Wednesday 4 June 2008

What price safety?

Pete Goldin looks at the incentives and disincentives of applying safety technologies across commercial fleets in the US and comes away with a rather more rosy picture than one might anticipate

While safety may be the top priority for motor carriers, there are many factors that impact the adoption of onboard safety systems.

click image to enlarge

Lane departure warning systems, such as this one from **Iteris**, are gaining ground as commercial vehicle operators realise the benefits of fitting them

While many of these technologies are proven to reduce crashes, is this fact alone enough to drive carriers large and small to deploy safety systems on every truck in their fleets? The US Department of Transportation (USDOT) is currently trying to answer that question, and even the carriers are studying the costs versus benefits.

Several factors in addition to cost influence the adoption of safety technology. According to Amy Houser of the US Federal Government's Federal Motor Carrier Safety Administration (FMCSA) carriers are very concerned about system reliability, low maintenance, ease of use, a low false alarm rate, driver acceptance and proven effectiveness.

Clearly, cost is one of the major factors impacting upon the adoption of safety technologies today. Although the industry as a whole is concerned with safety, the price of technology still must be right.

"Carriers are typically looking for safety systems that cost USD$1,000-1,500," explains Houser. "They are also interested in the cost of maintenance and driver training in addition to those initial purchasing costs. Roll stability **control technologies** and collision warning systems are within that range, for example, but additional features will affect the price."

The price is right

Due to the high cost of an accident - vehicle and freight damage, worker's compensation and medical expenses, fuel spills, potential injuries to people and damage to both public and private property - many carriers find that safety technology generates a rapid Return On Investment (ROI). While accidents can cost $100,000 or more, accidents with fatalities can cost in the millions of dollars.

The FMCSA is completing an upcoming report on cost-benefit analysis of onboard safety systems for motor carriers, including stability control, Lane Departure Warning (LDW) and collision warning systems, to help carriers make purchasing decisions over safety technology.

"Most large carriers are either completely or partially self-insured and they

bear the entire cost of a crash, or up to a certain amount," Houser says. "Since the report is not published yet, the results are preliminary but we have found that typically for a dollar the carrier might invest in safety technology they get more than a dollar back."

The exact ratio varies depending on factors such as the cost of the equipment and the number of vehicle miles travelled annually. In some cases, the FMCSA found a 2:1 ratio, which means a savings of two dollars for every dollar spent.

As an example, Prime, Inc., a major North American refrigerated, flatbed and tanker carrier, conducted a cost-benefit analysis on the deployment of LDW systems from Iteris. In 2006, Prime's total cost for run-off-road and rollover accidents for trucks not equipped with LDW was over $3 million.

For the 1,960 trucks currently equipped with LDW systems, Prime expects to save approximately $1 million annually on these types of accidents. When compared to the cost of equipping the trucks with LDW, Prime recognised a positive return on investment in about one year.

"The initial investment Prime has made to install Iteris lane departure warning systems in our fleet of trucks has really paid off," says Robert Low, Founder and President of Prime, Inc. "In less than a year, we have seen a dramatic reduction in run-off-road and rollover accidents on the trucks we equipped with the technology which has saved the company a considerable amount of money."

For onboard safety system ROI, the LDW and rollover stability systems have produced the most definable results, adds Don Lacy, Director of Safety for Prime: "On those two types of technologies we are convinced that we have achieved a return on our investment. Our rollover accidents have dropped dramatically. We used to have double-digit numbers but in 2007 we had two rollers in our flatbed fleet of 500 units."

Size matters

"The empirical evidence suggests that those firms with the organisational resources to adopt safety management technologies are initiating their adoption," says a June 2007 analysis brief from the USDOT entitled Factors Underlying the Adoption of New Safety Technologies by US Commercial Motor Carriers. "For example," it continues, "it is apparent that large firms operating over long distances are the leaders in safety technology adoption.

Many of the firms surveyed reported that they had adopted at least three different types of safety technology."

click image to enlarge

Despite the lack of a legal mandate, the trucking industry appears to be moving ahead with full-scale implementations of a variety of onboard safety systems

"I have talked to smaller carriers that are also seeing the advantages of these systems," adds FMCSA's Houser. "For instance, I have spoken with one smaller petroleum carrier who is putting stability systems on all new

vehicles."

When it comes to smaller carriers, the cost-benefit analysis is more complicated, because many of these companies are not self-insured. Since most smaller carriers purchase traditional insurance, they are only subject to a deductible, which could be as low as $5,000 per crash. While this may indicate that the cost of a crash would be significantly lower than the cost for a larger carrier, consequently impacting the ROI on safety technology, several other factors come into play.

"If a smaller carrier's truck is involved in a crash, the insurance premium payments can start going up," Houser explains. "We found that if a crash causes premiums to increase, then safety technology is still cost beneficial. Insurance companies have explained to me that they look at the carrier's overall crash record over a number of years to determine the rates."

"The carrier pays in the end, even if they have insurance," confirms Don Lacy. His company, Prime, is a large carrier that is self-insured with a $4 million deductible. "It might not be a direct out-of-pocket expenditure at the time if you have insurance, but ultimately it is going to effect your insurance premiums because it impacts your loss ratio. The insurance company rates the carrier on the number and severity of accidents and your rates are going to reflect those accidents."

"In addition, if the carrier has too many crashes, the company can get dropped by the insurance company," Houser adds. "So we are finding that there is still a possibility, even with a fairly low deductible, that smaller carriers will gain a positive return on investment for safety technologies."

Houser points out that motor carriers also have to bear other expenses from truck crashes that are not necessarily covered by insurance, which typically only covers damage to vehicles, and costs related to injuries and fatalities such as fees for legal representation and medical expenses.

For example, if a driver is disabled or killed in a crash, the company would be faced with the expenses of hiring a new driver, including the cost of recruitment, medical testing, training and orientation. If there is any type of environmental damage, such as a spill or damage to the infrastructure, the carrier would incur related costs.

The FMCSA continues to study the factors that affect adoption of safety technologies for both small and large carriers. The agency is conducting a study with the American Transportation Research Institute during 2008 in which they will examine specific demographics relating to adoption of technology and the size of the carrier.

The FMSCA is also completing a survey with the University of Michigan Transportation Institute covering carriers' use and knowledge of safety systems.

The safety imperative

The question of whether new onboard safety systems such as LDWs will be mandatory is still up in the air, but this level of 'push' does not seem likely in the near future. The FMCSA focuses current efforts on studying the issue, educating the industry players and encouraging voluntary use of safety technology.

Currently, the only Notice of Proposed Rulemaking (NPRM) at FMCSA with regard to safety systems is for electronic onboard recorders. The purpose of this NPRM is "to establish new performance standards for EOBRs, require the use of these devices by certain motor carriers, and to provide incentives for the voluntary use of such devices by the industry". The final ruling on this proposal is still to be decided.

Meanwhile, despite the lack of an onboard safety system mandate, the industry appears to be moving ahead with full-scale implementations of a variety of onboard safety systems. Mobile communications and tracking systems are the most widely deployed systems, according to the FMSCA. Houser also points to a trend where use of stability control systems is growing at a much faster rate than some of the other systems. She notes that this trend may be due to the fact that OEMs are installing the systems on certain models of trucks.

More study needs to be done, but so far the findings show that safety technology in general produces quick ROI, which overcomes the cost issue. Maybe just as interesting, however, is the developing interest in studying these factors, which will probably result in a wider and more rapid adoption of onboard safety technology through the industry.

The bottom line is that adoption is currently up to the trucking companies themselves. Although cost is a major factor, the carriers' efforts seem to indicate that safety itself is considered a top priority.

"I am very impressed with how much the carriers care about safety," Houser says, referring to an expert panel of representatives from 15 diverse carriers that collaborate with the FMCSA. "Those particular carriers are very concerned, not just about drivers but anyone else in the general public that would get hurt or killed in a crash."

Published in ITS International May - June 2008 (ITS NAFTA Safety & Security)

Related links
Iteris
control technologies

Comment on this article

Email this page to a friend

more feature articles