

## CASE STUDY



## Improving Safety On UK Highways

### Project Overview

The UK's motorway network is currently undergoing a major expansion and improvement program to build the next generation of highway travel throughout the UK. This expansion program includes the widening of several key areas of motorway along with safety enhancements such as new concrete central reservations and traffic spacing chevron schemes.

As part of these works the UK highways agency has specified that during all major construction the work areas should be monitored by CCTV systems for the purposes of safety for both the construction workers as well as road users. In addition the CCTV systems are to be used for traffic flow monitoring in order to spot broken down or stranded vehicles. This allows the operators to arrange for fast recovery of these vehicles to ensure traffic jams and disruptions are kept to a minimum during these essential works.

Specific requirements of the system are to provide real-time un-compressed video monitoring of the traffic conditions and to ensure complete coverage of all lanes as well as both entry and exit slip roads throughout the entire construction areas.

ComNet have worked closely with Graham Firth Communications, one of the UK's leading providers of temporary motorway monitoring systems to ensure all the required objectives of the schemes were met and that the construction work could be carried out safely and on schedule while using a minimal fiber optic infrastructure.

### ComNet's Technical Solution

ComNet proposed a revolutionary new solution to the problems faced with this type of transmission application with their state of the art Self Healing Ring (SHR) system. The systems called for a rapid deployment of cameras in a very flexible architecture as each construction project would be of varying sizes and complexities. The distances involved could be from just a few kilometres to over 20 kilometres in some cases. These vast differences in system sizes called for between 15 to well over 35 cameras in some instances. With traditional solutions these large quantities of cameras would require a huge amount of fiber and coaxial cable which would make the installation and subsequent maintenance both costly & very time consuming.



“The nature of the work we do and the installations where our camera systems are used means that we are constantly battling system failures caused by the construction workers cutting the fiber cable.” commented Graham Firth, managing director of Graham Firth Communications Ltd. “With the traditional optical technology available to us this meant that during a failure at a particular location we also lost video or data at other locations and made locating the fault very difficult. With the ComNet SHR system these issues are a thing of the past as during a failure we can quickly diagnose the problem and locate the fault using the intelligent fault location LED system. The simplicity of this system has been a huge benefit to our engineers who are now directed exactly to the location of the problem just by viewing a ComNet unit anywhere in the network without having to have a PC or other specialist test equipment. This has allowed us to drastically reduce our time on site solving these problems.”

### Video Quality & Fault Healing Technology

Graham Firth Communications installed a large number of ComNet Self-Healing Ring (SHR) units along stretches of the M6 and M62 motorway networks allowing the monitoring of more than 100 cameras. These systems transmit 8 real-time digital video signals at 10-bit high quality plus associated command and control data over a single fiber core. According to Steve Clarke, managing director of ComNet Europe Ltd, “ComNet’s SHR product gives the end user much higher flexibility and resilience than that of a standard point-to-point solution. Our single optical fiber solution offers the fastest and simplest fault tolerant dual counter-rotating ring network in the industry with fault recovery time lower than 5 milliseconds over 48Km between nodes.”

“The fact that our SHR units do not use

any form of video compression ensures that the quality of the image received back at the control room is far higher than any equivalent IP based video system and allows for real-time monitoring of the fast moving traffic flows.”

### Future Proofing The Investment

The ComNet SHR product line is constantly evolving adding new features and increasing the total number of signals that can be transported on each optical fiber. ComNet recognises the importance of helping customers ensure a good return on investment and with this in mind the ComNet SHR product line was developed to ensure that customers did not have to replace their existing equipment to increase the channel count or add new features.

“Having a system that allows us to expand and upgrade to tomorrow’s technology without the usual expense of replacing the current products was a key decision in selecting the ComNet SHR solution for our projects. This will ensure we can maximise our investment and stay ahead of our competition.” says Graham Firth.





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### ComNet Self-Healing Ring Features

- Provides self healing ring for 8 **real-time** video and data signals over a single optical fiber.
- Fastest fault recovery time in the industry ensures no loss of video during a fiber cable break. Fault change over happens in less than 5 milliseconds.
- “Plug & Play” design ensures the system is no more complex to install than traditional CCTV equipment.
- Exclusive intelligent fault detection LED system can locate a fault from a simple glance at any unit in the network using a simple blinking format.

### Full System Example for a Self Healing Ring Configuration

