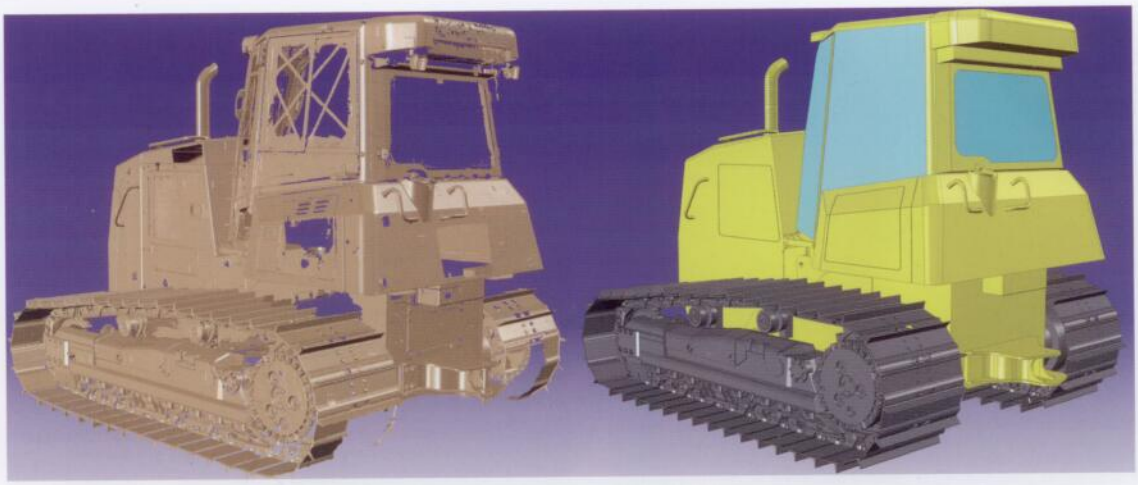

3D scan and final 3D model of the tractor

Bespoke booms engineered

3D modelling provides the accuracy required to fit pipe-laying booms to tractors

Midwestern Manufacturing is an American company that introduced, in 1953, the world's first hydraulically operated side boom pipelayer attachment. Over the past 50 years, these side booms have continuously set the highest standards for safety, reliability, ease of operation, and cost-efficiency in the pipeline industry.

Midwestern side booms are engineered and manufactured to satisfy the requirements of each job and the needs of customers across the globe. The company converts new and used Caterpillar, John Deere, Case, and Komatsu plant into reliable pipe-layers.

For one project, Midwestern needed scanning files and 3D models to accurately and efficiently design and integrate its side boom attachments onto a bulldozer platform This involved the complete 3D scanning of the outside surface of a bulldozer along with detailed scans of the engine door, engine compartment, cab door and operator's station. Some reverse engineering also had to be performed in order to convert the scanned data into a detailed 3D model.

Meeting the reverse engineering challenge

In the past, Midwestern used other technologies to create 3D models. However, a higher level of detail became necessary and as reverse engineering files with insufficient accuracy caused fitting issues on tractors and additional project delays and costs. To overcome this and give its clients good results within the shortest timeframes possible, Midwestern obtained Creaform's advanced 3D measurement solutions.

For this specific project, the scan was performed inside Midwestern's facilities using the MetraSCAN 210 optical CMM scanner and the MaxSHOT 3D optical coordinate measuring system. The bulldozer was driven up onto railway sleepers to elevate it and facilitate scanning.

Doug Garner, Vice President of Engineering at Midwestern, said: "Without the Creaform solutions, it would have been impossible to reach the level of accuracy and the level of details we needed in order to manufacture a new, fully integrated side boom attachment that would allow optimum functionality, visibility, accessibility, serviceability and safety. In addition, the fact that the files were so accurate minimized considerably the amount of modifications we had to apply to the platform.

"The detailed 3D scans and 3D models allow us to accurately design and integrate our side boom attachment onto the existing platform. It also allows us to completely visualize the design before final approval and production," added Mr. Garner.

"It saves us a lot of time upfront since we don't have to physically measure and recreate the dozer in CAD. But more importantly, we gain a much higher level of detail and accuracy from the scan – all of which ultimate helps us optimize our design process."

Creaform's technologies reduce the amount of engineering time actually spent to complete a project, which, in turn, allows Midwestern to focus on the actual side boom design. These time savings help to reduce substantially the costs related to engineering and side boom attachment development.

Mr. Garner concluded: "By using the 3D scanning technology and reverse engineering process, we are able to provide a superior product in our industry and to remain the world leader in side boom attachments. This is especially important in today's world, where platform models are changing more rapidly than ever before."

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