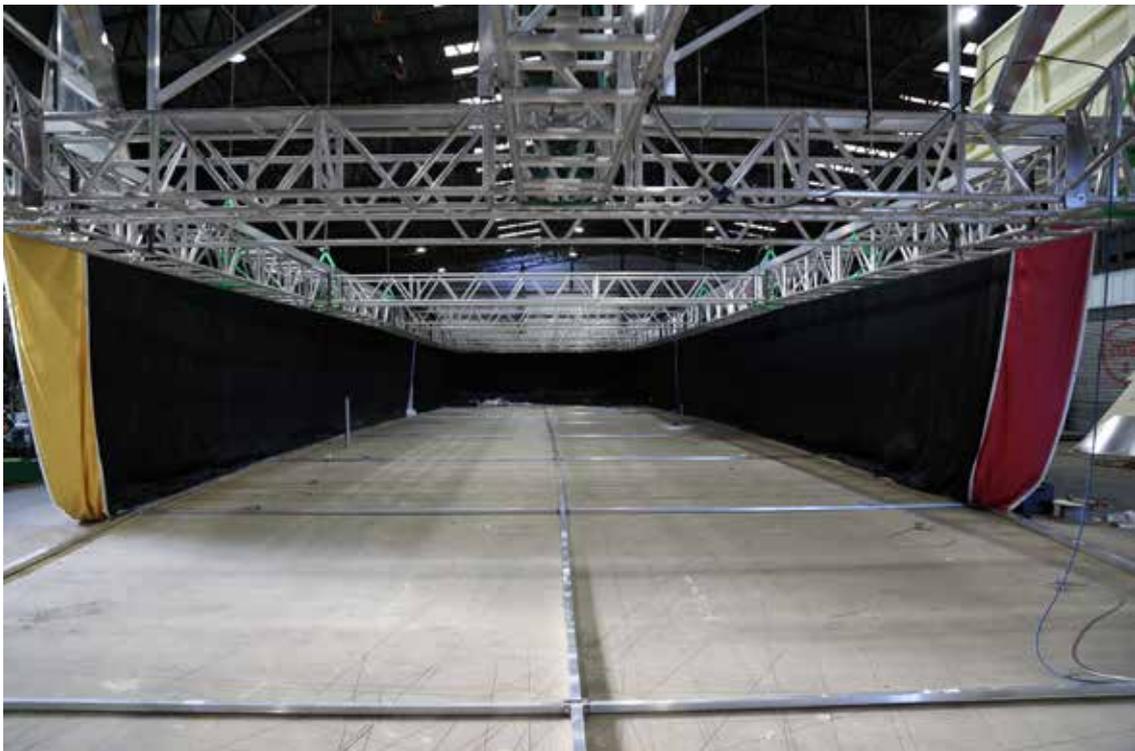
Although a huge scenic piece, the Mir was designed with particular camera angles and close-ups in mind, meaning that the accuracy with which we rendered the finer detail was extremely important. We worked collaboratively with the designer and specialist suppliers in order to achieve a series of convincing finishes and colours that would withstand the close scrutiny of the cameras and also that of the worldwide audience.



## The Hull

The Ice Breaker construction occupied one of our aircraft hangars for two and a half months, the 10m roof height necessitating a two stage build with the superstructure being created first before being dismantled. The deck was then raised, allowing the 7.5m high hull to be fitted beneath. With weight a primary consideration, the hull was constructed from a series of rigid inflatable cells which formed the geometry of the stern and the bow, even accommodating two turning propellers. The cells were then covered with a secondary skin, onto which we applied a series of scenic finishes including the plimsoll line, rust and algae.

The completed ship was so large that even our huge aircraft hangars could not accommodate the height of the hull when fully inflated. The first time full-inflation was achieved, along with the addition of the ship's bridge to the superstructure, was in the super-sized temporary hangars at either end of Sochi's Fisht stadium.



SCENIC GIANT: Construction of the lightweight hull in one of the hangars

## Light and Ice

The Mir was dismantled before being shipped to Sochi in a series of 22 containers where she underwent additional finishing touches on site, adding layer upon layer of highly realistic detailing. Working with lighting designer Durham Marengi, we fitted internal lighting that could be seen through the various superstructure windows and also the portholes in the hull.

Carefully referenced helipad lights and port and starboard lights were added, as was a huge searchlight on the mast that beamed a path for the Mir's journey through the stadium. Further details such as full rigging, lifeboats and smoke machines in the funnels helped create the illusion of a real, fully functioning ship. We worked with ice and snow specialists to provide highly detailed ice finishes for the superstructure and hull, including the cracked-ice sections that revealed the Mir's name as she made her way slowly across the stadium, Maria Guleghina singing from a specially constructed platform on the forecastle.

We flew the Mir into the stadium for a second time for the Closing ceremony. This time she was draped with a white skin, bringing the huge surface area of her hull and superstructure into use as a vast projection surface.

