



FASTER DEVELOPMENT, CLEARER DECISIONS:

TBI Manufacturing Ltd Case Study

How TBI Manufacturing is using NimbleTrack and PolyWorks to accelerate the development and validation of complex fabricated assemblies

Client

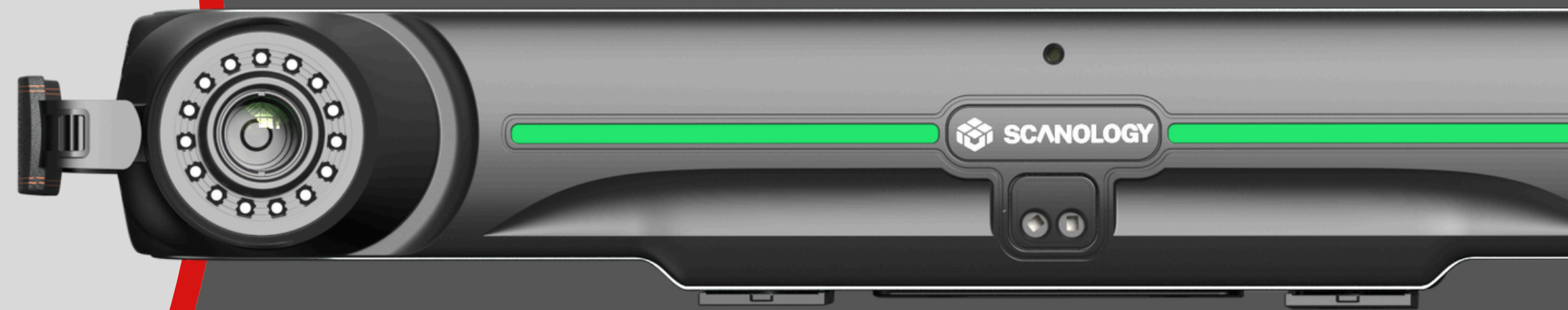
TBI Manufacturing Ltd

Product

NimbleTrack Gen2 E wireless 3D scanner and probe with DefiniSight and PolyWorks

Industry Sector

Manufacturing



A man with a beard, wearing a grey shirt and a bright yellow safety vest with a logo, is holding a black 3D scanner device. The device has several circular sensors and a blue light. He is looking down at the device. The background is a blurred industrial setting.

Executive Summary

Rapid growth and an expanding pipeline of new projects had created a development bottleneck for TBI Manufacturing. The company needed a faster way to validate the tooling, fixtures and first-off samples behind its tubular welded assemblies, with clear results it could share with customers.

After comparing the NimbleTrack Gen2 E with further investment in measuring-arm technology, TBI chose a scanning-led workflow supported by PolyWorks. It now has greater visibility of deviations and welding distortion across complete parts, faster feedback during development and more confidence when deciding whether a component is ready for the customer.

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The NimbleTrack and PolyWorks have massively improved our process. With the old measuring arm, every part meant its own setup and its own report – inspecting ten parts meant creating ten separate reports. Now we can handle all of that in a single program and report, which has cut our reporting time by up to ten times.

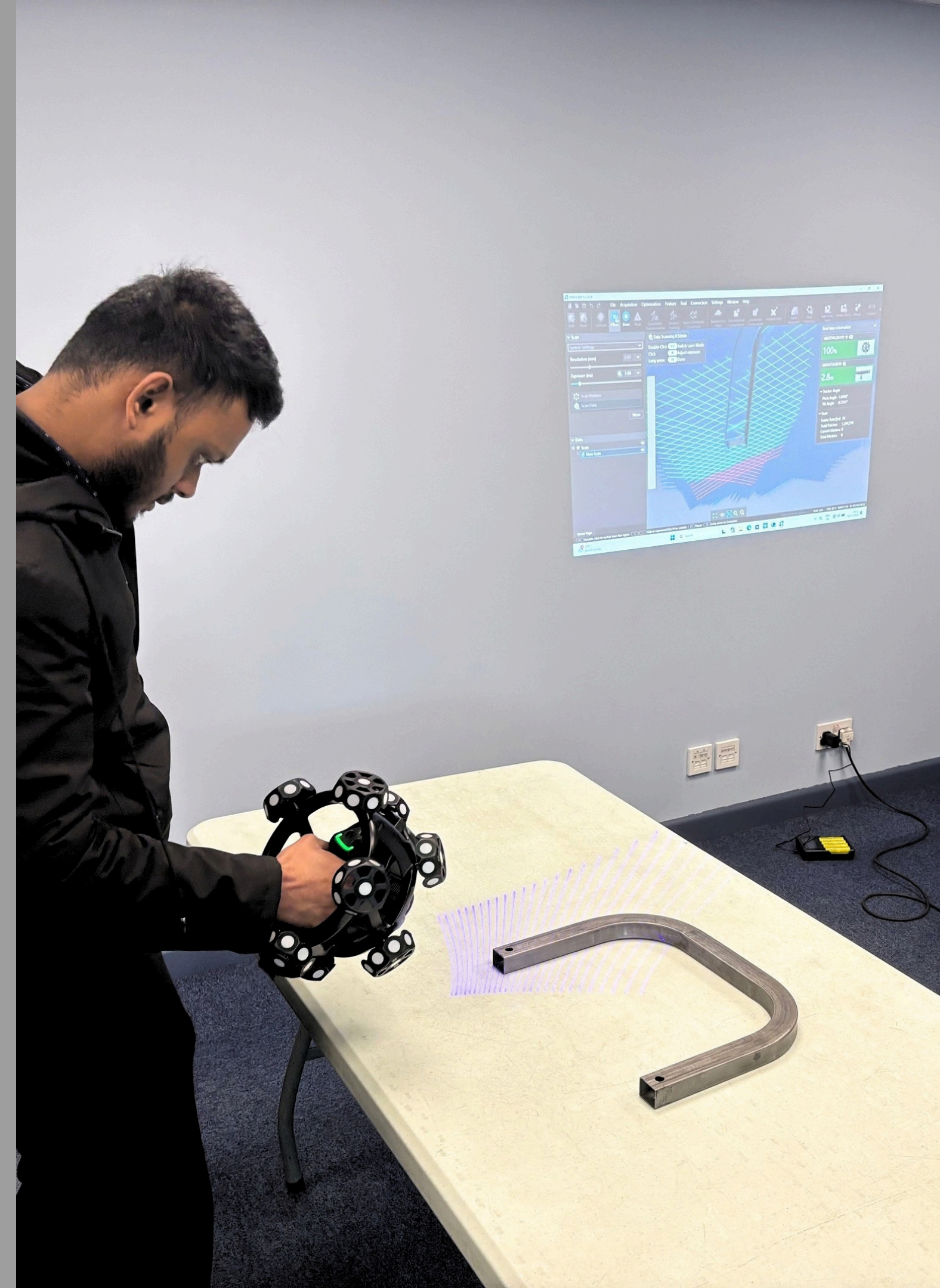
Koushik Sujatha, New Product Introduction Engineer
TBI Manufacturing



The Challenge:

SUPPORTING GROWTH WITHOUT SLOWING DEVELOPMENT

- Based in Mildenhall, Suffolk, TBI Manufacturing began as a subcontract tube-manipulation business more than 30 years ago. Today, its capabilities span tube bending and forming, laser cutting, machining, welding and fabrication, powder coating and assembly. Its work includes chassis, canopies, pannier and battery boxes, handrails and automotive components, with off-highway manufacturing representing its largest market.
- TBI's engineering team develops the tooling and fixtures needed to manufacture each customer's product consistently and repeatably. As the business grew from a turnover of approximately £7-8 million two or three years ago to a forecast £14 million this year, the volume of new projects increased with it - and that development stage became a bottleneck.
- Each new fabricated assembly can require tube bends to be refined, tooling and welding fixtures to be developed, and successive samples to be checked as changes are made. TBI's existing measuring arm remains useful for positioning elements within jigs and fixtures, but the team required a faster, more visual way to validate tooling and complete parts. The previous reporting process also depended on having the physical part available and required separate reporting work for each sample, making it difficult to scale across a busy new-product pipeline.



The Solution:

CHOOSING A SCANNING-LED ROUTE

After considering measurement systems from a number of suppliers, including the option of investing in a new conventional measuring arm, TBI decided that a scanning-led workflow offered the strongest fit for its developing requirements. Speed of data capture and reporting mattered, but so did the quality of the information produced.

By comparing the scan of a manufactured part with the customer's CAD model, the team could use colour mapping to see where the complete geometry matched the nominal design and where deviations remained.

Ease of use and portability were also important. NimbleTrack can be moved to wherever a sizeable fabrication is being developed on the shop floor, while its optically tracked workflow avoids covering the part with reference markers or magnetic targets for routine scanning.



Working with T3DMC, TBI evaluated how the system could complement its existing arm, combining mobile scanning and probing with PolyWorks reporting and CAD comparison.



What really stood out about the solution from T3DMC was how easy the technology is to work with. The NimbleTrack is far more straightforward to use, and the portability means we can set it up anywhere on the shop floor, even for our larger fabrications."

**Mark Tanner, Commercial Director
TBI Manufacturing**

Implementation:

CONNECTING SHOP-FLOOR CAPTURE WITH DESKTOP ANALYSIS

Inspection projects can now be prepared on desktop systems before an engineer steps onto the shop floor. The part is captured with NimbleTrack, an inspection laptop and DefinSight, then the scan data is transferred through TBI's server and processed against the customer's CAD data in PolyWorks. Reports can therefore be prepared from the drawing and CAD model before the first physical part is available, then populated once the scan is complete.

Two members of the new product introduction team, including New Product Introduction Engineer Koushik Sujatha, completed specialist PolyWorks training. Koushik has since trained shop-floor colleagues to operate the scanner and collect data, widening access to scan capture while programming and analysis remain with the NPI team.

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The biggest benefit is being able to check the complete part and see the deviations and distortions. It helps us make confident decisions about whether a part is ready to send to the customer.

**Koushik Sujatha, New Product Introduction Engineer
TBI Manufacturing**



The Application:

DEVELOPING FOUR LIGHT-ARM VARIANTS

- An early project put that workflow to work on four variants of a tubular light-arm assembly for two divisions of a major off-highway customer. It began with the first tube bend: the tube-bending team produced a sample, the inspection team scanned it and fed the findings back. Further tubes could then be adjusted and checked until the geometry was ready to move forward.
- TBI then built and scanned a bend-checking jig before progressing to fabrication. Its existing measuring arm was used to position elements within the welding fixture, while NimbleTrack provided broader validation of the tooling and the fabricated result. Once the first complete assembly had been welded, the team scanned it against the customer's CAD model and drawing, reviewing distortion and deviation across the part alongside GD&T characteristics such as flatness, perpendicularity and the true position of holes.
- If a sample was not yet where it needed to be, the scan evidence guided the next correction and the cycle continued. The same PolyWorks project could also bring results from multiple samples together: in Koushik's example, ten parts could be compared within one report rather than requiring ten reports to be created separately. This gave the team a clearer view of variation and a faster route to the next engineering decision.

The investment formed part of a Made Smarter Adoption East of England project, supported by Suffolk County Council, delivered in partnership with Norfolk County Council and part-funded by the UK government. The programme supported TBI in understanding the limitations in its existing process and confirming where the development bottleneck lay.



Results & Outcomes

What's Next?

With a busy pipeline of new projects, TBI expects NimbleTrack and PolyWorks to remain central to new product development. The next step is to involve more of the quality team, extending portable scan capture beyond NPI so current production parts can also be validated on the shop floor when required.

Faster development feedback and more efficient reporting

Successive samples can be inspected and fed back to manufacturing more quickly. Reporting can begin from the drawing and CAD model before the first completed part reaches inspection, while results from multiple samples can be compared within one PolyWorks project.

Whole-part visibility instead of isolated measurements

Colour-mapped CAD comparison shows how the whole scanned part relates to the nominal design. TBI can see welding distortion and geometric deviation across the assembly while still reporting defined dimensions and GD&T controls.

Greater confidence and closer alignment with customers

Complete-part evidence supports more confident decisions about whether a sample is ready to progress. Because many TBI customers already use the same technology, TBI can share the information and reporting structure directly with them during product introduction.

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The speed at which we can generate reports is a big plus. The colour mapping makes it much more visual, so we can compare exactly where we are against where we need to be.

**Mark Tanner, Commercial Director
TBI Manufacturing**



Conclusion

TURN INSPECTION BOTTLENECKS INTO FASTER DECISIONS

- Whether you manufacture individual parts, fabricated assemblies or larger structures, the pressure is the same: validate parts quickly, understand deviations clearly and keep new projects moving. TBI's experience shows how portable 3D scanning and connected reporting can bring that visibility directly into the manufacturing process.
- NimbleTrack and PolyWorks provide a flexible route from shop-floor capture to whole-part CAD comparison and shareable inspection results - complementing existing measurement equipment while helping teams make faster, more confident decisions.

If measurement, tooling validation or reporting is slowing production or new product introduction, the right 3D scanning workflow could remove the bottleneck.

Speak to T3DMC about your application and see how NimbleTrack and PolyWorks could fit the way your team works.

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We brought the scanner in to make our development process much more efficient, and it's done exactly that. Instead of relying on conventional checking methods, we can quickly scan a part, see what's changed, and understand the impact straight away.

**Mark Tanner, Commercial Director
TBI Manufacturing**

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