CONCRETE INDUSTRY ON TRACK TO MEET EMISSIONS REDUCTION TARGET
**MESSAGE FROM THE CHAIR**

Kia ora readymixers,

As with the rest of New Zealand, the concrete industry is currently holding its collective breath, waiting to see what the true impact of COVID-19 community transmission will be. Up until the recent reintroduction of Alert Levels 2 and 3, planning for the short to medium term had already been difficult. The promised shovel ready projects are yet to show any sign of coming on stream, while opposition parties constantly claim that only they can save New Zealand from looming recession, large budget deficits and extensive job losses.

Now that new cases of COVID-19 have appeared with no clear source of infection we again find ourselves surrounded by uncertainty, unsure if and when Alert Levels will change and how long they will remain in place.

However, I am buoyed by the way our industry collaborated during lockdown and the Alert Level 2 return to work. The health & safety protocols established were effective and will serve us well over coming months.

In terms of Concrete NZ Readymix activity, a number of other health & safety initiatives have come to fruition.

We have communicated our updated position on blow-back and pump-back – that this potentially dangerous procedure should no longer be performed from any concrete pump – see Safety Alert: Blow-Back & Pump-Back on page 3. Our Guidelines to Site Delivery Safety video (based on Allied Concrete’s resource) is available via the Concrete NZ website. This presentation highlights the combined responsibility to ensure public safety when accepting deliveries to construction sites.

In terms of support for training during these “unprecedented” times, Apprenticeship Boost and No Fees are now available – see pages 6-7.

Finally, with the 2020 Concrete NZ Conference postponed until 14-16 October 2021 in Rotorua, we will look to have our Readymix annual meeting at a combined Auckland/ Central North Island regional meeting in November – developments around COVID-19 notwithstanding.

In the meantime, as an industry we must remain transparent and thorough in our approach to health & safety.

Richard Sands
Concrete NZ Readymix - Committee Chair

**GUIDELINES TO SITE DELIVERY SAFETY**

The Health & Safety at Work Act came into force in early 2016. As a result, there is a greater accountability for businesses and individuals, as well as increased requirements for everyone on site to work together to stay safe - consult, cooperate and coordinate.

Allied Concrete developed a video resource to emphasise the collective duty of all companies to ensure public safety, as well as that of road users, when receiving supplies at site.

The video has been re-formatted, and its ‘voice’ adjusted to enable wider use by Concrete NZ Readymix members when connecting with their customers.

Advice on how members can use the video as part of their in-house training or when communicating with customers and council will be distributed shortly.

In the meantime, visit the Concrete NZ Readymix website to access the video - https://concretenz.org.nz/page/readymix_hs

Cover images: The sustainability properties of concrete in use.
The Concrete New Zealand (NZ) Readymix Sector Group has issued an updated Safety Alert: Blow-Back & Pump-Back document that urges its ready mixed concrete producer members to no longer accept blow and pump-back from any concrete pump.

Richard Sands, Chair of the Readymix Sector Group, believes the procedure poses significant health and safety hazards for all those involved and should not be undertaken.

“Blow and pump back entails moving residual concrete from the line or boom pump back into the truck mixer bowl under pressure, which is inherently dangerous.”

“Concrete NZ is strongly advising against the practice of accepting blow and pump-back from all line and boom concrete pumps due to the risks involved,” says Richard.

The Readymix Sector Group also urges those involved in concrete pumping to adhere to the Ministry of Business, Innovation and Employment’s (MBIE) Concrete Pumping Health and Safety Guidelines.

“This Guide provides practical advice about the safe operation and maintenance of concrete pumping equipment and the environment this equipment is used in,” says Richard.

“Health & safety vigilance needs to be maintained across the supply, acquisition, disposal, inspection, maintenance, registration and safe operation of all types of concrete pumps and associated placing equipment used in pumping or spraying concrete.”

The Safety Alert - Blow-Back & Pump-Back is available from the Concrete NZ website - https://concretenz.org.nz/page/Readymix_HS

CONCRETE NZ ISSUES UPDATED CONCRETE PUMPING HEALTH & SAFETY RECOMMENDATION

HAZARD IDENTIFIED

This Concrete NZ Readymix Sector Group Safety Alert addresses the issue of concrete blow-back and pump-back into the concrete truck mixing bowl, which can be an inherently dangerous procedure unless carefully controlled.

**Blow-back** uses high air pressure to move residual concrete from the line or boom pump back into the truck mixer bowl. Air pressure will cause anything inside the pipe to act as a high-velocity projectile.

**Pump-back** is the return of residual concrete back into the truck mixer or bowl by either line or boom pumps. Excessive pumping pressure creates similar problems.

**Risk 1**

High air pressure or pump line pressure and pipe movement during blow-back or pump-back can cause pipe joints to fail and break apart.

**Risk 2**

Concrete in the pipe is subjected to high pressure during blow-back or pump-back, and can cause the hose to eject from the concrete bowl or material to rebound and exit the concrete bowl. In both situations there is the potential to cause injury to bystanders, or equipment and/or property damage.

**Risk 3**

Climbing a concrete truck ladder while carrying a line pump pipe or trying to maneuver a pump line while not having three points of contact creates a high risk of fall from height.

**Risk 4**

Control measures previously deemed as acceptable in both blow-back or pump-back have not been adhered to resulting in injury or damage.

ONGOING ACTIONS

• Make blow-back and pump-back an agenda item at safety meetings.

CONCRETE NZ STRONGLY URGES AGAINST THE PRACTICE OF ACCEPTING BLOW-BACK OR PUMP-BACK FROM CONCRETE PUMPS.

REFERENCES


Over the past few months Wellington and Manawatu locals may have spotted a pink concrete truck roaming the streets. A second glance reveals the truck to be one of the Higgins Concrete fleet, decked out in support of the Child Cancer Foundation.

Aaron Currie, Lower North Island Regional Manager at Higgins Concrete, points out that each year the company takes part in the ‘Manawatu Professionals Big Rigs’ event, which raises $45,000 in support of children with cancer and other serious illnesses.

It is a day filled with family-friendly activities and entertainment, with around 120 trucks from various companies offering rides around Palmerston North for a small donation.

In preparation for the 2020 event, Higgins Concrete commissioned the pink truck with Child Cancer Foundation livery and introduced it to their fleet of green concrete trucks.

“Unfortunately, this year’s ‘Big Rigs’ event was cancelled due to COVID-19. However, the Higgins family still wanted to show their support for the Child Cancer Foundation and have committed to donate a portion of the proceeds from every cubic metre of concrete we supply through until October,” says Aaron.

Mike Botherway, Higgins Concrete General Manager, is delighted that the truck has been well received by the community.

“There have been a number of positive spin-offs, such as piquing the interest of young people wanting to learn more about the concrete and construction industries,” says Mike. “We have even taken requests for the truck to make appearances at children’s birthday parties.”

Higgins Concrete is fiercely proud to be locally owned and operated, and hopes that the pink truck encourages other concrete companies across the Concrete NZ membership to be as creative and unique in their own community support.
OFS - FILTER PRESS - FOR DEWATERING OF CEMENT FINES

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- Side beam with recessed chamber plates
- Rotating drip tray with external launder
- Programmable cloth wash and plate shaking device

RAPID - RECLAIMER - FOR CONCRETE TRUCK WASHOUT AND RECYCLING OF RETURNED WET CONCRETE

- Integral control panel
- Hydraulic trommel and sand augers
- Overload protection

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Warwick Quinn, Chief Executive, Building and Construction Industry Training Organisation (BCITO)

Over the last few months the impact of the COVID 19 lockdown and the Government’s response has been, in that now well used term, ‘unprecedented’. But it indeed has been.

Without intervention, we anticipated a significant decline in apprentice numbers over the next 6-18 months but the extent of that decline, and the recovery time, is difficult to assess with any certainty at this early stage.

Our view relies on past experience of the issues and trends identified from those experiences. We see no particular reason why the outcomes would be markedly different this time given the construction sector has been through recessions many times before and the results are always the same. You just have to look at what happened in 1987 with the stock market crash, 1997 with the Asian financial crisis and of course, the 2008 global financial crisis. Unless the response is changed this time round, 2020 will be no different.
A GOOD BAROMETER
As a general overview, apprentice numbers are tied directly to the health of construction firms, mainly residential construction firms. As the largest sector of construction (it is also the largest employer of construction apprentices with over 80% of BCITO trainees) it is a good barometer when it comes to considering how construction activity and training is likely to react to the current circumstances. The amount of existing work and the ongoing confidence in the supply of future work is the crucial determinant in the willingness of employers to take on apprentices.

We know that for every construction employee that is laid off four apprentices are. During the GFC the construction workforce shrank by 8 percent, but apprentice numbers fell by 32 percent. With economists predicting a reduction in construction activity (and the workforce) of anywhere between 8-12 percent this time round the effect on training would genuinely be significant.

We are aware of the Government’s intention to accelerate investment in “shovel ready” construction infrastructure projects to help kick start the recovery. We support any moves in this vein and while these large infrastructure projects will help with unemployment, they will do little to address the loss of construction apprentices given most are employed in the housing sector. Infrastructure has no call for floorers, roofers, tilers, joiners, carpenters, electricians, plasterers, interior designers, kitchen and bathroom apprentices and the like.

THE CHALLENGE GOING FORWARD
We expect consumer confidence in the housing market to be negatively affected, which will result in residential construction being similarly impacted. Trainee numbers will be an early causality and it is difficult to see how this can be avoided (although we hope we are wrong). The property market often seems to hold up well initially, as it did in 2008 and 1987 but a year on is when it starts to bite. This is due to the length of construction transactions and the degree of pre-commitment but once these have run their course work can get thin on the ground.

The challenge, therefore, is to try and retain (or keep a connection with) the number of apprentices currently in the system, not to waste their learning to date, and have a capable and trained workforce ready when the recovery is underway.

Accordingly, we wrote to Ministers sharing these views, and with the Budget, on 14 May we saw their response. Investing $1.6b in trades training and apprentices is truly unprecedented (there’s that word again) and along with $5b for 8,000 new public houses will go a long way to supporting us.

The two main planks of the Government’s policies are no fees for Targeted Trades Training and Apprenticeships and the employer financial support for training an apprentice – the Apprenticeship Boost Scheme.

NO FEES
All apprenticeships (i.e. a Level 4 programme over 120 credits) are now free from 1 July 2020 until 31 December 2022. Some targeted sectors have other programmes free as well and construction is one of those. So virtually all BCITO apprentices and trainees will not be charged fees from 1 July and this applies to current apprentices and new ones.

APPRENTICESHIP BOOST
The Apprenticeship Boost scheme runs for 20 months from 1 August 2020. It is administered by MSD and is designed to support employers who have an apprentice in the first and second year of their apprenticeship. An employer is eligible to receive up to $12,000 for a first year apprentice ($1,000 per month) and $6,000 for a second year apprentice ($500 per month). As the scheme runs for 20 months, the maximum support available is $16,000 per apprentice.

However, there are some conditions to the support. The Apprenticeship Boost scheme is not the wage subsidy in disguise, it is not cheap labour. The apprentice must be enrolled in an apprenticeship, show progress in their learning and the support is paid monthly. If the apprentice is not progressing, then the support will cease and if the apprentice changes employer then the money follows the apprentice, with the new employer eligible for the balance.


BUILD THE BEST MODEL
We have been asking for support for years, particularly during a recession when training gets whacked. We now have that support, and it is up to the construction sector to do the right thing, step up to the plate and respond in kind. We will only get one opportunity and we cannot afford to blow it. We know plenty of work is the best medicine for firms and apprentices, but maybe, just maybe, when it is thin on the ground that firm with plenty of work on, and who doesn’t formally train now will, and we increase the number of firms training in our sector. If we do, then we have a model that will work next time.
Extruded concrete for kerb and channel work is supplied as a semi-dry material with zero or very low slump since the material is subject to high intensity vibration and must be self-supporting after extrusion. Quality assurance of this type of concrete requires extra attention during testing as the material has significant differences to standard structural concrete.

Specific guidance for extruded concrete is not covered in New Zealand Standards, while local guidelines produced by NZRMCA in 2005 rely on AS 2876 even though this document is not cited in NZ standards. Typically kerb concrete is specified in terms of strength grade, but quality assurance can be complicated due to the following:

- Compaction of cylinders at the plant requires extra compaction using vibrating tables or ramming with larger diameter (e.g. 32 mm) rebar or modified Proctor hammer.
- Site testing of concrete is occasionally done and requires special attention to ensure full compaction is achieved as per plant-based testing.
- Some projects specify core testing of kerb concrete that requires precise sampling and correct testing to produce a reliable indication of in-situ strength.

The quality of kerbing concrete is a combination of strength and dimensional stability and optimum moisture content may differ for these two properties. Strength will be highest when concrete is on the point of slumping since the benefits of improved compaction usually out-weigh the increase in water/cement ratio. In contrast, good dimensional control of extruded concrete may occur with concrete that is slightly drier although compaction efficiency is slightly reduced (e.g. air contents of 4-6 percent compared with 2 percent for well compacted concrete). A relatively narrow range of moisture content is therefore possible for kerbing as shown in Figure 1 below.

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**Figure 1:** Schematic of the process of batching and extrusion of concrete
Measured strengths from plant and in-situ testing will vary, which is shown in Table 1 using recommended kerb mix proportions for different road applications. This analysis assumes a water demand of 155 L/m³, which is an average value that will vary depending on materials and mix designs around New Zealand. Predicted strengths assume good construction practice in terms of curing concrete that can have a significant effect on compressive strength.

Table 1: Recommended kerb concrete proportions and typical strength performance

<table>
<thead>
<tr>
<th>Mix Type</th>
<th>Road type application</th>
<th>Cement content (kg/m³)</th>
<th>Water/cement ratio</th>
<th>Plant strength (MPa) Air – 2%</th>
<th>In situ strength (MPa) Air – 6%</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Motorway</td>
<td>280</td>
<td>0.55</td>
<td>40</td>
<td>32</td>
</tr>
<tr>
<td>B</td>
<td>Arterial</td>
<td>260</td>
<td>0.60</td>
<td>35</td>
<td>28</td>
</tr>
<tr>
<td>C</td>
<td>Residential</td>
<td>240</td>
<td>0.65</td>
<td>30</td>
<td>24</td>
</tr>
</tbody>
</table>

N.B. predicted strengths derived from modified Abrams law for GP cement while 1% extra air reduces strength by 5%

TESTING METHODOLOGY FOR CONCRETE SUPPLIERS

Concrete supplied to projects using extruded concrete will have batch and test records that confirm mix proportions and performance in terms of density and strength. Technicians undertaking this testing must ensure that concrete is at the correct consistence when sampled and have appropriate equipment to ensure a reasonable level of compaction. Quality assurance of kerbing concrete supply includes the following activities:

- Cement contents should comply with the prescriptive limits given in Table 1 and must be within 1 percent of the target value to comply with NZS 3104.
- Consistence level is assessed by taking a handful of concrete using protective gloves and by balling and shaking the fresh material, the level of cohesion and workability can then be assessed.
- A representative sample is then extracted from the concrete mixer in the normal manner specified in NZS 3112 Part 1.
- Concrete is compacted in standard cylinders using either a vibration or rodding/hammering where the energy used in compaction is significantly higher than used for standard concrete (e.g. double vibration time or ramming more than 30 blows per layer).
- Storage of concrete cylinders follows standard practice and the visual appearance and hardened density of test specimens should be checked after demoulding to confirm compaction.
- Testing for compressive strength is undertaken at 7 and 28-days is the standard manner outlined in NZS 3112 Part 2.
- Site testing may also be undertaken after final water addition by the kerbing contractor, and it is important that cylinder compaction produces dense concrete consistent with that achieved during plant testing.

Anecdotal evidence suggests that concrete plants that regularly supply kerb concrete usually develop the skill to sample the material at the correct consistence and fully compact the concrete (e.g. cylinders when demoulded appear normal without excess porosity or low density). Concrete plants that only occasionally supply kerb concrete often do not always have this expertise, which may lead to poor density and strength results and require core testing of in-situ concrete.

Reducing the amount of in-situ testing requires good quality assurance of concrete supply. This is shown in Figure 2 for a kerbing project of 20 MPa residential concrete. Note that testing of kerb concrete on site is not commonly undertaken but it is possible if requested. While this is more difficult to undertake, quality assurance on site using cylinder testing may help avoid core testing of kerbing, which is often found to be unreliable.

CONCLUSIONS

Construction of new developments requires a significant amount of extruded concrete for kerbs, channels and median barriers. This type of concrete is periodically the source of disputes regarding the quality of the concrete in the field. Invariably the issue is difficult to resolve since test records from concrete suppliers may differ from those obtained from core testing on site. The lower strength found from core tests is due to several factors that include higher water content, incomplete compaction, less effective curing in the field and in particular the higher variability associated with core testing. Concrete suppliers cannot resolve these site issues but should ensure that they provide reliable quality assurance for kerb concrete supplied to projects. It is particularly important that non-standard compaction processes are understood by technicians undertaking this testing.

REFERENCES


Rob Gaimster, Chief Executive, Concrete NZ

The New Zealand concrete industry is halfway towards meeting its target of a 30 percent reduction in carbon dioxide emissions by 2030, and is fully committed to becoming net carbon neutral by the Government’s target date of 2050.

A recent review by independent sustainability consultancy thinkstep, found the New Zealand concrete industry is well placed to meet climate change commitments the New Zealand government signed up to under the Paris Agreement.

The independent review confirmed that the New Zealand concrete industry has reduced its emissions from cement by 15 percent between 2005 and 2018.

The emissions reduction occurred against a 13 percent increase in demand, which demonstrates how committed we are to sustainability.

See page 12 for other measurements of success.

We are pleased that our initiatives to reduce cement’s carbon footprint have avoided about 400,000 tonnes of carbon dioxide emissions in 2018 alone.

The reduction in emissions has been achieved through a range of measures, including the use of waste products such as wood biomass to fuel cement kilns.

Concrete NZ’s Sustainability Committee has recently met Climate Change Minister Hon James Shaw and Dr Rod Carr (Chair of the Climate Change Commission) to share the thinkstep results and discuss how concrete is part of the transition to a net zero carbon New Zealand by 2050.
Mangere Wastewater Treatment Plant is a vital piece of concrete infrastructure.

“A game-changer for the industry here in New Zealand is that we have available naturally occurring minerals that can be used to replace a percentage of cement clinker, which is the main ingredient of concrete production associated with carbon dioxide emissions.”

Waste from other industries is also being used to lower the cement clinker content in concrete and help to significantly reduce concrete's carbon footprint.

At the same time, moving to new technologies, such as more energy efficient equipment and vehicles to produce and transport concrete, is part of our plan to be net carbon neutral by 2050.

Concrete is the second most consumed substance in the world after water and is central to supporting communities and economies around the world.

Our kids walk to school on concrete footpaths, they learn in schools that rest on concrete foundations, we receive healthcare in hospitals built from concrete, and many of us work in concrete buildings.

Concrete also underpins our water and sewerage systems and will be crucial in the development of low energy infrastructure that includes electricity generation and public transport.

As we adapt to climate change and our planet warms, concrete will offer protection against fire and floods, while its mass will help regulate the internal temperature of buildings to reduce our reliance on energy intensive air conditioning.

The environmental benefits of concrete are significant. Concrete structures act as carbon sinks, they can also be recycled, redesigned and repurposed. Concrete structures require little maintenance, and don't rot or burn.

Our industry knows how important concrete is to everyone's future wellbeing. That's why we're working so hard to reduce our carbon footprint and maximise the benefits of concrete.
NZ CONCRETE INDUSTRY EMISSIONS REDUCTION

The New Zealand concrete industry is halfway towards meeting its target of a 30 percent reduction in carbon dioxide emissions by 2030.

A review by independent sustainability consultancy - thinkstep - confirmed that the New Zealand concrete industry has reduced its emissions from cement by 15 percent between 2005 and 2018.

**NATIONAL**

- 15% \(\downarrow\) reduction in CO\(_2\) from cement
- 11% \(\downarrow\) reduction in CO\(_2\) from concrete

**PER CAPITA**

- 27% \(\downarrow\) reduction in CO\(_2\) from cement
- 24% \(\downarrow\) reduction in CO\(_2\) from concrete

**PER UNIT (PER TONNE)**

- 17% \(\downarrow\) reduction in CO\(_2\) from cement
- 21% \(\downarrow\) reduction in CO\(_2\) from concrete
Nick Leggett, Chief Executive, Road Transport Forum

One of the positive outcomes of the COVID-19 lockdown in New Zealand was it initiated a greater understanding by Government of both the necessity and the many inter-connected parts of moving freight.

Road freight transport presents a conundrum for this Government. They don’t like fossil-fuelled trucks on roads, but they need them. We have an economy based on exports and imports and 93% of the total tonnes of freight moved in New Zealand goes by road. This has possibly never been more important to the economy than it is now.

To the uninitiated, trucks don’t fit with the climate change narrative. But the Government can’t tax and regulate trucks off the road until there is some viable alternative to fuelling them and the infrastructure to support that.

The Ministry of Transport (MoT) has put its toe in the water to explore transitioning road freight to alternative green fuels in its recently released 2020 Green Freight - Strategic Working Paper. The Road Transport Forum engaged with MoT as they gathered information for this project and it was an extremely worthwhile experience. It is always good to plan for the future and we can’t put our head in the sand and pretend we can run on diesel forever.

It’s not just the Government calling for greener solutions across all aspects of our lives. Many road freight transport operators will be finding customers wanting to deep dive into how they are running and measuring sustainable business practices.

We are all aware of the current limitations, but we also need to look at the opportunities. Another thing COVID-19 has taught us is you simply don’t know what’s ahead and global shocks have a way of changing things.

The MoT working paper looks at the three existing options as alternative fuels – electricity, green hydrogen and biofuels – but acknowledges a lot more work needs to be done for any of these to be viable at scale. It also notes that there is no one-size-fits-all solution and other options could emerge.

Alternative green fuels are a growing area of interest and investment globally but the passenger vehicle market has developed more than truck manufacturing. So, choices that can be made in New Zealand will be constrained by what is available. There also has to be the appropriate infrastructure to support any alternative fuel options. Freight companies are unlikely to invest in vehicles that cannot be easily recharged/refuelled throughout the country.

The working paper is a signal, if you like, to Government that there is a lot more work to do before finding viable green freight solutions. It takes a first look at the fuels, vehicles and infrastructure challenges and opportunities. We are pleased to see it notes there are sustainability concerns with batteries for electric vehicles, in particular their production and disposal. We feel in the rush to endorse electric vehicles, this has been somewhat overlooked.

Backing one horse will not be the way to go. Transitioning road freight in New Zealand to alternative green fuels has to happen, but it isn’t going to be overnight. That means there is time to thoroughly analyse the options.

The working paper says: “The Government should consider options that provide the freight industry with flexibility to transition to the alternative green fuels that are best suited to their organisations.”

We think that is sound advice.

If the Government really wants to go big on green freight, the opportunity is there to back ourselves as a smart, clean, green country and come up with the solutions ourselves.

We are known for our problem-solving and innovation, so let’s lead the way here if we can.

Pedro José Ayala Bernal, Frumecar

Digital technologies and Big Data are two of the pillars of R&D in all industrial environments; concrete cannot escape this revolution and it is important to reflect on its impact on production systems.

The Fourth Industrial Revolution has reached the concrete sector and is really a paradigm shift. The opportunities that new technologies present for the industry may lead to an exponential rise in the range of products and services that the sector can offer.

This new approach may also result in many companies becoming outdated and it requires a change in the way of thinking, acting and working. The product as we know it has become obsolete; our customers are changing – they are demanding something beyond the mere purchase of an asset.

A new horizon includes a series of concepts that may sound like science fiction, such as artificial intelligence, additive manufacturing, virtual reality, cloud computing and storage. Unknown concepts in many cases are sometimes perceived with a feeling of remoteness – a mistaken way of thinking, which can lead to a serious problem in the short term for companies that do not know how to adapt. The new revolution is not something far off that will arrive gradually and be imposed on current technologies over a long period of time; quite the opposite. Industry 4.0 and all its accompanying technologies are already here. They are being adopted in the day-to-day running of many industrial sectors and the world of concrete will be no exception. Industry 4.0 has arrived, is here to stay and for those quickest to adopt it offers a new world of expansion and business opportunities.

For this reason, in 2017 Frumecar launched a comprehensive innovation plan to analyse the possibilities that industry 4.0 offers the development of projects in the concrete production and transport sector. After more than a year’s work collaborating with the Automation and Autonomous Robotics group of the Polytechnic University of Cartagena (Murcia, Spain) and suppliers and customers, there are some clear conclusions that outline the trends that the sector should analyse and gradually implement.

The first pillar of this transformation will come from the collection and management of production and business...
The Industrial Internet of Things allows us to use smart sensors to generate new and valuable information; cloud storage enables the mass storage of all this data so that it is instantly accessible from anywhere for plant technicians and managers; and blockchain can provide unique value to our information management systems, equipping them with maximum security.

The second pillar on which the digital transformation of the concrete industry is based is the use of artificial intelligence. New computer algorithms and automatic learning make it possible to obtain differential information on the uses of our facilities, enabling the continuous improvement of production processes and customising predictive maintenance to each specific case.

In terms of these two work streams, we have an intelligent control system operational for concrete batching plants that is able to extract all the essential information from our plants and concrete mixers, and an ‘ecosystem’ of applications that processes this information and shows it to each of the roles involved in the production and distribution of concrete – from business management through to the operations and order processing manager and the company’s maintenance manager.

This ecosystem of applications makes it possible, from the first minute, to exploit all the essential information required by participants in the production and distribution of concrete with any device connected to the internet from anywhere, having access to the critical information of each of the processes in real time, without depending on physical ties or location.

Finally, the latest major trend of industry 4.0 that will have an impact on the concrete industry is intelligent robotics, which will enable in the near future the development of unmanned plants equipped with intelligence and communications that activate their procedures at the request of production robots without human intervention. This is one of the priority lines of research of the Frumecar R&D plan and we will shortly be presenting the first prototypes in the market.

As can be seen, the industry 4.0 revolution is not just the latest trend to follow, it is a reality that is already transforming our sector and will provide concrete producers with more and better information for decision-making, new automated ways of working and new business models. Let’s stay alert.
Our NZ made cement is genuine NZ grade cement.

We produce and supply consistent quality cement that you can rely on. We call it NZ grade - you know where it’s made, what it’s made of, who made it and that it’s made for the NZ market. It’s Genuine so you can trust it.

Being Genuine is part of our fundamental approach to do business.