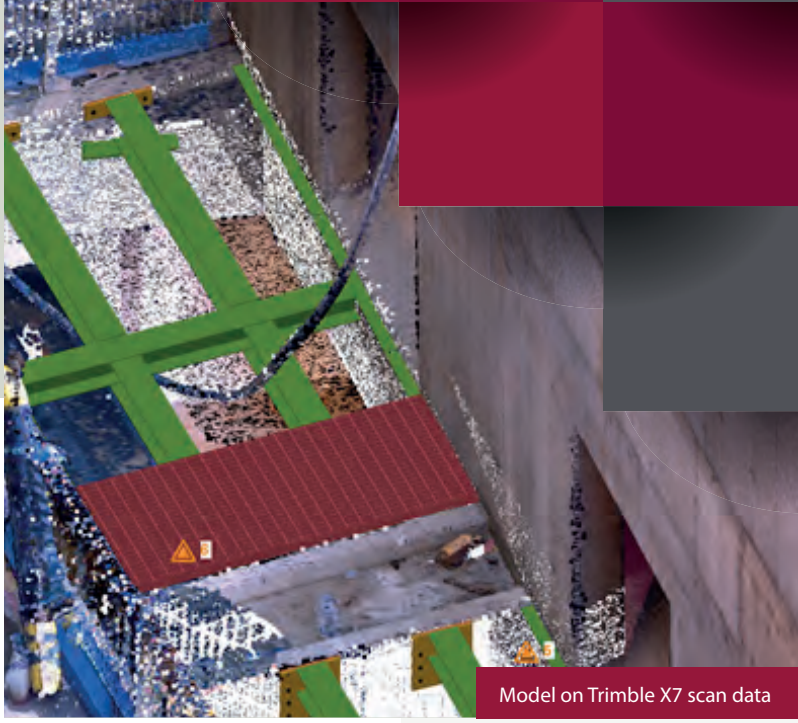
KOREC™

CUSTOMER
Nugent Manufacturing

PROJECT
All infrastucture projects requiring steel fabrication

SOLUTION
Trimble X7 3D Laser Scanner, FieldLink software, T10 Tablet and Tekla software



Model on Trimble X7 scan data

CASE STUDY

At the cutting edge of steel

Nugent Manufacturing and the Trimble X7: A steel manufacturing company in Ireland is aligning itself with some of the industry's biggest players as well as the country's leading survey practices following its investment in Trimble's groundbreaking X7 3D Laser Scanner and FieldLink software.

Based in Naas Co. Kildare, Nugent Manufacturing is a company that specialises in the fabrication and supply of steel structures for a wide range of infrastructure projects. These contracts include the fabrication and fitting of anything from beams and platforms to walkways and railings with projects ranging in size from vast, new, data centres to smaller existing buildings. In particular, Nugent has established a reputation as a company that successfully delivers bespoke orders for one offs such as 'The Hanging Pod', an imposing pink steel ellipsis that formed part of a Chelsea Flower Show gold medal-winning garden and the 9m high 'Way Ahead' sculpture by artist Bob Quinn.

However, whether the company is manufacturing for large construction projects or smaller one offs, its guiding principles remain the same, namely to deliver high quality steel fabrications designed with millimetre accuracy, to fit exactly into a specified position. This must all be achieved whilst avoiding clashes with existing structures and working within a tight site schedule. Above all, the aim is to work safely, both in the construction environment and more recently, within COVID guidelines.

Working smarter

Under the guidance of Company Director Stephen Nugent, General Manager Jason Hickey, Draughtsman David O'Sullivan and Drawing Office Manager Jason Gray, the Nugent team appreciated that although projects were being delivered successfully, there was a feeling that they could further meet company aims and vastly improve their overall effectiveness if they took a fresh look at their site survey methods.

Whilst their traditional survey methods of a disto, level and total station produced sufficiently accurate measurements, there were many drawbacks. At least two of the team were always required on site to carry out surveys and sometimes points could be missed on complex builds and consequently overall

BENEFITS

1. Automatic clash checking in Tekla
2. Reduction of risk / verification of site layout at time of survey
3. Better use of manpower
4. Greater site efficiency
5. Increased health and safety benefits on site
6. Increased client confidence
7. Better communication of visual data
8. Ease of use for non-surveyors

The Trimble X7

The new Nugent Manufacturing workflow, Trimble Tekla, Trimble X7 3D Laser Scanner and Trimble FieldLink

detail and context was often lacking. Additionally, the measurement process was particularly time consuming if there was restricted access or dangerous areas that needed to be surveyed. This was further enforced during a recent survey where Stephen and Jason found themselves in a large cool room with a high vaulted ceiling. Trying to position a survey staff and hold it steady from a boom lift saw the survey take all day, something they now know would have been completed in less than an hour with a 3D laser scanner.

The team felt that these challenges could be rectified by investment in their survey equipment and that the obvious choice of technology for improving site performance was a 3D Laser Scanner. As long-term users of Trimble Tekla Structures (powerful software for the creation of detailed 3D models of any type of steel structure), their first call was to Trimble distributor and survey equipment specialists, KOREC Ireland.

The X7/FieldLink/Tekla workflow

Investment in 3D Laser Scanning was not a decision the company took lightly and the team was therefore keen to ensure that any system they selected would be highly innovative, easy to use (because they were not surveyors) and also offer an excellent ROI. They therefore opted for Trimble's recently released X7 scanner which offered a number of key benefits. These included onsite registration of scans, fast set up, self-levelling, intuitive software and importantly, automatic calibration which would ensure that they had confidence in every scan they undertook and also considerably cut costs because the X7 would not need to be sent away each year for this process.

As Tekla users, the Nugent team felt that Trimble's FieldLink setting out and

"For Nugent Manufacturing the Trimble X7 has been an incredibly successful piece of hardware. Arriving on site with it has inspired great interest from our clients who include the largest construction companies in Ireland.

In their eyes, we are punching well above our weight in terms of the detail we can provide and our efficiency on every survey, no matter how challenging and this gives them huge confidence in the information we are providing. Simply, the X7 is fabulous."

Stephen Nugent,
Company Director

> "There's no doubt the X7 represents a large financial investment for us but our clients have been blown away by its speed and efficiency."
>
> Jason Hickey, General Manager

scanning software would be their best option for operating the X7 and that this would be done via the Trimble T10 tablet (selected for its large screen). FieldLink also brought additional functionality including the ability to seamlessly import IFC models (supported by Tekla), the option to compare scans to models and the use of a floor flatness routine.

Typically, the Nugent team will plan setups for the X7 in advance and once on site will carry out the scans using the X7 and FieldLink software running on the T10 tablet. Thanks to the X7's on site registration, Nugent can check there and then that all the necessary information has been captured.

Back at the office, the generated point cloud is processed and analysed in Trimble RealWorks and then exported to Tekla where the required steel structure can be designed to fit exactly within the model and any clash detection carried out automatically. The team reports that this new workflow has brough many advantages.

Trimble X7/FieldLink – workflow gains for Nugent

- Automatic clash checking in Tekla: This ensures that costly conflicts are exposed in the model – not on the shop floor or on site. Nugent say that the cost of taking a beam back for remodelling can cost hundreds of pounds in steel work but many thousands more in disruption to the works schedule and downtime.
- Reduction of risk / verification of site layout at time of survey: One of the biggest challenges facing Nugent was that often there was a gap of up to 10 weeks between the initial survey and their arrival back on site to fit the finished steel fabrication. During this time, the site could have changed dramatically and consequently the structure, where tolerances could be as low as 10mm, no longer fit in its specified position. Having a highly accurate, detailed scan of the site provides Nugent with verification that they have designed exactly as per the specification helping them to avoid costly rework. Previously their total station surveys lacked the detail to provide this sort of back-up.
- Better use of manpower: Using a total station, Nugent always required a team of at least two to carry out a survey. The X7's easy operation and manoeuvrability means surveys can now be undertaken by a single person.
- Greater site efficiency: Jason Hickey reports that time on site has been at least halved using the X7. The X7 is extremely fast to set up and working within tight construction schedules, its speed of data collection has greatly reduced time pressures on Nugent.

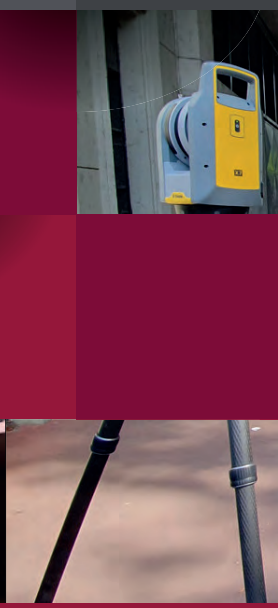
"There's no doubt the X7 represents a large financial investment for us but our clients have been blown away by its speed and efficiency."

Jason Hickey,
General Manager

"The beauty is that in the current COVID environment, we've been able to hold client meetings remotely to review the data and physically see any problems thanks to the Trimble X7 generated data."

Jason Gray,
Drawing Office Manager



Surveying safely with the Trimble X7 on an extendable tripod • Trimble X7's scan generated data with the steel design overlaid • High quality imagery from the X7 over scan data provides an excellent visualistion tool for client meetings • The Trimble X7

They can also work more independently because no special measures have to be put in place for surveying inaccessible or dangerous areas. This can all be done from a safe distance with all points captured, irrespective of their position.

- Increased health and safety: Not only is the Nugent team on site for less time but they no longer have to carry out manual surveys at height. The use of an extendable tripod has already proved extremely beneficial.
- Increased client confidence: The team reports that the X7 attracts a lot of attention from other contractors and in particular, clients have been particularly appreciative of the efficiency of Nugent on site. The team has even been using the X7 to carry out preliminary scans to ensure that clients receive a complete and accurate quote for proposed work.
- Better communication: The ability to use photo imagery with the scan data (normally captured within just a couple of minutes) means that Nugent can now provide a highly visual interpretation of the site making it far easier to explain and rectify situations. This has even been done from site 'live' using Microsoft Teams. Working remotely has been particularly useful in keeping site teams apart during COVID with clients able to see what the Nugent team sees, but from the safety of their office or home.

On site with the X7

Whilst Nugent has had less than 6 months with its X7 and Ireland's construction sites have largely been shut by COVID, essential projects have still gone ahead. Investment in a 3D laser scanner has enabled the Nugent team to continue working safely from a design perspective and also via remote client meetings.
On a recent job, the Nugent team was contracted to fabricate steel structures for a five-storey building in Ireland. The Trimble X7 set ups were planned in advance and once on site, 15 full dome scans were undertaken over a 4 hour period.

To survey an inaccessible area, at height, the X7 was used on an extendable tripod which meant there was no disruption on the site or need for additional assistance. Every last detail of the full site was captured and this enabled Draughtsman David O'Sullivan to detect early on that one of the concrete pillars was out of line from bottom to top by 50mm. This would have compromised the fitting of the steel fabrication. Nugent was able to alert the client before the steel structure was brought to site saving time and money.

Our thanks to Stephen Nugent, Jason Hickey, Jason Gray and David O'Sullivan for taking the time to talk to KOREC.
https://nugentmanufacturing.ie

The ability to capture every detail allows the Nugent design team to take limitless measurements to ensure a perfect fit for their steel fabrications

CONTACT US

Please do get in touch for further information on any of the products or services mentioned in this case study, a demonstration, support or just a chat about your requirements.

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