



Press Release

Fibreglass membranes coated with 3M Dyneon PTFE as a stadium roof

Porto Alegre: Scoring goals surrounded by palm leaves

The southernmost venue of the 2014 FIFA World Cup™ is Porto Alegre in the federal state of Rio Grande do Sul, home to the thoroughly modernised Estádio Beira-Rio which means ‘stadium on the river bank’. The new design of the roof and facade makes use of form in an unusual, eye-catching way. Fibreglass membranes in the shape of palm leaves, tensioned between steel beams and coated with 3M Dyneon PTFE, protect spectators and players alike from the rain.

The design for this radical modernisation of the Estádio Beira-Rio, originally built in 1969, came from Brazilian architecture firm Hype Studio Arquitetura. The design was submitted in 2007, with the architects taking inspiration from the stadiums for the 2006 FIFA World Cup™ in Germany. The new roof structure for the Estádio Beira-Rio comprises 65 steel beams which project 42 metres into the stadium. On the outside, they extend down to the ground. Fibreglass membranes tensioned between the beams protect the approximately 50,000 seats, the ramps, entrances and exits at the goals from the rain. Nevertheless, the probability of rain during the 2014 FIFA World Cup™ in the coastal city in southern Brazil is greater than 20 per cent.

Membrane construction in the shape of palm leaves

Sheets of woven fibreglass membranes, modelled on palm leaves, surround the fully-roofed stadium like a wreath. The cover comprises around 57,000 square metres of glass cloth coated with

Dyneon PTFE. The translucency of the membranes provides a pleasant soft and light all day long. When illuminated at night, the facade is visible from far and wide.

The membranes were manufactured by Verseidag Indutex GmbH, based in Krefeld, Germany. A coating of the high-performance material Dyneon PTFE protects the glass cloth, which is extremely strong under tension. The material has a high elongation at break. Therefore, the membranes can withstand even significant wind loads without damage. The coating protects the structural fabric from aging caused by UV rays and keeps moisture entirely away from the glass fibres. This combination has shown itself to be very robust and resistant to aging in a wide range of climate zones for more than 40 years.

Longlife coating with PTFE

The high-performance material Dyneon PTFE belongs to the fluoropolymer family and needs no plasticisers or stabilisers which can evaporate over time leading to brittleness of the coating. Even when faced with a combination of strong sunlight, salt-laden coastal air and heavy rain as in Porto Alegre no cracks will form in which bacteria or fungi could take hold. Dyneon PTFE is almost universally resistant to chemicals and will withstand car exhaust fumes and other pollutants for decades. At the time of installation, the membranes are pale brown. However, they are quickly bleached to a radiant white, and will remain so for the long term. An additional benefit of the roof design in Porto Alegre: The surface of the membrane coating is so smooth that any rain shower will leave it substantially cleaner. This significantly reduces the maintenance costs over the lifespan as whole.

About 3M

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About Dyneon GmbH

Dyneon GmbH, a 3M Company and part of the Advanced Materials Division, is a major supplier of fluoropolymers and is focusing on development, production and sales at its headquarters in Burgkirchen, Germany. The product portfolio of fluoroelastomers, fluorothermoplastics, Polytetrafluoroethylene (PTFE) and specialty additives, is available through the 3M sales organisation or representations in more than 50 countries. For more information please visit www.dyneon.eu

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Captions:

Image 1: The stadium in Porto Alegre is located at the river side. The shell consists of 57.000 sqm Fibreglass membranes coated with 3M Dyneon PTFE

Image 2: The new lighted roof and facade construction in the shape of palm leaves is made of 3M Dyneon PTFE coated fibreglass membranes

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