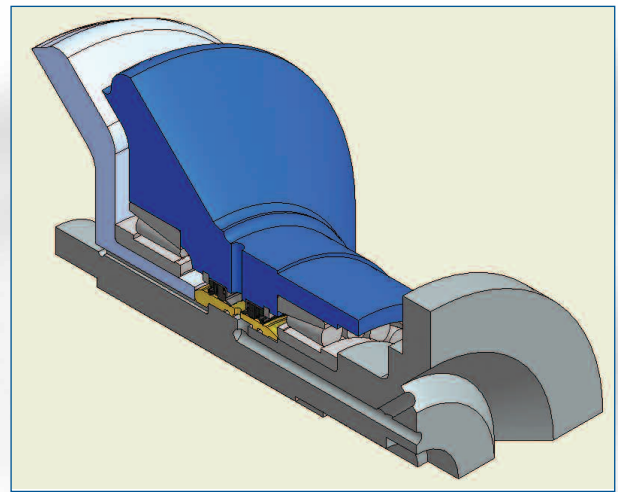




FTL Technology Central Tyre Inflation (CTI) Seal system

A brief history of FTL Technology & CTI

As far back as 1985 FTL Technology started to investigate a CTI solution for companies such as Timoney Research and GKN Heavy-duty Axles. Much of this early work was centred around rotary unions, used successfully in the Paris - Dakar rally. More recently however the push was more for a simple high integrity inboard seal for sealing both pressurised air and oil. This led to the design of our dual material patented CTI seal.



Definition

CTI systems are mechanical systems that allow a driver to adjust a vehicle's tyre pressure while the vehicle is in motion. Using these systems, a truck can be operated with tyre pressures appropriate to the speed and strength of the road section being negotiated, and the load being carried.

Features of CTI

- Increased vehicle mobility (thus fewer miles of road required)
- Reduced vehicle operating costs (i.e., tyre replacement and truck repair expenses, etc.)
- Reduced driver fatigue and medical complaints
- Reduced road maintenance requirements
- Reduced road surfacing requirements

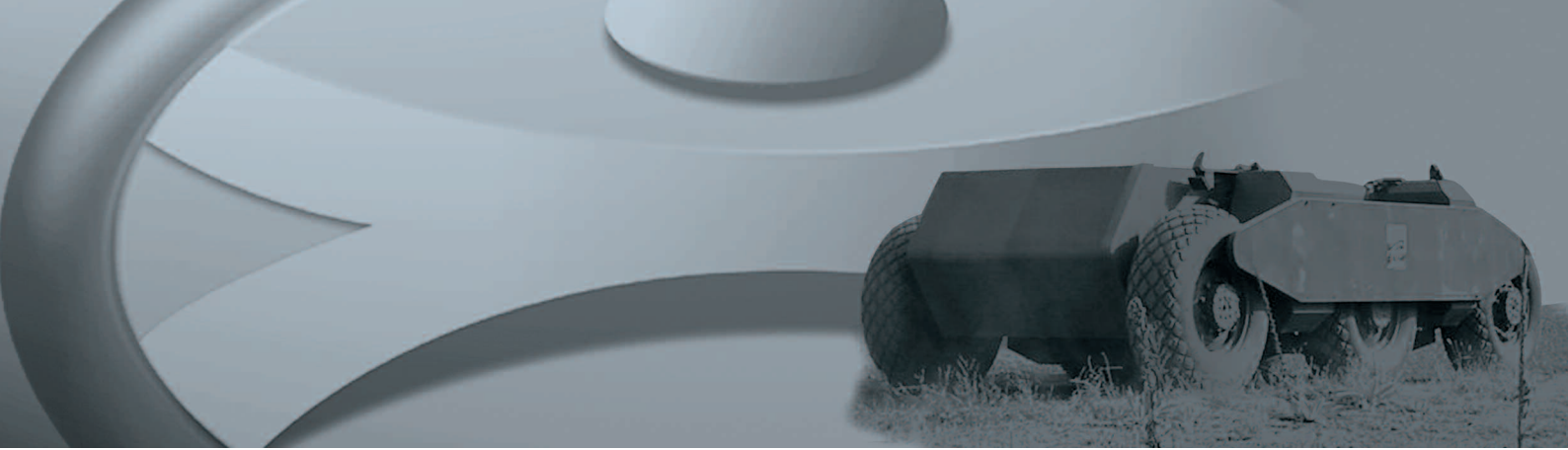
'Reduces stress on the truck, trailer and driver'

Benefits of CTI

As well as a CTI system allowing optimum pressures to be maintained, it also greatly reduces the stress on the truck, trailer and driver. With the combination of properly functioning air suspensions and the central tyre inflation system, ride is greatly improved. Damage to the roads is greatly reduced, by softening the impact both the road and rig reap the benefits

Now Available from FTL Technology

| Seal Parameters | Value |
|----------------------|---------------------------------------|
| Temperature Range | -40°C to +150°C |
| Max Speed | 10m/s |
| Max Pressure | Air side 12 bar / Oil side 0.5 bar |
| Shaft Surface Finish | 0.2 -0.4 Ra |
| Shaft Hardness | 55 - 60 HRC |
| Concentricity | <0.1mm |
| Centre offset | <0.1mm |
| Concentricity | <0.1mm |
| Oil sealing lip | Poly-acrylate |



Seal application - Timoney hubs for Carnegie Mellon

(Electrically powered unmanned ground vehicle).

The US Defense Advanced Research Projects Agency has awarded Carnegie Mellon University's National Robotics Engineering Consortium and teammate Boeing \$5.5 million, to build and test a prototype robotic unmanned ground combat vehicle (UGCV). The vehicle will be the first attempt at an autonomous ground combat vehicle that can operate on all types of terrain.

"This hybrid-powered vehicle, named Spinner, will combine fuel efficiency, survivability and payload flexibility to deliver the long-range capability required for UGCV missions," Other companies working on the project include Timoney Technology of Meath, Ireland, which will build the vehicle's unique invertible suspension and wheel drive units with CTI seals from FTL Technology.

The seals have been supplied in a number of applications by Timoney, all of which have proved successful; John Holland of Timoney considers the seals to be, "A major contributing factor to off-road ride quality, performance, reliability and safety of Timoney high mobility vehicles".



NREC researchers have been working with Boeing Co./ PEI Electronics and Timoney Technology to build this six-wheeled testbed machine. The vehicle rolled out at the end of '02 and has just completed 18 months of intensive testing.



American Growler

FTL Technology were asked by American Growler of Ocala to modify a standard wheel hub for use with a Central Tyre Inflation System (CTIS). The modification was to provide an air passage which would allow air in and out of the tyres, varying the pressure to suit different ground and transport conditions.

The main problem was the lack of space, however, a unique seal system and novel design made it all possible. FTL Technology developed a design that ensured their control system would operate successfully with the modified hub.

The project was to provide the US Marine Corps with a land vehicle capable of being transported by a V22 'Osprey' tilt rotor aircraft. Several manufacturers vehicles were supplied for extensive tests at NATC. The American Growler vehicle with FTL hub was approved and a significant contract is now pending.



FTL TECHNOLOGY
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