



# Under the PUMPER

While the omnipresent agitator enables concrete carriage from batching plant to building site, conveying the 'grey goo' from the truck to exactly where it's needed onsite is every bit as important. It's within this critical sphere that Callaghan Concrete Pumps (CCP), based at Silverdale on the western rim of Sydney, has specialised since its inception in 1969.

Callaghan Concrete Pumps, or CCP, is a family-owned business run by Brian Callaghan and his wife Kelly, backed by a staff of 15. Yet like so many family-owned concerns connected with road transport, it was Brian's father – also named Brian – who kicked the business off.

But that was more than four decades ago and like most ventures, the start was modest, with Brian senior initially hiring out a concrete pump and a rudimentary machine colloquially known as a flipper hoist.

These portable machines were powered by either an electric motor or petrol engine and towed between job sites by car or ute. Significantly, before starting the hire business in the late '60s, Callaghan had owned and operated a concrete agitator but as I was soon to find out, it wasn't only various forms of concrete conveyance that captured the elder Callaghan's fascination.

"I guess I have to blame my father for getting me involved in this business," said the junior Callaghan jokingly as we sat in the office situated above the company's workshop at Silverdale. "He started in the concrete pumping game in 1969 with a hire fleet consisting of a pump and a flipper hoist that they used back then to carry concrete up to the first level of buildings where it was dumped into wheelbarrows."

As the conversation continued, it was soon apparent that his father had built the business from the ground up – literally! That's because several years after initiating the rental fleet, Brian senior set about manufacturing concrete pumps in a bid to supply not only his own rapidly expanding rental business, but also the concrete industry at large with an affordable alternative to the expensive imported pumps of the day.

"Back in the early '70s concrete pumps were only built in the United States and Germany and were very costly," Callaghan explained. "So by the mid '70s, Dad decided to start manufacturing them himself."

After setting up a factory at Smithfield in Sydney's west, Callaghan's concrete pump production started in earnest in

1975. Interestingly, all components including cylinders – both concrete and hydraulic – and booms were manufactured in-house. While initially building the pumps for his own hire fleet, production was subsequently ramped up to cater for a domestic market eager for a more cost effective alternative to the imports and in the early '80s Callaghan also began exports to Singapore, Malaysia, Indonesia, Thailand and the Middle East.

In fact, it was at the height of the export program in early 1989 that Brian's son, then just 18 years old, joined his father in the business after completing a four year automotive mechanical apprenticeship. Indeed, Brian junior has fond memories of travelling to the Middle East and various Asian countries to commission the machines that were produced in the Smithfield factory, which at its peak operated in two shifts around the clock and kept 100 people gainfully employed.

However, the factory's days were numbered largely due to a sharp drop in demand from Asian markets hammered by the region's economic crisis in the mid '90s. In response, production at the Smithfield plant was dramatically scaled back in early '95 and ceased altogether in 1997. Despite this, the rental arm of the business continued to flourish and in 2003 the company took a new direction and began sourcing all its concrete pumps from Korea.

"We were allowed some input into how the machines were manufactured in Korea which ensured they were suitable for our market,"

Xtra stable. Outriggers deploy from both sides in an X fashion to maximise stability in all directions. Wide spread between DAF's steer axles enables the front unit to nestle neatly between the tyres when fully retracted.



Concrete couple. Brian and Kelly Callaghan.

Callaghan continued. "So for the last seven years we've been importing the machines in semi-knocked-down form and doing the final assembly and fit-out at our workshop here.

"My father was involved in the business up until three or four years ago when he decided to 'semi-retire' and set up another small company that hires out general equipment like Bobcats, mini excavators, floor sanders and portable toilets."

### DAF DESIRABILITY

As the conversation turned to trucks and specifically those on which CCP prefers to mount its concrete pumps, Brian Callaghan was happy to elaborate on why DAF has been the firm favourite for the last four years.

"It comes down to the customers in the end," he confirmed. "It's no use trying to sell them something they don't want. But we find the new DAFs are ideally suited to this application due to their high GVM (gross vehicle mass) ratings and because their tare weight tends to be a bit lower than other European brands.

**Weight saving. Steps, guards and covers constructed from aluminium help keep overall mass to a minimum without sacrificing strength and durability.**



**Heart 'n' soul. Hydraulic pump at centre is driven by a split-shaft PTO through the DAF's ZF manual transmission. Pair of hydraulic cylinders in foreground power the twin piston concrete pump.**



"For instance, they allow 16 tonnes on the steer axle group (twin-steer) and 24 tonnes on the drive. This means a GVM of 40 tonnes which is pretty good.

"However, we can't actually use the whole capacity of the truck because we're restricted on the bridge formula which for a wheelbase of 7.1 metres allows a GVM of 38.4 tonnes."

Callaghan also went on to describe the wide spacing of the DAF steer axles as

advantageous for concrete pump applications as it allows room for front outrigger installation between the two axles.

"It's also a very reliable truck," he continued. "We've had no major issues with any of the DAFs to date. Of course we've had the odd little thing go wrong but you get that with any brand. The most important thing to us is that the engine and driveline are bulletproof because they're always working whether the unit is standing still pumping concrete or travelling between jobs."

While Volvo, Scania and Mercedes-Benz are makes the company has used in the past, Brian also holds Fuso (Mitsubishi) in high regard, saying, "Mitsubishi is a good truck in the lighter range with its 8x4 – it's quite economical."

Back on DAF though, he describes the power and torque of the 460 hp MX engine as outstandingly strong.

"I drove a 45 metre unit which weighs 37 tonnes up to Emerald in central Queensland and it felt just like driving a car," he remarked.

That said though, it was interesting to discover that DAFs used by CCP feature

ZF manual transmissions rather than the supremely smooth AS-Tronic automated shifter. According to Brian, this is due to the 'split-shaft' PTO design where engine torque to drive the hydraulic pump is channelled through the gearbox when the vehicle is stationary.

"It's not that we can't use an automated 'box,'" Callaghan conceded. "In fact, we built one on a Scania fitted with an Opticruise transmission a while back. But it requires

reprogramming of the computer to stop it changing gears when the pump loads up: It's just an extra complication we prefer to avoid."

On the subject of DAF's meagre representation on Australia's truck sales charts to date, Brian believes the answer goes back to the days before DAF was part of the Paccar (Kenworth and Peterbilt) organisation, and the failure of the former parent company to promptly address issues in trucks working in Australia. Some of the mud from those days has stuck, he suggests.

"In the early '90s DAF had problems and didn't fix them quickly enough," he remarked. "Every manufacturer has problems from time to time but it's how they respond to help the customer that really counts."

Scania, for example, was particularly pleasing when a new unit suffered a major engine failure en-route to the Northern Territory. "We had a new Scania on its way to Darwin that put a con-rod through the block near Mt Isa on a Friday afternoon," Brian recalled. "The guy who bought it was thinking 'I've just financed this truck and now it's going to be sitting around for a month waiting for a new engine.'

"But to Scania's credit, they floated it back to Brisbane and pulled the engine out of another new truck to replace the busted one and it was ready to go the following Wednesday night; problem solved, everyone was happy."

Similarly though, he describes a high level of service from DAF dealer Gilbert & Roach in western Sydney on the 13 or so DAFs bought by CCP over the last four years.

"Any problems have been addressed quickly. But like I said, we've had no engine or driveline issues whatsoever with the DAFs. For us that's the key because these trucks do relatively few road miles but lots of engine hours and are often working under light load conditions for lengthy periods.

"The simple fact is, when you need a heavy 8x4 for a concrete pump there's not a lot of choice. It basically comes down to the European brands," Brian concedes. "And the DAFs are very competitively priced."

While agreeing that the eventual availability of Paccar's MX engine in Kenworth trucks will be a good thing for both Kenworth and DAF, Callaghan was quick to elaborate on his previous point that Kenworth and North American trucks in general usually aren't suitable for large concrete pump applications.

"We can't use Kenworths primarily because they don't have high enough axle weight ratings," he explained.

"But certainly having the backing of Paccar has helped DAF a lot as people now understand that Paccar is behind both Kenworth and DAF," Callaghan concluded.

### BOOMING BUSINESS

While the relatively light tare and high axle capacities of DAF appeal to concrete pump applications, it was similarly interesting to hear Brian Callaghan explain how significant efforts are being made to reduce the overall weight of its pumping equipment. This is particularly important, he insists, because the size and mass of concrete pumps have been steadily increasing for the past 15 years.

"Over the last few years we've lightened up everything as much as possible," he affirmed. "For example, we now use aluminium side covers, safety guards and steps where they were once all steel. Also we've reduced the size of the water tank from 1000 to 600 litres. There's no point carrying the extra water around when it's possible to fill the tank on site using a garden hose. All up we've managed to remove around 800 kg from the equipment without any loss of durability just through all these small changes, which allowed us to use an 8x4 chassis to carry the same size pump we used to install on a 10x4 unit."

In addition to weight reduction, cost paring has been a significant factor in the success of the business over the last seven years. According to Callaghan, sourcing the pumps from Korea and letting go of the rental business in order to concentrate solely on

View into hopper shows the S-valve that oscillates at high speed between the two cylinder ends allowing concrete to be drawn in on one stroke and pumped through the valve on the next.



pump sales have been significant factors.

"Over the last seven years the business has grown a lot," he continued. "The lower price of the Korean machines has brought the cost of concrete pumps down in Australia. But we probably still pay more for trucks and related equipment like concrete pumps than other parts of the world simply because of our low volumes and relative isolation from the manufacturers."

On other changes in the concrete pump industry in recent times, Brian said the increase in the size of machines as well as the introduction of stricter safety standards have been significant. As for how the size of a concrete pump is measured, he went on to explain that a 36 metre unit is so-called because the vertical extension or reach of the boom is 36 metres, and that the horizontal reach is generally four metres less.

"Over the last decade machines have got a lot bigger," he added. "Probably 15 years ago a 36 metre unit would have been considered large but now you can get 52 metre machines, although the largest we do is 48 metres.

"The pumping modules have also grown markedly in that time," he added. "Whereas 10 or 15 years ago the average capacity was 100 to 120 cubic metres per hour, it's now about 150 and the largest machines are capable of up to 200.

"Though keeping up the supply can be an issue with the high capacity pumps," Callaghan continued. "Even a 150 cubic metre pump can shift six cubic metres of concrete in two minutes."

Closely linked to the increased boom reach and higher capacity pumps have been corresponding rises in safety requirements over the last 15 years. As Brian explained,

"In '94 the Australian standards for concrete pumps were introduced which stipulated each machine be completely stripped down and tested every six years. This involves sandblasting and crack testing to ensure structural integrity before the machine is reassembled and painted.

"It's an expensive and time consuming task," he added. "It normally costs around

\$1300 to \$1400 per lineal metre of boom which for a 48 metre pump works out at more than \$62,000."

Yet he was quick to point out that it's a worthwhile exercise, particularly in terms of preventative maintenance, as any cracks that are found can be rectified before they lead to an expensive failure.

"Concrete pumps are subject to a lot more stress than cranes," Brian attested. "Whereas every movement done by a crane is steady and smooth with no shock loading, the pulsing effect of the concrete pumping through the pipes gives the machine a significant workout. And, of course, the higher the pressure of the pump the more exaggerated the stress on the structure."

He went on to explain that this surging is due to the design of the twin-piston concrete pump where one piston is drawing concrete in while the other is pumping. This process is effected by an 'S-valve' which switches from side to side, allowing concrete to enter one cylinder while the other is blocked off, and vice versa.

As for the pistons, they're made of rubber and range from 180 to 280 mm (7.0 to 11 inches) in diameter. The larger pistons do fewer strokes to move a given amount of concrete but don't develop the high pressures needed for line pumps which are fitted with the smaller diameter pistons.

"Pumping pressure on most machines is 70 bar (1015 psi) but for a high pressure line pump, like those used to supply concrete for high rise buildings of 80 storeys or more, it needs to be 225 bar (3263 psi)," Brian said, before listing a number of major projects around Sydney where pumps supplied by CCP were used.

"When we had our hire fleet we pumped the concrete for World Square in Sydney, Glebe Island (ANZAC) Bridge, Cross City Tunnel, Eastern Distributor, Lane Cove Tunnel and Epping Rail Link," Callaghan recounted, before mentioning that he isn't sorry the days of hiring out concrete pumps are behind him.

"We just concentrate on the manufacturing now," he concluded, with more than a hint of relief in his voice. **ID**