

Historical and technical details of the Genesis car competition

The 2001 Genesis car competed in the first American Solar Challenge, a grueling 2300 mile race from Chicago to LA following Route 66. This 9 day event featured a wide range of race conditions, from the plains to the desert, and required two 2000+ foot climbs through the Rockies. The car sported a gallium-arsenide dual-junction satellite-grade solar array comprised of nearly 3000 solar cells, donated by Emcore Corporation and hand built by students at Messiah College. This array was evaluated by the National Renewable Energy Laboratory at the start of the race and certified as having the highest power output per square meter of any solar racing car in any previous national competition. The car also boasted a sophisticated lithium-ion polymer battery pack, again designed and built by Messiah students. This battery had a capacity of 5.6 kWhr at a weight of only 65 lbs. Students designed and built a cell monitoring/charging system that was able to balance the charge in each battery module, while also providing additional power dissipation to maintain regenerative braking capacity during long descents, such as would be expected while crossing the Rockies. As a result, the Genesis battery pack brought home the first-place Technical Innovation Award for the race.