Case Study
A new approach to cycle detection

Newcastle City Council wanted to improve the efficiency of its signalised junctions by ensuring cyclists are accurately detected and ghost demands minimised. A unique new solution was devised for a busy city-centre junction at Durant Road using two of AGD Systems' solutions.

Is anybody there?

Newcastle City Council's traffic signals team face two key issues around ensuring safety for cyclists and congestion-free roads in the city centre. If cycle detectors are not sensitive enough to reliably detect all cyclists, when a bike approaches the signals too slowly (or it could be that the bike is made of the wrong materials, or that ambient light isn't optimal), the occasional cyclist might be 'missed' by the traffic signals, with the result that no green demand would be placed. If no other cyclists arrive soon afterwards, the lone cyclist could find themselves stranded at the junction for an indeterminate length of time.

Alternatively, if detectors are set to be so sensitive that they compensate for this scenario, they will indeed detect all cyclists but they might also sometimes detect nearby motor vehicles and pedestrians. This results in 'ghost demands', which means the cycle phase is demanded and goes to green when not required, causing unnecessary delays for all other traffic and pedestrians at the junction.

While providing cyclists with a push-button unit is a technically robust solution, giving them a reliable means of placing a demand, the additional street furniture leads to more clutter at the junction. And, understandably, cyclists tend not to like having to take a hand off the handlebars and reaching out to push the button.

There is also a concern that some cyclists approach a junction legitimately and place a demand as expected, but will then deviate away from their cycle lane and onto the pavement if more convenient, or sometimes simply jump the red light. The signals then later go to green for the cyclist, who is by then nowhere to be seen.

James Robson, assistant traffic signals manager (design) at Newcastle City Council, explains: "Given these issues, we've tended to go with the overly sensitive detection, so that cyclists are always detected – and we accepted the occasional ghost demand as an inevitable inconvenience when providing cycle facilities."

However, the authority is committed to providing sustainable travel options and making the city centre safer for pedestrians and cyclists, so there was a need to address the problem of detection. "Wasted green time is increasingly a luxury we can no longer afford as we try to incorporate ever more cycle facilities into already-

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congested junctions and roads," continues Robson. "This led us to develop and trial more innovative solutions to the problem – the most promising of which uses two different types of above-ground AGD detector on each cycle lane approach to a junction with dedicated cycle phases."

Ghost-busting

In this unique solution, the AGD 318 traffic control radar is configured to detect cyclists approaching within a certain speed range and distance. Then the AGD 645 optical pedestrian detector is configured to detect cyclists waiting within a defined zone around their stop line. "Even though the AGD 645 was designed and marketed as a pedestrian detector, we have found them to be very good as a stop line detector for cyclists, as the functionality and performance required is largely the same," says Robson.

"Giving cyclists two chances of being seen at a junction means the detector settings do not need to be too sensitive, as we can be confident that at least one of them will identify a cyclist approaching or waiting at a junction, especially as they operate in different ways. One detects moving cyclists while the other detects stationary cyclists. This should reduce or even eliminate unwanted ghost demands.

"Having this increased assurance of the reliability of the cycle detection also allows us to make any cycle demands 'unlatched' – meaning we can confidently cancel any demands placed that are no longer needed, such as when a cyclist moves off the cycle lane onto the pavement or jumps their red light."

The result is no more wasted green time. "Beforehand, we would not do this in case a cyclist had their legitimate demand cancelled," he concludes, "but given our experience with the reliability and performance of AGD detectors, we are confident that this strategy will perform as planned."

Asked why he opted for AGD solutions, Robson said: "We have a lot of experience in using AGD detectors, so they were the first port of call for this solution. We like the fact that you can configure and modify them instead of having to rely on something off the shelf. They are so easy to set up – we don't have to install bespoke software because we can configure them via a web browser, on our smart phones or tablets." And although it is early days for this new approach, James Robson and his colleagues believe their twin solution could be replicated for similar cycle schemes across the city.

The AGD 318 Traffic Control Radar

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