

**Special Feature** Crestron Integration Award Winning Installations

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A Supplement to Residential Systems

# INTEGRATION AT HOME

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CRESTRON INTEGRATION AWARDS 2005 **WINNER**

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INNOVATIVE

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The old house was set back in a field, far away from the single winding road that passed through this rural landscape. It was late on a dark night; only the stars shining through the heavily foliated trees provided any light. Suddenly, there was an unexpected hard knock at the front door, startling the unsuspecting family inside.

This sounds like the beginning of a horror story, but it actually happened. That stranger's knock at the door that night turned out to be the beginning of a wonderful adventure with a very happy ending.

Electronic Design Group was contacted by the homeowner of this modest 4000-square-foot country home to collaborate with the architect and interior designer who were contracted to renovate the 18-year-old house. The original structure was not wired to support any technology such as Internet access or even cable TV. Because the cosmetic renovations required extensive interior alterations, cutting open walls to pull wire was not an issue. The clients wanted a fully automated, state-of-the-art home that included an integrated security system — especially for the long driveway in front of the house.

The home automation solution EDG designed and installed was expansive and comprehensive. Crestron controlled and automated the GE security and alarm systems; 60 zones of lighting; eight audio zones

fed by a hard-drive audio server, FM radio, and Crestron's XM radio tuner; three zones of Crestron thermostats; shades; and a dedicated media room. Bob Gullo, EDG President, says, "This really shows the power of Crestron integration — everything working together." Gullo, speaking specifically about the Crestron thermostats comments, "All the metadata is displayed on the touchpanels, which is very cool." The client controls all systems from different touchpanels in six locations throughout the house or from a PC using e-Control. Crestron touchpanels include a TPS-2000, an STX-1700C, three CT-1000s, and two TPS-3000s.

The family room, which is used as the media room, "looks like an old gentlemen's club with lots of dark woods and leather chairs, and not a hint of technology," describes Gullo. Except for the fact that this old-world style room is actually full of technology, including a plasma and a projector displaying multiple sources such as HD TiVo, DVD, VHS, PC, and various video game inputs. Crestron controls all of the technology with "one button operation" according to Gullo. The client selects the display device and the source, and magic happens. Either the painting on the wall lifts to reveal the plasma, or a motorized door on the wood soffit



PHOTOGRAPHS BY WILLIAM PSOLKA





opens to expose the projector in the ceiling. "We found a motorized actuator that is triggered simply by applying voltage," explains Gullo. "The arm extends to open the door and then retracts to close the door." Simultaneously, the lights dim, the shades lower, the appropriate input is selected, devices turn on, and sources are displayed.

While the family room is certainly striking, the truly impressive achievement is the driveway surveillance system. The "Tree Tops" project, as it became known, is especially noteworthy, and, in fact, award winning, because of EDG's innovative application of technology to successfully implement this automated solution.

The client's previous home was located in a more urban environment in which cars approaching the house were easily seen or heard from inside the house. This country house is set back 1/8-mile from the road and accessible only from a narrow gravel driveway. The drive is shared with another nearby house for a short distance entering from the main road, and then forks with one path leading to the client's home. Occasionally, someone gets lost and drives along the wrong path and startles the clients.

There was no conduit of any kind run along the length of the driveway. At first, it seemed that the only solution was to trench

the 1/8-mile long driveway to lay cable, and then to set a post at end of the drive to mount a camera. However, this is a very costly, time consuming, and obtrusive solution. "The clients wouldn't accept that because it would be an eyesore," says Gullo.

The breakthrough came when EDG found an inexpensive, yet reliable wireless probe that could be buried underground. EDG used an electromagnetic sensing device with a range of 10 to 12 feet that they buried 12 inches in the ground. Reliability and false alarms were another concern, because there is a dense deer population. "We tested to be sure that deer or other large animals would not trigger the alarm," recalls Gullo.

The probe communicates with a long-range RF sensor, which is mounted in a waterproof case and powered by 9V battery (which only needs to be changed once per year), to a wooden post just off the driveway along the tree line so it is obscured. The RF sensor, which has a 750-foot range, transmits signals to an RF receiver located in the attic of the house. "We had to experiment through trial and error to find a reliable location for the receiver," Gullo explains. "The only place to put it was in the attic." For an entire day EDG conducted the "Ten Pass Test" until they were confident that the system was stable and reliable. "We needed to see that the sensors triggered accurately ten times in a row before we were satisfied." Contact closures from the receiver to the Crestron controller trigger a series of programmed events.

When the probe at the end of the driveway detects a vehicle, the outdoor house lights automatically turn on, and a WAV file enunciator is activated on all the touchpanels in the house. The audible alert is a soft female voice saying, "Driveway... Driveway...Driveway." Next, the first surveillance camera picks up the vehicle and the live video is displayed on the touchpanels. The driveway system is blind for the first 150 feet — visual confirmation occurs after the audible alert. "We had to go with an audible

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first alert because we couldn't mount the camera at the end of the driveway," Gullo says. "We mounted the camera to the chimney mast on the house and used a 16mm lens that gave us a long distance view; we didn't need a wide angle because we were only looking at a narrow drive." There is no lighting along the driveway, only at the garage parking areas near the house, so EDG installed infrared cameras to see at night. When they installed the cameras they were very careful to mount them at the appropriate height, location, and angle for optimum viewing range. "We used this tool like you see at an optometrist (which is better A or B?) that showed us exactly what the camera would see so we could choose the best spot for the camera," says Gullo.

Next, the touchpanel video display switches to camera two. "We tested by driving vehicles at different speeds and timed ourselves to see how long it took us to get from one camera to the other," describes Gullo. "We came up with a 20 second interval, which seems to work per-



fectly at least 90 percent of the time." The "Garage View" of the parking area from camera two remained active on the touchpanels for five minutes, then automatically timed out and reverted to the main menu default screen.

The driveway surveillance system was an innovative solution that met the client's needs and resolved their issues. Gullo says, "We knew the Crestron system could do whatever we wanted; the solution was really contingent on that little probe." EDG applied standard available technology to an unusual application, delivering a cost-effective, reliable solution for its customer. ■