

STRAP IN for a Smoother Ride

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Have you ever wondered what it might be like to drive a truck through a tunnel in an earthquake? Well neither have I really, but it was one of the first images I could conjure up in my mind when I was shown some camera footage that was taken by one of my colleagues after a visit to one of Western Australia's underground mine sites.

In an industry that goes to great lengths to sure up internal tunnel and header surfaces with support structures and spray mix concrete being liberally applied to prevent collapse and rock fall there is something of a paradoxical lack of energy, effort or expense when it comes to the actual transport or 'road' surface.

With the exceptions of extremely high traffic areas such as entrance tunnels, workshops, crib areas, magazines (explosives storage), and the like, the road surface will most likely remain rough and un-manicured (see Figure 1). On occasion, if appropriate equipment is available, graders will be used to prepare these road surfaces but let's face it, it's going to be more like driving on an outback dirt road than on the local freeway.



Typical unfinished underground road surface

Consistently driving down these rough roads is regularly linked to low back injuries from the constant jarring and compression forces experienced by the occupants of a vehicle as they are quite literally thrown around the cabin and who could be forgiven for double-checking to see if they still have all their teeth after such a trip.

In a passenger or transport vehicle this type of issue can be addressed in many ways through tinkering with suspension and shock absorbers, tyre compressions and so on, but in a specialised service vehicle such as an Agi Truck this is simply not an option.

According to Peter Hallman (SEQ&T Manager, Jetcrete Australia) the weight distribution parameters of a typical Agi truck are as follows:

- Unloaded Weight: 14.9T
- Loaded Weight: 10-12T
- Rear Axle distribution: 19.4T
- Front axle distribution: 6.8T

So now imagine driving a 25 tonne Agi truck through a tunnel in an earthquake....

Essentially with this type of vehicle the only way to properly address the issue of rough riding is to strap the driver firmly into their seat and let the seat do the majority of the shock absorption as opposed to the spine.

Specialised mechanical and hydraulic seating systems attempt to do just that, however, the driver needs to be firmly secured in the seat harness for this to work effectively. An additional complication to this is the often bulky always mandatory Personal Protective Equipment (PPE) which typically includes a cap light battery pack and a self-rescuer to be worn on the mining belt at all times.

These items regularly interfere with the typical seat belt or seat harness systems in these forms of service vehicles. At the

Cosmos mine site in Western Australia, BAC assisted the Jetcrete workforce in seeking improved cabin seating mechanisms for their Agi trucks as well as trialling a number of different heavy duty mining belts to see if we could find an equipment based solution to the incidences of lower back injuries being reported by drivers in particular.

In the end two items were identified that could potentially alleviate this issue. The mechanism at the base of the seats was identified as requiring changing from the weight setting type to an air compression type which allowed individual operators to set it to their individual weight. To this, retro-fit all seats with the T Back to allow the cap light battery pack and the self rescuer to sit more comfortably on the operator not pushing into their low back area.

During the trial of these modifications which followed it was found that the changes allowed for a far more secure fastening of the driver to the seat without the interference associated with the bulky PPE carried on an underground miner's belt. After extensive consideration of the trial results, Jetcrete Australia has decided to implement both of these modifications to the seating in the Agi trucks Australia wide.

In addition, an alternate miner's belt is also being considered as part of the modifications to add further to the improvements in this area and is currently being investigated.

To date the feedback from the drivers has been very positive with all those asked to comment commending the company on the changes made to date and the way that they are pro-active in addressing the area of injuries especially sprains and strains.

BAC and Jetcrete Australia are closely monitoring the incidences of driver-related low back injuries and the initial figures being reported are quite encouraging with the organisation currently standing at 50 days Injury free when this article went to press.