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Franklin County, Ohio COMBATs Winter Weather While on the Move

The cost per hour of maintaining safe roadways during the winter is staggering, and varies depending on the number of given storms in an area from one winter season to the next. Today, there are numerous high-tech weather technologies available to assist maintenance departments battling winter storms on the nation's roadways. Both fixed and mobile weather monitoring technologies are used to manage storms so that maintenance and operations can keep pavements clear and safe for motorists.

The fastest growing trend in monitoring weather conditions is with mobile technologies, tools that are proving their worth in providing valuable data for roadway maintenance operations. While fixed weather stations still provide valuable data, mobile weather sensors provide instant feedback on what is happening in the field. As a result, many agencies are adding mobile weather sensors to their vehicles in order to enhance their level of service to motorists.

Franklin County in COMBAT Against Winter

Franklin County, Ohio, is using mobile weather data and implementing an entire tracking system to help its snow plow fleet run more efficiently, use less chemical, and be proactive in its approach to winter maintenance operations. Franklin County Engineers and the City of Columbus recently teamed up on a project called COMBAT, which stands for Central Ohio Management Based Applied Technology.

COMBAT tracks air and pavement temperatures, plow information (status - up or down, for example), the spread rate of salt, and vehicle speed. Under the COMBAT project, over 100 snow plows are being equipped with an AVL (Automatic Vehicle Locator) system as well as a mobile weather sensor that measures both air and pavement temperatures.

The AVL system tracks the vehicle location using satellite technology. The mobile weather sensor provides the snow plow driver with current pavement and air temperature data throughout a route. The vehicle location and weather data are also routed to a central server, where supervisors can evaluate conditions in the field, and then decide if resources need to be adjusted, how much chemical was used, and recall the data for later analysis or reporting.

Mike Meeks, Project Manager for COMBAT and Traffic Engineer for Franklin County Engineers, leads the effort in writing specifications for the COMBAT project and implementing the sensors and systems for the fleet.

"In Operations, safety is top priority. Our job is to work safely, clear the roads, and keep driving conditions safe for motorists. On the other hand, we do have an eye for cost savings," comments Meeks. "Choosing mobile weather sensors for the COMBAT project allows both the drivers and supervisors to see valuable, current data from the field. If we know the specific weather conditions throughout each route, we can spread the right amount of salt in the right place at the right time. This results in cost savings through greater efficiency, less chemical usage, and clearer roadways."

Franklin County Engineers and the City of Columbus felt that they could better manage their fleets if they knew which types of conditions the trucks were actually driving. Weather conditions can be vastly different in one area of the County as opposed to another. Being able to evaluate current data benefits the County by allowing it to shift resources to areas requiring more attention, use less chemical and keep roadways clearer and safer.

The AVL system was provided by a Canadian company specializing in fleet monitoring. The mobile weather sensors, called the Vaisala Surface Patrol Pavement Temperature Sensors, were supplied by Vaisala, Inc. and their local distributor in Plain City, Ohio, M.H. Corbin, Inc.

The AVL and mobile data collected by COMBAT are sent to a central server using radio frequencies. An antenna on the truck looks for a satellite signal, which provides the location of the truck. A serial port connected to the Surface Patrol unit sends pavement and air temperature data to additional electronics on the truck. The location and weather data is then sent to the central server via radio waves.

Mr. Meeks gathered information from the top three AVL providers and used his experience with mobile weather sensors for the COMBAT project, which was officially bid in January 2007. “We wanted to make sure we could integrate all of the elements so that drivers could see current data as well as the supervisors,” said Meeks. “The Surface Patrol was chosen because Vaisala was able to adapt the cable length to meet our needs; the daughter board provided expanded functionality that met our specifications; and we could calibrate and repair the units as opposed to replacing them. Being able to purchase a part, instead of an entire new sensor, saves us money in the long run.”

The COMBAT project totals over $4 million dollars, with funds coming from gas taxes and other ITS (Intelligent Transportation System) funds appropriated by the Federal Highway Administration. The goal of the project is to allow winter maintenance operations to run more efficiently using mobile data to adapt to changing weather conditions quickly, provide helpful data for drivers and allow operations to provide the best level of service possible.

The COMBAT project is in its initial phase; thus, specific results and statistics are unavailable. “It is still too early to quantify any results,” says Meeks. “The system is built and we used it the last winter season. We are continuing to train personnel on the software and making minor tweaks as needed. Overall, we feel the project will be successful for Franklin County and the City of Columbus.”