

Nicked by PC Drone, robot spy in the sky

Pilotless surveillance aircraft are being trialled across Britain, heralding a new era in the policing of our roads, writes Mark Harris

1 Watching over a secure high-speed video link, a police officer controlling the drone from 60 miles away spots a speeding car

The drone has a wingspan of just over 10ft and can take off without a runway, using a catapult launcher

2 It accelerates from its cruising speed of 55mph to 85mph to track the speeding vehicle

3 An electro-optical camera mounted on an inertially stabilised turret delivers rock-steady images, even at night, thanks to a secondary infrared sensor

Police and fire services will also deploy drones over major incidents

4 The numberplate is cross-referenced with the DVLA database and a ticket is issued

An efficient propeller engine keeps the 44lb drone aloft for up to 15 hours at a time, using less than two gallons of fuel

Sophisticated avionics enable the drone to follow pre-programmed missions, guided by GPS satellite technology

Iraqi insurgents have shot down several drones on spying missions. But flying at up to 19500ft, civilian drones should be safe from 'Group Captain Gatsos' in the UK

The aircraft pictured is based on the Insitu Insight due to be launched in America in June

Speeding tickets from the sky might sound like science fiction, but the robot spy-plane technology that is used in the war on terror in Afghanistan may soon be coming to British roads.

Under a government-funded scheme, a new generation of pilotless drones could be patrolling motorways within the next five years. Although they will initially use cameras to record and monitor accidents and provide traffic-flow data, they have the potential to spot speeding offences and identify reckless or uninsured drivers.

Already dubbed "sky gats" after the Gatso speed camera, the new devices will provide a bird's-eye view of the road and cover far greater areas than a patrol car. However, some motoring groups have warned that they could result in a reduction in traffic police numbers, and mark a further step towards remote road safety.

The technology behind the drones is based on

that of the military unmanned aerial vehicles (UAVs) that have been operating in Iraq and Afghanistan for several years to help identify and target insurgents without risking a pilot's life. Some military drones are also fitted with missiles, enabling them to engage the enemy.

The drones will be operated by police officers from a control hub, who will be able to monitor images from the aircraft's cameras and direct surveillance.

In America, the idea of using drones for policing roads is already well advanced. The Houston police department is planning to launch a \$1m unmanned spy plane to patrol the freeways of Texas as early as June this year. The Insitu Insight aircraft, which has seen military action in Iraq, will cruise for more than 15 hours at a time, gathering information on drivers with the use of on-board video and infrared cameras. In Britain the Department for Business,

Enterprise and Regulatory Reform and several regional development agencies are paying £16m towards a scheme, codenamed Astraea (autonomous systems technology related airborne evaluation and assessment), which is working towards UAVs operating in civilian air space. Astraea predicts that UAVs will be a viable form of traffic control and testing of unmanned prototypes is already well under way over Britain. "Since 2005, we've been flying UAVs in areas that are relatively remote," says Simon Jewell, the group's chairman.

On paper, the advantages of UAVs, which can take off, fly for miles, take high-resolution pictures and return to base by remote control or in some cases on a pre-programmed route are clear. Planes can be made smaller, faster and cheaper without pilots on board, and cameras are not limited to fixed satellite orbits or CCTV poles.

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"Electronic systems don't get bored," says Jewell. "Long surveillance missions would be unendurably boring for humans, but UAVs are capable of remaining on station for hours, relaying information in seconds and then potentially being able to do something about it. This endurance would be beneficial for policing."

However, Jewell says the law is lagging behind the technology, and that in addition to pioneering new technology, Astraea is having to lobby the Civil Aviation Authority for regulatory reform.

"You can't operate a UAV freely in UK airspace," he says. "Only if your UAV is very light and flying at very low levels does the Civil Aviation Authority allow a high degree of autonomy. It's a judgment based simply on safety — if a light, low-flying UAV crashes, it's less likely to hurt anyone."

However, he believes it is only a matter of time

before the restrictions are lifted and more sophisticated UAVs are given the green light. "There's an analogy here to the Red Flag Act in the 19th century. It took 30 years for motoring restrictions to get gradually lifted and we'll go through exactly the same

route with UAVs."

The technology is already on standby. Merseyside police have recently finished a trial of £30,000 Hicam microdrones — remote-control miniature helicopters with still, video or infrared cameras that beam images back to officers on the ground. Police have used the microdrones to track off-road motorbikes in public parks and to plan raids in hard-to-reach locations.

Superintendent Ngairé Waine of Merseyside police says: "Following a prolonged trial of the

microdrone, the force has identified both the need and the potential of such a device within operational policing. However, certain technical and operational issues need to be addressed to enhance its use." A spokeswoman confirmed that the first generation of drones suffered from poor battery life and problems in bad weather.

The race is now on among British companies to build a UAV to rival the American Insitu Insight. Qinetiq, a UK-based aerospace company, has already developed a UAV known as the Zephyr, which last year set a record for the longest UAV flight (54 hours), using solar power alone. BAE Systems has Herti (High endurance rapid technology insertion), a 40ft UAV with a range of more than 600 miles, while Thales offers the £15m Watchkeeper, an all-weather UAV that can operate day or night.

Although all three were designed for military use, their makers are keen to develop them for

civilian use too: Qinetiq, BAE Systems and Thales are all partners in Astraea.

Not everyone is backing the moves and the AA remains to be convinced of the merits of flying traffic spies controlled from miles away. "Drones could have a role in managing the knock-on effects of accidents, but the biggest improvement to motorway safety comes from having traffic police on the roads. Any enforcement that is remote loses that effect," says Paul Watters, its head of public affairs.

It's fair to say that opponents of surveillance, such as the notorious "Captain Gatsos" who claims to have sabotaged dozens of fixed speed cameras, won't welcome spy planes over Britain's roads either. However, with drones flying far above the range of baseball bats and home-made bombs any potential "Group Captain Gatsos" may have to settle for simply paying his speeding tickets instead.