

○ CyberOptics XLP 3D Laser Scanner Used to Assist E-Bike Manufacturer

With a big push for greener transportation and personal mobility solutions worldwide, many companies are moving to develop and launch new products that support these sustainable initiatives. One such company contacted CyberOptics to help them explore how to improve their existing inspection processes to improve quality and reduce time to market for an electric bike (e-bike) they are in the middle of product development on.



Challenges

As with many companies that are concerned with producing a high-quality product, our customer reached out with a focus on continuous improvement in search for the best balance of creating parts and products faster, better, and more cost effectively. With that in mind, we learned that the customer was struggling with the inspection of a large electric bike frame using their existing technology.

Their current method for inspection was a manually created inspection jig that shows when a part is out of tolerance. In this case, it is a very expensive go / no go gauge that only provides qualitative results but requires additional inspection to verify where the part is out of tolerance. In addition to limited inspection results, the cost of creating the inspection fixture is high and each version of the fixture takes a lot of time to create. With this inspection method, the customer was not realizing the desired benefits - faster, better or more-cost effective.

For this e-bike customer, they needed a large CMM to handle a large bicycle frame and they needed high resolution and accuracy over the entire area for 3D measurement purposes. Additionally, they wanted a system that was easy to use and included minimal operator interaction through setup, scanning, inspection and reporting.

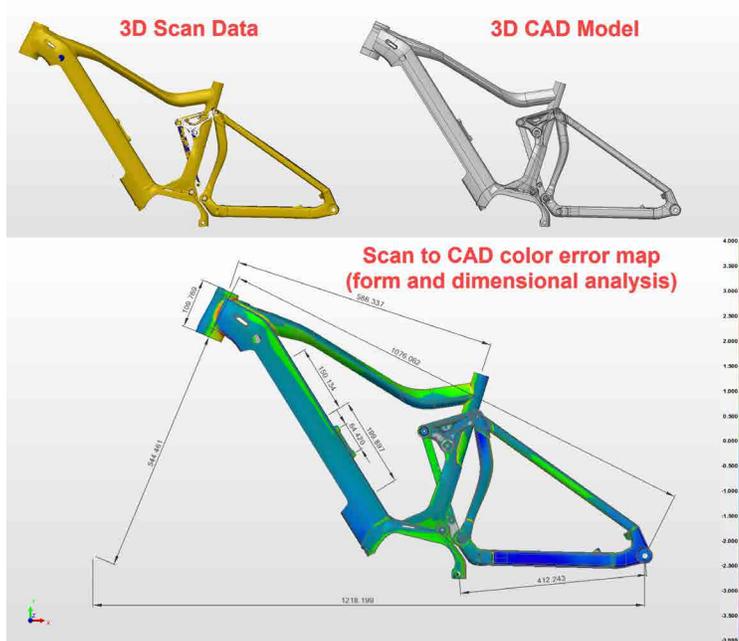
Results

After learning of the customer's inspection requirements, and their current methodology, the team at CyberOptics knew they could offer a solution to support the continuous improvement goals of the customer by applying CyberOptics' XLP 3D laser scanner's non-contact 3D laser scanning technology. When mounted on a Coordinate Measurement Machine (CMM), the XLP laser scanners can capture hundreds of thousands of measurement points per second on small to large objects for the purposes of form and dimensional analysis.

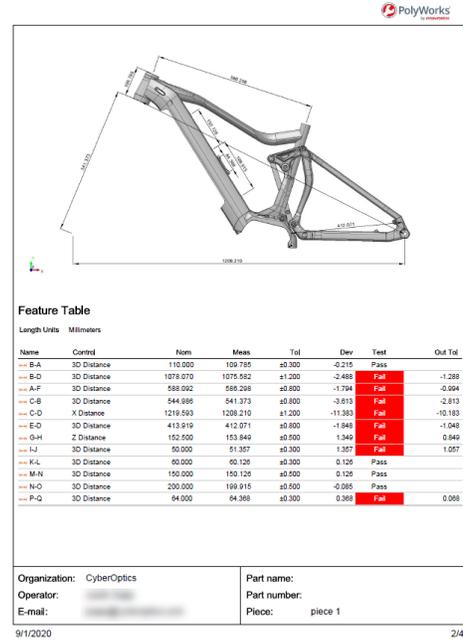


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What the team at CyberOptics provided was a semi-automated, metrology grade, 3D scanning solution including all hardware and software to support the immediate frame inspection application, along with the flexibility to expand for smaller and larger objects in the future without the need for adding fixturing costs. Programming the 3D measurement process is guided by wizard-based path planning tools and inspections are completed once the 3D data is captured. Starting with a form analysis, a 30,000-foot visualization of error in the part as compared to CAD, the customer was able to see immediately where deviation was present in their assembly.



3D Scan Data, 3D CAD Model, and Color Error Map



Feature Report

Moving onto the dimensional analysis phase, the deviation was quantified, and decisions were made about tooling, material and process adjustments needed to dial in the production process. The scanning process took less than a half an hour to provide this valuable information and all team members were back to work focusing on their next continuous improvement event.

Benefits Summary

With the XLP laser scanners, customers have access to a highly flexible 3D measurement system for high resolution, metrology grade accuracy measurement applications where speed, quality and ease of use are critical. In this case, for our e-bike customer, the XLP laser scanner not only speed up their existing process, but it also provided valuable feedback that they were not able to get with their inspection jig – all while providing easy to understand results that can be shared and understood by all team members. When the next revision of this frame comes along, the scanning and inspection programs can be easily modified to support these new measurement requirements giving the customer room to grow in their 3D measurement capabilities without adding expensive fixtures. Sounds like another benefit in sustainability.

For more information on CyberOptics products, services, or solutions, visit our website at www.cyberoptics.com.



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