

Super Sized for the Super Bowl XLI

Laser Scan to Super Sized Model

By Reggie Morgan



STORY

The Super Bowl stands for everything that is truly American. It is an event that is big, bold and dynamic in every aspect. For a company to be selected to assist in designing a pavilion for a Super Event is like scoring the winning Touchdown or making that 60-yard field goal. The DesignX Company, an exhibit house based in Chicago, landed a great opportunity to assist a very large company in putting together a Pavilion for the Super Bowl XLI events being held in South Florida. The pavilion required a large company logo to be displayed at the top of the pavilion. The DesignX Company was uncertain as to how to go about in designing the logo, but someone stated that they should contact Millit5. Millit5 typically does automotive scanning and milling projects for the world's leading automakers. They called Millit5 and discussed their design for the pavilion, specifically the creation of the super sized company logo that had to be created for the pavilion. When Millit5 asked for the digital mill data for the logo, the DesignX Company could not get the data and came extremely close to dropping the project. They were unfamiliar with the concept of digital data for engineering and milling processes. They had just an ordinary .jpg file to create the logo. Unfortunately, this type of file does not contain the math data, which is needed for engineering and CNC milling. Millit5 came to the rescue by offering to scan a company logo directly from a product made by the company to create the needed digital data. Larry Ray owner of Millford's, MI Hillside Limo and Chauffer Services provide the products required for scanning. Larry states, "I step outside for a smoke and when I came back inside he was done scanning. The scan only took minutes and part of my limo was on the Laptop screen floating around in 3D space." A simple laser scan of a company logo along with reverse engineering processes created the necessary raw data that was needed then to enlarge and mill the super sized 8 ft diameter logo for the Super Bowl pavilion. A simple laser scan captures the basic design of any object, called reference data. Once the basic design is captured, it can then be used in other Engineering applications to create an actual 3D digital model. The 3D digital model can then be enlarged, modified and morphed as needed for CNC machining. In this case, a simple enlargement of the logo was needed. The logo had to be sized so that the art for the logo would fit correctly onto the milled parts. The 3D digital model was then used to create the data needed to mill the parts of the logo for the final design. Once the parts were milled, they were then shipped to the DesignX Company for the finishing touches on the logo and shipped to South

Florida for display at the Super Bowl. Millit5's Computer-engineering-technical knowledge of the design, CNC and product development processes is Boundless with no limits.

Scanner Tech:

VxScan, Creaform's data acquisition software that powers the REVscan laser scanner, produces a real time surface rendering visualization on a computer monitor as you scan. The scanning method requires a technique similar to spray-painting a model. You see what you're scanning in real time, and can repair any holes or voids in the data or satisfy any other specific requirement on the spot. This eliminates the need of having to rescan. Moreover, VxScan automatically generates .STL files instead of point clouds. REVscan's new technology and better algorithms have also improved the 3D morphing process and the eventual milling of the final results. The STL's new mesh aspect ratio quality needs no post processing for CNC milling, CFD software requirements, or even model morphing, thus saving time at each step. The REVscan's lightweight and compact design, as well as its ability to scan concave and convex shapes, produce outstanding flexibility when scanning holes. The REVscan scanner has an umbilical cord, which facilitates a 360-degree capture of data for hole openings or the most complex surface contour. All scanning is based on line of sight during data capture, which is the same as 3-axis view dependant CNC machining. The scan data captured with a single scanning of the object with the REVscan were used to do all the engineering data changes, data morphing, digital rendering, 3D walk through video and CNC machining for the finished 8-foot diameter badge.

Benefits:

Quick and reliable 3D scanning data capture, quick surface reconstruction methods, deviation analysis, morphing and 5-axis milling process implementation tools will accelerate a company's design project strategic direction. By using .STL files that are directly generated by the REVscan for prototype wood, metal, and clay milling, processing time can be cut by 60-80%. This time saving is realized by using flat end mill tools over ball end tools. Every 60 minutes of milling a surface with a ball tool represents only 12 minutes of milling using a flat tool! When it comes to surface cutting or .STL manifold topology, the time saving factor to mill is 5. Time saving of approximately 80% is obtained by using a flat cutter whether the model is a car exterior or even a human heart. With quicker reverse engineering data collection methods, .STL generation, and Class A surface generation, industry is turning out 5-axis milling products in record time. This industry has pushed software suppliers very hard to develop some of the tools as well. Very few companies offer the ability to scan, surface, and 5-axis mill leading industry quality prototypes all under one roof. Millit5, based in Michigan, uses the REVscan to do on-site 3D data capture. The laser scanner allows companies to do on-site 3D measuring and shape acquisition of large parts that are not economical or timely to ship, saving the clients shipping costs, time, part teardown and setup, and preventing them from loosing possession or control of a tool, part, or confidential design.

