



2016
CASE STUDY



FOX HITS A GRAND SLAM

Vision Research Digital High-Speed Cameras Help Fox Sports Hit a Grand Slam with its 2009 World Series Broadcast



Ultra slow-motion, instant replay has become an invaluable production tool in the broadcast of professional sports, especially for networks who seek to enhance their coverage of the highest profile events and add to the viewing experience for the fans at home. Significant advancements have also been made in the camera technology which allows such amazing images to be captured and played instantly for viewers. No matter the sport, the awe-inspiring video produced by these digital high-speed cameras captivates audiences like never before and adds significantly to the overall entertainment value of the broadcast with the ability to take coverage from ordinary to unforgettable.

Covering some of the country's highest-profile professional sporting events, FOX Sports recognizes the impact that ultra slow-motion replay can have on a network's ability to deliver an entertaining live broadcast, especially when that broadcast is of the World Series of baseball. Providing the exclusive national coverage of the six-game long 2009 World Series, FOX Sports utilized a comprehensive, 20-camera setup, one of which included the high-performance, Vision Research Phantom v640.



When it's too fast to see and too important not to.®



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Supplied by Inertia Unlimited, which incorporated the camera into its next generation X-Mo slow-motion replay system, the Phantom v640 is one of the most advanced digital high-speed cameras available today. Highly regarded as the leader and go-to source for high-definition, slow-motion capture and broadcast video, Inertia Unlimited’s X-Mo system has quickly become the de-facto standard for ultra slow-motion, instant replay in the professional sports broadcast industry.

“FOX Sports has been working with Inertia Unlimited’s X-Mo slow-motion replay system for over six years,” said Michael Davies, vice president of technical operations at FOX Sports. “The quality and performance of X-Mo cannot be matched, and the entire FOX Sports team was eager to see what exactly the revamped X-Mo featuring the Phantom v640 could do. X-Mo has truly come of age in terms of a production tool that we can count on and use to make a dynamic difference in our broadcasts. The results speak for themselves and we couldn’t be more thrilled with the system’s performance throughout the 2009 World Series.”

Double Duty

Recording in ultra-slow motion under normal stadium lighting conditions can typically pose a challenge for camera operators, as higher frame rates require a wider aperture and increased gain for proper exposure. Unfortunately, both options lead to reduced image quality and noticeable differences between the various video feeds used for the broadcast. To avoid resorting to these measures, Inertia Unlimited’s team of engineers leveraged the impressive low-light performance of the Phantom v640’s CMOS sensor and applied a custom color matrix, fine-tuned to match the high-definition footage from other cameras used by FOX Sports.

This custom calibration allowed the X-Mo system to shoot at negative gain and with a nominal aperture to provide FOX Sports with the cleanest, lowest-noise image possible for seamless integration with all of its camera feeds. This allowed X-Mo to be used for both live, on-air shots as well as for ultra-slow motion replays. For the 2009 World Series, the Vision Research Phantom v640 was utilized at speeds of up to 540 frames-per-second (fps) and recorded every play in 1280 x 720 high-definition.

“The biggest difference with the new X-Mo system is its ability to be integrated live into the broadcast. The camera produced images which were indiscernible from those provided by the other cameras in use. From a production perspective, footage provided by X-Mo was able to be integrated seamlessly as both a specialty and live camera. This versatility allowed our director to always have the ability to take a camera live, and never be forced to sacrifice a camera position or viewpoint,” added Davies.

Camera Positions Make the Difference

FOX Sports had X-Mo in two positions throughout the 2009 World Series, providing its viewers with an extraordinary look from behind home plate and down the first base line. At Yankee Stadium in New York, X-Mo was positioned at low-first where it captured the powerful swings of right-handed batters as well as ensuing sprints to first base in incredible ultra-slow motion. When the World Series came to Citizens Bank Park in Philadelphia, FOX Sports utilized X-Mo from behind home plate, which supplied a number of impressive slow-motion shots, ranging from the delivery of critical pitches to plays which were too close to call within the infield.

“The images captured by X-Mo never fail to impress,” said Davies. “We receive constant feedback from our viewers who are simply astounded by our ability to capture detail such as the rotation of a curve ball as it leaves a pitcher’s hand, what a ball looks like as it travels from shade to sunlight, or what a batter’s body is subjected to when he swings for the fences. This detail has had a tangible impact and has made a real difference in the quality and lasting effect of our broadcasts.”

Super-Fast and Advanced

The Phantom v640 is one of the most versatile, highest-performing digital high-speed cameras on the market today. A four mega-pixel camera offering a maximum resolution of 2560 x 1600, the Phantom v640 provides high-resolution imagery for maximum detail. The Phantom v640 can record at speeds greater than 1,400 fps at its full, four mega-pixel resolution, and offers a maximum recording speed of 300,000 fps at a reduced resolution. The Phantom v640’s versatility continues as it can also be used as a standard camera with the ability to record at more traditional frame rates. In the full-HD resolution used during the 2009 World Series, the Phantom v640 offers frame rates which range from 10 fps to over 2,700 fps. Such flexibility made the camera a stand-out addition to FOX Sports’ arsenal of broadcast tools, helping to further enhance its 2009 World Series event coverage.

“The new X-Mo ultra slow-motion replay system is all about versatility. After experiencing the full benefits of the system during our broadcast of the 2009 World Series, FOX Sports is now integrating X-Mo into its regular season NFL football games. Our production staff was allotted a set budget to make enhancements to our NFL broadcasts, and X-Mo stood out as the option that would make the biggest difference. Moving forward, X-Mo will be making a regular appearance at some of the most critical regular season football games broadcast by FOX Sports, and will be utilized in key areas of the stadium, most prominently at the reverse 50-yard line,” concluded Davies.



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