



LASER SCANNING SOLUTION FOR REVERSE ENGINEERING

PROJECT SUMMARY

Production Modeling Corporation (PMC) collaborated with a leading global material handling system supplier to perform maintenance on a section of conveyor that carries painted vehicle bodies at a major Automotive OEM assembly plant. The conveyor carries the body to the area and through a series of rails, opens the carrier and lowers the body. The conveyor rails must be replaced to maintain proper operation. No drawings of the compound curved rail sections were available. Additionally, the rails were custom to the carrier and vehicle design.

OPPORTUNITY

Laser Scanning could be used to replace manual field checking procedures. Typically this project would consist of multiple engineers traveling to the remote location and performing measurements using basic tools like tape measures and plumb bobs. These measurements would be documented in 2D in four days. When the measurements were complete, the information would be used to generate drawings to build and install the new rails. Very frequently, these steps may require multiple trips to the location to capture missed measurements which are required to generate the CAD Model. This is a time consuming and error prone process.

APPROACH

This project was performed by PMC using laser scanning techniques to capture the measurements of the equipment that needed to be replaced. PMC provided the laser scanning services that gave the material handling system supplier a 3-Dimensional Point Cloud. The data was captured in 4 hours and was delivered to the OEM client within 4 days. The days between capture and data delivery to the client involved scanning, registration, and translation processes to Autodesk Factory Design Suite software.

SOLUTION

The overall project consisted of the following components:

- Capture an existing section of conveyor line with laser scanning
- Convert the laser scan data (Point Cloud) for use inside Autodesk Software Products
- Using the laser scan data, perform modeling and review of the plant layout and replacement components in Inventor and Navisworks
- Create shop detail drawings from the 3D CAD Model to build the conveyor components
- Install the new conveyor section

BENEFIT

The following benefits were realized after updating processes and technology at the material handling system supplier:

- 3x Reduction in time to capture plant conditions
- 4x Reduction in manpower
- 6x Increase in accuracy of plant conditions
- 4x Reduction in time to accurately generate 3D models based on laser scanning data in Inventor
- 2x Reduction in time on site to place equipment
- 3x Reduction in costly scrap at startup
- 3x Reduction in engineering hours