

## Solving Excessive Speed Issues During Wet Conditions

### Loss of Grip and Increased Speed

The A725 trunk road is an important part of the road network for the metropolitan area of Glasgow and surrounding communities. Located to the southeast of the city of Glasgow itself, the trunk road serves as a significant part of the commuter network. In Scotland the trunk roads and motorways are the responsibility of the Scottish government; however, most of the roadways are serviced by private companies. Scotland TransServ provides all roadway maintenance on the A725. During an annual meeting of the road safety review group, it was brought to the group's attention that one particular section of the carriageway had an above average record of accident occurrences, including an accident involving a fatality in September of 2012. It was determined that the problem was caused by a combination of wet road surface and vehicles traveling at higher than posted speeds.

Motorists commonly slow down when more visible weather conditions such as snow and ice, are present on the road surface; however, with the more common condition of rain and wet surfaces, motorists typically forget about the loss of traction that can occur. In wet road conditions your braking distance can increase by as much as 25% over a dry roadway, and at higher speeds you begin to aquaplane, which can mean a loss of control of the vehicle.



### Challenge

- Buildup of water on the road surface led to numerous accidents at one location on the A725
- Vehicles were travelling too fast for the conditions and losing grip at the location
- A fatal accident occurred at the site in September 2012

### Solution

- Remote sensor to detect water accumulation, resulting in reduced grip
- Vaisala weather system to monitor the grip values and activate a signage along the roadway
- Speed sensor also warns drivers of excessive speed in dry conditions

### Benefits

- A reduction of crashes by one third from after the system was installed
- Only slight accidents being reported since the installation
- Estimated savings of over one million pounds in accident costs
- Safer conditions for drivers - reduced accidents and reduced severity of accidents
- Improved traveling environment for the community



## Measuring & Decision Making

Amey Scotland undertook a full review of the route and signage for the speed limit on the dual carriageway. Following that work the company began looking into a Vaisala road weather solution. “They already had knowledge of Vaisala’s compliance in the industry, which made choosing the solution easy,” said Vincent Tait, Road Safety Manager of Scotland TransServ. Working with Vaisala, the decision was made to use a Road Weather Station with a remote weather sensor that uses lasers to measure changes in grip caused by water or ice accumulation on the surface. The sensor, known as the Vaisala Remote Surface State Sensor DSC111, can determine whether there is water, snow/ice, or a dry roadway, and measuring the thickness of the weather layer, can calculate a grip or friction value. Using this quantitative value of grip, a 60 mph speed limit sign and VMS (Variable Message Sign) can be activated to flash when a loss of grip is detected. The system is also integrated with a traffic speed sensor, so that even in dry conditions, if the speed is detected to be higher than 60 mph the sign flashes, reminding the driver of the posted speed. This sort of instant notification to the motorist has a higher rate of success because it reminds the driver at that very moment decisions should be made. It is also important that the system is reliable, so the motorist can begin to trust the information coming from the system.

## Ensuring Safe and Smoother Traffic Flow

In the three years before the station was installed the site was identified as a repeat offender of traffic problems. The location had eight slight accidents, two serious and one fatal accident. In the 3 years after installation up until February 2015, the site saw a significant reduction in both the severity and occurrence of crashes, as there were only four slight accidents since the solution was commissioned. With accidents reduced by a third with the use of the local warning system, this could be translated in to a reduction of over 1 million pounds in savings from fewer accidents. Vincent Tait with Scotland TransServ went on to say, “Not only is there significant saving to society in accident reduction (although monetary saving is not the priority), the saving is also great in emotional factors for families of those involved, making the environment safer for all users.” This success story is an excellent example of how warning motorists with critical information, at precisely the correct time, can greatly reduce crash rates at key areas in your road network. With all the new and developing technologies to warn motorist we must remember these key elements; can you warn everyone? Is the message simple and effective? Is the message timely and accurate? If we can answer yes to these questions, the solution will be successful.

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