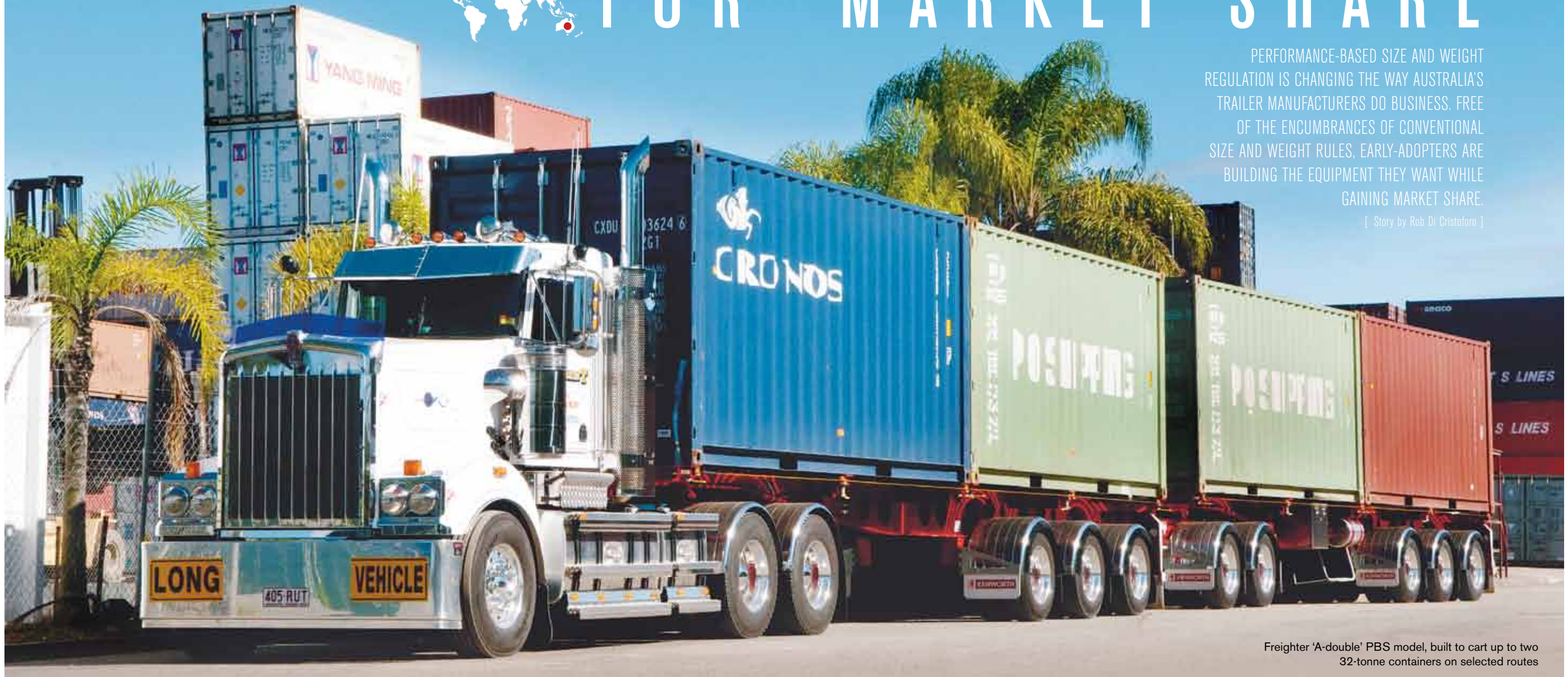


A BLUE PRINT FOR MARKET SHARE



PERFORMANCE-BASED SIZE AND WEIGHT REGULATION IS CHANGING THE WAY AUSTRALIA'S TRAILER MANUFACTURERS DO BUSINESS. FREE OF THE ENCUMBRANCES OF CONVENTIONAL SIZE AND WEIGHT RULES, EARLY-ADOPTERS ARE BUILDING THE EQUIPMENT THEY WANT WHILE GAINING MARKET SHARE.

[Story by Rob Di Cristoforo]



Freighter 'A-double' PBS model, built to cart up to two 32-tonne containers on selected routes

The ink had barely dried on the ministerial approval of Australia's Performance Based Standards (PBS) Scheme when the naysayers collectively predicted it would be a lamentable failure. After all, it was the most ambitious development in heavy vehicle size and weight regulation the world had ever seen. The year was 2007.

Just five years on, PBS success stories constantly appear in the Australian trade media. Melbourne's 2012 International Truck, Trailer and Equipment Show was peppered with vehicles emblazoned with the words 'PBS Approved', like a badge of honour. A new era had dawned. So what happened?

Prior to PBS, Australia's prescriptive system for regulating the size and weight of heavy vehicles was not very different from the systems adopted in most other countries. There were limits on trailer length, combination length and axle spacing. There were limits on axle group weight and gross combination weight. Historically, in response to economic growth, about every decade the limits were eased to allow vehicle combinations of slightly greater size and weight to meet the growing demand for road freight transport.

When such 'limit creep' fell out of favour in the mid-1990s, the industry went on to squeeze every remaining drop of potential productivity out of the regulations. Then came the ominous predictions that Australia's freight task would more than double over the next 20 years. Freight transport needed a quantum leap in productivity.

In 2000, the ambitious PBS project commenced. The goal was to develop a scheme through which certain prescriptive limits could be exceeded by equipment manufacturers if a vehicle could be shown to meet a comprehensive set of performance-based standards for road safety and

infrastructure protection. From an initially proposed set of more than 100 potential standards, a final set of 20 was agreed through a process of elimination.

The standards cover such elements of vehicle performance as drivetrain, high-speed dynamics, low-speed manoeuvring, and braking, as well as infrastructure protection measures for pavement vertical and horizontal loading and bridge loading. A vehicle combination must be shown to satisfy all of the performance standards to a degree that is commensurate with the level of road access it requires.

Broadly speaking, four classes of PBS road access correlate with road access for existing vehicle combinations such as semi-trailers (PBS Level 1), B doubles (PBS Level 2), two-trailer road trains (PBS Level 3) and three- and four-trailer road trains (PBS Level 4). The greater the level of access required, the better the performance needs to be. In the main, it is about ensuring that the vehicle fits on the road and does not pose undue risk to traffic flow or infrastructure integrity.

An administrative framework was established to manage accredited engineers



PBS model by O'Phee



“THE GOAL WAS TO DEVELOP A SCHEME THROUGH WHICH CERTAIN PRESCRIPTIVE LIMITS COULD BE EXCEEDED BY EQUIPMENT MANUFACTURERS IF A VEHICLE COULD BE SHOWN TO MEET A COMPREHENSIVE SET OF PERFORMANCE-BASED STANDARDS FOR ROAD SAFETY AND INFRASTRUCTURE PROTECTION.”

who provide services in computer simulation-based performance assessment of vehicle designs, and accredited engineers who inspect and certify that built vehicles meet the approved design specification. A national panel comprising representatives of each of the nation's road authorities was established to approve applications on the basis of the accredited third party assessments and certifications.

In the early days of the PBS Scheme, transport companies would specify particular vehicles that they wished to operate. They would specify particular makes and models of truck, with particular drivetrains and suspensions. They would specify particular trailer dimensions and suspension packages. The result was typically a tight vehicle specification that worked well for the first few vehicles built. Later, however, operators often wished to specify different drivetrains, opt for higher bodies on trailers, and use different brands of tyres, to name a few examples. These changes were accommodated within the Scheme through variations to existing assessments. Variations became undesirable as the number increased and assessment costs began to mount.

Some trailer manufacturers decided to invest in their own PBS assessments on behalf of customers, with costs amortised over a number of future sales

to different customers. Using this approach, despite a greater upfront assessment cost to allow for different vehicle specifications, the cost per customer was ultimately less. For this approach to be viable, the assessments needed to cover a suitable range of vehicle specifications. For example, they had to allow for various truck makes and models, which in turn meant different driveline specifications, suspensions, wheelbases and front overhangs. Even the trailers needed to have some flexibility, such as a selection of tyres, suspensions, and body dimensions to suit the requirements of each individual customer.



Hamelex White's PBS rigid and dog combination can cart up to 40 tonnes



O'Phee 'A-double' PBS combination, permitted to run at 79 tonnes GCM



THE AUTHOR

Rob Di Cristoforo is an accredited assessor under the PBS scheme. He is also Deputy Chair of the Australian Road Transport Suppliers Association and a Board Member of the International Forum for Road Transport Technology.

The challenge when developing such a 'blueprint' envelope design is to come up with something that can be proven to satisfy all of the performance standards no matter what combination of options is selected. Whether somebody opts for the long or short wheelbase, this or that trailer suspension, this or that truck manufacturer, the result must be a vehicle combination that is PBS-compliant. It is possible to limit some specifications to be available only when certain other specifications are adopted. For example, some trailer suspensions may only be available up to a certain body height. In general, however, it is necessary to design more than one blueprint, with each one targeting a particular market segment. For example, one blueprint for North American prime movers, and another for European ones. One for high payload mass, and another for slightly less payload mass but more design flexibility.

To date the most activity has been seen in the tipper industry and the skeletal trailer industry. 'Truck and dog' combinations with low-sided tipper bodies for carrying quarry materials or grain products can obtain up to seven tonnes more payload capacity on Level 2 roads (a payload increase of almost 22 per cent). Skeletal semi-trailers connected by a converter dolly can carry two heavy 20-foot grain containers on specially approved Level 2 roads where previously only one container could be carried at a time.

And, the efficiency gain is not limited to Australia only. The PBS approach is already being tested in other countries. South Africa and Argentina are each exploring the possibilities, with South Africa trialling a number of long combination vehicles for use by the local paper industry.

However, it is worth noting that the PBS approach is fundamentally very different from the European Modular System (EMS). The PBS approach encourages innovation and recognizes each vehicle combination as a unique, specialized design. The EMS, in contrast, standardizes trailers. There are benefits in both systems. Only time will tell whether the PBS approach will have far-reaching benefits for the Australian industry. So far the results are promising. **GT**

www.globaltrailer.com