The widely anticipated introduction of the Highways Agency Digital Enforcement & Compliance System Version 3, or to give it its catchier moniker, 'HADECS3' is set to become a key factor in the Highways Agency’s (HA) ongoing road strategy.

The evidence from the M42 pilot is clear and unequivocal. Managed motorways deliver strong benefits in terms of improved road user safety and journey time reliability; reducing the impact of congestion at a lower cost and with less environmental impact than conventional road widening schemes.

Intelligent Radar Detection Systems are set to play an integral role in the implementation of HADECS3’s managed motorway network initiative which will increase much-needed capacity by converting the hard shoulder to a traffic lane and introducing variable mandatory speed limits (VMSL) to smooth the flow of traffic and reduce congestion on the busiest sections of motorway.

AGD Systems’ new generation of state-of-the-art, intelligent radar detection systems provide the highly accurate speed and range data to the host (speed enforcement) systems. This is the critical information that the Police need to measure the speeds/velocity of passing vehicles for enforcement and monitoring purposes.

The systems are currently being assessed by the Home Office for Type Approval. The Type Approval process involves challenging and rigorous field and laboratory testing to ensure that all enforcement equipment is accurate, reliable and resistant to error. This makes the UK Type Approval one of the most exacting and sought-after certifications in the world.

**COMBINING FORCES**

These are exciting times for the ITS sector. Highways authorities, transport departments and local authorities across the world are under more pressure than ever before to reduce congestion, emissions levels and improve road safety levels. Mindful of budgetary restrictions, authorities are seeking innovative ways to get more out of existing road infrastructure rather than spend lots of money on new roads and costly road widening schemes. HADECS3 and the widespread adoption of managed motorways is a logical and cost effective solution.

New, pioneering initiatives such as HADECS3 require expertise, strong part-
nships, flexibility, and commitment to interoperability and joined-up thinking from the start in order to be successful.

Imtech Traffic & Infra, formerly known as Peek, one of the leading players in the provision of technical services and solutions to the traffic and infrastructure markets, has joined forces with AGD Systems to deliver the groundbreaking new solutions for the effective deployment of the Highways Agency’s managed motorways scheme.

John Welsh, Projects & Systems General Manager of Imtech Traffic & Infra, says: “Working on managed motorways from its infancy through to the current programme of schemes has enabled us to build and develop smart technology to support the Highways Agency’s requirement to continually improve the network, without the need for extensive infrastructure. We recognise that as the number of road users continues to grow, the network needs to be managed in increasingly innovative ways in order to maximise capacity.”

INTEGRATED SOLUTIONS

Working closely and collaboratively with both HADECS3 partners, AGD’s team of skilled engineers have helped to develop sophisticated, bespoke speed enforcement radar detection platforms which provide highly accurate and reliable event-driven data capture in a highway environment.

In each HADECS3 system, the radars simultaneously track multiple targets whilst measuring the speed and range of each of these individual tracked targets.

Measuring speeds from 20kph to 300kph across the whole highway with a target range measurement from 2-60m, AGD’s enforcement radars are suitable for use in a variety of enforcement scenarios - from multiple lane control using fixed infrastructure, in the case of HADECS3, to multiple lane enforcement from mobile applications.

FREQUENCY BENEFITS

Based on a range of Frequency Modulated Continuous Wave (FMCW) radars in the 24GHz band, AGD’s new generation of intelligent radar detection systems are designed for varied applications and installation on both urban and inter-urban environments and are ideal for highways applications.

FMCW radar detection technology works by employing a unique frequency modulated solution which enables the
detection of moving or stationary vehicles at specific distances from the radar.

It is particularly suited to the HADECS3 initiative as it provides a very high resolution for ranging, velocity and imaging applications.

In addition, FMCW radars are well-suited to different geographic jurisdictions providing optimal performance in a range of conditions and temperatures.

AGD already has proven track record providing similar fully integrated, `front-end` bespoke radar solutions for global clients capturing critical event data for specific applications. However, the enforcement solution developed for HADECS3 will be unique for the Highways Agency’s specific requirements and differ from other traffic enforcement systems in operation internationally.

**TESTING ACCURACY**

On HADECS3 the speed limit will be enforced using strategically positioned digital cameras that are able to detect and record speeding offences and seamlessly initiate the prosecution process. It is therefore critical that the displayed speed limit on motorway signage is appropriate to the prevailing traffic conditions to protect the credibility of the system and the enforcement regime.

Furthermore, the accuracy of the enforcement system will be absolutely critical in terms of getting buy-in from all road users, authorities, enforcement bodies and government departments.

Accuracy and testing is something that the HADECS3 partner companies all take extremely seriously. AGD guarantees accuracy and reliability of all its intelligent radar detection systems by providing a bespoke set of test and simulation equipment for its products.

For the AGD’s enforcement radar suite, Hyperion™ is dedicated to the rigorous testing of AGD’s ‘ranging’ FMCW vehicle radars providing true range simulation and both target speed and direction simulation at a given range. Optimisation of frequency signals on Hyperion ensures full compatibility with country requirements within the 24GHz radar operating band.

**MANAGING THE WAY FORWARD**

There is no doubt the managed motorways model represent the future for highways throughout the world, delivering smoother traffic flows, more reliable journey times, fewer road traffic collisions and from an environmental perspective, reducing noise and harmful vehicle emissions. But there is also huge convenience and cost benefit advantages to be gained.

As the enforcement systems hardware on the HADECS3 will be mounted on verge-side MS4 variable message sign and overhead gantries, routine repair and maintenance work can be undertaken with minimal disruption and without the inconvenience and cost of having to shut carriageways for long periods of time. Removing the need for secondary speed check markings on the road will remove the need for their ongoing maintenance and associated disruption.

Says John Welsh: “We have extensive experience of developing, installing and maintaining the ITS solutions integral to managed motorways, having been involved since the pilot project went live in 2006. Being involved in a scheme that has become one of the most important benchmarks in the history of Britain’s motorways has been an invaluable experience for us.”

**SCOPING OUT THE FUTURE**

HADECS3 is a prime example of how the ITS sector can work together to develop innovative solutions that help governments, transport authorities, enforcement agencies and other bodies achieve a smoother, more reliable, more efficient, safer and sustainable travel infrastructure.

Cooperation, collaboration and innovative ways of thinking that focus on integrated solutions rather than individual products and processes will be the key to success now and into the future.

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**About the Highways Agency**

The Highways Agency is responsible for improving, maintaining and operating 4,300 miles of England’s motorway and major trunk road network, and is an executive agency of the Department for Transport – www.highways.gov.uk

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**Contact:**

Ian Hind is commercial director of AGD Systems

ian.hind@agd-systems.com

www.agd-systems.com

www.imtech.eu/uk

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