

Opening the Door to True Home and Small Business Security

A Micron/WiLife Case Study

A Fresh Idea; a New Market

WiLife, Inc. is an emerging company that has developed a remarkably simple but powerful PC-based digital video surveillance system for residential and light commercial use. The company's first product, LukWerks, enables consumers to set up their cameras quickly and affordably, without using coaxial cables, purchasing complex hardware, configuring a wireless network, or hiring a professional installer.

WiLife was formed in 2002 by company President Evan

Building the Camera

With the power-line concept and the LukWerks software coming together, WiLife began to investigate camera designs. Previously, the cost of cables, installation, service subscriptions, and traditional CCTV made the cost of the camera irrelevant, so most security cameras used expensive CCD imagers.

Despite the expense and other challenges, WiLife's initial camera design concepts used CCDs because the Luk-

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Tree and CEO Andrew Hartsfield. As the owner of a security and alarm company, Evan lost approximately 90 percent of video surveillance sales to homeowners and small businesses because of the price and the difficulty of installing home surveillance systems. Realizing that this could be a great business opportunity, Evan teamed with Andrew to start a company that would develop an easy-to-install, low-cost system to serve these markets.

Building the LukWerks System

"Our goal was to build a professional-grade system that consumers could afford and use," said Evan. In addition to removing the difficulty and expense of cables and installation, WiLife needed to build a lower-cost camera that would still have professional-grade features. However, cameras affordable enough to meet the market's demand produced only low-quality images. To eliminate the high costs associated with surveillance, WiLife used power-line networking technology and software-enabled, professional-grade features, implementing a plug-and-play solution that works with a building's existing wiring for the surveillance system's network.

Werks camera needed to have CCD-level image quality. The CCD imagers proved to be difficult to integrate. The imagers consumed too much power, and many produced only analog outputs (the WiLife designers required digital video data). An alternate technology, CMOS imaging, was less expensive but was generally used in low-end cameras that produced poor pictures. The CMOS image sensors the design team had researched simply weren't suitable for security systems.

The Imaging Solution

Through a contact in their supply chain, WiLife was referred to Micron Technology. After preliminary discussions between the companies, Don Lake, Teresa Hausladen Huff, and Roger Hawkins from Micron visited WiLife in Draper, Utah, to provide on-site assistance. The Micron and WiLife teams discussed the features and capabilities the LukWerks camera needed. Don introduced several CMOS image sensors that could potentially meet their requirements. According to Evan, "They brought in experts to help us understand the product and road map and to give us tips regarding the product." To test and demonstrate the sensors, the Micron team provided hardware kits, software, and demo boards.



After testing the CMOS image sensors and discovering how they could work within the LukWerks system, the WiLife team chose Micron's MT9V131. They were sold on its ease of use, price point, and high quality. Evan described it as being "perfect for our implementation." While competitors had offered either difficult multiple-chip solutions or single chips that produced poor outputs, Micron delivered a low-cost, easy-to-use, one-chip solution. The WiLife team agreed, "The sensor was very easy to design in to our system. The SOC part of the chip made it easy to use."

Throughout the camera design process, Micron provided a dedicated field applications engineer to assist with the integration. Don, Teresea, and Roger also returned several times to help with a variety of technical issues. They provided sample sensors with the software to assist the WiLife team in fine-tuning their design. "Support and education were terrific," Evan explained. "Other companies didn't want to deal with an emerging company. Micron had the ability to see the value of the system we were building, and took a chance on us. They allowed us to use a rich set of features and registers that we could tailor to our application."

The Complete Solution

WiLife finished building the LukWerks camera and launched the full system in December 2005 to great reviews from customers, media, and security professionals. Using Micron's sensor kept the price of the camera affordable for homes and small business, while maintaining high quality.

The LukWerks camera, thanks to the ingenuity of WiLife's team and the support of Micron's team, produces higher-quality images than anything in its price range. The capabilities of the MT9V131 add exceptional functionality to the LukWerks system, including a motion-detection feature that can be set to record only when the camera sees movement. And because the output is digital, the video is easy to search through later (it contains less dead time and offers functions not available with an analog output).

"The solution helped us get into the market quicker, with a system that consumers could afford," said Evan. With help from Micron and the MT9V131, WiLife was able to achieve their market objectives. They built a camera for their surveillance system that could reach the large, relatively untapped market that Evan Tree and Andrew Hartsfield envisioned with the creation of WiLife.

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