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SABIC Innovative Plastics helps New Bedford Seaport create a stunning work of art for education about the world's oceans

Building a giant, luminescent "blue cube" with Lexan* Polycarbonate Thermoclick* sheet system

The New Bedford Seaport in Massachusetts is a historic coastal site nicknamed the "Whaling City" because it was formerly a key port for whaling. With its maritime heritage, the seaport has focused on marine education. The most recent attraction is the Ocean Explorium, a joint partnership between the University of Massachusetts, Dartmouth and the New Bedford Oceanarium, which takes a new approach to the concept of aquariums and marine education. The focal point for the new facility is an exhibit called Blue World Pavilion, an educational exhibit featuring advanced technology to depict a three-dimensional view of the planet on a large sphere suspended in space. To enclose this sphere, the Ocean Explorium contracted with cosestudi, an exhibit design group. In turn, cosestudi worked with EXTECH/Exterior Technologies to build a translucent cubical structure. The material chosen for the walls of the "blue cube" was Lexan Thermoclick sheet from SABIC Innovative Plastics.

Challenge
Creating a unique, luminescent structure with practical advantages

To create an environment to house the Blue World Pavilion at the new Ocean Explorium in New Bedford, cosestudi needed a material that would provide both stunning aesthetics and practicality. Envisioned as a metaphor for the ocean, the enclosure was to house a 5-foot sphere upon which images of the planet would be projected for education about ocean and earth topography, climate change, weather systems, light distribution, plate tectonics, El Nino phenomena, and more. The structure that cosestudi designed was a cube - 24 feet on each side - that could be lighted internally.

Not only did the enclosure material have to be translucent so it would glow with light, it needed to be colored a deep blue to evoke the seas. And cosestudi wanted to avoid heavy steel supports that would detract from the ethereal effect. From a practical perspective, the material selected had to be structurally robust yet provide design freedom. Also because this exhibit would be semi-permanent (in place for several years), the structure had to be easy to assemble and disassemble when necessary.

Solution
Lexan Thermoclick Sheet for profile-free structures

The designers contacted EXTECH/Exterior Technologies, Inc. of Pittsburgh, Pennsylvania for their expertise in fabricating structures of cellular polycarbonate (PC) cladding. Cosestudi told EXTECH they wanted to mount translucent panels on thin steel elements to minimize the appearance of supports.

Based on EXTECH's extensive research and recommendation, SABIC Innovative Plastics' Lexan Thermoclick sheet system was chosen for the cube. This interconnecting system features tongue and groove panels that click together. The X-structure of the sheet provides extra stiffness and thermal insulation. Lexan Thermoclick sheet is made from super-tough polycarbonate resin that is extruded with an ultraviolet-resistant coating. Fine beads of high-temperature polycarbonate are mixed into the resin, causing the final product to have an iridescent quality when lighted from the reverse. The Lexan Thermoclick sheet was produced in a standard, deep blue color.

To fabricate the cube, EXTECH utilized 40 mm, 24-foot Thermoclick panels that were installed horizontally on vertical bar joists with concealed clips. The steel bracing was completed with lightweight members to make a lacy structure.

The Thermoclick panels assemble very quickly, so that cladding of the structure required only a few hours' work.

Benefits

A work of art for education and inspiration

The choice of Lexan Thermoclick sheet helped to fulfill cosestudi's vision for the "Blue Cube." Through the use of light and color, the cube creates an environment that helps visitors understand and appreciate the wonder and power of Earth's oceans.

"We love the way light is diffused as it passes through the deep blue Lexan Thermoclick panels, evoking an underwater feeling," said Michael Oleksak, a principal of cosestudi. "The structure creates a microcosm of the oceans and sets off the lighted sphere suspended in the center."

"The Blue Cube provides a focus for the activities of the Ocean Explorium, a metaphor for the oceans and a beacon for environmental stewardship. The entire exhibit space glows with an oceanic hue," said Mark Smith, executive director for the Ocean Explorium.

As the focal point for the new Ocean Explorium, the Blue World Pavilion is expected to be the major draw for visitors to the new facility.

Smith concluded, "Visitors to the Ocean Explorium have been very impressed with the Blue Cube, in particular its scale and elegance. The subtly moving blue light within the wall of the cube adds to the atmosphere of the exhibition and simulates the gently shifting hues as viewed by a diver descending through the water column. Already the Ocean Explorium is seen by local organizations as an excellent venue for evening events, where participants will eat their dinner illuminated by the Blue Cube and the luminous world within."

Details at

www.oceanexplorium.org

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