

WOODTRANS

LOADSENSOR**Evaluation of airbag pressure sensors/gauges as load weighing devices for use on timber haulage trucks****PROJECT TEAM**

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COMPLETION DATE: April 2009

BACKGROUND

This project proposal arises as a result of a recommendation in the Forest Industry Transport Group (FITG) *Code of Practice for Timber Haulage*, launched in December 2004: *COFORD in collaboration with the forest industry to undertake research and evaluation of load cells and mobile weighing devices*. This issue was further discussed in 2005 at FITG meetings.

OBJECTIVE

To test the cost-effectiveness and accuracy of using load-weighing devices fitted to the truck air suspension system.

PROGRESS

To date, one vendor has been sourced to retrofit the on-board weigh systems to both tractor unit and trailer. The idea was to develop a new piece of technology from an air suspension approach or indeed load cell perspective but after review, it seemed that this technology already exists. However, in addition to monitoring payload weights on site, it is important to be able to monitor weights in transit and remotely in real time. This angle connects well with the previous project, GPSTRACK, where the real-time GPS tracking of articulated trucks was assessed.

General Packet Radio Service (GPRS) is a packet-based, wireless communication service for passing data over the mobile phone network. It has become known as 'always-on data connection' for GSM mobile phones. It sends packets of data collected by the equipment on the truck, back to base in 'real time'. It can also be used for voice communications between the vehicle and base. Thus, by simply incorporating the GPRS network for data transfer, the technology can be developed so that trucks can be monitored in real-time and

any discrepancies in loading, unloading, and indeed overloading, can be established and marshalled correctly. This work has been part of the early review stage of the project.

Research has shown that for payload control, the high quality AirWeigh system incorporates a unique air sensor principle that measures the load in the trailer's air suspension system. This works in conjunction with fifth wheel load cells for even greater precision weighing results (Figure 1). The AirWeigh system can be fitted easily and installed within one working day. The system can measure to within $\pm 1.5\%$ which implies optimising the full revenue per payload weight. For in-cab monitoring, the indicator is fixed in place (Figure 2). For out of the vehicle and on site weighing, the wireless pad can also be used (Figure 3).

The team is proposing a working and research relationship with the GPS vendors from the GPSTRACK-funded project to develop the on-board payload real-time information with their R COM tracker.

If this software can be developed (planning stages), then both COFORD-funded projects will connect very well to provide an overall packaged answer to real time GPS tracking and onboard weigh systems for the haulage industry.



Figure 1: Jost fifth wheel load cell.



Figure 2: In cab indicator.



Figure 3: Freeweigh wireless pad.

ACTIVITIES PLANNED

Planned activities include final analysis of the results from the trial period and writing the final report, presentation and circulation of findings to FITG, and presentation of research at Forest Engineering Group (FEG) meeting in March 2009.