



FROM PAPER TO

PRODUCTION

VOLVO TRUCKS EXPLAINS THE LOGISTICS BEHIND ENGINEERING ITS FE EURO 6 DUAL CONTROL REFUSE VEHICLE, WHICH AIMS TO BE SAFE, ERGONOMIC AND ENVIRONMENTALLY FRIENDLY.

Keeping pace with the rapidly changing trajectory of the automotive industry can be challenging for some, but for Australia's largest automotive manufacturer Volvo – it's part of their DNA.

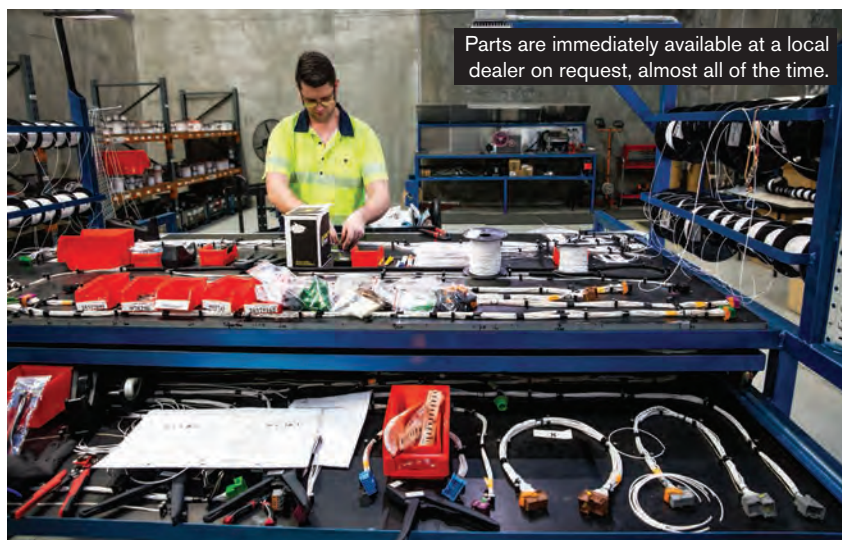
Ever since the first Volvo truck, the Series 1, made its debut in Sweden January 1928, the company has constantly been evolving to meet industry needs. From establishing its Accident Research Team in 1969, to making environmental care one of its core values in the 70s, Volvo continues to remain at the forefront of innovation.

In July 1970, the organisation established operations locally as Volvo Australia. Over that time, Volvo has been underpinned by its core values of safety, quality and environmental care.

And the multinational manufacturing company shows no signs of slowing down – operating the largest dealer network in Australia and New Zealand. The network has formed a crucial part of working with its customers in the rollout of its latest refuse truck – the Volvo FE Euro 6 Dual Control. Engineered and adapted in Australia, the company worked in close collaboration with the waste industry to offer a safe, reliable, ergonomic and environmentally friendly vehicle.

One of the leaders involved in the rollout of the innovative Euro 6 low emissions vehicle is Mitchell Peden, Vice President of Volvo Trucks Australia. Mitchell says the company worked directly with its key customer groups in an 18-month design process, which delivered the first production representative prototype in July 2015 and launched to the Australian market in May 2016.

He says Volvo worked hand in hand with its key customers servicing all parts of Australia to establish a dual steering, purpose-built vehicle suitable for the side loading waste industry.



“Volvo Trucks saw a pocket in the market. There wasn't a lot of competitors in the dual control space so it was an obvious place for us to try and work our products into that area,” Mitchell explains.

THE FE DUAL CONTROL JOURNEY

The journey from paper to production involved extensive input from Paul Cartwright, Engineering Manager of Volvo Group Governmental Sales Oceania. Paul managed the inception of the FE Euro 6 Dual Control, working closely with Scott Simpson, Senior Product Manager.

“In the early days, Scott was the conduit between the dealer and the customer for me from an engineering point of view,” Paul says.

“A large part of what we were about to embark on was really developing a dual steer that was safe, aesthetically pleasing in the cabin, reduced fatigue and ultimately made the operators job more efficient.”

With past roles at Toyota and JCB Construction, Paul brought a robust understanding of structural design and testing, ergonomics and cab design to the role.

“We established the key requirements of the customer and the operators,

with a heavy focus on customer collaboration,” he says.

The engineering team spent about four months developing digital concepts before presenting them to a network of established customers and refining them until given approval. From there, they developed a physical mock up, which was refined and evaluated before being approved by the end user.

“It's not just about engineering, it's about production, purchasing, sales and aftermarket, which are all extremely important throughout the whole Volvo



Fast Fact

FE 4x2, 6x2, 6x4

Suitable for:

- Side loader
- Hard waste front lift
- Recycle front lift
- Hard waste rear loader
- Hook-lift
- Skip
- Liquid waste recovery
- Vacuum truck
- General waste



Volvo engineered the FE Euro 6 Dual Control at its factory in Wacol, Brisbane.

Global project process. What we've ended up with is a world class fit-for-purpose locally engineered product.

"It's a process that keeps the customer at the centre of all business activity throughout the engineering stage, which is sometimes lost on larger companies, but it's absolutely part of the DNA within Volvo."

SAFETY FIRST

With safety being a core value of the company, a number of unique selling points were adopted in the design of the FE Dual Control. Paul says this included a decision to make the left-hand steering circuit independent to the right, with its own steering box. It came at a hefty cost to the company, but it was important safety remained a key part of the design. Independent left-hand steering means the driver has full control when picking up bins using the left-hand drive, while also maintaining the capability to drive at standard speeds on the highway in a right-hand position.

"We placed a strong focus on improving visibility, which is extremely important from an operator point

of view, particularly in urban areas."

In addition to the external camera monitors in the cab, Paul says visibility has been optimised with a commanding seating position, unobstructed windshield and bespoke side mirrors.

He adds that another key innovation unique to Volvo is that all right-hand side driver functionality, is mirrored to the left-hand side of the vehicle and controlled by one central changeover switch, so all controls are placed in the same position for easy reference.

"Everything is switched from the right-hand side to the left-hand side via one central switch, including all of the instrument cluster displays and all the switches you need.

"The only exception is an ergonomically placed independent transmission interface on the left-hand side."

Paul and his team also spent extensive amounts of time reducing glare by removing reflective surfaces, allowing for a seamless view of the road ahead. The centre console design also ensures monitors do not interfere with the forward visibility of the operator,

allowing them to focus on objects outside the vehicle.

"All of these features combined are extremely important, particularly when these trucks are operating in residential areas where there's a lot of pedestrian and vehicle traffic around," Paul says.

Other features in the FE Dual Control include the company's electronic braking system, which aims to provide instantaneous brake response under all conditions.

The system comes in handy with hill start assist, reducing the risk of rolling back, maintaining traction control, and improving drivability in slippery or uneven road conditions. Forward collision warning with emergency braking and lane keeping support also reduces the risk of accidents and collisions, whether the truck is picking up bins in a residential area or on the highway travelling to the tip site.

Telematics also forms a key piece of the safety puzzle. Rather than relying on external sources, Volvo has taken the initiative to include its own telematics system – Dynafleet – that provides instant access to fleet, fuel and driver

information. The opening screen shows fleet performance data, including up to the last 30 days. Mitchell says the platform is constantly expanding, with potential to display bodybuilding information and other valuable data.

“We’ll be bringing on a lot more monitoring and data availability through our Dynafleet system,” Mitchell says.

“Every customer has different needs depending on the applications and segments that they run in. We’re very confident it will be used widely as a one-stop-shop open platform. It certainly is a quickly evolving space.”

QUALITY

With more than 70 dealerships, service and parts centres and customer service centres across Australia, Volvo is on hand to provide its customers with ongoing support. The company boasts a 97 per cent first pick rate for any part that’s required, which almost guarantees a part will be available immediately at a Volvo dealer. The parts are supported by a 24-month part warranty of up to 500,000km on fitted parts when installed by an authorised Volvo workshop. The warranty covers

repair or replacement of parts and even consequential damages.

Mitchell says working hand-in-hand with the company’s strong dealership network is crucial, as Volvo continues to provide training to ensure parts are available and dealer technicians are fully across the product specifications.

“We want to keep our customers in the loop from the development phase, right through to deployment with ongoing support and maintenance.

“In the trucking industry, not just the waste industry, relationships are everything.

“Not everything always goes to plan, but we can assure our customers that we’re able and willing to listen to them and solve challenges, any challenges as they arise.”

Available in 6x4, 6x2 or 4x2 configurations, Paul says working with the bodybuilders to deliver a range of chassis configurations was also important.

“The other thing we found with the bodybuilders was even though they’re doing the same job, they all have slightly bespoke requirements with the way that they control their waste bodies,” Paul adds.

“We worked with three key bodybuilders to set what we call electronic control unit (ECU) parameters for them to be able to control their body and ensure optimal performance.”

In order to deliver an ergonomic unit, the FE Euro 6 Dual Control features a significantly quieter cab and braking system. Depending on the needs of the driver, the FE is available with an EBR-EPG engine brake with exhaust pressure governor, providing 130Kw of engine retardation or an optional EBR-CBJ3 compression engine brake that delivers 188Kw of engine retardation. It also includes Volvo’s electronic braking system, an integrated engine braking system that helps prevent wheel lock-up, reduce brake wear, avoid brake overheating and boost safety. A thick layer of insulation under the cab reduces engine noise with superior aerodynamics to help eliminate wind noise.

ENVIRONMENTAL CARE

With environmental issues front and centre in the public sphere, reducing emissions has never been more important. Since the 70s,



Volvo's engineering team spent months refining the FE Euro 6 Dual Control prototype.

Volvo has reduced emissions of air pollutants from new Volvo trucks by 90 per cent, while decreasing fuel consumption and its climate impact by 40 per cent. Euro 6 compliant selective catalytic reduction is a way of converting nitrogen oxides (NOx), a key contributor to air pollution, into

harmless diatomic nitrogen and water vapour. Euro 6 is the latest in emissions standards which defines the acceptable limits for exhaust emissions of new vehicles sold in European Union and European Economic Area member states. Compared to previous models, Volvo estimates the Euro 6 engine has halved particulate emissions and reduces oxides of nitrogen oxides by close to 80 per cent. The engines have been engineered to comply without losing power or torque, or increasing fuel consumption. Reducing fuel consumption is part and parcel with environmental care, with Volvo reducing fuel consumption by 40 per cent since 1970.

"The Euro 6 emissions is of great interest to our customer base of councils, particularly those servicing urban areas. It's top of mind for

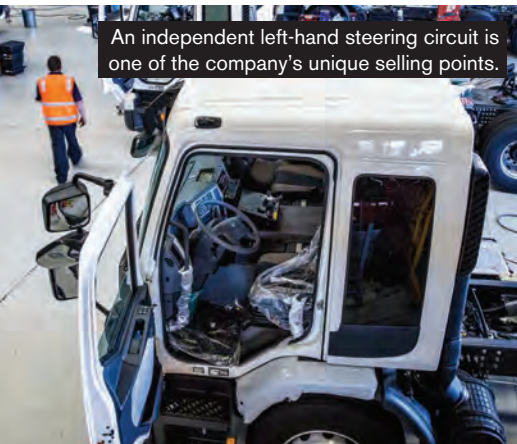
councils to have the latest generation of clean and green technology, while also being able to tick all the boxes as far as tenders go," Mitchell says.

This care for the environment goes a step further with around 85 to 95 per cent of every truck recyclable and about 33 per cent of the material to build each truck derived from recycled material.

"We use all original equipment manufactured components that have been tried and tested," Mitchell adds.

The company's Queensland factory in Wacol, Brisbane, is accredited to ISO 14001 standards, a core set of standards used by organisations in minimising their effect on the environment.

So what does the future hold for Volvo? The company remains tight-lipped on the road ahead but states the future is looking strong. ■



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