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OptaSense Traffic Monitoring Solution Deployed On Interstate 20, Atlanta

Georgia Department of Transportation Invests in Fiber-Optic Traffic Monitoring

The Challenge

Highway traffic volume in the greater Atlanta area ranks among the highest in the United States. A 2019 Urban Mobility Report found that drivers in Atlanta spend on average 77 hours each year in traffic and the area ranks 6th in the nation for traffic congestion. To meet this challenge, Georgia Department of Transportation (GDoT) has a long history of innovation in intelligent transportation systems, most notably starting with the 1996 Olympic Games in Georgia and continues to push the envelope in getting the most out of its transportation network.

In an effort to reduce traffic congestion in the metro Atlanta area, GDoT wished to evaluate the use of distributed fiber-optic sensing as a viable method for providing key traffic flow indicators. This would

allow the department the option to retire existing, legacy detection devices in favor of leveraging their existing, pre-installed fiber-optic network for traffic monitoring.

The Solution

In the first quarter of 2020, GDoT completed a successful project to deploy the OptaSense Traffic Monitoring Solution on a section of the I-20 Highway in Atlanta. This project validated the performance of OptaSense's distributed fiber-optic sensing-based traffic monitoring solution as a means of providing accurate and up-to-date traffic speed and traffic count information on state highways.

The OptaSense Traffic Monitoring Solution converts a single fiber within a standard single mode telecoms fiber-optic cable into an array of distributed sensors to deliver

Background:
- I-20 Highway - Atlanta, Georgia
- Implementation of fiber-optic Traffic Monitoring Solution
- Completed in first quarter 2020

Solution:
- OptaSense Traffic Monitoring Solution delivering:
  - Average Speed
  - Journey Time(s)
  - Queue and Congestion
  - Detection
  - Traffic Count(s)
- Near-side and far-side monitoring

Value Delivered:
- High-quality, real-time traffic information
- Opportunity to retire existing, legacy detection devices for lower cost solution
- Potential for further deployments and integration into Traffic Management Center

Screen shot taken from OptaSense Traffic Monitoring Solution indicating average traffic speed and journey times between distance points.

timely and reliable traffic monitoring and incident detection information from the entire monitored highway. OptaSense is the trusted partner for fiber-optic sensing solutions worldwide, supporting customers in more than 50 countries and more than 25,000 miles of assets under contract.

The OptaSense Traffic Monitoring Solution can deliver the following real-time traffic monitoring applications:
- Average Traffic Speed
- Automated Congestion Detection
- Automated Queue Detection
- Average Journey Times
- Vehicle Count
- Flow Rate

Delivered Value
Initial results have exceeded expectations and demonstrated the potential of the OptaSense solution to deliver accurate and timely traffic flow information using an existing roadside fiber as a traffic sensor.

The acoustic sensing technology converted a roadside fiber-optic cable into an array of virtual speed sensors capable of monitoring the entire highway and providing accurate traffic speed information at 165 feet intervals, updated every second from both near-side and far-side lanes. In addition, the ability to provide accurate traffic counts at key locations where fiber-optic monitored road crossings exist was demonstrated.

The rapid and easy installation process (with zero highway closures or need for on-site construction) and the ability of the technology to sense passing traffic on both near and far-side lanes using a single roadside fiber offer significant advantage to GDoT.

Future Opportunities
GDoT intends to further its investment in the OptaSense Traffic Monitoring Solution as it enables them to leverage their prior investment in fiber optics and rapidly deploy a high-resolution traffic sensor at a fraction of the cost associated with conventional roadside sensors. Moving forward the department intends to assess options to integrate the OptaSense data into its existing traffic management center systems and consider deployment to additional highways where the requirement for high quality traffic information to manage increasing traffic volumes and journey times is vital.

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To learn how the OptaSense Traffic Monitoring Solution can improve your ability to make effective traffic management decisions, contact an OptaSense representative.

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