



It's a small world

In the Netherlands there is a very unusual city: it contains the largest number of special buildings, and yet it is also the smallest city in the country. Its name is Madurodam. GTC European representative Richard van Nijnatten visited this tiny city and found out how Polecam has been involved in creating a special new attraction for visitors.

Madurodam is a miniature park and tourist attraction, home to a range of perfect 1:25 scale model replicas of famous Dutch castles, public buildings and large industrial projects that can otherwise be seen at various locations throughout the country. The park was opened in 1952 and has been visited by tens of millions of visitors since that date. It has been the model for many other miniature parks worldwide.

Flying visit

In the winter of 2012/13 the park was extensively renovated and many new 'experiences' were added, most with a more interactive character. One of the new experiences is a virtual flight where people can 'fly' over Madurodam, just like a real Superman, or a little sparrow... whichever you find easier to imagine.

The technology behind this is based on traditional green-screen keying. The person steps into a cylinder that is green all around the inside, and looks up to a camera mounted on the ceiling with a monitor next to it. When the system starts, the camera image is shown on the monitor and the green-screen areas are keyed-in with 'aerials' over Madurodam. The virtual flight cannot only be seen on the monitor inside, but also by bystanders on screens outside. It is also possible to upload the video directly to the internet using social media.



Above: Inside the Panorama flight attraction; Top right: The girls 'flying'; Bottom right: Ceiling-mounted camera inside the cylinder



Edo Kuipers with Polecam in front of the Panorama flight attraction

All the 'aerials' were made with Polecam, operated by Edo Kuipers of polecam-operators.nl in the Netherlands. GTC member Richard van Nijnatten spoke to Edo to find out all about the project.

Edo, why was Polecam chosen over other camera cranes or systems?

Actually, at first the production company had a different plan. They wanted

to use a quadcopter to make use of a real flying camera. However, this quickly turned out to be impossible for a number of reasons. The downwash and upward airstream were potential problems. The quadcopter would have to fly very low and close to objects, and irregular air turbulence might make the platform unstable to fly, meaning a high risk of hitting and damaging the model buildings. An even bigger problem was the size of the system, which wouldn't allow shooting between the buildings in small alleys.

Cranes with full-size cameras were also not an option because of size, so Polecam was chosen as most suitable to achieve the range of shots required. However, even with Polecam we had to adapt. For the past two years we have been mainly shooting with the Polecam wide head that can accept a variety of cameras, including DSLRs and large-sensor cameras such as the Panasonic AG-AF101 and Canon C300. But even this turned out to be too big, so we reverted to the older, smaller, traditional Polecam head made for mini cameras such as the Iconix HD-RH1 and Toshiba IK-HD1.

This was not a problem though as, for this shoot, large-sensor cameras were not an option anyway; with their shallow depth of field we would never have been able to get the desired result. In the end, we chose the Toshiba over the Iconix because it is more light-sensitive, allowing us to stop down the aperture two more stops. Together with the use of the 1/3-inch sensor, we ended up with more than sufficient depth of field. The 4mm lens provided exactly the right angle for a natural perspective, and at first glance you don't notice that the objects are actually miniatures.

Another big advantage of Polecam was its portability. We put it on a dolly for quick

At first the production company wanted to use a quadcopter as a 'real flying viewpoint' but it would have had to fly too close to the objects with a high risk of hitting them due to instability caused by any air turbulence

transportation from one position to another although, if necessary, it is possible for one person to lift the system, even without removing the counterweights. We filmed sequences at about 15 or 16 different locations in the park but the whole shoot only took one day.

Did the shooting for this project differ from more traditional Polecam shoots?

Generally no, but there were some specific needs for the project. One thing that was really different was the shooting direction. Usually for crane shots, the camera points forwards in the direction you are 'flying'. However, in this set-up, as the ceiling-mounted camera in the attraction looks down on the person, the effect of such shots was that the person appeared to fly backwards. So, we quickly learned that the camera had to face backwards and move away from the scenery instead of towards it!

Another thing we had to keep in mind at all times was not to move the camera's view outside of the miniature environment, as the moment a real-size object came into shot the illusion was gone.

Strangely enough, the speed of the camera movements didn't seem to matter too much, although we did keep movements close to objects slower than when further

away. But even at 1.5m to 2m, the effect of changing perspective rapidly decreased.

Polecam can be operated with or without wire-struts. Without, it is possible to move the head in very tight spaces, but this comes at the cost of some steadiness. On this shoot, even very tiny camera vibrations would affect the illusion, so whenever there was enough room to manoeuvre, the wire-struts were employed.

In order to sustain the illusion there had to be no cuts, but the video needed to be much longer than one full Polecam move. How was this achieved?

So you want to know our (or actually the director, Jelte Maarten Boll's) secret? You are right that it was impossible for the whole flight to be in one shot as it takes about a minute. So, to make natural transitions we made use of something the Netherlands is well known for – its weather and, in particular, the famous Dutch skies with their many clouds.

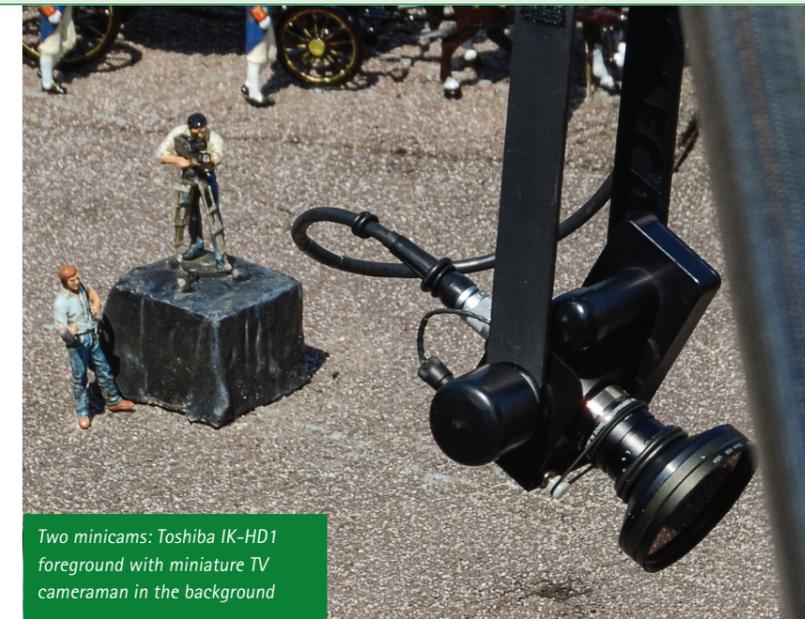
The video starts on the runway of Schiphol airport, where the camera takes off. I must say that when you stand in the attraction making quick steps on the spot as if you are running and the camera 'takes off', it looks very cool on the monitors. But once airborne, at a certain point, the reach of the Polecam would end and an invisible



Polecam shot of the royal golden carriage in front of the model House of Parliament

Kit List

- 6 metre Polecam with small head
- Wire-struts
- Sachtler HotPod CF14 tripod with pedestal, on wheels
- Toshiba IK-HD1: 1080i @ 25fps
- TVLogic LVM071W monitor
- Sound Devices PIX-240: Apple ProRes 422



Two minicams: Toshiba IK-HD1 foreground with miniature TV cameraman in the background

We chose the Toshiba IK-HD1 camera for its light sensitivity; it allowed us to stop down the aperture two more stops and, together with the 1/3-inch sensor, we ended up with a more than sufficient depth of field

transition was needed to get to the next shot. So, we placed a fog machine near that point and flew the camera into the 'cloud'. The next shot also started and ended in a cloud of fog and so cuts could be made at the point when the camera was inside the cloud. To be honest, this didn't always work and sometimes the effect was faked in post, but at least the illusion was maintained.

What system did you record on?

For the recording we used a Sound Devices PIX-240, which is a really great bit of kit. It allows recording in all essential formats and with native codecs for the two most used editing systems: DNxHD for AVID and Apple ProRes for Final Cut Pro. Also, the monitor provides an excellent image for reference.

The Toshiba delivers an excellent full HD picture and so, personally, I think it is a pity they used SD systems for the attraction. I think they missed an opportunity there, but on the other hand it probably made it easier to have the videos in the right format for uploading via social media.

The renewed Madurodam opened her doors to the public in spring 2013, and the new 'experiences' have definitely attracted more visitors, even despite the very poor weather early in the year.

Fact File

See more about Polecam at: www.polecam.com and Polecam Netherlands at: www.polecam.nl; contact: info@polecam.nl
 Contact Edo Kuipers on: info@edokuipers.nl and see his work at: www.polecam-operators.nl
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