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[Case Study – 3D Documentation]

Capturing Oversley Castle development in 360 degrees

Organisations involved: Ruxton Surveys
Products used: NCTech iSTAR

Ruxton Surveys saves 30% on scanning time and expands project scope using iSTAR 360 degree imaging

Located near Wixford in picturesque rural Warwickshire, the site of Oversley Castle has views across seven counties and has attracted settlements throughout history. The castle and the buildings in its 65 acres of grounds are being converted into a collection of 14 individual luxury homes which are already up for sale.

Over two years were spent on design and planning work, and in 2015 a team of master builders and craftsmen embarked upon the transformation of Oversley Castle and the properties in its grounds into 14 unique luxury homes ideal for 21st century living, yet retaining the original features.

Warwickshire-based property developers, Farm Page Limited, are behind the historic conversion and appointed Ruxton Surveys to provide the extensive surveying services required to complete the ambitious project.

Ruxton Surveys is a family practice established in 1987, specialising in topographical surveys, measured building surveys, area surveys and 3D surveys. The firm has successfully completed in excess of 3000 surveys across the United Kingdom, from Jersey to Aberdeen and Tenby to Dover, with a reputation for being accurate, reliable and flexible among its loyal and diverse client base.

Surveyor Ben Ruxton has been working on the site since the project began.

"We did our first topographical survey in 2012 and in more recent months we have documented the site using the Faro X130 laser scanner," said Ruxton. "There are two aims to laser scanning, the first is to generate all of the measurements in 3D but also to document the site for visualisation purposes."

For projects like the Oversley Castle redevelopment, visualisation is an increasingly important part of the surveying process, both for demonstrating progress to investors and prospective purchasers, and to support ongoing work with architects and other parties involved in the development.

"In order to secure planning for additional developments, the process is greatly assisted by visualisation, as it can be hard for people to imagine what plans will actually look like without a strong visual component," said Ruxton. "Using modern surveying technology, combined with the building models created by architects, it's possible to create a highly visual, augmented reality environment to show a plan."

Laser scanning a complete site like Oversley Castle is a thorough and time-consuming task, requiring approximately 500 scans to capture all of the external site data. Each scan took between three and five minutes, and then required using the Faro scanner's built-in digital camera to collect the visual colour data, which took a further three minutes.

"It took approximately 50 hours to scan and photograph the entire site using the Faro scanner and camera," said Ruxton. "In this business, time is everything, and we are always looking for ways to reduce how long we have to spend on site doing the documentation. That's what led us to iSTAR."

Enter iSTAR

Ruxton Surveys decided to try using NCTech's iSTAR – the world's highest resolution, fully automatic, 360-degree HDR camera. Machined from solid metal for robustness and accuracy, iSTAR precisely captures full spherical immersive images and high resolution panoramic data streams for fast, efficient visual documentation of almost any environment.

iSTAR uses four pre-calibrated camera sensors, fully synchronised to deliver a highly accurate 50MP spherical image with excellent high dynamic range (HDR). The camera is fast, with typical capture times averaging around 10 to 20 seconds for a five-exposure HDR image.

"As soon as we got iSTAR, we realised the benefits it could deliver to our business – a real testament to the product's ease of use and reliability," said Ruxton. "The Oversley Castle project was the first time we used it and it worked like a charm. The interface is very simple to use and we were up and running in no time at all."

"It's so important to have equipment that is easy to use. There are so many new products and technologies that are supposed to save time and money, but it can be prohibitively expensive in terms of the time required to get up to speed on using them."

Saving time, improving quality

The difference was immediately noticeable on-site at Oversley Castle. Instead of using the Faro scanner's built-in camera, the team simply replaced the scanner with the iSTAR after each scan and took a single 360-degree image.

"The whole process with iSTAR takes less than a minute per scan to capture a perfect image," said Ruxton. "So we estimate that iSTAR is saving us more than 30% in our total scanning time."

But the time-saving is not the only benefit that iSTAR delivered.

"Working with iSTAR has also made a huge difference to the quality of the images and colour data that we are collecting," said Ruxton. "The exposure setting limitations of the camera on the scanner means that lighting conditions are much more consistent with iSTAR. Ultimately, the contrast is much better, providing a superior output when it comes to colourisation of the scans."

Reliability is key

The iSTAR camera's rugged reliability is designed to deliver consistently good results, time after time. This holds particular significance for firms like Ruxton Surveys.

"We're an industry that needs things to work, which is why we still walk around with tape measures – that's the level of reliability we expect," said Ruxton. "iSTAR does exactly what it says on the tin and it works every time."

Next steps

As the Oversley Castle project moves forward, Ruxton Surveys will be expanding the scope of its surveying to include the internal details of the buildings on the site.

"This project is challenging us to do more with the technology that is available to us, and a lot of our inspiration actually came from using iSTAR, which made us realise how quickly we can gather high quality 360 degree colour imagery of a site," said Ruxton.

"We've been using the NCTech Colourisation Plugin for FARO Scene to colourise the point cloud, but we are also looking to use the 360 imagery to support the building of virtual-tour type capabilities but with added interactive enhancements such as details on the kind of timber being used in a specific area and so on."

"While there are a few solutions available that allow people to navigate around a point cloud, we find them to be needlessly clunky and complex. Thanks to the popularity of apps like Google Street View, people are very familiar with navigating through photospheres, so it makes much more sense to use a product like iSTAR to collect that data. Plus it's also much faster!"

For further information about iSTAR or NCTech software visit www.nctechimaging.com or contact us sales@nctechimaging.com