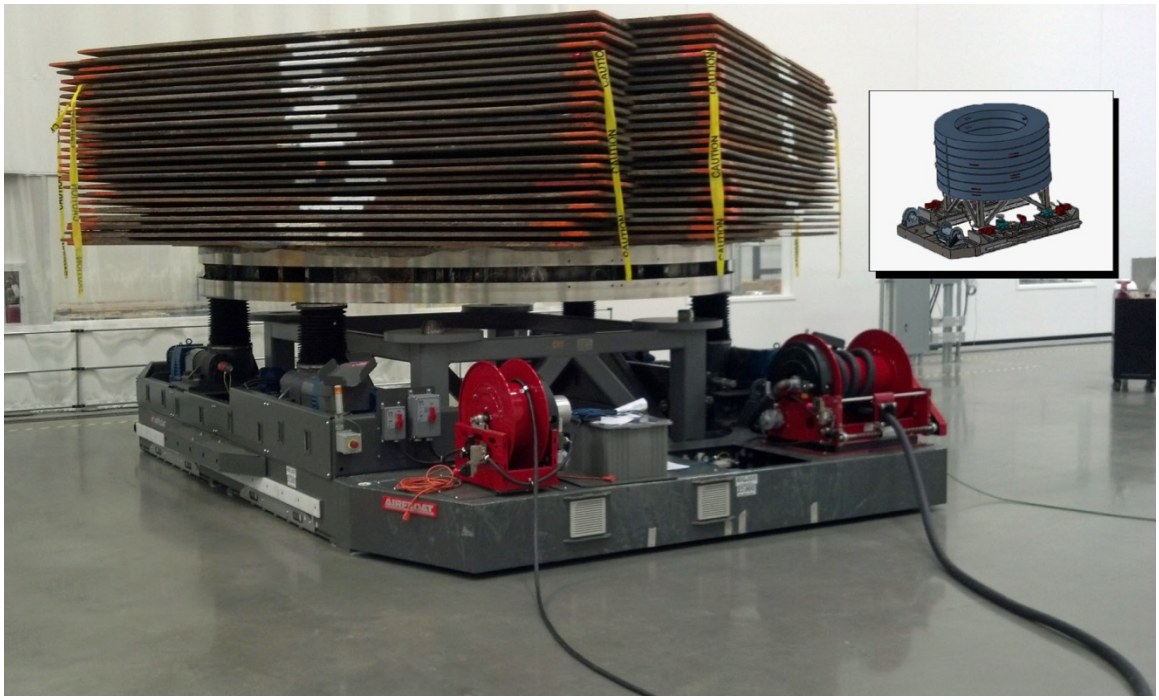
Super-Conducting Magnet Manufacturing



Situation

General Atomics, a defense contractor headquartered in San Diego, Calif., needed a way to move enormous superconducting magnets around its manufacturing space. The facility is equipped with a 35-ton crane; however, each magnet and its support structure weigh in excess of 200 tons. Further complicating matters, the highly sensitive magnets must be kept level within .01 inch to avoid putting undo stress on it.

Solution

General Atomics partnered with Illinois-based Airfloat to create a custom transporter to move the magnets at ground level. The large U-shaped machine uses air-bearing technology to gently float up to 400,000 lbs. on a cushion of air, in any lateral direction. Built-in lifting jacks raise and lower the magnets several feet while a computerized leveling system keeps them perfectly level. The machine is steered via a wireless controller and is capable of maneuvering in circles, around corners and other complex movement patterns.

Result

General Atomics uses the Airfloat transporter to quickly and easily move each magnet from workstation to workstation, where it is wound with 3.5 miles of superconducting cables, insulated, heat-treated and the like. When the magnets are complete they will be shipped to Southern France, where they will form the backbone of a $20-billion fusion reactor slated to power up in 2020.