

UMC Jinshan Site Where Mixed Cables Make Surveillance Upgrade Difficult

Site Name	UMC Jinshan Site
Country/ City	Hsinchu, Taiwan
Industry	Factory
Solution	DTV FHD Digital Surveillance System
Solution Provider	Ubiquity Smart Technology Inc. (UST)
Reasons of Adoption	<ul style="list-style-type: none">■ Retrofit without recabling■ Full HD video quality■ Hybrid (IP/DTV) system



CUSTOMER NEEDS AND PROBLEMS

United Microelectronics Corporation (UMC), established in 1980, is a well-known corporation in Taiwan. It was the first local company to offer foundry services, as well as the first semiconductor company to list on the Taiwan Stock Exchange (1985). The case is UMC Jinshan Site in Hsinchu. When the site was built, dozens of analog CCTV cameras were installed at the parking lot and site entrances, and the videos were sent to the central office, security room, and control center for simultaneous monitoring through coaxial cables buried underground or hidden behind walls.

For years, because trucks came in and out frequently, and different tenants made different changes for their own needs, resulting in broken or damaged cables. The damaged and broken coaxial cables were replaced with either new coaxial cables or recently popular CAT5 network cables over the years by different contractors during different periods of time in different methods. Because sometimes the cables were installed in a rush, the contractors did not following the existing cable layouts for the sake of their own convenience. The videos of analog CCTV cameras became very blurry due to the aging cameras or cables and in desperate need for replacement. Several surveillance contractors were asked for a field survey and shocked by the hodge-podge of cables, layouts, and analog signal amplifiers, which were installed here and there to boost the analog signal transmission distances. Seeing this, all of the contractors came to a conclusion: it was too difficult to improve the existing system; and it was even more difficult to replace the cables and sort out the layouts since the tenants of the site had to shut down for this. Just as things were stuck in deep mud, an incident of missing items in the site led the management committee to one of the tenants -- UST and its DTV digital surveillance system, and the light seemed to be visible at the end of tunnel for the surveillance system upgrade.

CUSTOMER BENEFITS

UST's DTV digital surveillance system subvert the ingrained idea that "IP cameras work on CAT5 cables and analog CCTV cameras on coaxial cables." DTV cameras are not limited to certain types of cables. DTV signals can be transmitted on coaxial cables, network cables, or twisted pairs. They can be converted to optical signals by

optical transduces and transmitted on optical fiber cables. Furthermore, DTV system also supports wireless transmission, meaning the video signals are transmitted wirelessly from DTV cameras to DVRs.

The contractor of the Jinshan project followed UST's plan to leave the cables unchanged and to replace only the cameras and video servers at both cable ends. Immediately after the replacement, more than half of the videos became sharp and clear HD videos. The next step is to check one by one the rest of the channels without image, i.e. the channels with issues between the cameras and the video servers. The analog signal amplifiers were found to be one issue. If not used properly, they cause interferences between channels. Because DTV systems support long-distance transmission and these amplifiers were no longer needed. By removing them, many channels were recovered and the energy was saved. The next in the list was to check the channels with hybrid cables. The baluns used to connect coaxial cables and twisted pairs or CAT5 cables were replaced with those that meet the DTV specifications. With the above fix-ups, the images on all channels were all restored. In just one day, and without affecting the activities of the tenants, the surveillance systems of the entire site were upgraded to 1080P digital full HD. The existing cables were remained untouched. The videos from the camera at the main entrance and that at the basement parking lot, which correspond to the closest and farthest cameras from the video servers, are equally clear thanks to the immunity of digital signals to aging cables or increased distance.

In addition, so far the cameras are installed at important public areas of the site. If in the future, the committee decides to increase the camera density at hot spots such as corridors and staircases, what needs to be done is to set the DTV cameras at different channels and combine the output signals into the existing cables with readily-available TV splitters. By doing so, the surveillance blind spots can be easily eliminated.

DTV digital surveillance system not only solves the complicated problem of hybrid cables easily, but also provides customers great flexibility in terms of time and budgets.

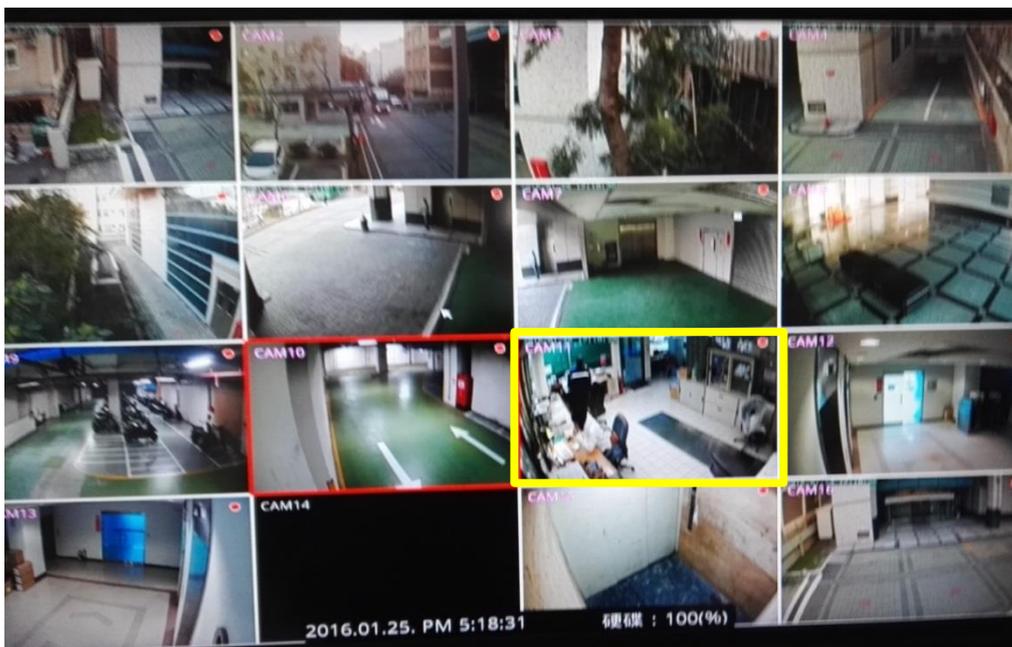


Figure 1. The 16-grid screen display on the monitor of the old analogue CCTV system. The footage seems clear on screen but is not clear enough when it has to be zoomed in to search for the key images for a certain event. Figure 2 and Figure 3 are the image in the yellow rectangle before and after zooming in.



Figure 2. Surveillance image of the old CCTV system (The zoomed-in version of the image in yellow rectangle in Figure 1). The image is blurry and only the human figures are visible not the faces.



Figure 3. The digital DTV surveillance image after the upgrade. The image is sharp and clear, and it is easy to tell the details.