Case Study
Pollution Response

The Client

The Department of Environment and Conservation (DEC) is responsible for protecting and conserving the environment and nature of Western Australia for future generations. Pollution control is an integral component of this responsibility and the Department has created a Pollution Response Unit to provide:

- Prevention of pollution including blitz and pre-emptive strike strategies
- Identifying polluters and mounting cases for legal prosecution
- 24/7 first response to pollution related incidents and emergencies
- Identification, sampling and monitoring of hazardous materials during these incidents
- Containment and clean up advise at incidents and emergencies
- Environmental advice to other Government departments on pollution issues

The Challenge

The DEC have adopted a tough stance when investigating pollution and regard prevention as better than cure. At times unless the offender is caught in the act it can be difficult to prove that it was the accused who committed the offence. Without adequate evidence (hard data) offenders often escape prosecution. Problem areas include:

- Location of gross polluters
- Industrial pollution which includes air, ocean and ground water damage
- Illegal dumping by individuals and industry.

The DEC sought a new and innovative means to outsmart polluters and secure evidence to support positive identification

The Journey

In addition to hand held air quality sensors, DEC officers had previously used hand held video to capture footage of polluters, and wanted a car mounted Digital Video Recorder (DVR) to enhance efficiency. The Pollution Response Unit owned a virtual treasure trove of different analog and digital sensors from different vendors, but had no simple uncomplicated manner of integrating them.

A solution that could integrate, reconfigure and access these devices remotely, extend the coverage and incorporate video would be an ideal solution. An in-vehicle video with integrated sensor monitoring was the first step to realise this goal of an integrated environmental information system.

The Discovery

After 5 years of exploring for suitable technology to view the incident and obtain live on line chemical data, Dr Jimmy Seow, Manager of the Pollution Control Unit, DEC, discovered ETCorp and raised the possibility of integrating live video and sensor automation into a general purpose airborne particle monitoring unit.

Realizing the potential benefits for his operation, Dr Seow introduced ETCorp to another instrument company to combine this technology with internet 3G communication and gas detection, and immediately requested the design of a prototype in-vehicle system.

GPACsystem™ etcorp

Case Study
Pollution Response

State of the Art Solution

ETCorp's GPAC System™ easily integrates and controls these specialised devices in addition to providing real time data and video online from any internet enabled computer. The in-vehicle GPAC System™ features:

- The ability to browse directly into the vehicle from any PC or a PDA
- Open standards/vendor neutral operating platform
- Rugged compact Car PC and wireless 3G Modem
- High resolution Day/Night IP Axis camera to provide real time video
- Sensor data in real time over the internet
- Siren with manual override.
- Secure logins & data audit trails
- Automatic data quality and compliance checks
- SMS for critical data alarms
- Simultaneous management of up to 20 different analog or digital sensors
- Scalability to quickly and easily expand the system

Simple Implementation

Within weeks, a compact innovative solution was delivered by ETCorp Pty Ltd and retro fitted to the Pollution Control Vehicles.

Step 1. Antennas Fitted

Step 2. Camera fitted to dashboard

Step 3. Control is fitted to transmission hump

Step 4. GPAC System™ fitted to wiring harness.

GPACsystem™

etcorp

Case Study
Pollution Response

ETCorp's technical team designed an interface to allow DEC personnel to browse vehicle cameras and data via their hand held PDAs and phones. Although not part of the initial requirements specification, this feature was greatly appreciated by management who need to stay informed, particularly during emergencies.

Effective Results

Dr Jimmy Seow, Manager of the Pollution Response Unit explains how the system is working operationally:

"We have now deployed on the vehicles, a one switch button whereby we can not only record incidents, but also view them on the internet anywhere, anytime. Additionally we can control the vehicle cameras, alarms and sensors from any browser which is critical to our ability to view the incident and retrieve the important chemical date for decision making anywhere anytime.

The GPAC System™ installed also allows us to retrieve data, set trigger alarms from our gas monitors and detectors via the internet and the new 3G mobile phone system. Lately we have installed LEL, VOC, CO, NH4, H2S, Cl, SO2 and HCN detectors on top of our vehicles. Wireless internet connection to the GPAC System™ in the vehicle, means that as we drive through a chemical plume, we receive data in real time and see exactly what is happening as the events unfold. Next is to set triggers on the detector readings so that the GPAC System™ can alert the operators in the vehicle via an enunciator as to the levels of any particular chemical.

Sensor box assembly

Sensor box installation on vehicle

We recently commissioned ETCorp to integrate their system to a particulate monitoring unit which means we can now receive particulate data and see what causes the rise in say PM10 anywhere, anytime via the internet. The combined particulate/GPAC System™ can also send us (or anyone we choose), an alert each time a value is exceeded and automatically directs the webcam to where the alarm originates from.

The GPAC System™ has given us so much flexibility and greater capabilities. We are now working towards installing a WiFi network around these vehicles to collect data from webcams fitted to our safety helmets. This will enable us to see exactly what our officers are seeing during an emergency response anywhere, anytime.

If I am not mistaken, I think we will be the first to use this technology for environmental monitoring"

The GPAC System™ proved to be a fast, reliable and cost effective solution to the DECs problem. The return on this investment will be realised by all West Australians as the newly equipped vehicles enable staff to increase the detection and prosecution of polluters, for a safer, cleaner environment.

GPACsystem™ etcorp