

A LAW CHANGE MEANS VISUAL DOCUMENTATION IS EVEN MORE IMPORTANT

The Power of Visual Documentation in Construction



The Netherlands' new Quality Assurance Act means that crews may be called on to prove they are building to plan at any point. For this, teams need to have a day-by-day overview of the project situation: a big job in the best circumstances, but made harder by tight local drone regulations. VolkerWessels chose the Pix4D Crane Camera solution for end-to-end, automatic site documentation.



VolkerWessels' construction site capturing initiative aims to find new tools for increasing construction projects' efficiency, while of course complying with the law. The Crane Camera solution fits the bill.

How does the Pix4D Crane Camera solution

work?

Pix4D's Crane Camera solution consists of a number of connected camera systems mounted on tower crane jibs. The cameras capture images automatically as the crane moves. Images are wirelessly sent to a linked [Pix4Dcloud Advance](#) account, where they are automatically processed and transformed into 2D maps and 3D models. The results are accessible online and can be reviewed from anywhere in the world.

The Netherlands' new Quality Assurance Act transfers responsibility from the government to construction companies, who must ensure - and be ready to prove - construction projects pose no danger to people or the surrounding environment. In practice, this means that companies must be able to prove at any point that builds exactly match BIM models and plans.

Pix4Dcloud Advance aligns perfectly with the Quality Assurance law: plans can be overlaid on the as-built images, and the timeline feature allows users to scroll back through the build day by day.

Although the new law is not yet active, VolkerWessels wanted to prepare for it by implementing the newest technologies in the industry.



In progress image of the Onyx Tower project.

Putting it into practice: A city centre's crowning glory

In the beginning of 2018 VolkerWessels' team undertook the construction of a residential building in Eindhoven, the Netherlands, which was also their first project with the Pix4D Crane Camera solution. The Onyx Tower stands 83 metres high, and is crowned by a coronet of lights. The residential building contains 135 apartments and a commercial area. Local commentators called the building the area's "crowning glory".

Overcoming construction challenges

Every project inevitably has its challenges. And the Onyx Tower project was no different. One of the major challenges VolkerWessels had with the project was the limited space. Located in the city centre of Eindhoven, the project had limited space and a very small jobsite where every centimetre counted.

Any mistake with scheduling, or even storage, could lead to potential delays. Because of the tight jobsite space, the project had logistics challenges - traffic around the site had to be avoided, so everything had to be installed in the right place at the right time.

To avoid any issues, the team reviewed Crane Camera documentation regularly to stay aware of the project's progress. Data collection was scheduled twice a day (once a day is more usual) to ensure that the project remained on schedule and to plan.

Gathering data without an unmanned aerial vehicle (UAV or 'drone') had another advantage - staying within the law. Drones are tightly regulated in the Netherlands, and the VolkerWessels' team estimates that upwards of 80% of their projects are in areas where drones need permission to fly. It takes a lot of time and energy just to get a drone into the sky: that's why the Crane Camera was an ideal solution for the project.



Drone regulation map of the Netherlands.

Project documentation in the real world

Data collection is just one part of the Crane Camera solution. Images are sent wirelessly to Pix4Dcloud Advance, which automatically creates 2D orthomosaic and 3D point cloud models.

These assets are important - especially after a project has finished, when the team discusses the project.

When images taken during the project are not sorted logically, searching for them can take an inordinate amount of time. One team member has been known to take pictures with a phone and save them to a folder on their laptop. Compare this method to the Crane Camera and Pix4Dcloud Advance: images are ordered by time, and are searchable. They can be accessed years after delivering the project, by any team member.

Same day problem-solving

The project superintendent starts their day by reviewing the Crane Camera data on Pix4Dcloud Advance - all without leaving the office. The team estimates that it takes one minute to check the progress, and reviewing the data may take as much as five or ten minutes each day.

This compares favorably to the alternative: taking hours to walk the site. Climbing the 83-metre tower alone could take half an hour. With data being collected twice a day, the information is never more than a few hours old. Overall, the VolkerWessels team estimates that the Crane Camera is 80% faster than other methods. And, if something's wrong, it can be spotted at once and corrected immediately.



All data in one place thanks to Pix4Dbim Timeline.

The right information for better communication

VolkerWessels were working with many subcontractors, who moved in and out of the project as it developed. Subcontractors may be onsite for a month, or only a day: but all had to be fully briefed. The Crane Camera 2D and 3D data proved invaluable when quickly explaining what work needed to be done where. The team found that with the right briefing, subcontractors were able to jump into work immediately, with a minimum of back-and-forth or delays.

Drone data has undoubtedly reshaped the construction industry. After relying on UAV technology, the VolkerWessels is now committed to the Crane Camera for daily as-built information, without any of the disadvantages of a drone.