



New Technical Players Join *Monday Night Football* Lineup

By: Carolyn Braff, Managing Editor | Published: October 4, 2010

Monday Night Football broadcasts always showcase the latest technical intros for ESPN, and, this year, three major enhancements have become staples. The network has incorporated a Maxx Zoom feature, in collaboration with Fletcher Chicago, which offers a full, clear picture of the goal line for replays and official review. ESPN's normal super-slow-motion cameras have been replaced with ultra-mo I-Movix cameras, which shoot at 600 frames per second, and Orad's MVP system now provides visual enhancements on every broadcast.

Maxx Effect

Of the three, Maxx Zoom is the top development on this year's broadcasts, according to director Chip Dean. A replay enhancement that offers a definitive look at goal-line situations, Maxx Zoom uses four clusters of video cameras mounted at each goal line on both the near and far sidelines. Each 2- to 3-in. square camera is mounted on an adjustable frame and fixed on the goal line to shoot a specific area of the field.

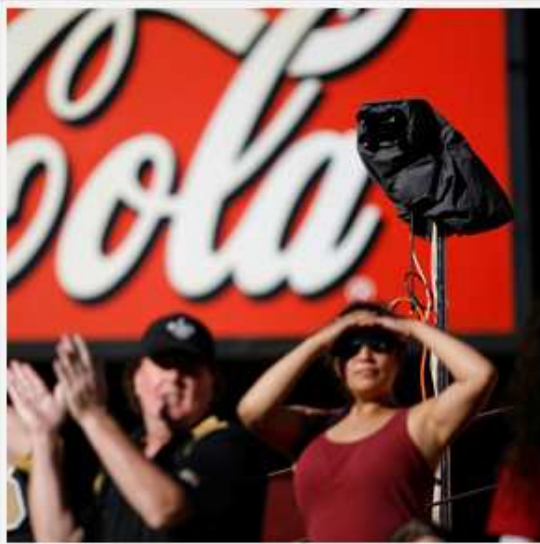
"They're 4k cameras that are mounted in the stadium and recorded into a computer," Dean says. "Then, a software program allows us to stitch the cameras together, so that, when you shoot an area, you can zoom into it and get a clearer picture."

During the Super Bowl, the broadcast network positions manned cameras to give a definitive look at the goal line, so ESPN began experimenting with using photography cameras at the goal lines several years ago.

"We found that we didn't get enough frame rate, so we would miss frames, and sometimes it's one frame that's the difference between seeing the player break the plane or his knee hitting the ground," Dean explains. "This year, we worked with a company in Belgium to create this computer system that stitches these images together to give you one high-quality image, which you can then zoom into, to give you the composition that you need."

Clearing Up the Picture

With each camera shooting at eight times HD resolution, the resulting aligned image can be zoomed and manipulated to show closeups in the red zone and in goal-line situations. The feature has already been used in several critical situations on *Monday Night Football*, including to overthrow a replay challenge in San Francisco, but the ESPN team is still working to improve picture quality.



One of the Maxx Zoom cameras set up at the San Francisco 49ers' Candlestick park.

"It's a combination of stadium light, shutter of the camera to freeze the action, and depth of field in the lens to get the clearest picture," Dean says. "I think we're making great strides."

He had originally placed an additional unit at the 50-yard line, to experiment with other in-game applications of the stitching technology, but that was eliminated after Week 2.

"We found that we couldn't apply it to our show as much as we thought," he says, "so we're only using the four goal lines."

Although the Maxx Zoom captures the images instantaneously, the stitching operation takes longer than real time, and communication is necessary between the operators and the production team.

"The challenge there is, when it's a replay challenge, it probably takes 20-30 seconds before we have what we feel is the definitive look," Dean says. "When we do a replay challenge for that, we usually feed it during the break."

A Virtual Telestration MVP

Orad is providing new visual enhancements for this season of *MNF*, via the MVP virtual telestration system.

"Instead of pre-producing drawings on top of players, Orad calibrates the field from high cameras, and they can then lay illustrations onto the field and run them throughout the play," Dean points out. "Before the broadcast, we sit down with [Orad analysts] Jon [Gruden] and Jaws [Ron Jaworski] and try to identify four or five elements during the game where we will apply the Orad."

Those elements include vision cones, the actual distance a player runs on a particular play, missed tackles, made blocks, highlights of particular players, etc.

"We're applying the MVP system in a lot of different ways," Dean says. "We feel it's more visual than a telestrator, and it allows us to do a lot of functions that we really like."

The Orad MVP system is calibrated so that the virtual graphics do not obstruct the viewer from seeing how plays develop and appear cleanly on the screen.

Higher-Speed Cameras

Last year, ESPN relied on NAC high-speed cameras that captured 300 frames per second. This year, the team upgraded to two I-Movix cameras that are used at 600 frames per second, although they are capable of capturing 1,000 frames per second. One camera is placed at the 50-yard line, and the other is on a reverse sideline cart.

"They have similar responsibilities as last year, but we're running these at somewhere around 600 frames a second, which means the clarity's better," Dean explains. "When we isolated on [quarterback] Matt Leinert's hands, you could see his hands wiggle back and forth when he caught the ball in shotgun. When somebody got hit, you could see muscles moving. It really helps us to make the game into almost a movie by adding in some drama. It's great for replay challenges, big hits, just to see the body contort, things like that."

The *MNF* production team includes an iso producer, who oversees two hand-held super-slo-mo cameras and the new I-Movix high-speed cameras. It is that producer's job to integrate them into the show, which is not always easy.

"The high-speeds shoot twice as fast, but, when you play back, they're twice as slow, so it affects your cue on it," Dean explains. "When you're playing it back, you're probably going to play one less replay, because it's going to take a lot longer to show the play shot at 600 frames per second. That's the challenge that our team has gotten used to."

Aesthetically Teasing

Also new for this season of *Monday Night Football* is a Lomo-look approach to billboards and bumps coming in and out of commercials. Each week, promotional bumps highlight scenic images of the city hosting the game, and those bumps are now treated with a Lomo look.



A lomo image of New York City taxi cabs used during a New York Jets MNF broadcast.

"Lomo refers to a Russian style of photography that was created in the '80s on old box cameras," Dean explains. "They came out with a picture that has an artistic look where the colors would bloom and it would give you a black portholing around the sides. We're using that as an artistic photography approach for our in-game stills, photo bumps, and billboards. It's an aesthetic thing that we have fun doing."

Prior to the game, the *MNF* production team shoots different still images throughout the host city, then uses Adobe Photoshop and Apple Aperture to achieve the Lomo effect.