Samsung and other manufacturers are working to reduce one of the chronic irritations with LCD TVs: blurry images.

A new technology refreshes TV images at 120 to 100 hertz, or 120 to 100 times a second, versus the 60 hertz rate of typical LCDs (liquid crystal displays). This effectively doubles the number of images per second, which leads to a smoother visual presentation to human eyes. Known as motion-compensated frame interpolation, or MCFI, the technology is just starting to appear in high-end TVs.

The additional images, moreover, aren't static repeats of the image that came before them. Instead, the new images are composites of two successive images. The TV's internal microprocessors try to compensate for what the additional frame might have looked like had it been inserted into the film.

"The motion image quality issues are history with this product," said Brian Berkeley, vice president of advanced technology in Samsung Electronics' LCD division. Cranking up the refresh rate alone does not solve the blurry image problem, he said.

Other large TV manufacturers will likely do the same, said Sweta Dash, an analyst at iSuppli. While the blur issue isn't a big deal for a lot of programming, it has been an issue for sports programmers and viewers. Sports fans are one of the larger consumer groups snapping up fancy TVs.

"You don't see it in the stores really, but if you go to the conferences, it is there," Dash said. "It will make a significant improvement in picture quality."

JVC has actually started selling a few 120 hertz LCD TVs with interpolation. Sharp Electronics will add the technology to high-definition TVs, a representative said. Sharp expects to be the first company to put it into 1080p HD TVs, he added.

The LCD blur is actually the result of the human visual system and the way the technology works, said Berkeley. When looking at moving objects, the brain anticipates where the object should go. If the mental, anticipatory image and the actual image of a moving object don't synchronize, the image begins to look blurry.
Traditional CRT TVs, in some ways, are a great match for the human visual system. Electrons fire at a phosphor screen to create an image, but images degrade quickly, even before the frame passes away. A new image gets painted when a new frame appears. Thus, when you are looking at a CRT, you are looking at a rapid-fire staccato of images separated by blank spaces.

By contrast, the image on LCD TVs and monitors remain in place until the next one appears: without the break between images you get a blur effect. It also takes longer to paint an image on an LCD TV. The response rate on typical LCDs is around 15 milliseconds, versus 12 milliseconds for a CRT screen. MCFI-enhanced LCDs can paint an image in 8 milliseconds.

Samsung is also experimenting with replacing LEDs and other light sources with carbon nanotubes in LCD TVs.

MCFI will start to appear in high-end Samsung TVs next year, but it is unclear at this point whether the technology will appear in Sony TVs. Samsung and Sony have a joint venture for LCD panels, but the panel itself is only one component in an LCD TV.

Samsung, Berkeley added, also continues to build up its manufacturing capacity. The Samsung-Sony joint venture currently makes LCD panels in its seventh-generation fab in Tangjeong, South Korea. The sheets of motherglass processed in this factory measure roughly 6 by 7 feet. More than 1 million panels come out of the factory per month.

An eight-generation fab, which will turn bigger sheets of glass into TV screens, is currently under construction. The plant is set to open in October 2007, but customers have asked Samsung to move it up. (Samsung makes TV panels for itself and Sony, but it also makes notebook panels for most major PC makers.)

Japan’s Sharp has already built an eight-generation fab and is trying to use its manufacturing advantage to undercut competitors in price.

The factory under construction will allow Samsung and Sony to produce LCD TVs with screens 50 inches or larger that will compete with plasma screens of the same dimensions. These TVs will be MCFI-enabled, Berkeley indicated. The TVs from the eighth-generation fab will have "near-perfect motion performance," he said.

In the Tangjeong area, known as Crystal Valley, Samsung has room to build seven generations of fabs, getting it to a 13th manufacturing generation. The company is also constructing dorms and condominiums nearby.