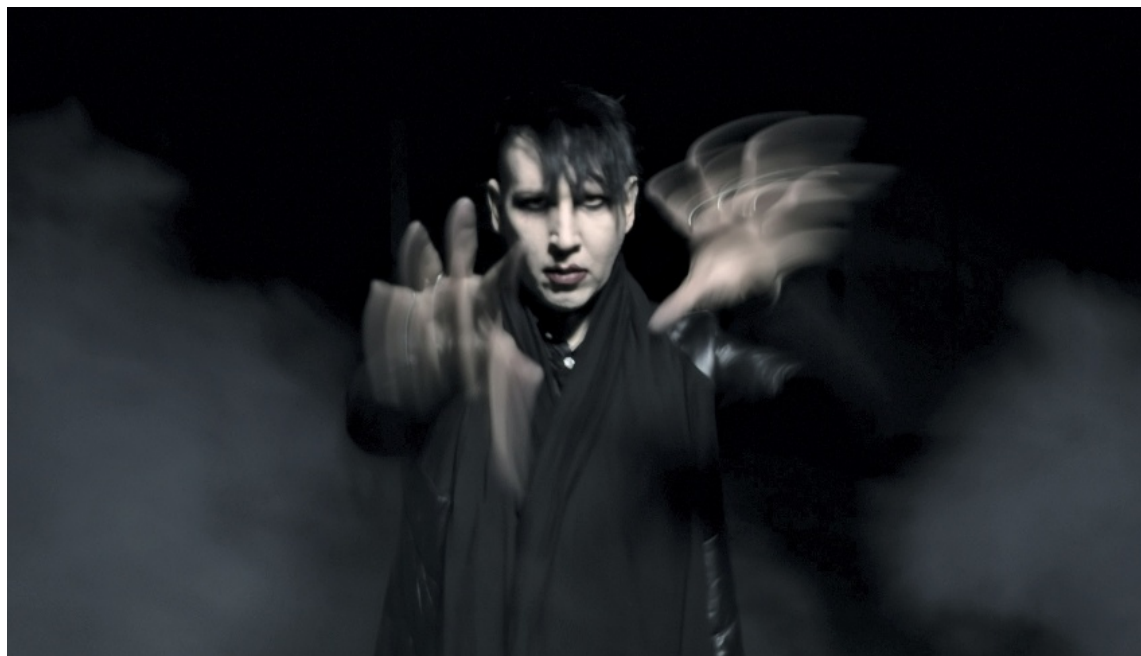


# Short Takes

Shot by Alan Lasky, the music video for Marilyn Manson's "Slo-Mo-Tion" features a variety of motion effects that were created in-camera using a P+S Technik PS-Cam X35.



## Pushing Boundaries with Marilyn Manson

By Jennifer Wolfe

The music video for Marilyn Manson's "Slo-Mo-Tion," directed by Manson and shot by Alan Lasky, utilizes motion effects captured in-camera to create a dynamic look that pushes the boundaries of digital cinematography. Shot primarily on P+S Technik's PS-Cam X35, the video is a literal realization of the song's refrain, wherein Manson chants, "This is my beautiful show, and everything is shot in slo-mo-tion." Manson worked closely with Lasky, who also served as the visual-effects supervisor, to create the complex motion effects, many of which depended on sophisticated motion-vector analysis and complex mathematical algorithms.

With an undergraduate degree in film from New York University and a master's in media technology from the Massachusetts Institute of Technology, Lasky has consulted for a number of camera companies over the years, including P+S Technik and Dalsa. A veteran of music-video cinematography, he first collaborated with Manson on "No Reflection," the first video from *Born Villain*. "The great thing about working with Manson is that he is not afraid to utilize all of a camera's potential functionality," Lasky says. "What's more, he'll always say, 'I want to push it way, way, way, way further.' Once we decoupled ourselves from the standard model of rock-video production, we were able to push the technology and get into an experimental side of filmmaking that is fun and exciting — and kind of dangerous, too.

"What's really cool about the X35 is that not only does it allow you to capture up to 500 fps with a full-frame sensor and global shut-

ter, but it also enables you to shoot time-lapse, alter frame rates, do speed ramping, and change and manipulate the shutter in really interesting ways," Lasky continues. He notes that Manson dislikes using greenscreen and common compositing techniques. "He loves image processing and would much rather get it in-camera. He's about manipulating images, not assembling them."

Using a style known as glitch art, a technique related to data moshing, Lasky and editor/visual-effects artist Richard Piedra applied optical-flow analysis techniques to material captured with the PS-Cam X35 in order to create artifacts within the footage. "Basically, you take an image-processing algorithm and destabilize it in order for it to do something that it was never designed to do," says Lasky. "Once you knock the foundation out from under the fundamental algorithm, the resulting imagery is the embodiment of what we call the glitch. The visual artifacts that result from the destabilization of the algorithm can be very interesting, and they're something you couldn't get any other way. We wanted to fundamentally destabilize the optical-flow analysis and the timing interpolation in such a way that we could get these artifacts that might look really cool."

Lasky shot the material at 6 fps with a 360-degree shutter, capturing the footage to solid-state drives as uncompressed QuickTime 10-bit files using Blackmagic Design's Hyperdeck recorder. The images began to blur, becoming "jerky and strange looking," he says. "The camera was essentially allowing us to manipulate time. We shot the material and then brought that footage in for some fairly sophisticated motion-vector analysis. Then we took that output, the underlying motion-vector map — in other words, a mathematically derived vector map of the motion of the pixels in the

Photo and frame grabs courtesy of Sturmgruppe.



Top and middle: A portion of the music video was shot using ultraviolet light, resulting in images that looked “like this strange, smeared, moving painting,” says Lasky.  
Bottom: Manson and Lasky frame up the X35.

frame — and started experimenting.”

When Manson saw the results, he suggested shooting some of the images using ultraviolet light. “We had no idea if that would work at all,” Lasky recalls. “We didn’t know the UV cutoff point of the sensor or the phosphor levels, so we had to go in and run some tests. The first thing we did was shut off all the camera’s internal processing, but I wish we could have removed the internal filters on the sensor as well. If we’d had enough time, I probably would have removed the UV-cutoff filter. We ended up having to boost the gain on the back end, but it came out looking great, like this strange, smeared, moving painting.”

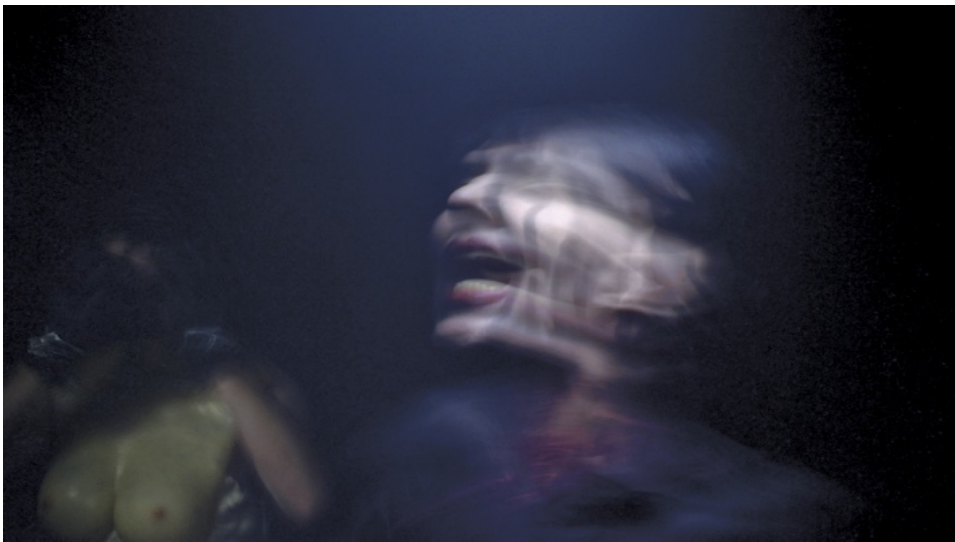
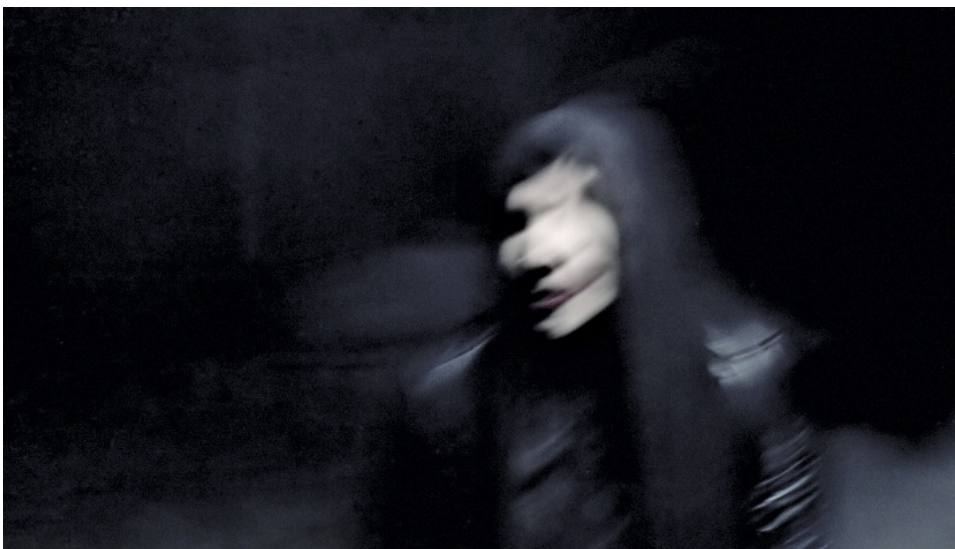
Lasky had shot with ultraviolet light before, but “Slo-Mo-Tion” marked his most extensive use of it. “The potential is there for some very interesting imagery, both ultraviolet and infrared,” he observes. “I’ve been researching how to shoot without the infrared-cutoff filters and without the UV-cutoff filters, and learning what it takes to excite the photosites on sensors using those kinds of light rather than the visible light spectrum.”

Lasky used Kino Flo Diva-Lites to light the UV sequences. “If we were to do it again, I would probably look for a little bit more brightness value so we could get a little more depth-of-field. The Kinos gave us the right amount of exposure, and we were also able to get very good range using the camera’s extra-sized sensor. It took a bit of tweaking in color correction because, of course, the standard sensors are not designed to work with UV light. It’s an entirely different spectrum.”

Preparing the highly processed images for editing was the next crucial step. “It’s important to note that we did a huge amount of image processing before moving into the edit bay,” says Lasky. “It’s also important to remember that we did an enormous amount of image processing with the motion-analysis vector tool as well.”

A variety of de-noising tools were applied to the 1920x1080-resolution footage, which was then transcoded into ProRes 4:4:4 and 4:2:2 formats using Adobe After Effects and treated with color look-up tables designed by Lasky, Manson





Lasky worked with editor/visual-effects artist Richard Piedra “to fundamentally destabilize the optical-flow analysis and the timing interpolation in such a way that we could get these artifacts,” Lasky explains.

and Piedra. “Depending upon the nature of the shot, we would utilize completely different de-noising applications,” Lasky notes, adding that five separate tools were employed. “Some of them are better at fixed-pattern noise, and some are better at high-gain noise, so it really depended on the shot content.”

Lasky and Piedra set up a robust post pipeline at Sturmgruppe, creating fully rendered and approved pre-comp elements sorted into a detailed bin structure for editing within Adobe After Effects CS6. Material from the PS-Cam X35 was intercut with footage captured with Canon EOS 5D Mark III and Mark II DSLRs; the Canon material was acquired primarily in the native Canon codec, although the new, higher quality IPB codec available on the Mark III was also used for certain elements shot *vérité* style on the streets of Los Angeles.

“For this type of experimental project, with multiple levels of image processing, it’s important to have a solid background in visual effects,” notes Lasky. “We needed to develop a complex post pipeline with sophisticated process trees that would allow us to get back to the original footage and change something in it if we needed to.”

As is the case for so many cinematographers, image capture, visual effects and post all blend into one for Lasky. “It’s a difficult thing for some people to metabolize, but the way I’ve worked throughout my career has led me in this direction for a long time now,” he says. “I don’t consider myself a cinematographer, a visual-effects artist, an editor or a post person, but I certainly consider myself whatever the word is for all of those things.” ●