



# Driveline

## Case Study

Improved mobility for military vehicles - 12,500km in 15 days

# Effective sealing with no lubrication - dry running

## About CTIS

Central Tyre Inflation Systems (CTIS) maximise vehicle mobility by making adjustments to the tyre pressures of a vehicle in line with changeable ground conditions.

FTL Technology's range of CTI sealing components and driveline solutions have a proven pedigree on wheeled military vehicles, including:

- Infantry Fighting Vehicles
- Utility Vehicles
- Logistics Vehicles
- Support Vehicles

**The key benefits of CTIS in military applications are:**

- **Increased vehicle and mobility safety**
- **Reduced tyre wear**
- **Reduced fuel consumption**
- **Improved driver comfort**

## The Client

A major European OEM for wheeled military vehicles.



*CTI system fitted to wheel hub of military vehicle*



# Negative pressure sealing as low as -0.80 Bar

## The Challenge

To improve the mobility of their vehicles by designing and implementing a Central Tyre Inflation system. There were four key challenges specific to this project.

1. The CTI seals used must be able to deal effectively with differing tyre pressures, depending on the terrain covered by the military vehicle.
2. The CTI seal will have no lubrication on the air side.
3. Due to the air compressor rating on the vehicle, the maximum pressure of the application could be as high as 10 Bar.
4. The CTI seal may also experience a negative pressure as low as -0.80 Bar on the air side, during tyre deflation cycles.

Max. air pressure	10 Bar
Min. air pressure	-0.8 Bar
Max. oil pressure	0.5 Bar
Speed	5 m/s
Temperature	-25°C to +165°C

## The Solution

FTL took the time to understand all of the client's requirements, before developing a multi-lipped CTI seal able to separate the air chamber within the CTI system from the oil cavity.

The solution featured an optimised positive and negative pressure capable air side sealing lip, with both high wear resistance and dry running capabilities to improve reliability in difficult operating conditions.

The CTI solution was developed with specifically modified high temperature elastomer components for the oil side lip, capable of delivering exceptional performance at temperatures up to and exceeding the maximum temperatures experienced in the application. For additional seal stability, a metal insert was also provided.

Finally, a rubber-covered outer diameter provided a static seal for the housing.

# Optimised positive and negative pressure capable air side sealing lip

## The Benefit

The key outcome was a CTI sealing system which worked to deliver a reliable and responsive military vehicle in all terrains.

The FTL solution efficiently separated the air and oil within the wheel hub, with no recorded leakage during either high pressure inflation cycles or negative pressure deflation cycles.

In extensive test cycles, FTL's CTI solution covered over 12,500km over a period of 15 days. This test programme covered a wide range of road conditions, both on and off-road, including dry riverbeds.

During the client trial, CTI seals were quoted as performing 'phenomenally well'. Additionally, for over 3,000km of the trail, the test vehicle travelled with a puncture.

As a result of the trials performed, the FTL CTI solution has subsequently been fitted on production vehicles.

**In-depth  
Solutions** 

### For more in-depth solutions

---

T: 0113 252 1061

E: [sales@ftl.technology](mailto:sales@ftl.technology)

W: [ftl.technology](http://ftl.technology)