



# Technology into practice

Bulk Tanker Day

11 May 2021



# PBS Statistics

## PBS Fleet

PBS Comb Count

12282

Total VIN Count

50796

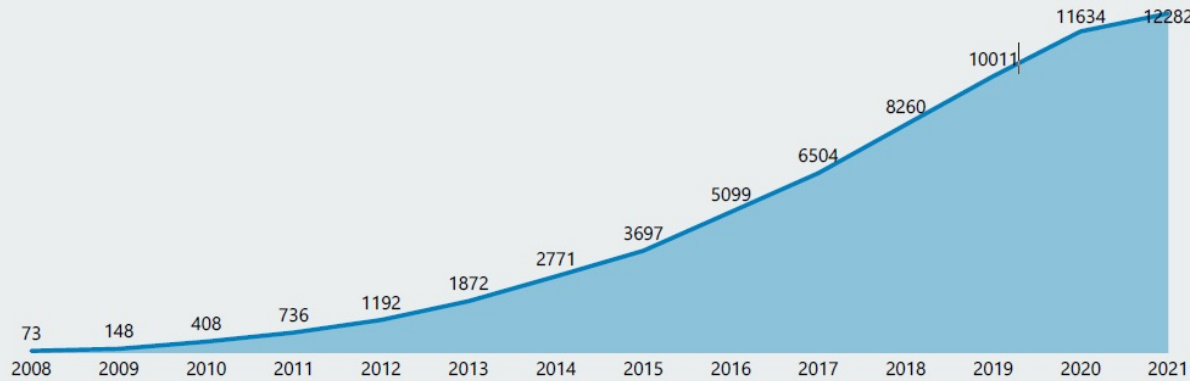
Unique VIN Count

29826

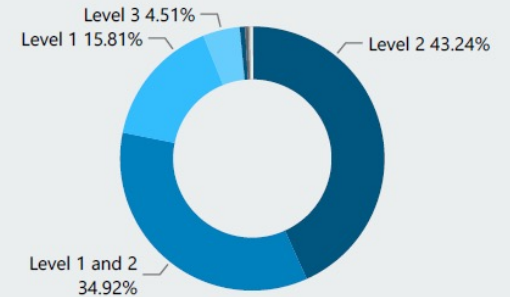


May 05, 2021 11:54:14 AM

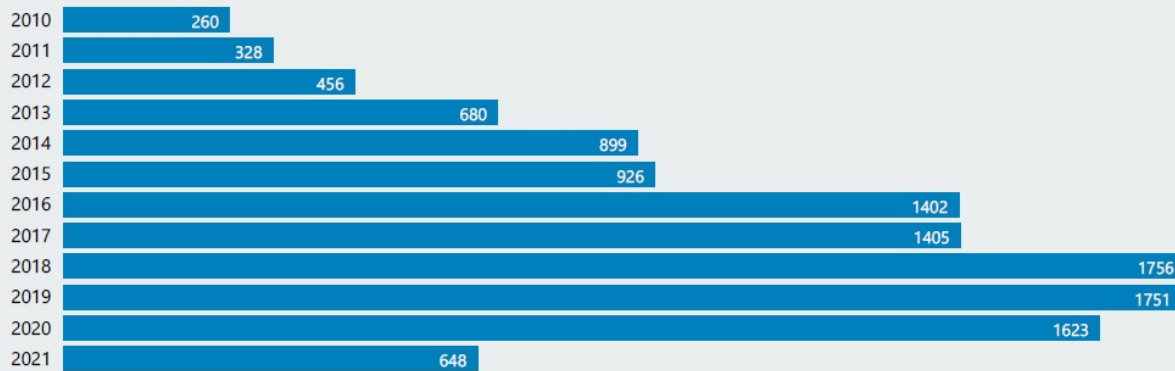
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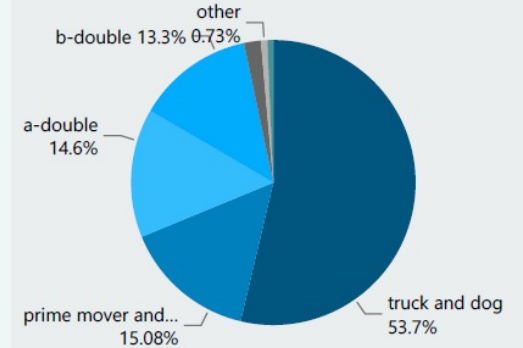
PBS Fleet by Level



PBS Combinations Yearly



PBS Fleet by Combination Type



# PBS Statistics

## PBS Fleet

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Total VIN Count

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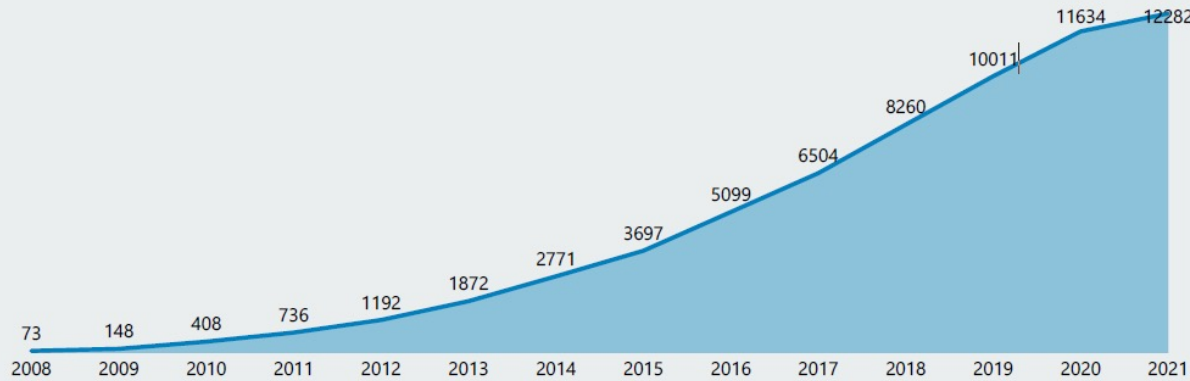
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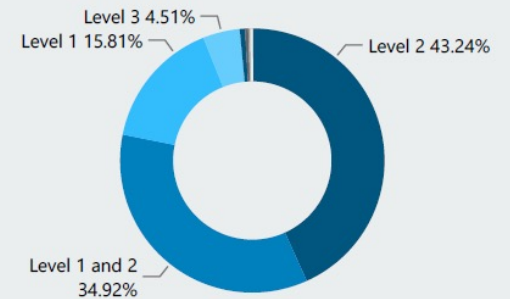


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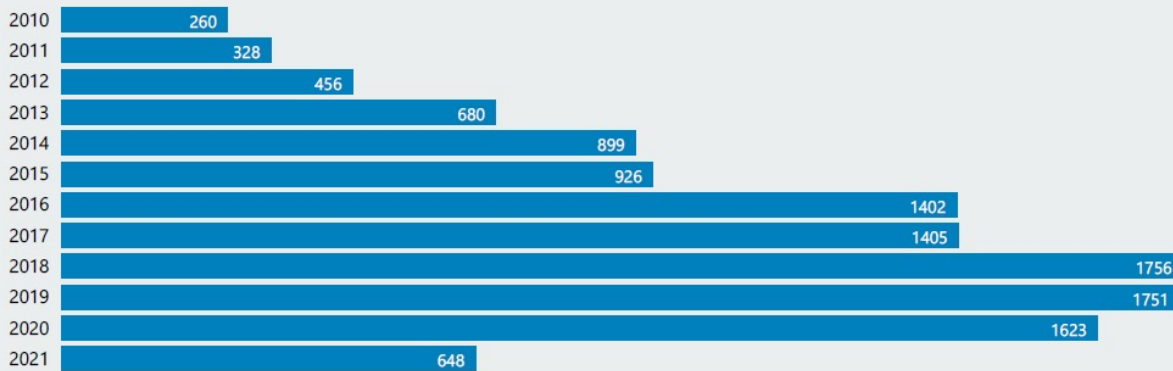
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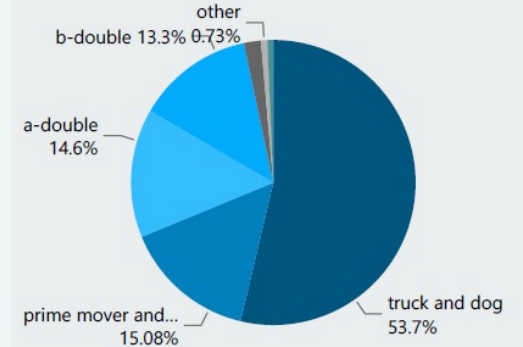
PBS Fleet by Level



PBS Combinations Yearly



PBS Fleet by Combination Type



# PBS Tankers

## PBS Tankers

PBS Comb Count

12282

Tanker Comb

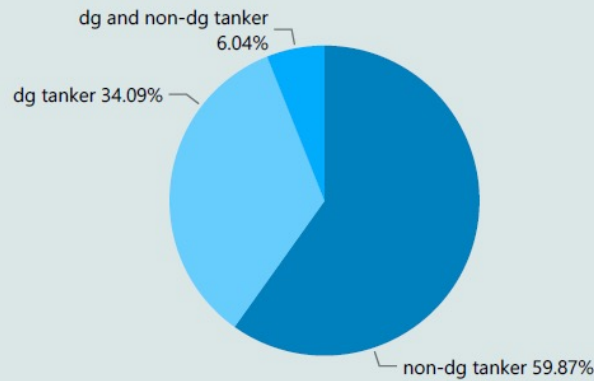
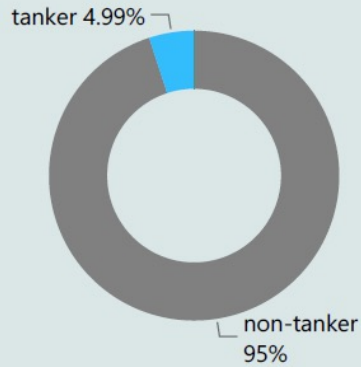
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Non-Tanker Comb

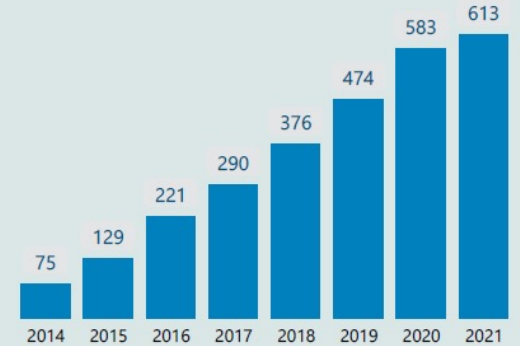
11668

DG Tanker Comb

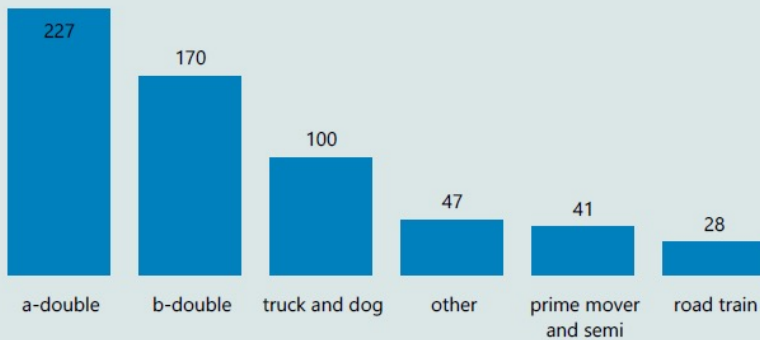
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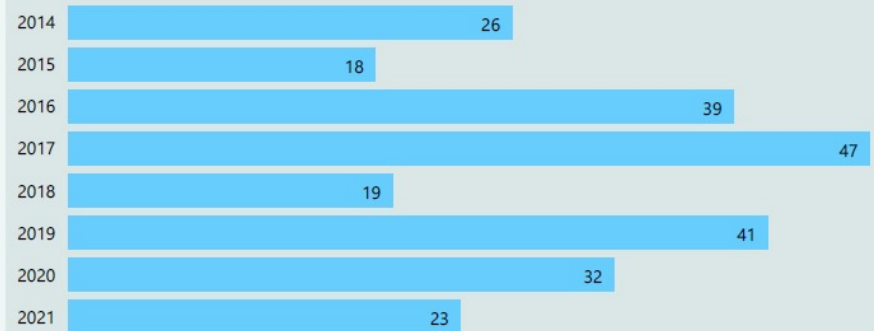
### Tankers Cumulative



### PBS Tankers (DG and non-DG) by Combination Type



### Dangerous Goods Tankers Yearly



# Safety data (CILTA/NTI)

*Conventional*

*PBS*

Rigid Trucks



**16.7**

Crashes per 100m km



**8.8**

Crashes per 100m km

The results show an overall improvement in safety outcomes of 60% when compared to the conventional fleet on a distance travelled basis.

Articulated Combinations



**17.6**

Crashes per 100m km



**5.4**

Crashes per 100m km



# Safety technology in regulation

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## Mandated safety technologies

- Front Underrun Protection (for vehicles with a GVM over 12,000kg)
- Antilock Braking Systems (ABS)
- Electronic Stability Control (ESC)

## Vehicle Safety and Environmental Technology Uptake Plan (Vehicle SETUP)

- Development of a program of work to accelerate the introduction and uptake of safety technologies in the heavy vehicle fleet
- Increase deployment of Autonomous Emergency Braking (AEB)
- Relax access and use limits for vehicles fitted with the latest environmental and vehicle safety technology
- When developing new notices, the NHVR will consider whether safety technology could be used to mitigate safety risk posed by non-compliance or to enhance the safety of vehicles operating under higher productivity schemes

# Compliance with PBS specific performance requirements

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- PBS assessment specified self-steered axles for a PBS B-triple
  - Self-steered axles are needed to achieve the required low-speed performance
  - Self-steered axles must be locked above 30 km/h
- Knorr-Bremse TEBS (Trailer EBS) trailer brake module (TBM)
- The system provides full roll stability (RSP/RSC)
- TEBS has 9 programmable auxiliary functions available
- There are 8 electrical plus 1 x pneumatic functions
- Practically any function required that is related to **speed or load** may be configured



# Application of technology: steering systems

Steer axles are locked using Knorr-Bremse TEBS depending on the speed of the combination



One steer axle

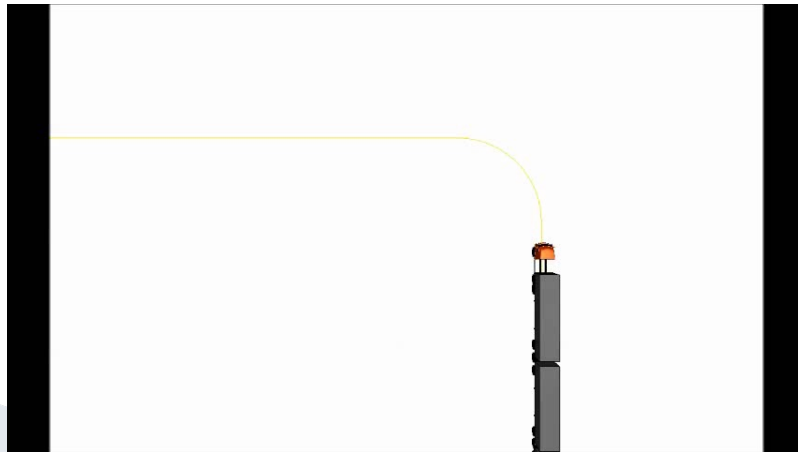
Two steer axles



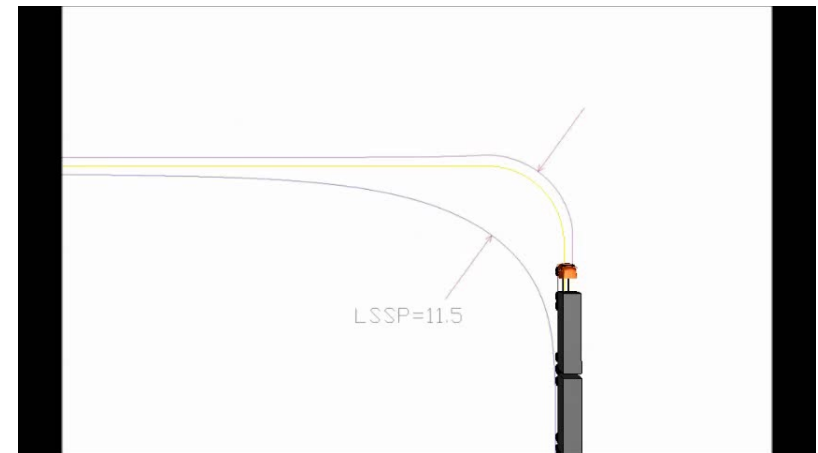
# Application of technology: steering systems

- PBS requirement for dual rear steer axles to lock at  $> 30\text{km/hr}$
- Using the TEBS, the pneumatic output configured to apply air pressure to axle unlock actuators from  $0\text{ km/hr}$  to  $30\text{ km/hr}$  and then remove air supply (lock axles)
- Locking the axles for reversing represented a problem as steer axles may not be aligned, the system was configured to operate a solenoid to cut supply to axle actuators and 'lock' axle at  $<6\text{km/hr}$

**42m long PBS B-triple (no steer axles)**



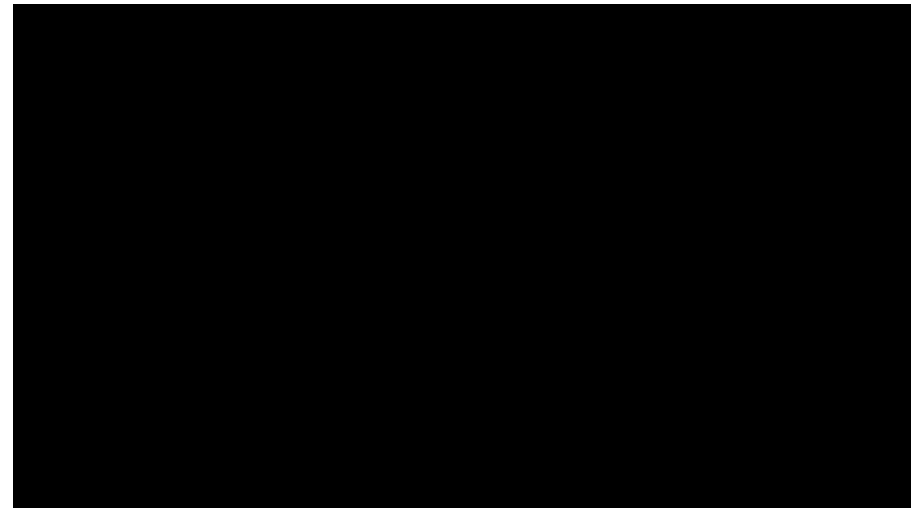
**42m long PBS B-triple (steer axles)**



# Application of technology: load transfer

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- Improving performance by using technology: iCorner/iCargo
- iCorner is a function within the TEBS braking system which interfaces with the trailers air suspension system and monitors the input from the wheel speed sensors
- It detects when the vehicle is entering a turn, reduces the air pressure in the rearmost axle to improve cornering performance
- Lack of regulations



Source: Tiger Spider

# Application of technology: tyres

- Application of low profile super-singles, improved payload
- Wide-track axles, improved stability
- ESC, Tyre pressure monitoring system (TPMS)
- Review of existing regulations is needed (MDL, VSB11)

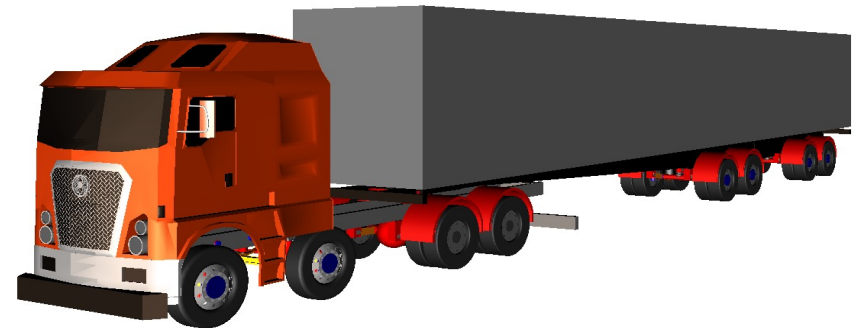


# Innovative vehicle designs

19.5m (64 foot) long semi



20.25m (66 foot) long semi





# Further development in technology is needed

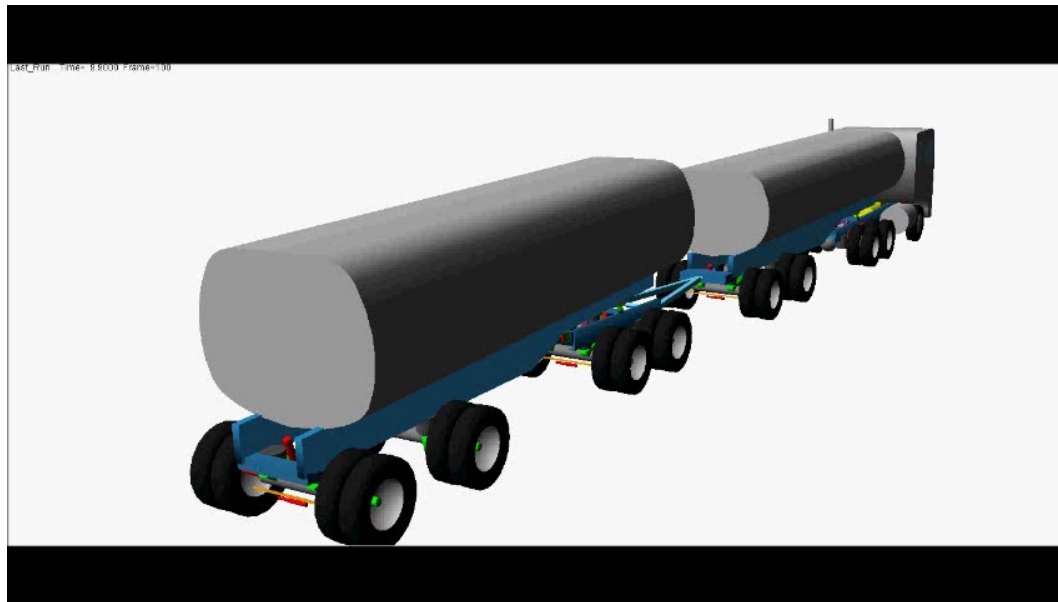
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# Evaluation of the technology is needed

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*Thank you!*