



Trackaxle Self-Steer Trailer with Command Steer Reverse

Trackaxle is based on a radically different design of the rear axle set of a tri-axle trailer causing the back end of the trailer to steer itself along a path similar to the prime mover, it presents opportunities for performance based standards to contribute enormous gains in transport productivity, to reduce traffic congestion, pollution and road damage caused by semi trailers.

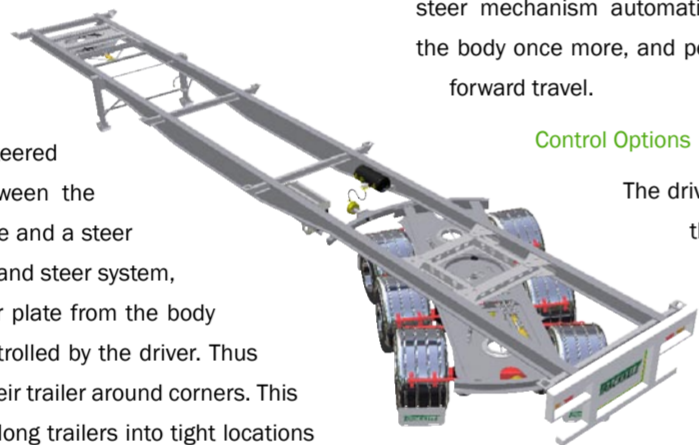
Trackaxle is an invention which generates benefits for all players in transport. It uses much less road space cornering and reduces to negligible levels the damaging effects of "tyre scrub", delivering substantial gains in transport productivity and safety, reducing operating costs and the cost to the nation occasioned by road transport.

Command Steer Reversing

After five years developing the Trackaxle trailer project, the company had achieved excellent results in forward travel which contributed greatly to productivity. However, the system of locking the axle set to reverse the vehicle meant the trailer was still quite cumbersome in reverse. Moreover, reversing still placed a great deal of stress on tyres and components. In response to this, the company designed and developed the command steer reversing system.

In forward travel, the Trackaxle is steered by simple mechanical links between the rotating axles under the sub frame and a steer plate fixed to the body. The command steer system, in reverse gear, unlocks the steer plate from the body and locks it to a driven plate controlled by the driver. Thus the driver can steer the back of their trailer around corners. This dramatically improves access for long trailers into tight locations and removes the lateral stress on tyres and suspension.

A classic example of the contribution is where a semi needs to reverse into a narrow gate, laneway or dock. A standard trailer needs to be substantially aligned before reversing. This may mean blocking traffic to reverse, or it may be impossible because of restricted space. With command steer, reverse entry requires no more space than forward entry, and this is considerably less than a normal trailer because of Trackaxle's narrow swept path.



Straight Line Reverse Option

The company fitted the command steer to the 52 ft Trackaxle prototype. The better maneuverability was immediately noticeable and the system was easy to use. However, after a trial period, an improvement was added for reversing in narrow lanes and finger docks. This locks the system in straight alignment for predictable straight line reversing. When the driver disengages reverse, the steer mechanism automatically aligns itself before locking to the body once more, and performs at normal Trackaxle level for forward travel.

Control Options

The driver's control switch can be wired into the cabin, or can be operated with a remote control as it is on the prototype. The advantage of the remote control is that it can shift between prime movers and, in a difficult reversing situation, can be operated by somebody standing with a

good view of the rear of the trailer.

Multi-Trailer Reversing

The Trackaxle command steer can be fitted to multi trailer Trackaxle combinations, such that the rear axle set is under the command of the driver. The other axle sets follow the rear axle set. When the rear trailer is unhitched, the command automatically reverts to the last axle set of the combination.

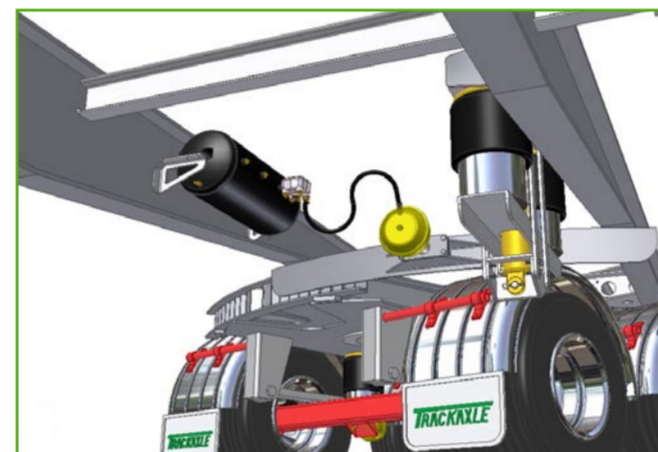
Smart System Reversing

The command of reverse can be switched to a guide system such as a sensor following a reflective white line or a buried wire. This could be particularly useful where turnaround time at delivery points is critical, especially for multi trailer combinations.

A Complete Package

Command steer completes the Trackaxle trailer package. With a command steered Trackaxle trailer, an operator will be able to deliver much greater volumes consistently. The additional benefit is that the trailer is not stressed, nor is the pavement. The major benefit can be expected to accrue to logistics operators. Examples of productivity gains might be:

1. Able to deliver with 48 or 53 ft trailer instead of 40 ft.
2. Able to use a semi trailer instead of two rigid trucks.
3. Able to increase journeys per day on multi trip duty.



A Vehicle for the Future

In the face of an ever increasing freight task, combined with an inability to expand infrastructure especially in urban situations, the only solution is to move goods more efficiently. Trackaxle, with command steer reversing, is a major gain in freight efficiency. This will advance further under Performance Based Standards. Some possibilities with command steered Trackaxle under PBS:

1. 60 ft trailers for volume loads.
2. Super B-doubles which can achieve general access.
3. B-triples able to access all arterial routes.

Under the PBS umbrella, Trackaxle will be a tool for operators and

trailer manufacturers to expand the boundaries of productivity as they take up the opportunity these offer.

A National Benefit

Trackaxle technology delivers on all fronts. All the players win.

- Freight users obtain more efficient delivery of goods.
- Freight providers reduce operating costs.
- The community pays less to establish and maintain infrastructure.
- Other road users benefit from improved amenity and safety.
- The environment benefits from reduced exhaust gas pollution.

Gains For Your Operation

With Trackaxle, a large vehicle can work more efficiently through traffic, reducing urban delivery times. For a task where once you made eight trips a day, now you may well do ten.

This will also express as a gain in public amenity because, for a given volume of goods transported, the Trackaxle trailers will cause far less disruption to traffic.

All linearly aligned, multi axle transport systems cause significant damage to pavement. The Trackaxle aligns all axles in the direction of travel, dramatically reducing pavement damage. This will show up in reduced maintenance cost for freight yards. Scientific analysis shows the improvement to be by a factor between 160,000 and 190,000.

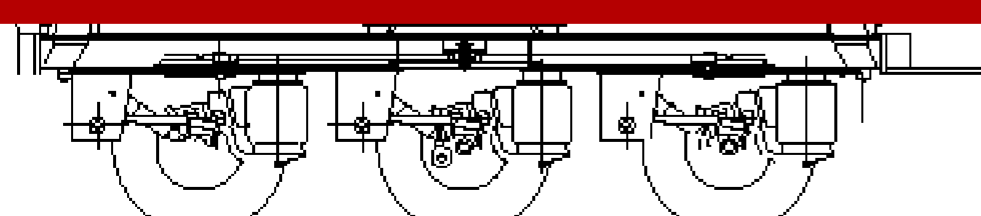
A Better Bottom Line

Hypothetical Partial Budget - Logistics

Quicker through traffic and faster through depots	10% gain
Greater volume loads delivered	10% gain
Total Increased Delivery Volume	20% gain
Gross Income per Trailer	\$ 200,000
Annual Tyre Cost	(\$ 4,000)
Repair and Maintenance	(\$ 1000)
Total Fuel Cost	(\$ 18,000)
Income Gain	\$ 40,000
Cost Reduction	\$ 4,940
Trackaxle Benefit	\$ 44,940
Less 10% of Capital Expenditure	(\$ 3,600)
	\$ 41,340
Return On Investment	125%

Trackaxle

EFFICIENT TRANSPORT SYSTEMS



"Trackaxle, and similar active semi-trailer steering systems, provide a dramatic change in the way semi-trailer combinations track and operate in the road and traffic system. They also provide significant productivity benefits, reduce operating costs and reduce environmental impacts of semi-trailer operations. Trackaxle-style systems fit a long-term vision of a safer and less intrusive road freight transport system."

Peter F Sweatman, Marcus Coleman & Robert Di Cristoforo
Evaluation of An Active-Steering Tri-axle Group (Trackaxle)

TRACKAXLE

...the great leap forward in performance-based transport...

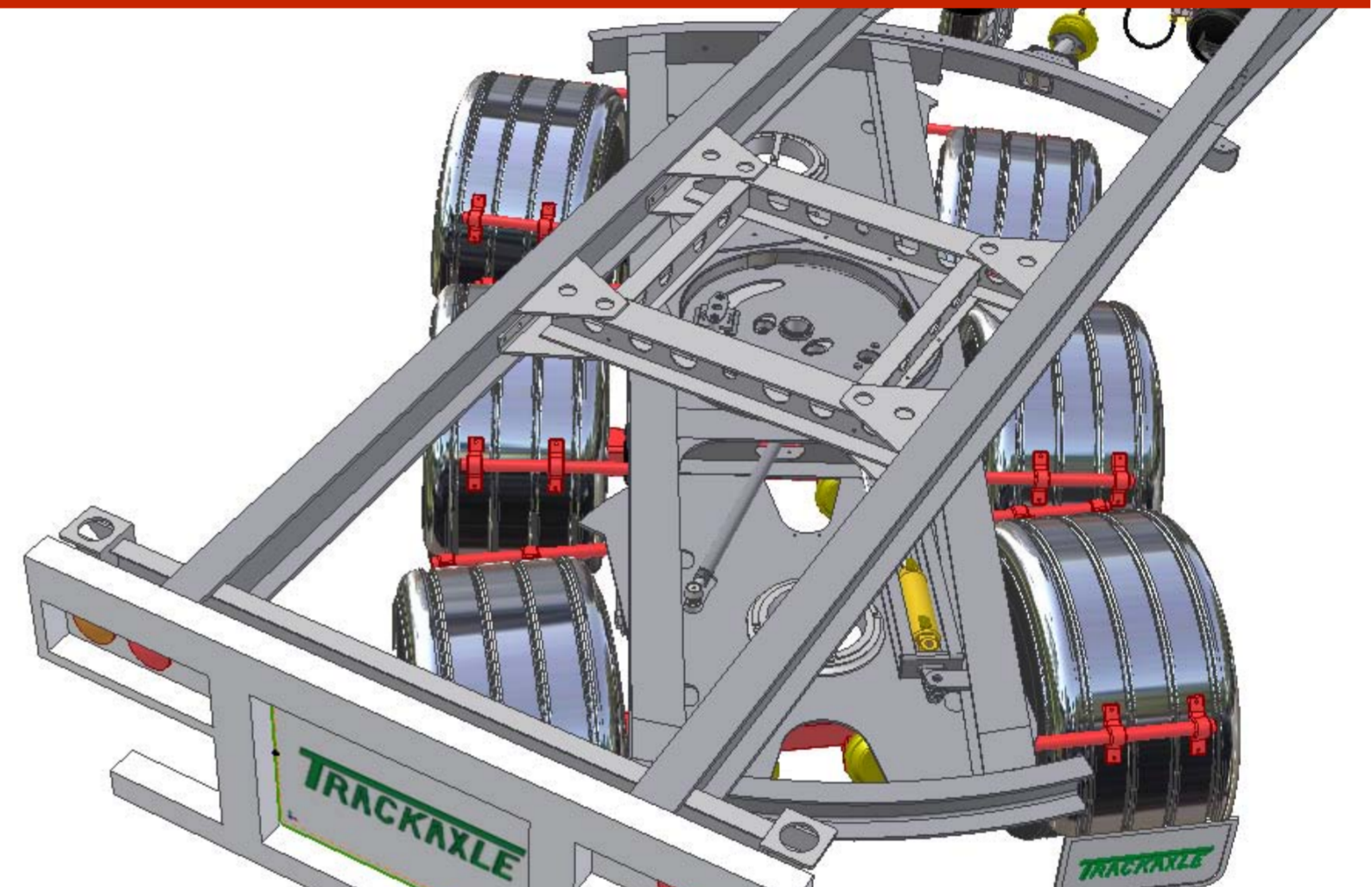
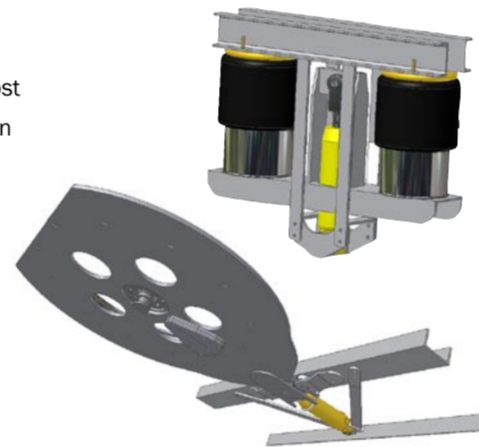
Driving The Trackaxle

There are some important points for drivers to consider:

1. Driving Trackaxle is different from driving a standard trailer.
2. Driving Trackaxle is easier than driving a standard trailer.
3. When cornering, the rear of the trailer will not cut in like a standard trailer, so the driver needs to negotiate a corner following a path similar to a large rigid body truck.
4. Trackaxle requires 40% less power to corner, so don't speed out of corners.
5. Reversing round corners is possible, so you can get access to tight locations.
6. Trackaxle has a lock for straight line reversing.

Trackaxle Kits

Trackaxle technology is available to all trailer manufacturers in the form of a Trackaxle Kit. This is easily fitted and will accept any good quality air bag suspension. The manufacturer can adapt most forms of trailer, including extendable, to the Trackaxle Kit, delivering very significant advantages in the transport of long loads.



www.trackaxle.com.au

Trackaxle Pty Ltd
PO Box 6757
Shepparton,
Victoria, Australia 3632

Tel: +61 3 5831 6888
Fax: +61 3 5831 6899

Mob: Mr Kerry Atley
0413 309 791
Mr Peter Gaylard
0417 575 461



Increased Accessibility • Improved Flexibility
More Productivity • Superior Safety • Enhanced Profits

Decreased Tyre Wear • Less Traffic Disruption • Reduced Fuel Consumption
Diminished Costs • Reduced Pavement Damage