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About the Cover

The City of Newcastle, NSW is utilising a new AI-enabled bridge asset condition tracking system to help optimise its defect identification, maintenance planning, budgeting and data management processes for 56 of its bridges and major culverts.

▶ Turn to **Page 10** for the full story.

WHAT CAN WE DO ABOUT REPEAT OFFENDERS?

Dear Readers,

While most of us are all too familiar with reports of illegal and, more often than not, just plain stupid and dangerous behaviour on our roads, in recent times there seems to have been a significant increase in both the seriousness of the offences and the regularity with which they are occurring.

Add to this the fact that this 'extreme' driving behaviour is clearly no longer the exclusive domain of young males aged 18 to 23, one might be forgiven for wondering if our roads are in imminent danger of sinking into complete anarchy.

Not surprisingly, in many states this increase in illegal on-road behaviours has also coincided with the highest number of road fatalities and serious injuries for many years.

In the past few weeks alone there have been reported instances of vehicles being detected travelling at speeds of over 100km/h above the posted limit, incidents involving illegal street racing, numerous lengthy police pursuits, and countless incidents of drunk-driving, drug-affected and distracted driving resulting in serious accidents.

Alarmingly, many of these incidents involved vehicles being driven by repeat offenders - many of which were unlicensed and/or driving unregistered, uninsured or stolen vehicles.

Indeed, in one recent instance, the offence resulted in the driver losing his second car under the anti-hoon driving legislation. He would have also lost his license for a considerable time; save for the fact he didn't have a license to lose.

Most alarmingly, these behaviours are showing no sign of abating.

Indeed, in recent years, there seems to have been a significant upsurge in this type of extreme driver behaviour which, of course, includes the upsurge in road rage incidents.

Whilst some may be tempted to want to 'find the deeper meaning' behind these behaviours, the simple fact is that whatever the motivation, it is clear these drivers have a total and absolute disregard for society as a whole. These types of extreme offences transcend a mere disregard for the road rules, they even go past a lack of concern for personal safety or the safety of others.

The other major concern is that, more often than not, drivers such as these will continue to re-offend - regardless of their license status and/or the consequences.

This, of course, begs the question: *what can we, as a society, do with repeat offenders such as this?*

Notwithstanding my personal views on the need for lengthy custodial sentences for those found guilty of killing someone with a motor vehicle as a result of drunk or drug-driving, excessive speeding and/or other serious illegal behaviour, I also recognise that there is perhaps little to be gained from 'locking them up and throwing away the key' indefinitely.

The problem with recidivist behaviour is that once presented with an opportunity, a large percentage of habitual drink-drivers, drug-drivers, hoons and/or dangerous drivers will re-offend.

That said, we clearly don't have the law enforcement resources to monitor these people 24/7 to ensure that they don't get behind the wheel of a motor vehicle.

With that in mind, what I would like to suggest is that after an initial custodial sentence, we have these repeat offenders serve extended community work orders in our serious road trauma rehabilitation and extended care centres, while still serving after-hours home or periodic detention.

That isn't to suggest that these facilities be used as a dumping ground for serious criminals. I am merely suggesting that perhaps the shock and trauma involved with having to deal with the consequences of serious road trauma on a daily basis for an extended period may be just the thing to cure them of their wish to treat the nation's roads as their own personal racetrack or 'extreme sports ground'.

Anthony T Schmidt
Managing Editor

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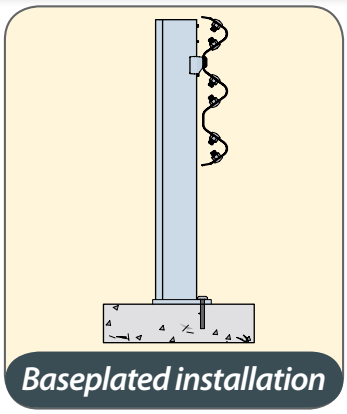
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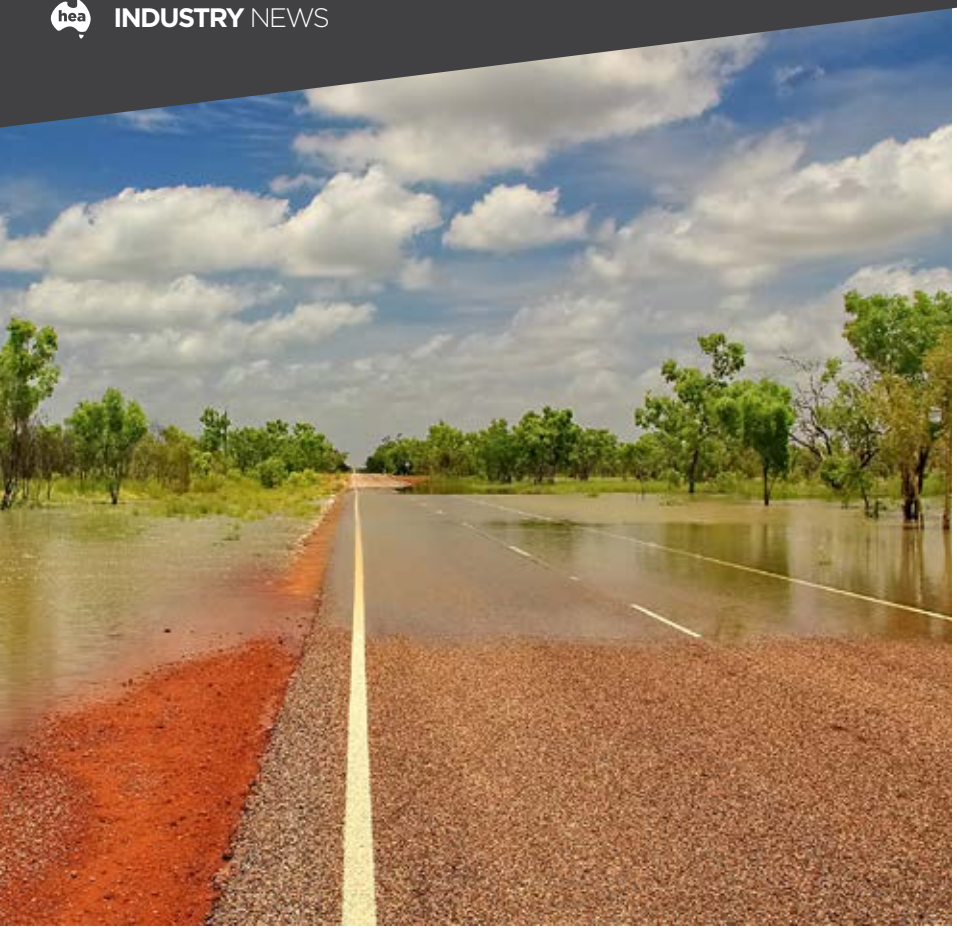

Australia's road infrastructure at a crossroads

The House of Representatives Standing Committee on Regional Development, Infrastructure and Transport recently tabled the report for its inquiry into the implications of severe weather events on the national regional, rural, and remote road network.

Chair of the Committee, Mr Luke Gosling OAM, MP, said 'the severe weather events over the past few years have taken a tremendous toll on our road network and our nation. The unprecedented scale and intensity of floods, torrential downpours, and bushfires have caused catastrophic damage to our road infrastructure, exposing its vulnerability against severe weather events and a changing climate.'

'Our communities and supply chain networks are heavily reliant upon a safe and functional road network to ensure connectivity and access to health and other essential services, food, fuel, and other resources. We have reached the crossroads of changing climate risks, socio-economic growth, and long-term resilience.'

The 26 recommendations made by the Committee complement the Australian Government's announcement to double the Roads to Recovery Program funding over the next four years and aim to build nationally resilient road infrastructure including:

- collaboration across all levels of government to develop road asset infrastructure resilience guidelines, planning and investment frameworks, and address existing road asset data gaps
- engagement across all levels of government, the scientific community, and industry to revise national road design and construction standards and incorporate innovative and recycled road materials and technologies
- a review of local government funding allocation to support asset maintenance works under the Australian Government's Infrastructure Investment Program
- consider the distribution of local government Financial Assistance Grant program road component funding
- an assessment of betterment access and claims approvals under Disaster Recovery Funding Arrangements, and
- embedding resilience design and construction procurement requirements under the new Federation Funding Agreements on transport infrastructure.

Further information in relation to the inquiry and a full list of its recommendations is available from the Committee's website: **https://www.aph.gov.au/Parliamentary_Business/Committees/House/Regional_Development_Infrastructure_and_Transport**

ASHTAS will become mandatory across a number of jurisdictions from July 2024

With the end of 2023 rapidly approaching, contractors and sub-contractors are reminded that the Austroads Safety Hardware Training and Accreditation Scheme (ASHTAS) will become mandatory across a number of jurisdictions from 01 July 2024.

ASHTAS is a training and accreditation scheme comprising a graduated pathway for individuals. Beginning with entry-level safety and operational awareness, and generic installation training, individuals can then undertake separate road safety barrier type training.

For each of the road safety barrier types, associated proprietary-specific road safety barrier system training is also provided. In particular:

- OPERATIVE COURSE: an entry-level course for anyone involved in the installation and maintenance of road safety barrier systems. This course aims to ensure the individual comprehends the fundamentals of road safety hardware installation to aid their safety on-site and their value to the industry as members of a road safety hardware installation crew.
- INSTALLER COURSES: the next stage of training for operatives is to become accredited for installing road safety hardware, by completing the following:
  - Installer A course: installer theory covers the generic elements and practice of road safety hardware installation.
  - Installer B course/s: RSB types and associated specific proprietary systems.
  - Proprietary Installer Course(s): additional specific proprietary system training (as applicable).

Lantra has developed the training and accreditation material for ASHTAS and is responsible, along with its approved training providers, for operationally delivering ASHTAS. Visit the Lantra website (**https://www.lantra.co.uk/national-highway-sector-schemes-nhss/austroads/approved-training-providers**) for details about approved training providers.

For further information on ASHTAS, including details on jurisdictional adoption, please visit: **https://austroads.com.au/safety-and-design/ashtas**

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What's more, at around 120 kg/m installed, DOLRE bridge traffic barriers are significantly lighter than many AS5100 'Regular' / MASH TL4-rated barrier alternatives.

SEAMLESS **PROTECTION** WITH **DOLRE TL4** TRANSITIONS

DOLRE transitions have been designed and tested to provide full longitudinal load transfer between the bridge traffic barrier and connecting roadside barriers.

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WHERE **PERFORMANCE** AND **AESTHETICS** MEET

DOLRE's clean, uncluttered lines and aesthetically pleasing design make it an ideal match for a wide variety of bridge designs and locations. The design allows for rapid installation, as well as rapid repair and reinstatement of the barrier following an impact. DOLRE is also easy to dismantle and remove in times of flood, thereby helping to significantly reduce the risk of damage to valuable bridge assets caused by flood-borne debris.

DOLRE is also available with an extensive range of standard or custom fascia designs and integrated lighting options.

CHOICE OF PERFORMANCE LEVELS

Available in a range of AS5100-2017 performance levels, including DOLRE Low (MASH TL2 | EN1317 N2), DOLRE Regular (MASH TL4 | EN1317 H2) and DOLRE Medium (MASH TL5+ | EN1317 H4b), there is a DOLRE barrier to suit virtually any bridge, culvert or road embankment application.

All DOLRE systems feature three rails - two rails for the initial vehicle impact and one rail to resist rollover – and one post design per system type, suitable for both sides of the bridge.

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DOLRE bridge traffic barriers can play a significant role in extending the serviceable life of many existing bridges - delivering AS5100 and AS3845 compliant protection without the need for expensive deck strengthening works or additional reinforcement.
INNOVATION
TOWARDS ZERO
DISCOVER MORE
SCAN ME

One-third of Australians set to electrify roads in next five years

Evie Networks, Australia's largest fast Electric Vehicle (EV) charging network, recently released the first significant insights from its Evie Future Forecast Report 2024 into the shifting landscape of Australian driving habits and the accelerating adoption of electric vehicles.

The report reveals that nearly half of Australian drivers are actively contemplating the switch to electric vehicles, with one-third committed to making the transition within the next 5 years.

"Electric vehicles are no longer a thing of the distant future; they are becoming a tangible reality for Australian drivers. Our report showcases the evolving mindset towards sustainable transportation," said Chris Mills, CEO of Evie Networks.

"As the leaders in fast EV charging, we are committed to supporting this transition by identifying opportunities and partners for our expanding infrastructure and making the transition to an EV a seamless one for Aussie drivers."

The research released today further highlights the reasons drivers are considering purchasing an EV, with the key driver being cost savings (70%), followed by environmental benefits (69%), energy efficiency (56%), and quiet transport (41%).

"Consumers are increasingly recognising the noticeable benefits of electric vehicles, not just for their wallets but also for the environment. This surge in interest signifies a crucial moment in the transformation of the automotive industry," commented Mills.

However, the transition to an EV is not without consideration and research, with key barriers for Aussie drivers being the perception of EVs being too expensive (55%), concerns about range compared to regular vehicles (47%), and a perceived lack of charging infrastructure (46%).

"Understanding and addressing these concerns are pivotal in fostering widespread EV adoption. We really appreciate the barriers and concerns around EV adoption and the day-to-day potential unknowns for drivers. Which is why our commitment goes beyond infrastructure. We want to educate and empower drivers to make informed choices for a sustainable future," emphasised Mills.

Key Evie Future Forecast Report 2024 findings include:

- Three-quarters (76%) of Australian drivers (13.2 million) say that more EV charging stations are needed across the country to support the number of EVs on the road.
- WA drivers are the most concerned about infrastructure and stations, followed by SA, VIC, QLD and then NSW.
- NSW drivers lead the way when it comes to EV adoption – with the greatest number of drivers (51%) of any state considering switching to an EV at some point in the future. Next in line is VIC, with 47% considering the switch. QLD drivers say the most important consideration when it comes to whether they purchase an EV is convenience – in particular at home charging and access at public charging stations.
- SA drivers are the slowest intenders of all states – they are most likely considering purchasing an EV within the next 10 years (all other states are more likely to purchase in the next 5 years).
- SA drivers are more concerned than other states about the cost to purchase an EV and have the greatest range anxiety.
- WA drivers are the most concerned about EV infrastructure and chargers – with WA being the least satisfied with the number of charging stations in their state.
- All states across the country are united in what would most encourage them to switch to an EV: the main one being lower EV prices.
- The most cost-conscious states are VIC and SA - with the most drivers in these states saying they would need to see a cost saving of at least $100 per week in fuel and maintenance costs in order to be convinced to switch to an EV.

"Evie Networks remains committed to dispelling misconceptions surrounding the affordability of EVs, demonstrating that the shift towards electric mobility is not only eco-friendly but also economically advantageous for drivers across Australia – particularly with the cost-of-living challenges we currently face across the country", continues Mills.

"When comparing an EV to a petrol car (based on an average consumption of 30 litres of petrol per week) the cost savings range between an impressive 45% to 75% - which translates to a substantial weekly saving of $27 to $45, achieved through a combination of both home and public fast charging.

"The financial benefit not only underscores the economic feasibility of EV ownership but also highlights the potential for individuals to make substantial savings while contributing to a more sustainable and environmentally conscious mode of transportation," Mills added.

As of 1 December 2023, Evie Networks has 186 live sites, with 85 new sites built and 2 existing sites upgraded in 2023. The state breakdown of new sites includes significant expansion in VIC, NSW, and QLD. Evie has further received substantial grant funding of $14.3 million to date nationally. This funding playing a pivotal role in supporting the development and expansion of EV charging infrastructure.

For more information about Evie Networks, please visit **https://evie.com.au**

New campaign keeps international drivers safe on Queensland roads

Queensland is often described as beautiful one day, perfect the next and that's why international visitors continue to visit the state. Indeed, international visitor numbers have increased by 21 per cent since the mid-2000s, reflecting the state's popularity with tourists.

Unfortunately, from 2017 to 2021 in Queensland, 13 lives were lost, and a further 494 people were hospitalised as a result of crashes involving international visitors.

The leading risk factor for international drivers is fatigue, due to the size of our state and driving being unprepared for the long distances between destinations. Disorientation and a failure to keep left are major factors for drivers from right-hand driving countries who were more prone to driving on the wrong side of the road, leading to head-on, angle and side-swipe crashes.

A new road safety campaign, specifically targetted at international visitors, uses a multi-faceted approach to connect international drivers, engaging visitors at multiple locations through a simple checklist.

Travellers arriving at Brisbane, Cairns and Gold Coast airports will be greeted with informative advertisements highlighting the key considerations for travelling on Queensland roads and serving as the initial point of contact with international guests. International holidaymakers will also be targeted through popular social media platforms and through online travel booking websites, engaging them prior to travel through informative posts to ensure they are aware of the local road rules.

Visitors are encouraged to scan a QR code to discover more information on road safety, road rules and emergency information, and provides translated materials in multiple languages to ensure travellers can access the information they need in their native language.

Speaking about the campaign, Joanna Robinson, General Manager, Land Transport Safety Regulation with Queensland's Department of Transport and Main Roads, commented:

"We want international visitors to enjoy their driving holiday in Queensland, and that starts with being informed about the unique challenges our roads may present."

"Known for its breathtaking landscapes and vibrant cultural experiences, Queensland remains a popular destination for international travellers seeking unforgettable experiences, but we don't want a trip to be remembered for all the wrong reasons on the road."

"Those of us who live in Queensland know to take a break every two hours on a journey, we learn to drive on the left side of the road, we know to always wear our seatbelts and leave our phones alone. These points are second nature to us, but we need to highlight them to visitors who might not be familiar with safe driving in Queensland," Ms Robinson said.

"This campaign demonstrates Queensland's commitment to safety, and we encourage all international visitors and stakeholders to visit the website to learn how to stay safe on our roads," Ms Robinson concluded.

Visit the StreetSmarts microsite: **https://streetsmarts.initiatives.qld.gov.au/initiatives/driving-in-queensland**

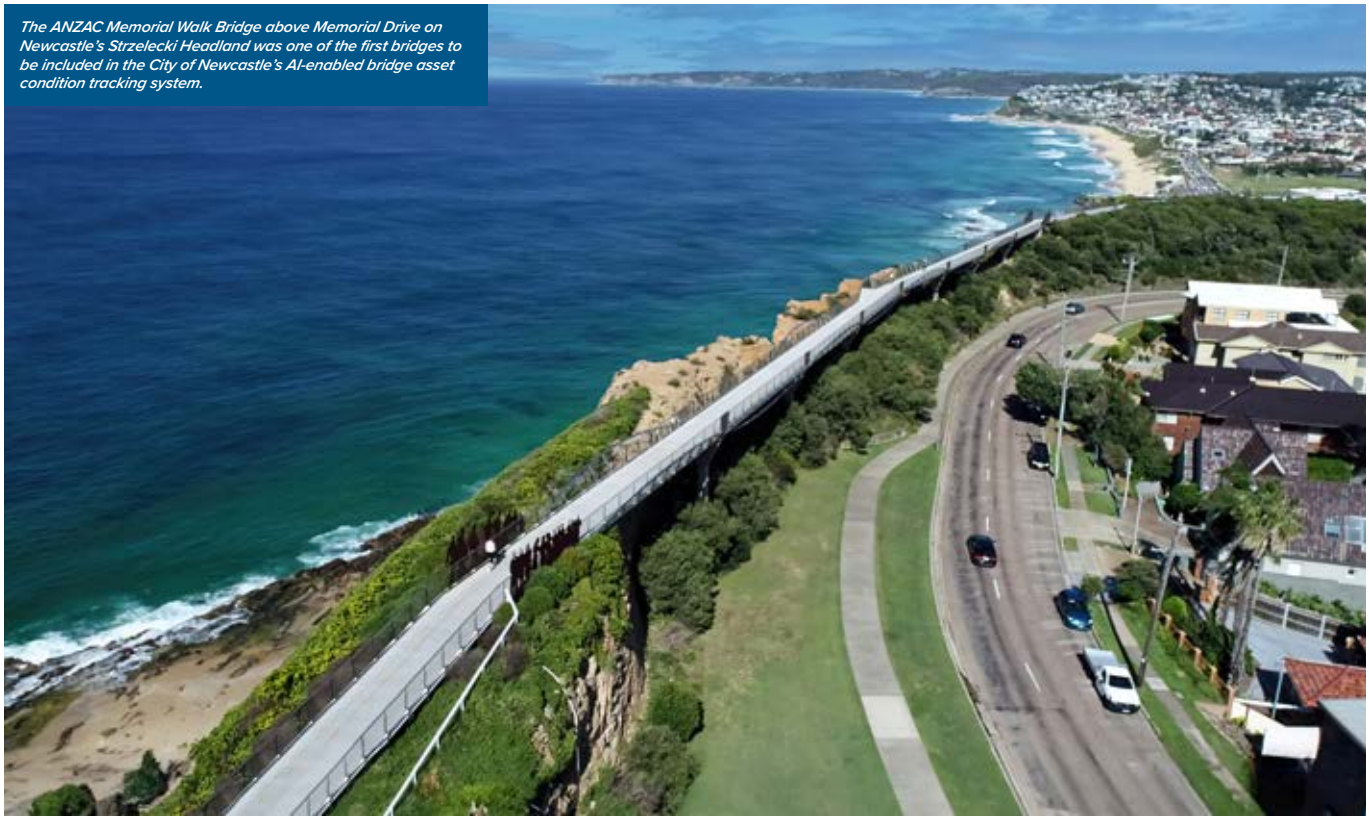
REAPING THE REWARDS OF THE DIGITAL REVOLUTION

The City of Newcastle, NSW, has implemented a cutting-edge AI-enabled Digital Infrastructure system to streamline bridge infrastructure data management, defect identification and maintenance planning

Many would argue – and most in Local Government would agree – that one of the biggest challenges facing councils and authorities across Australia, is the ever-increasing demand to 'do more with less'. The combination of tight budgetary constraints, often coupled with limited opportunities for growth in revenue and increased demand for infrastructure, services and facilities can make budgeting and planning a significant challenge - particularly when it comes to monitoring and maintaining major infrastructure assets.

With that in mind, the City of Newcastle in the New South Wales Hunter Region is utilising a new AI-enabled bridge asset condition tracking system to help optimise its defect identification, maintenance planning, budgeting and data management processes for 56 of its bridges and major culverts.

Known as Dynamic Infrastructure (DI), the cloud-based system uses current and historic bridge inspection data from multiple digital and paper-based sources including photos, reports, drawings and plans, to build a detailed chronological 'health record' for each bridge asset. The system then utilises cutting-edge technology to analyse the images – detecting, categorising and defining the severity of defects across each structure.



The ANZAC Memorial Walk Bridge above Memorial Drive on Newcastle's Strzelecki Headland was one of the first bridges to be included in the City of Newcastle's AI-enabled bridge asset condition tracking system.

THE VALUE OF DIGITISATION

Regardless of the type of business operation, the ability to digitise workflows not only helps to boost productivity and efficiency, it can also play a major role in optimising service delivery and budgeting.

Put simply, in the digital world 'data is gold', and the shift towards digital workflows and digitisation in general is crucial when it comes to delivering maximum value for all stakeholders. Digitisation is also proving to be a critical factor in enabling councils to keep up with the ever-increasing demands being placed on their services and facilities.

The City of Newcastle's focus on innovation has seen it place a strong emphasis on digitisation in recent years. From its massive 'Paper Light' project in 2017 (which saw the council digitise and downsize its entire document archive), through to the implementation of innovative software solutions for GIS, project management, planning, BIS and asset data management, innovative digital solutions play a critical role in helping the City of Newcastle to streamline and optimise its operations across a range of key areas.

But it's not just about 'going digital'. To truly be of value, digital systems have to be functional, efficient and, perhaps most importantly, easy to use. And it's on this point in particular, where the Dynamic Infrastructure system is proving itself to be of particular value.

Speaking about the new system, Sam Nearey, Assets Coordinator - Support Services for City of Newcastle, commented:

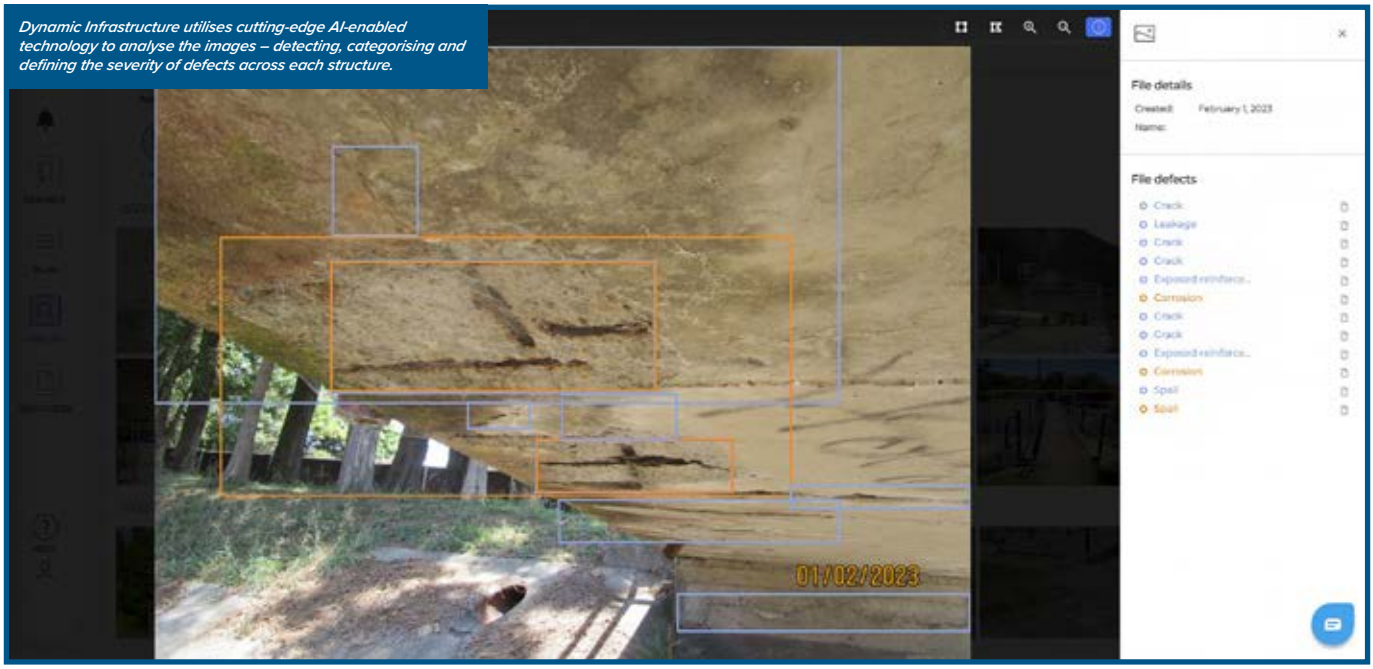
"For us, one of the key benefits of the Dynamic Infrastructure system is that it is extremely quick and easy to use. After all, it's all good and well to have all of your data loaded onto a software platform, but in reality, the KPI for any digital system is how quickly and easily you can access the data you want, in the format in which you need it."

"The DI system has a well-designed and extremely intuitive user interface which allows us to access every piece of data we have on a specific bridge or group of bridges – from the oldest photos, drawings and inspection reports, right through to the latest digital photos and scan data – in a manner of seconds."

"To put that into context, before DI, accessing that kind of historical data for just one bridge would have been a major undertaking, let alone for the entire stock of bridge assets. Having this data so readily accessible can, quite literally, save us hours or even days of work," he said.

"What's more, with the DI system we're able to sort and extract that data using a wide array of reporting parameters quickly and easily," Sam added.

"Whether we want to look for a specific type of fault across all bridge assets, track the condition or find defects on a particular bridge, or even monitor the performance over time of repairs that were made using specific materials or techniques, the DI system allows us to collate that information in seconds."



Dynamic Infrastructure utilises cutting-edge AI-enabled technology to analyse the images – detecting, categorising and defining the severity of defects across each structure.

EASY IMPLEMENTATION

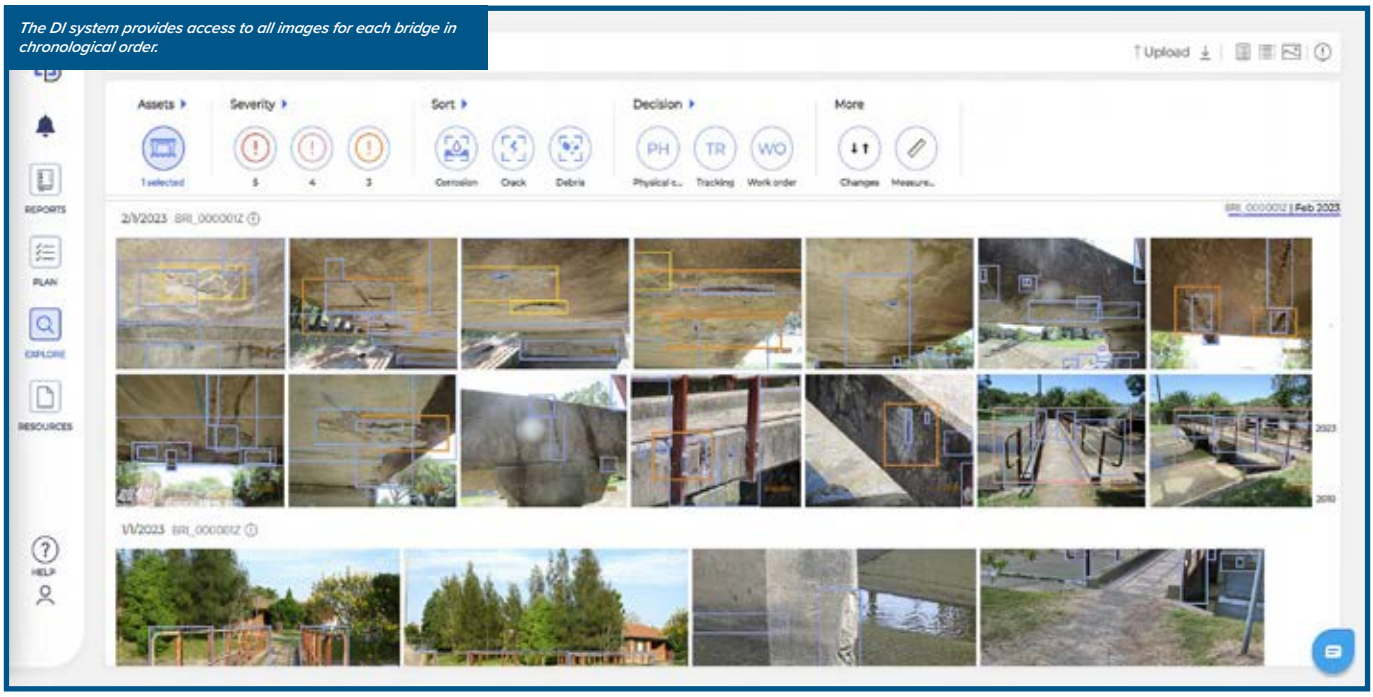
While the biggest challenge with most new digital systems is usually the set-up and implementation, one of the major benefits of the DI system is that the process of creating the detailed chronological digital 'health records' for each of the bridge assets is carried out by the team at DI, rather than by the client.

For example, as part of its initial implementation covering 56 of the City's bridges and major culverts, the City of Newcastle assets team simply had to provide DI with all of the data that they had for each of the assets, including scanned paper-based reports, drawings, photos and other data, together with more recent digital images, inspection reports, and data from the City's asset management system. This data was then uploaded to the dedicated secure Dynamic Infrastructure cloud server, from where the DI implementation team set about collating the data into individual 'health records' for each bridge asset, with all of the data and imagery included in each record in chronological order.

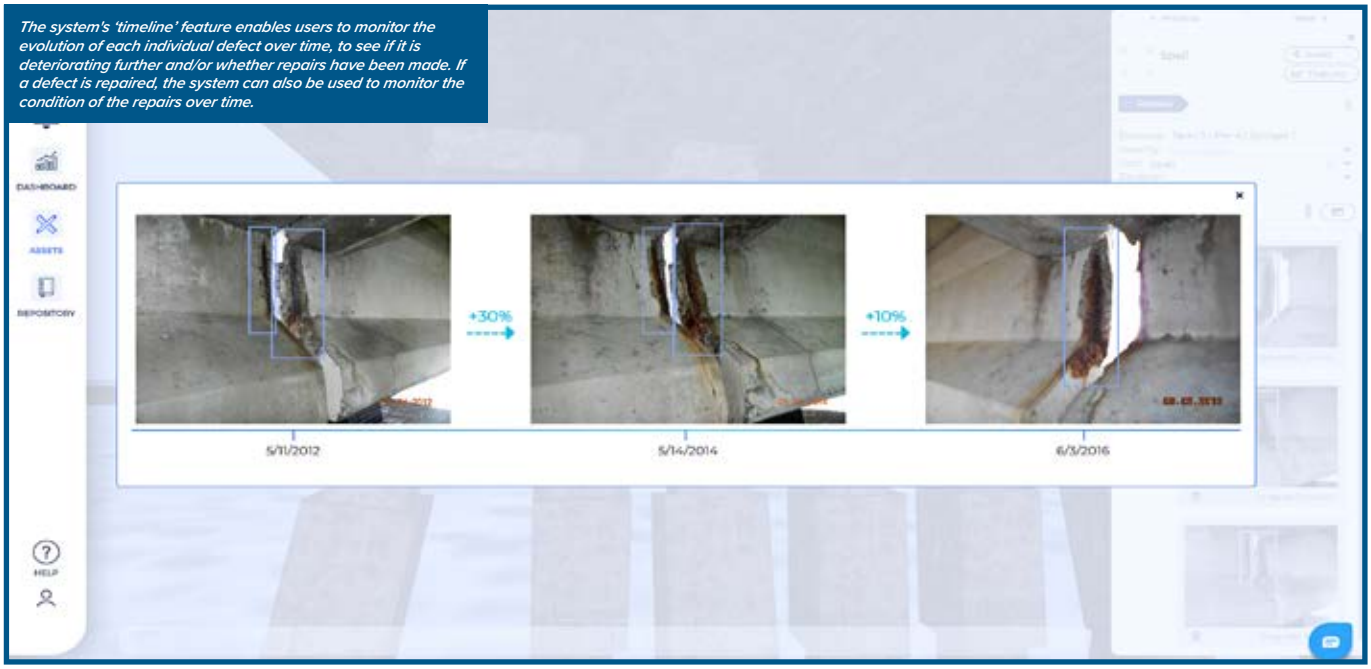
As these 'health records' are created, they're made available to the City of Newcastle assets team for a final 'quality control check' to ensure that all of the data in each record pertains only to that one specific bridge asset.

"As is the case with any digitisation project, the most important part of the DI system implementation was the initial set-up," Sam Nearey said. "While this task was made easier for us due to the fact that the majority of this data had been digitised in 2017 as part of the 'Paper Light' project, gathering all of the data for 56 bridges is still a major undertaking, and we wanted to be sure that we were including all of the data."

Importantly, even though the City of Newcastle had the added advantage of already having the majority of its data scanned and digitised, that is not a prerequisite for the DI system. Indeed, the DI implementation team is able to establish the bridge asset 'health records' using both digital and hard copy data sources including documents, reports, photos and drawings.



The DI system provides access to all images for each bridge in chronological order.



The system's 'timeline' feature enables users to monitor the evolution of each individual defect over time, to see if it is deteriorating further and/or whether repairs have been made. If a defect is repaired, the system can also be used to monitor the condition of the repairs over time.

USING AI TO ESTABLISH ASSET CONDITION

Once the bridge asset 'health records' are created, the system's cutting-edge AI-enabled technology analyses the images, detecting defects and recording the exact location of the defect on the structure.

Once identified, each defect is categorised (in terms of both defect type and severity) and then prioritised with a recommended action according to parameters that are set by the user. The chronological nature of the asset health records means that the DI system can also be used to monitor the evolution of each individual defect over time, to see if it is deteriorating further and/or whether repairs have been made. If a defect is repaired, the system can also be used to monitor the condition of the repairs over time.

Importantly, the DI system's AI-enabled technology has a globally proven track record, and its performance is underwritten by world-leading reinsurer Munich RE - ensuring comprehensive and reliable asset health data tracking for each bridge.

"The AI technology has proven to be extremely good at identifying and categorising a range of defects including cracks, spalling, corrosion, efflorescence and other physical damage - even on scanned images that aren't that great quality," Sam Nearey said.

As well as providing an objective bridge inspection process – rather than a subjective process that relies on someone manually checking images to find defects - another major benefit of the DI system is the speed and ease with which the asset records can be updated. Rather than requiring a specific asset inspection regimen or program, the DI system accepts data inputs from a variety of sources, including RPAS/ Drone data, LiDAR and digital images. In fact, updating a bridge asset 'health record' can be as simple as submitting digital images taken on a camera phone by a field maintenance crew member... a feature that is particularly useful if there is an incident involving a bridge structure.

The asset team simply uploads the digital images or scan data to a unique secure cloud address for the specific bridge, and the DI system analyses the images, locates them on the structure and adds them to the bridge's 'health record'. This not only significantly reduces the amount of time required to collate data following an inspection, it also means that councils can continue on with their current bridge inspection processes or service providers if they wish.

REVOLUTIONISING DATA CAPABILITY

"Even though we've only been using the DI system for less than a year, the system is already revolutionising the way we utilise our bridge asset condition data," Sam Nearey said.

"Having all of the asset condition data – including images - readily accessible in one centralised 'health record', means we can now complete a wide range of tasks in a fraction of the time it would have taken previously," Sam added.

"In fact, it's fair to say that having all of bridge inspection data and reports - including images where each of the defects are identified and highlighted - immediately available, in chronological order, in one central record, is providing us with a data capability which would have previously been too onerous and time-consuming to even contemplate."

"For example, if we want to do a 'deep dive' condition assessment for one bridge or a group of bridges, it's simply a matter of selecting the bridge or bridges we want to look at, and it's all there, ready to output in a matter of seconds," he said.

"Same as if we want to look at all of the bridges that currently have a specific type of defect (spalling damage, corrosion, cracking, etc). We simply enter the criteria for the defect type we want to see, and it's all there, complete with images that show the damage and in some cases its location on the bridge," Sam added.

Interestingly, this highly flexible reporting capability not only makes it significantly easier for councils to plan for a program of targeted repairs, it can also assist with budgeting. The fact that the data is accompanied by detailed imagery of the defects provides 'tangible' evidence, which, in turn, makes it much easier to convey need.

In addition, once any damage is repaired, the system will recognise the repair in future images or scans, thereby allowing the performance and longevity of the repair to be monitored. This feature can also be used to monitor the performance of a specific group of repairs, which can be extremely useful for comparing the long-term performance of different repair methods or materials.

"While it's only early days, we're very happy with the performance of the Dynamic Infrastructure system. Not only has it helped us to significantly streamline a number of critical workflows, it has also enabled us to expand our capabilities across a number of key areas, including asset condition analysis, reporting, planning, budgeting and works scheduling," Sam Nearey concluded.

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THE RISE IN DEMAND FOR **SUSTAINABLE STEEL**

2023 has seen an increased focus on sustainability in steel; construction generally is headed towards a carbon-constrained environment – for example, state governments have targets of 30-75% emissions reductions by 2030.[1] While the focus has been on reducing carbon emissions due to operational energy consumption, the embodied carbon in structures is quickly becoming a focus. Industry initiatives like MECLA and NABERS are reflecting these changes.

This is stimulating the demand for low-emission steel in construction. Importantly, this is not a single-sector issue – other industries are also demanding green steel. Electric vehicle manufacturers, for example, want materials with low or zero carbon emissions, in keeping with their broader zero emissions goals.

INDUSTRY DEVELOPMENTS

The Australian steel industry has made some incremental changes in recent years, improving sustainability by increasing energy efficiency to reduce consumption, focusing on the efficient use of steel in structures, as well as launching new products with a reduced carbon footprint.

Decarbonising the electricity supply will play a major role in enabling of low-emission steel. The global push to carbon neutrality is creating a range of interesting opportunities with a number of potential developments on the horizon. For example, Green Steel WA is developing plans for an electric-arc furnace powered by renewable energy, as well as a renewable energy-powered green steel recycling mill and a low-carbon technology hot briquetted iron (HBI) plant. In Whyalla, South Australia, GFG Alliance plans to replace its coke-fuelled blast furnace with an electric arc furnace, reducing carbon emissions by 90%.[2]

SUSTAINABILITY CERTIFICATION

The industry is increasingly recognising the importance of sustainable materials and striving to keep up, as the Australian market seeks compliant products that are recognised by Green Building Council Australia (GBCA). However, not all sustainability certification schemes are made equal.

It's important that schemes analyse the full lifecycle of a product. For example, steel processors/ fabricators' environmental impact may be quantified through a lifecycle assessment (LCA) which quantifies the kilograms of CO_2e (carbon dioxide equivalent) emissions per tonne of steel (i.e. the global warming potential or GWP). However, for steel manufacturers, environmental product declarations (EPDs) are presented to quantify not only the GWP but also the broader environmental impacts of manufacturing the steel products. The emissions produced by processing or fabricating steel are small compared to the steel manufacturer's emissions, however, a responsible fabricator/ processor should be presenting a verified account of their sustainability credentials, assessing and declaring their contribution to the carbon footprint in the creation of a product. By providing this, the total carbon emissions can be accurately determined throughout the entirety of the supply chain.

In practice, a GWP for manufactured material is usually provided, and a processor takes this number and adds their contribution for any processing, as well as the downstream supply to the end user. Hence, at the point of construction, the total GWP is known.

UNDERSTANDING DIFFERENT SCHEMES

When looking at different sustainability schemes, it is important to ask exactly what is being appraised; if are there any measurable metrics that can be assessed; and whether or not the audits are being conducted by independent third parties?

The Sustainable Constructional Steel (SCS) Certification Scheme offered by ACRS has been developed over fourteen years and is regularly updated and enhanced to assist the industry in moving forward.

Completely independent of steel manufacturers, the ACRS/CARES Sustainable Constructional Steel scheme, requires SCS certificate holders to:

- meet the ACRS Product Quality Standards
- have Quality Management System ISO 9001 certification
- have Environment Management System ISO14001 certification
- have Safety Management System ISO 45001 certification
- meet numerous environmental, social, and economic management requirements aligned with the UN Sustainable Development Goals (SDGs)

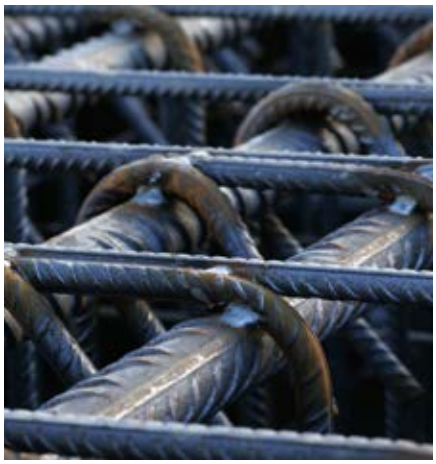
The Sustainable Constructional Steel (SCS) certification scheme ensures that construction steel entering Australia and New Zealand from anywhere in the world meets the highest global environmental, social and ethical standards, using independent certification of ESG criteria and performance indicators. In so doing, it seeks to improve the environmental, social, and economic management of steel producers and processors, as well as improving the performance of products.

The SCS scheme aligns to the UN's Sustainable Development Goals and measures and monitors a comprehensive range of criteria through the global supply chain, including ethical business practices; modern slavery, human rights and labour conditions; environmental impacts (including circular economy and climate change); fair supplier treatment and the socio-economic impacts of the steel value chain. Launched in 2009, its 9th version was released in 2020.

For transparency, the ACRS/CARES SCS scheme also publishes an annual report that provides benchmarks based on manufacturing type, which enables meaningful comparisons between producers and sites. These benchmarks are also adjusted with the goal of being carbon neutral by 2050.

ACRS continues to engage with global stakeholders for education and best-practice implementation of sustainability measures; we strive to help the industry move towards a more sustainable future.

For further information, please visit: **https://steelcertification.com/sustainability-certification**



ABOUT THE SCS CERTIFICATION SCHEME

The SCS Scheme covers the production of feedstock for further processing (e.g. billets, blooms slabs, wire rod), finished steel products (e.g. carbon steel bar/coil, stainless steel bar/coil and structural steels), and fabricated materials (mesh, processed bar and welded fabrication).

The Scheme is compatible with ACRS' traceability provisions in ACRS "Stage 1" (Manufactured Product) and "Stage 2" (Fabricated Product) certification plus the Traceability scheme for traders and distributors.

ACRS is the sole certification body in Australasia for delivery of the SCS Scheme, the internationally recognised scheme that is compatible with ACRS' existing certification schemes and meets local market needs.

ABOUT ACRS

Founded in 2001, the Australasian Certification Authority for Reinforcing Steels (ACRS) is Australasia's leading, not-for-profit, independent steel certification authority.

ACRS provides the most technically-rigorous, internationally-aligned, independent steel certification scheme to Australian and New Zealand Standards. It conducts audits and certificates over 100 suppliers from more than 24 countries for construction materials supplied to AS, NZS, EN and BS Standards, as well as a range of Government specifications.

ACRS certifies customer quality management systems and construction steel products to international quality standard ISO 9001: 2016 (or the identical ISO 9001:2015, or local equivalent); and Steelwork Fabrication and Erection Standard, AS/NZS 5131.

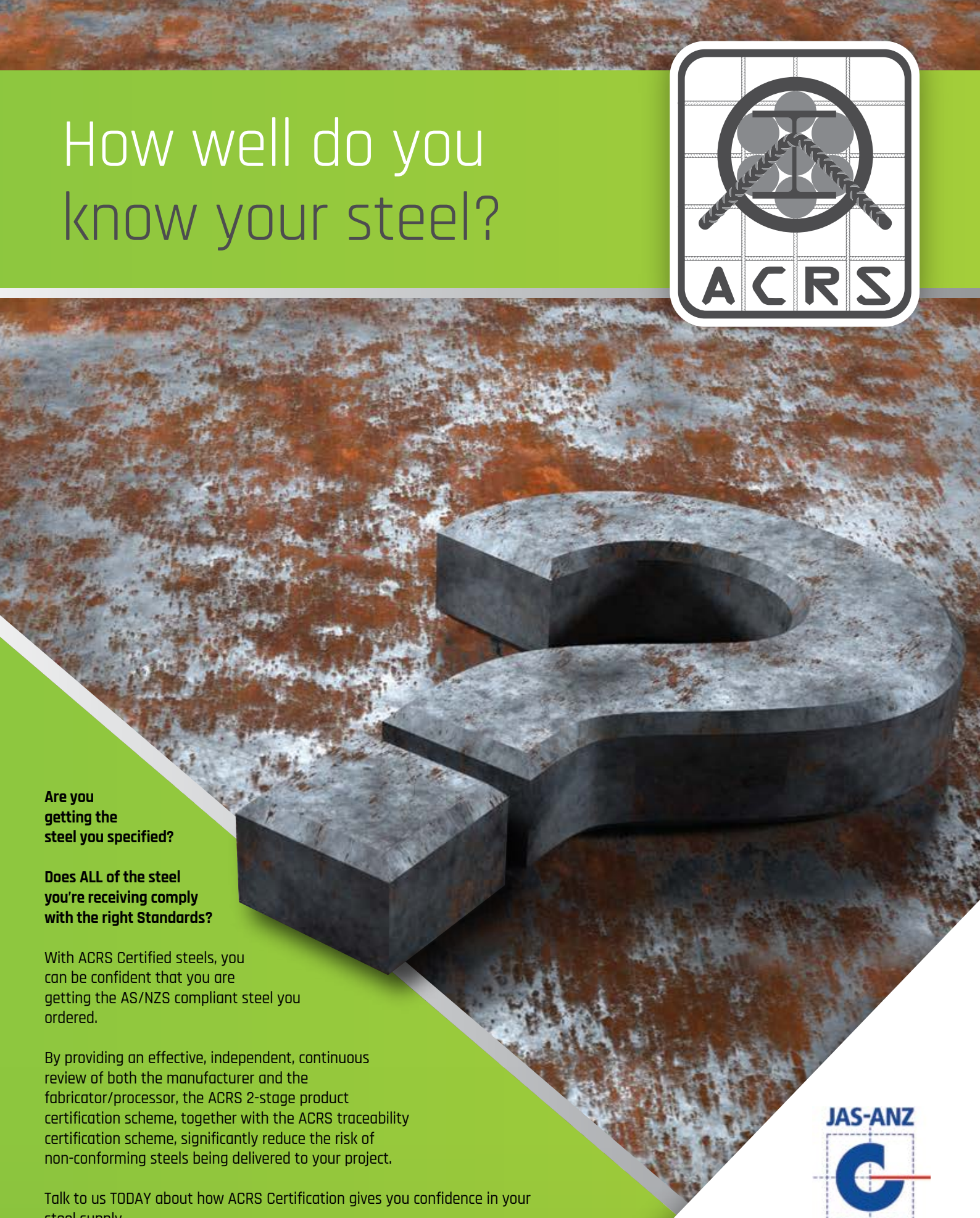
ABOUT CARES

Founded in 1983, CARES is the world's leading independent provider of assured certification for the construction steels industry. CARES operates in over 50 countries, providing confidence in product performance and provenance to discerning public and private sector clients. The CARES digital ecosystem offers speed and transparency in ever-more complex international supply chains where safety, sustainability and product data quality are mission-critical.

[1] Except for WA. "WA to be only state without emissions reduction target for 2030", ABC News, 21st Sep 2023: "Australia's 2030 emissions reduction goals: Tasmania: Net zero; ACT: 65-75%; South Australia: More than 50%; New South Wales: 50%; Victoria: 45-50%; Federal: 43%; Queensland: 30%.

[2] "LIBERTY Steel In Whyalla Announces The Phase Out Of Coal-Based Steelmaking With Purchase Of A Low Carbon Emissions Electric Arc Furnace", GFG Alliance, GREENSTEEL, 4th April, 2023.

How well do you know your steel?



Are you getting the steel you specified?

Does ALL of the steel you're receiving comply with the right Standards?

With ACRS Certified steels, you can be confident that you are getting the AS/NZS compliant steel you ordered.

By providing an effective, independent, continuous review of both the manufacturer and the fabricator/processor, the ACRS 2-stage product certification scheme, together with the ACRS traceability certification scheme, significantly reduce the risk of non-conforming steels being delivered to your project.

Talk to us TODAY about how ACRS Certification gives you confidence in your steel supply.

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DYNAMIC INFRASTRUCTURE leverages all available asset condition data, reports and images - regardless of the format or age - to build a detailed chronological 'health record' for each bridge asset - providing you with immediate access to all your asset data and empowering you with actionable insights that lead to cost savings and improved maintenance efficiency.

With DYNAMIC INFRASTRUCTURE there is no need to change your current bridge inspection methods or service provider. The system utilises all existing data and reports, regardless of the format or age -including paper-based engineering drawings and plans, photos, paper-based inspection and condition reports, together with digitised data and images - to build a detailed 'health record' for each bridge asset.

Using DYNAMIC INFRASTRUCTURE'S AI-enabled technology to identify faults and damage effectively transforms the entire process from a subjective one that relies on an individual to find and identify all faults on a structure and then make a judgement call on severity, to an objective one where over 99% of faults are identified, categorised, logged and then rated for severity against a global database of over 30,000 bridges and counting.

DYNAMIC INFRASTRUCTURE enables you to identify defects before they escalate into major failures, helping you to better manage risk and prevent unexpected expenses. It can even help you maximize warranty coverage through automated repair tracking - providing you with full visibility from the field to the office.

DYNAMIC INFRASTRUCTURE

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How long would it currently take you to find ALL of the historic inspection, repair and maintenance data for just one of your bridge assets?

A couple of hours?
A couple of days?
Longer?

With DYNAMIC INFRASTRUCTURE you can access ALL of your bridge asset data – including plans and historic inspection data (manual reports) as well as details of faults, damage, repairs and maintenance – within a matter of seconds.

All of the data, for each of your bridge assets, right at your fingertips... in one comprehensive, chronological digital 'health record' ...and the massive time saving is only one of the benefits!

INNOVATION
TOWARDS ZERO

DISCOVER MORE

SCAN ME

BENTLEY SYSTEMS ANNOUNCES WINNERS OF THE **2023 GOING DIGITAL AWARDS IN INFRASTRUCTURE**

Bentley Systems, Incorporated, the infrastructure engineering software company, recently announced the winners of the 2023 Going Digital Awards in Infrastructure. The annual awards program honours the extraordinary work of Bentley software users advancing infrastructure design, construction, and operations throughout the world.

Finalists presented their projects at the 2023 Year in Infrastructure and Going Digital Awards event in Singapore before global press representatives and 12 independent jury panels. The jurors determined the winners of the 12 award categories from 36 finalists which were shortlisted from over 300 nominations submitted by 235 organizations from 51 countries.

THE WINNERS OF THE 2023 GOING DIGITAL AWARDS IN INFRASTRUCTURE ARE:

BRIDGES & TUNNELS
WSP Australia Pty Ltd.
Southern Program Alliance
Melbourne, Victoria, Australia

CONSTRUCTION
Laing O'Rourke
SEPA Surrey Hills Level Crossing Removal Project
Melbourne, Victoria, Australia

ENTERPRISE ENGINEERING
Mott MacDonald
Standardising Delivery of Phosphorus Removal Schemes for the UK Water Industry
United Kingdom

FACILITIES, CAMPUSES, & CITIES
vrame Consult GmbH
Siemensstadt Square - Digital Campus Twin in Berlin
Berlin, Germany

PROCESS & POWER GENERATION
Shenyang Aluminum & Magnesium Engineering & Research Institute Co., Ltd. (SAMI)
Digital Twin Application Project of Electrolytic Aluminum Engineering of Chinalco China Resources
Lvliang, Shanxi, China

RAIL & TRANSIT
AECOM Perunding Sdn Bhd
Johor Bahru–Singapore Rapid Transit System
Malaysia and Singapore

ROADS & HIGHWAYS

I-70 Floyd Hill to Veterans Memorial Tunnels Project
AtkinsRéalis
Idaho Springs, Colorado, United States

STRUCTURAL ENGINEERING

Hyundai Engineering
Automated Design of Civil and Architectural Structures with STAAD API
Seoul, South Korea

SUBSURFACE MODELING & ANALYSIS

Arcadis
South Dock Bridge
London, England, United Kingdom

SURVEYING & MONITORING

Italferr S.p.A.
The Digital Twin for Structural Monitoring of St. Peter's Basilica
Vatican City

TRANSMISSION & DISTRIBUTION

POWERCHINA Hubei Electric Engineering Co. Ltd.
Full Lifecycle Digital Application on Xianning Chibi 500kV Substation Project
Xianning, Hubei, China

WATER & WASTEWATER

Project Controls Cubed LLC
EchoWater Project
Sacramento, California, United States

To learn more about the Going Digital Awards in Infrastructure, visit: **https://www.bentley.com/events/going-digital-awards**

CATEGORY: ROADS & HIGHWAYS WINNER & FINALISTS

2023 GOING DIGITAL AWARDS IN INFRASTRUCTURE

As with the eleven other categories in this year's Bentley YII Going Digital Awards in Infrastructure, the three finalists in the Roads & Highways category – including the winning I-70 Floyd Hill To Veterans Memorial Tunnels Project – each provide an ideal example of the wide-reaching benefits that 'digitisation' can deliver across the sector.
From improved planning capabilities, better communication between stakeholders, improved productivity and more streamlined project delivery, to improved safety and risk management processes, reduced environmental impacts and significant cost savings, digitisation is revolutionising the infrastructure and construction sectors. environmental impacts and significant cost savings, digitisation is revolutionising the construction and infrastructure sectors.

WINNER

ATKINSRÉALIS

I-70 Floyd Hill To Veterans Memorial Tunnels Project
Location: Idaho Springs, Colorado United States
Project Playbook: iTwin, LumenRT, MicroStation, OpenBridge, OpenFlows, OpenRoads, ProjectWise, ProStructures

The Colorado DOT will provide roadway improvements, enhancing safety and reducing crashes along an eight-mile section of the I-70 corridor near Floyd Hill that is prone to severe congestion and bottlenecks.

AtkinsRéalis is the lead designer and faced site constraints and challenging topography while needing to minimise the impact to environmentally sensitive areas and existing roadways. They also faced a complex design compounded by coordinating multiple disciplines and stakeholders.

To address these challenges, Atkins needed integrated digital technology.

AtkinsRéalis utilized iTwin to create digital twins to gain visibility, Bentley's open modelling applications to facilitate collaborative modelling and data management, and LumenRT for visualization.

Working in a connected digital environment with ProjectWise saved USD 1.2 million managing more than 1,000 file sheets, as well as 5,500 hours in coordination time, and 97% of effort developing and publishing digital twins for review. Atkins could clearly convey design intent, foster community integration, and quickly update models to mitigate environmental and social impact.

FINALIST

HUNAN PROVINCIAL COMMUNICATIONS PLANNING, SURVEY & DESIGN INSTITUTE CO., LTD. & HUNAN HENGYONG EXPRESSWAY CONSTRUCTION AND DEVELOPMENT CO., LTD.

Hengyang - Yongzhou Expressway In Hunan
Location: Hengyang and Yongzhou, Hunan, China
Project Playbook: LumenRT, MicroStation, OpenRoads

The Hengyang-Yongzhou Expressway is a 105.2-kilometre corridor that will improve traffic conditions and shorten travel times between the two cities, achieving industrial collaboration and better accessibility along the tourist route.

Located amid prime farmland, the large-scale project presented environmental, technical, and coordination challenges among the multiple disciplines, districts, and counties. However, they realized that previous software applications lacked the compatibility and features to manage the complex, voluminous data and numerous project participants.

They selected Bentley's open, integrated 3D BIM and reality modelling applications, providing unified data compatibility to model and design the roadway alignment, minimising impact to farmland by 10 hectares. By comparing on-site point cloud data in OpenRoads Designer, they eliminated the need for three bridges, saving CNY 40 million in costs.

Through collaborative digital design and data integration, the team improved communication efficiencies by 50% and avoided 20 on-site construction errors, saving CNY 5 million. Leveraging Bentley's BIM solutions, the project is expected to be open to traffic one year ahead of schedule.

FINALIST

SMEC SOUTH AFRICA

N4 Montrose Interchange

Location: Mbombela, Mpumalanga, South Africa

Project Playbook: iTwin Capture, LumenRT, MicroStation, OpenFlows, OpenRoads, Pointools

SMEC SOUTH AFRICA
N4 MONTROSE INTERCHANGE
IMAGE COURTESY: SMEC SOUTH AFRICA

The Montrose Interchange project was initiated to replace an existing at-grade T-junction on the N4 highway, improving traffic mobility, safety, and the Mbombela province's economy and tourism.

Positioned between two rivers amid steep valleys between mountains, the project presented difficult terrain for implementing the new high-standard, free-flow interchange on a short timeline with no available survey data.

Bidding for the contract, SMEC realized that their traditional, manual 2D strategies would not suffice to meet the project challenges and requirements to use much of the existing infrastructure.

SMEC selected ContextCapture to develop a reality mesh of the existing terrain and infrastructure and LumenRT to present their conceptual design, winning the design contract and delivering a workable design in record time. OpenRoads Designer facilitated integration with the bridge team's modeling software while corridor modeling tools enabled accurate earthworks and material quantities calculations, reducing the carbon footprint of the project.

Working in a collaborative digital environment saved approximately 2,500 hours in design time and an estimated ZAR 2.5 million in design costs.

Greg Bentley, CEO, Bentley Systems

BENTLEY SYSTEMS RECOGNIZES THE YEAR IN INFRASTRUCTURE 2023 AS GROUNDBREAKING FOR INFRASTRUCTURE INTELLIGENCE

At its annual Year in Infrastructure conference, Bentley Systems, Incorporated, the infrastructure engineering software company, described 2023 as a "groundbreaking year" for infrastructure intelligence. Citing users' projects, CEO Greg Bentley highlighted how infrastructure organizations are overcoming the engineering resource capacity gap through infrastructure intelligence strategies. When asked to quantify the engineering hours saved through digital advancements, the Going Digital Awards finalists reported significant median savings of 18%.

Engineering data serves as the foundation and digital twins as the building blocks of infrastructure intelligence. With iTwin Platform, engineering data in Bentley Infrastructure Cloud (ProjectWise for project delivery, SYNCHRO for construction, and AssetWise for asset operations) can be aligned, queried, and managed to increase infrastructure intelligence over the lifecycle of projects and assets. Bentley Systems estimates that the company's engineering users accumulate at least 100 million new unique digital components per month within their respective ProjectWise environments, teeing up potential infrastructure intelligence benefits across construction, operations, and maintenance. As an indication that digital twins are becoming mainstream, the proportion of Going Digital Awards finalists crediting iTwin has risen to 64% in 2023.

Greg Bentley highlighted multiple infrastructure intelligence strategies that organizations are using to further compound the value of their data, including reusing digital components, integrating subsurface modeling, and incorporating, into evergreen digital twins, operational data from IoT sensors, drones, and even crowdsourcing. He also explained how Going Digital Awards finalists and organizations in Singapore are accelerating their infrastructure intelligence through the use of AI.

GROUNDBREAKING INFRASTRUCTURE INTELLIGENCE IN SINGAPORE

In Singapore, the location for the 2023 Year in Infrastructure conference, digital twins are extensively used to optimize decision-making and operations:

- PUB, Singapore's national water agency, is working in collaboration with Bentley Systems on a Singapore National Research Foundation-funded project to develop a new system in detecting and localizing water system anomalies and leaks in near real-time. Through a high-fidelity digital twin, AI-based predictive models, and hydraulic network model calibration and simulation, the project could potentially help in improving network resilience and water conservation.
- SMRT Trains, the leading multi-modal public transport operator in Singapore, uses AssetWise Linear Analytics software as the basis for its Predictive Decision Support System to prioritize maintenance. The digital twin system has enabled SMRT to meet its service reliability targets by optimizing maintenance deployments.
- Singapore's Land Transport Authority (LTA) fully leverages Bentley Systems' EMME and DYNAMEQ mobility digital twin software for its long-term and short-term planning, including operational traffic models for traffic impact and scheme analysis. This includes using Bentley Systems' agent-based travel demand model.
- The Singapore Land Authority (SLA) is a leader in digital twin adoption. Dr Victor Khoo, Director of Survey and Geomatics, SLA, joined the Year in Infrastructure conference to discuss Singapore's national digital twin journey and share how a 0.225-meter accurate nationwide reality mesh from aerial surveying is incorporated with extensive inputs from other mapping datasets to produce a complete digital twin of the city, which is then shared with multiple agencies and research institutes to support Singapore's sustainability initiatives.

ACCELERATING INFRASTRUCTURE INTELLIGENCE WITH BENTLEY INFRASTRUCTURE CLOUD

Following Greg Bentley's keynote, Bentley Systems' product and technology leaders explained how the company's offerings increasingly help users derive greater infrastructure intelligence from their data.

"Bentley Infrastructure Cloud, including ProjectWise, leverages infrastructure digital twins to unlock data in order to apply AI and accelerate infrastructure intelligence," said Mike Campbell, Chief Product Officer.

Henry Okraglik, Global Director of Digital, WSP Australia, joined the Year in Infrastructure conference to explain the benefits of becoming data-centric through Bentley Infrastructure Cloud.

"As we've digitally matured, we've been able to embrace capabilities from Bentley Infrastructure Cloud to improve construction staging and planning, track and export quantity data across project phases, reduce the need for physical site visits, and a lot more," said Okraglik.

For example, using ProjectWise, SYNCHRO, iTwin, and other Bentley products, WSP was able to reduce modeling time by 60%, increase productivity by 25%, and reduce the carbon footprint by 30% on a rail network project in Melbourne.

ADVANCING BENTLEY OPEN APPLICATIONS WITH ITWIN

To systematically introduce the benefits of digital twins in the design phase, Campbell announced the addition of iTwin capabilities in Bentley Open Applications, for modelling and simulation, starting with MicroStation. With iTwin capabilities and workflows natively integrated, Bentley Open Applications will be able to automatically create digital twins during the design process, enabling users to collaborate in real-time, evaluate the impact of changes more seamlessly, reduce rework, and expedite infrastructure intelligence.

"Today, digital twins are critical enablers of how infrastructure assets are built and operated. With iTwin-powered capabilities coming to Bentley Open Applications, all our users will also be able to leverage digital twin technology to improve their efficiency and effectiveness during design," said Campbell.

GENERATIVE AI, POWERED BY ITWIN

Embracing AI's potential to accelerate infrastructure intelligence, the company highlighted its existing analytical AI capabilities, powered by iTwin, for asset monitoring, and articulated its multi-faceted approach to generative AI for design. This approach is guided by the company's commitment to helping users gain ever more value from their own engineering data secured in Bentley Infrastructure Cloud – maximizing their potential from generative AI, while also ensuring each account retains explicit access and control.

Julien Moutte, Chief Technology Officer, provided examples of generative AI for infrastructure engineering, beginning with an AI agent assisting engineers in further optimizing site layouts by leveraging designs and data from previous projects. He also showed how generative AI can be applied to minimize time spent on project documentation by automating drawing production with fit-for-purpose annotations.

"We believe iTwin-powered generative AI capabilities will support engineers by augmenting the work they're already doing. We see iTwin becoming a copilot to support better decision-making, reduce repetitive tasks, and increase design quality. It can help close the engineering resource capacity gap – not only by empowering current engineers to produce more, but also by enabling a more rewarding work experience, enticing future engineers to join the community advancing infrastructure," said Moutte.

ABOUT BENTLEY SYSTEMS

Bentley Systems is the infrastructure engineering software company. We provide innovative software to advance the world's infrastructure – sustaining both the global economy and environment.

Our industry-leading software solutions are used by professionals, and organisations of every size, for the design, construction, and operations of roads and bridges, rail and transit, water and wastewater, public works and utilities, buildings and campuses, mining, and industrial facilities. Our offerings, powered by the iTwin Platform for infrastructure digital twins, include MicroStation and Bentley Open applications for modelling and simulation, Seequent's software for geoprofessionals, and Bentley Infrastructure Cloud encompassing ProjectWise for project delivery, SYNCHRO for construction management, and AssetWise for asset operations.

Bentley Systems' 5,000 colleagues generate annual revenues of more than $1 billion in 194 countries.

For more information, please visit: **www.bentley.com**

AUSSIE HYDRAULIC TANKER PUMP'S A WINNER

The Aussie 3" B3XR-A/ST semi-trash pump with hydraulic drive is a compact installation, delivering high flows with minimal maintenance required.

Australian Pump Industries are pleased to report the huge take up of their high-flow cast iron semi-trash hydraulic drive pump. The 3" self-priming pump, called the Aussie B3XR-A/ST, is close coupled to a powerful 22 cc hydraulic motor that makes for a compact installation and less maintenance.

With a maximum flow of 1,500 litres per minute and a maximum head to 31 metres, the big 3" pump can handle a wide range of applications, including dust suppression, drill rigs, tankers, mine dewatering and moving contaminated water.

Hydraulic drive pumps derive their power from the main engine of the vehicle or equipment on which they are mounted. Thus, operators can get the advantages of virtually unlimited power, delivered through a flexible drive system that doesn't depend on shaft or separate engines.

The flexibility of the drive system and the compact design means the pump can be placed in the most appropriate location, with huge operational cost reductions and advantages.

These advantages include a major reduction in maintenance costs and labour with the elimination of a separate petrol or diesel engine to drive the pump.

"This pump really suits applications in the tanker market - delivering a high flow, hydraulic drive pump that will handle dirty water," said Aussie Pumps Product Manager Dolphie Mascarenhas.

"At a maximum head of 26m the pump will deliver 800lpm flow. That's impressive for a 3" self-priming semi-trash pump."

"Not surprisingly, we're seeing a lot of tanker operators upgrading to the Aussie B3XR-A/ST from their existing pumps, many of which have significant performance issues - particularly when it comes to dealing with the harsh Australian operating conditions and dirty water," he said.

A lot of tanker operators upgrading their old existing pumps to the Aussie B3XR-A/ST. The flexibility of the drive system and the compact design allow the pump to be placed in the most appropriate location, with huge operational cost reductions and advantages.

The 3" pump has excellent self-priming characteristics, with the ability to draw water from pits of depths of 6 metres. It has been designed to pass solids up to 35mm, making it suitable for handling solids-contaminated water.

The new Aussie semi-trash pump is fitted with a silicon carbide mechanical seal with an alumina counterface with nitrile rubber elastomers. It also features a stainless steel wear plate and stainless steel motor shaft.

The pump includes a front opening clean-out port that makes it easy to access the pump's internals. That's a huge advantage as this means the unit can be cleared of chokes in situ without having to dismantle pipework.

The hydraulic motor requires 22cm3 per rev at 150 bar pressure, that's equivalent to 7.5kW.

"We chose Italian hydraulic motors because of their reputation for quality and commitment to aftermarket support," Dolphie said.

The big pump is also available with a cast 316 grade stainless steel impeller making it suitable for handling more abrasive liquids.

For applications that are really corrosive, Aussie offers a fully cast 316 stainless steel pump. These have been installed in tankers used for transporting whey from dairies in Tasmania and are even in use with the Australian Army.

Like all Aussie Pump products, the units are designed and built to ISO 9001 quality standards. Australian Pump believes that users deserve the best quality and won't offer any product that is not built to their stringent requirements. These Aussie GMP pumps come with a 3-year warranty against faulty workmanship or material.

Further information including a free catalogue is available from Australian Pump Industries 02 8865 3500 and online at: **aussiepumps.com.au**

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ACCELERATING THE TRANSITION TO A MORE SUSTAINABLE FUTURE WITH THE BATTERY-POWERED B-AIR COMPRESSOR

The launch of the world's first battery-driven portable screw compressor, the B-Air 185-12, marks a defining moment in the market's transformation towards a low-carbon future. So says Maarten Vermeiren, Product Marketing Manager Sustainability and Digitalization at Atlas Copco, Portable Air Division.

A significant proportion of applications for Atlas Copco's products are in locations without easy access to electricity. As a result, diesel-power has long reigned king of the portable compressor market. But, thanks to societal changes, technological advances and the launch of the battery-powered B-Air – which just so happens to be a world first – that dominance is being challenged.

Atlas Copco is no stranger to firsts. Its talented team of engineers has been pioneering new technologies and innovations for 150 years, aligning product development with the changing needs of society. And what society needs now, as it continues to sink deeper into a climate emergency and energy crisis, is to decarbonise. And fast.

To help accelerate the journey towards a low-carbon future, Atlas Copco has committed to a range of science-based targets, including reducing the lifetime emissions of its products by 28% by 2030. "Making our internal combustion engines more efficient and adopting biodiesels such as hydrotreated vegetable oil (HVO) has cut our emissions drastically within the last decade.

But the key to achieving the transformation we all seek demands the long-term substitution of diesel power, entirely. The obvious solution to this challenge is to switch to electrification, powered by renewables," Mr Vermeiren said.

In 2018 the company released the E-Air VSD range of plug-in electric portable air compressors, which have subsequently proven to be extremely popular. Yet as successful as it is, it is constrained by its need for a constant external supply of electricity. The self-sufficient, battery-powered B-Air is therefore a logical evolution of the genre.

Battery energy storage presents the ideal solution to provide a combination of sustainability and autonomy. The B-Air runs on electricity supplied by its battery, with its 57kWh internal battery capacity removing the need for fuel or a continuous external electricity supply.

Cable-free when in use and compact in design, it offers portability and productivity to those working on sites where access to electricity is restricted. This marks a significant shift for the industry, as for the first time in history it offers a viable battery alternative to applications such as road construction, fibre optic cable blowing and crash barrier work, while providing users with the same functionality that is available with a diesel compressor.

THE POTENTIAL OF BATTERY TECHNOLOGY

Battery technology has undergone a transformation in recent years, offering new non-ICE product opportunities and becoming an enabler of a more sustainable way of working across multiple industries. Lithium-ion batteries, in particular, have become the heart of countless portable devices and vehicles. And now also in one of our portable screw compressors.

One of the primary ways this innovation can accelerate the transition to a more sustainable future is by reducing harmful emissions and noise pollution. Even the most advanced gasoline or diesel-powered compressors still emit noxious fumes, contributing to air pollution and climate change. Battery-powered compressors, on the other hand, operate silently and produce no local emissions, making them ideal for indoor locations, environmentally sensitive areas and urban job sites. And all this with no compromise on performance. On the contrary, it even offers new possibilities, for example for indoor applications where diesel alternatives are no option due to their emissions.

Battery technology brings another significant advantage to the portable compressor industry that is also available with electric-driven units with cords: energy efficiency. Battery-powered compressors are designed to maximize energy utilisation, resulting in lower operating costs and a reduced carbon footprint. Their efficient energy management systems help conserve power while delivering high-performance output, ensuring long-term savings for both businesses and the environment.

THE BIG SHIFT

Every day marks an incremental shift away from the industry's deeply ingrained convention of diesel dependency and towards a low-carbon future. Thanks to the plug-in electric E-Air's popularity, mobile compressors have been an early success story of this energy transformation.

"Eventually, we aim to offer a diesel alternative to every user and every application, and the battery-powered B-Air takes an important step towards that goal," Mr Vermeiren said.

"As the market leader in portable compressed air solutions, Atlas Copco understands its responsibility to play a leading role in helping the industry decarbonise. Turning the tide on climate change requires an industry-wide effort to transition away from diesel in place of renewable alternatives," he added.

"It also depends on an acceptance of new ways of working, an openness to new technology and leadership to show the way to others."

"In the words of author Richelle E. Goodrich: 'The direction you choose to face determines whether you're standing at the end or the beginning of the road'," Mr Vermeiren concluded.

For more information on Atlas Copco Portable Air Division, please visit **https://www.atlascopco.com/en-uk/construction-equipment/products/mobile-air-compressors**

YANMAR DEVELOPS NEXT-GEN ELECTRIC WORK MACHINE PROTOTYPE WITH ENHANCED FORCE CONTROL

Yanmar Holdings Co., Ltd. (Yanmar HD) has unveiled a prototype of a cutting-edge electric work machine with advanced force control at the Construction DX Challenge 2023, organized by the Japanese Ministry of Land, Infrastructure, Transport, and Tourism.

Developed in collaboration with JAXA's Space Exploration Innovation Hub Center, the large SEA (Series Elastic Actuator), was part of a prototype for the next-generation work machine under the Moonshot Research and Development Program.

Yanmar HD successfully implemented force control capabilities, a challenge for conventional hydraulic systems. Using the SEA composed of an electric motor, reducer, and spring, the functionality was implemented in an electric mini-excavator. This technology aims to automate fine manual tasks, addressing labour shortages at construction sites.

Moving forward, the company plans to conduct further verification to realize the practical applications of next-generation work machines in construction sites and similar environments.

Aligned with the company's YANMAR GREEN CHALLENGE 2050, the Yanmar Group continues its commitment to realizing a sustainable society, contributing to customers' decarbonization efforts through ongoing developments in electrification and other forward-looking technologies.

KEY FEATURES:

- Test development of force control function using a large SEA that can be mounted on construction machinery.
- Development of a prototype incorporating this technology into a mini-excavator as part of the Moonshot Research and Development Program.
- Mechanisation of delicate work in civil and construction sites, contributing to the labour-saving of material placement operations.
- Implementation of an articulated motor, not a conventional electric cylinder, to expand the range of motion through electrification, enabling high-altitude work like ceiling operations.

NEW DATA AND TECHNOLOGY TO REVOLUTIONISE OUR ROADS

Leading transport experts have outlined a range of data sources and cutting-edge technologies that, if fully harnessed, can steer the nation towards the ambitious goals of reducing road fatalities by half by 2030 and ultimately attaining zero road deaths by 2050.

These key insights from leading government and industry specialists are explored in 'Driven by Data: a Progress Report' from the collaborative research initiative 'Integrated connected data for safer, more efficient traffic management operations' from ITS Australia, in partnership with the University of Melbourne, Victorian Department of Transport & Planning, Transport for NSW, Transport & Main Roads QLD, Main Roads Western Australia, Transport Accident Commission, and iMOVE Australia.

Lead researcher Professor Majid Sarvi, University of Melbourne, commented:

"Following our successful Connectivity in C-ITS project, better understanding how data can improve safety and efficiency on our networks now was the crucial next investigation, and the insights from our stakeholder interviews and literature review have proven enlightening"

"The wealth of data coming from different sources such as connected vehicles present an enormous opportunity to enhance how we manage transport networks, reducing congestion and emission, and enhancing safety for all modes of travel."

Experts consulted for the research highlight the transformative power of various data sources and technologies, ranging from vehicle probe data, camera-based video analytics, vehicle Bluetooth data, in-vehicle safety sensor data, and location app data.

Stakeholders identified greater efficiency in the transport network and safety improvements that aim to drive down the number of road fatalities, as the primary opportunities presented by data and new technologies.

Importantly, there's a recognition from experts of the need to expand beyond conventional traffic modes like cars, trucks, and buses, to incorporate information from micromobility, active transport, and pedestrians within our traffic management ecosystem.

The opportunities stemming from integrated connected data are vast, spanning areas including congestion performance measurement, speed compliance enforcement, and the development of vehicle priority and pre-emption systems. However, along with the great possibilities, there are risks that must be addressed before we can fully harness the benefits of the data and technology.

Privacy and security management stood out as critical concerns amongst experts. While vehicle probe data is considered a game changer, stakeholders stressed the need to comprehend data aggregation, anonymization methods, and the verification process before integrating new data streams into existing systems.

Furthermore, policymakers must address several crucial considerations including adapting traffic control systems to accommodate diverse data forms, scaling up complex algorithms, fostering data sharing across agencies and jurisdictions, and navigating cost constraints.

"ITS Australia is proud to be supporting this research that brings traffic management into the digital age, using data and technology that can improve our traffic systems and save lives," Susan Harris, CEO, ITS Australia said.

"As the stakeholders have identified in the study, it's imperative that we put the effort in now to get the privacy settings right to ensure that the community's reasonable expectations for privacy and security are built in at the outset."

The Progress Report also summarises findings from an extensive literature review, exploring how data is currently used and how it could further enhance four pivotal facets of traffic management: intersection management, network and freeway optimization, incident management, and micromobility enablement.

According to the evidence, current traffic management systems often react to problems, but advancements in machine learning, artificial intelligence, and access to automated data offer great potential for predictive capabilities.

For instance, in intersection management, metrics like queue length, delay, pedestrian trajectory prediction, and bicycle volumes are used to optimise performance. The potential of probe vehicle data is immense, offering real-time GPS insights to enhance adaptive control strategies and prioritise public transport.

Moving forward, the project team will delve deeper into the analysis of connected vehicle data, specifically focusing on traffic efficiency at intersections. They will investigate a range of metrics including queue length information, midblock speeds, delay measurements, and stop-and-go traffic states.

The final report is expected to be published in 2024.

NEW PRESIDENT OF ITS AUSTRALIA BOARD ELECTED

Ms Silje Troseth from Q-Free Australia becomes the inaugural female President of ITS Australia. Her election took place following the association's Annual General Meeting on Thursday, November 23, marking a significant milestone in the organisation's history.

Ms Troseth, who has been a board director since 2018 is the Vice President APAC and General Manager Australia at Q-Free ASA. She replaces outgoing President Mr Dean Zabrieszach following the conclusion of his 6-year term. Mr Zabrieszach will remain on the ITS Australia Board. Two new board members were elected at the AGM, following strong competition from participating members, with nine candidates nominated for the seven vacancies.

For the first time, two board members were voted in as co-vice-presidents, with Mr Jeremy Nassau from Transurban joining Mr Dennis Walsh from the Queensland Department of Transport and Main Roads who was re-elected to the role.

"I am honoured to take on the opportunity of leading this esteemed board of industry colleagues. I aim to cultivate an environment where our diverse perspectives flourish, ideas thrive, and collaboration guides everything we do, during a period of great opportunity for the intelligent transport sector in Australia," said Ms Silje Troseth.

"I'd also like to acknowledge the outstanding contribution of outgoing President Dean Zabrieszach, who has guided the board through the extraordinary challenges of the last few years, supporting the remarkable achievements of the organisation during this period. I extend my gratitude to Dean for his dedication and wisdom and I look forward to building on his legacy and steering the board to more great accomplishments."

ITS Australia President, Ms Silje Troseth

Ms Troseth recognised the contribution of outgoing board members; Ms Kim Thomas, Integrate and Mr Brian Negus, CICA Group, who leaves the Board after an extraordinary 16-year contribution.

"I pay special tribute to Brian Negus for his contribution to the ITS Australia board as a Past President and significantly, in chairing the committee for the very successful ITS World Congress in Melbourne in 2016 – an event that has left a lasting legacy on Australia's ITS sector."

ENGINEERING MENTOR ANNOUNCED AS MAX LAY LIFETIME ACHIEVEMENT AWARD RECIPIENT

Respected ITS industry leader Dr Paul Higgins has been announced as the recipient of ITS Australia's highest honour, the Max Lay Lifetime Achievement Award.

Dr Higgins, whose career in intelligent transport systems spans more than 45 years, has been an active creator and innovator, leading the design and development of dozens of technology-enabled road safety products that have been deployed across Australia and internationally.

"I am both honoured and humbled to accept this award. I had spoken to Max Lay several times in the early 90's at IVHS conferences, the organisation that preceded ITS. His gracious capacity to inspire aspiring engineers has remained with me and has sustained my interest in supporting engineering student research projects," said Dr Higgins.

The Max Lay Lifetime Achievement Award is presented annually to a leader in the advanced transport technology industry and is recognised globally.

Dr Higgins began his career in the traffic signal unit at Brisbane City Council (BCC), simultaneously pursuing an electrical apprenticeship and engineering qualification at QIT, showcasing a rare blend of technical 'hands-on' abilities and design skills. Notably, he established the BCC Traffic Signal Laboratory, which was instrumental in developing Brisbane's BLISS wide area traffic management system during the evolution from relays to microprocessors in the mid-1970s.

Dr Higgins' entrepreneurial spirit led to the establishment of a software engineering company in the late 1980s, followed by the formation of Excel Infotech in 1992 and its eventual expansion to the Excel Technology Group (ETG) in 1996.

Under his leadership, ETG's robust R&D focus yielded over 30 innovative ITS products, securing five patents and garnering a reputation for reliability and quality. ETG has also delivered a highly successful range of detection solutions, which are widely deployed across Australia and internationally.

Paul's pursuit of knowledge and excellence earned him a Queensland Government research Scholarship to attend the Engineering Entrepreneurship Development Program at MIT Sloan School of Management in 2007, further amplifying his contributions to the industry.

Beyond his own achievements, Dr Higgins' commitment to societal impact is evident through ETG's sponsorship of undergraduate and postgraduate research students. Paul's dedication to nurturing future talent was recognised by the Queensland University of Technology in 2007 when he was honoured with an Outstanding Mentoring of Students Award.

Paul was appointed adjunct Associate Professor in the School of Electrical Engineering at the University of Queensland in 2013 which became a six-year tenure, and he continues to mentor and supervise research students today.

In 2023, Dr Higgins received Life Membership of the Institute of Electrical & Electronic Engineers Society, underscoring his profound impact and influence.

ITS Australia President Silje Troseth acknowledged Dr Higgins' significant achievements by announcing him as the Max Lay Lifetime Achievement Award recipient.

"Dr Paul Higgins has dedicated his entire career to the creation of products that have enhanced our nation's intelligent transport systems and made our roads and traffic network safer for all Australian road users," said Ms Troseth.

Dr Paul Higgins, ITS Australia Max Lay Lifetime Achievement Award winner

"Paul's depth of knowledge, harnessed through an ITS career that includes government, academia and industry is to be celebrated, and his influence will be ongoing through the many transport detection solutions deployed locally and globally to which he has contributed."

"Paul has also been a trailblazer when it comes to developing the next generation of ITS talent. From introducing a mentoring program for undergraduate and postgraduate students at his company Excel Technology Group, to his ongoing mentoring through the University of Queensland, Paul has ensured the future of Australia's ITS industry is in capable hands."

"On behalf of the ITS Australia board and industry, we congratulate Paul on his award," said Ms Troseth.

The Max Lay Lifetime Achievement Award is named in honour of Dr Maxwell Lay, AM. Dr Lay was a pioneer, leader and ITS industry figurehead, who passionately advocated for the advancement of ITS in Australia, Asia Pacific and around the world.

Dr Higgins will be presented with the Max Lay Lifetime Achievement Award at the ITS Australia Awards at the Sofitel Brisbane on 15 February 2024.

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Stormwater covers and grates play a vital role in civil construction projects nationwide. These essential components are extensively utilized in various infrastructure endeavours, carrying significant significance that should not be underestimated.

While some might downplay the significance of grates and covers used for stormwater drainage on roads, it is crucial to recognize their multifaceted importance. Beyond their role in water drainage, these elements bear a critical responsibility in enhancing road and pavement safety. They must withstand substantial and repeated loads from both vehicles and pedestrians.

The meticulous selection of stormwater and drainage products for Australian roads holds immense importance. Neglecting the quality and compliance of these products with Australian Standards can result in failures, potentially leading to injuries or even fatalities.

Most State Road and Municipal Councils across Australia exercise vigilance in specifying and ensuring compliance of their drainage products. Regrettably, this level of diligence is not uniformly observed across the civil construction sector.

It's worth noting that the civil construction industry currently lacks formal regulations regarding the compliance of grate and cover products. Consequently, the responsibility falls on road authorities, councils, and asset owners to ascertain the suitability and adherence of the chosen products to Australian Standards (AS3996-2019 – Access Covers & Grates).

When selecting civil stormwater and drainage products, adherence to Australian Standard AS3996-2019 is essential.

AS3996 outlines clear product Classes, detailing design loads and wheel loads for each category. However, instances of poor-quality, non-compliant, and even falsely compliant products are regrettably common in our industry. These discrepancies can have significant repercussions, such as products claiming to be of a certain Class but failing to meet the associated load requirements.

Some manufacturers opt for shortcuts to offer cheaper alternatives in the market, leading to a proliferation of non-compliant offerings. To safeguard against subpar and counterfeit products, it is imperative to exercise caution.

When selecting civil stormwater and drainage products, adherence to Australian Standard AS3996-2019 is essential and can be verified through physical markings on the

AS3996 outlines clear product Classes, detailing design loads and wheel loads for each category. Using non-compliant products can result in failures, potentially leading to injuries or even fatalities.

product itself. Reputable manufacturers typically imprint their company name and load class on their products as part of standard practice. The absence of these markings indicates non-compliance with Australian Standards and raises the risk of potential failure with dire consequences.

For added assurance, products that have achieved Global-Mark Certification, like Civilcast ductile and steel grates, validate compliance with AS3996-2019. This certification, provided by a recognized authority such as Global-Mark, independently verifies the adherence of products to relevant standards, providing peace of mind to consumers.

For further details, contact Civilcast at 1300 012 278 or visit their website at: **https://civilcast.com.au**

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PRECAST INDUSTRY GATHERS AT **NATIONAL CONFERENCE**

National Precast Concrete Association Australia's Sydney National Conference has emerged as a crucial event for the sector as around 150 of the country's leading precasters joined with suppliers and allied professionals to learn and network.

Led by National Precast CEO Sarah Bachmann and President Jeff Stratford, the three-day conference ran from 30th October to 1st November in Coogee, New South Wales. Leviat was the Conference Partner for the Event.

While National Precast holds a similar event earlier in the year – in 2023 in the gorgeous Barossa Valley - this annual event began with a Welcome Reception and Trade Exhibition, sponsored by Reid Construction Systems.

Notable industry participants such as Leviat, Reid Construction Systems, CONQA, PSA, ConXedge, BOSFA, ECOTONE, PROGRESS GROUP, Barrason's Engineers, Actech, Peikko, Hagane Systems, APTUS, and Bennett Equipment showcased their latest technology to the industry. On offer was information about quality assurance software for new structural precast connections – essential information for the precast industry to stay ahead of its game and offer smart, sustainable solutions to the construction industry.

National Precast's CEO Sarah Bachmann says the Conference attendance was unprecedented. While the exhibition continued on day two – Conference Day – keynote speakers as well as industry leaders stepped onto the stage to share their insights.

Fair Work Commission Deputy President Peter Hampton provided an update on the implementation of multi-employer bargaining options as well as a guide to what the Commission considers when hearing unfair dismissal matters.

Meanwhile, James Webster, Senior Construction Advisor at WorkSafe Victoria, discussed WorkSafe's 'Pre-cast Panel Project'. This initiative entailed a thorough examination of six primary hazards across the industry as it took a deep dive into twenty precast businesses in Melbourne. Common hazards including respirable crystalline silica (RCS), cranes and lifting equipment, panel storage, hazardous manual handling, vehicles and traffic management, and panel design and quality assurance were all explored.

Leviat Australia's National Technical Manager, Brett King, and Engineering Team Leader for Precast, Ali Asgari, delved into discussions on new durable and resilient connection solutions. These solutions are specifically crafted to overcome existing challenges associated with precast connections, simultaneously aiming to speed construction and decrease the cost and complexity of precast construction.

Of great interest to the audience was Daniel Nassar's presentation. As Managing Director at Alpha Precast, Daniel shared his insights into his company's rigorous approach to contracting. Having been initially faced with resistance, he outlined the strategies he has implemented to sustain his position and illustrated the positive impact these measures have had on his business.

Attendees also had the opportunity to hear from Fleur Heazlewood, Director at The Blueberry Institute, who discussed psychological safety. Sarah Hammond, Partner at Moray & Agnew, addressed the termination of project contracts, while Matt Press, Executive Director of Compliance & Dispute Resolution at SafeWork and Fair Trading NSW, shared progress with the work of the NSW Building Commissioner and associated roadblocks and modernisation opportunities.

Concluding the conference, Jeff Stratford, Euro Precast's General Manager in Queensland, shared insights into the company's adept management of challenges associated with manufacturing and installing precast elements for the prominent Mondrian Gold Coast project. He revealed the implications of reinforcement congestion and discussed mould manufacturing, drafting considerations, the use of form liners, the company's in-factory and onsite quality assurance procedures, offsite payment processes, audits, inspections and approvals, as well as delivery and installation. Additionally, Stratford emphasised the pivotal role of support from National Precast partnerships in navigating and overcoming challenges as they arose.

To conclude day two, participants indulged in a Networking Dinner sponsored by PSA and PROGRESS GROUP. The following day included an interactive factory tour of the Metro West Tunnel.

During the dinner, National Precast recognised several members for achieving membership milestones of 5, 10, 15, 20, 25, and 30 years.

Particularly noteworthy, Rod Mackay-Sim was awarded Life Membership in recognition of his outstanding dedication to the precast industry over the past 40 years.

"Rod's dedication to the precast industry, especially his fervour for enhancing safety, has been truly exceptional," said Stratford.

"We are proud to have Rod as part of our National Precast community and immensely grateful for his contributions to the industry."

In addition, Sarah Bachmann was recognised for her 20 years of service as the CEO of National Precast.

"Sarah's passion, dedication, sleepless nights and laughter have helped all of us grow and be successful in our respective businesses," said Stratford.

"On behalf of the Association and our members, I was so pleased to recognise Sarah's amazing tenure with a 20-year service award and gift."

Bachmann says the next conference is planned for Brisbane in late March, with the next big event being held later in the year in Melbourne.

"We promise the programme will make the March event one that the industry will want to attend," she said.

NATIONAL PRECAST ANNOUNCES NEW **BOARD OF DIRECTORS**

There is one new face on National Precast Concrete Association Australia's Board of Directors, with Jeff Stratford from Euro Precast continuing in his second year of a two-year term, as President.

National Precast's CEO Sarah Bachmann has confirmed that Stratford will resume his role as President.

"Jeff Stratford has had a profound impact on the Association in his first year as President, and membership has grown considerably over the last twelve months," Bachmann comments.

"He's inspired a new energy into the Board, with active working groups considering a variety of initiatives," she adds.

Among the initiatives being considered by the working groups are precast factory worker training, the audited Master Precaster programme and industry reporting.

"But first up, we will be conducting market research with our members and beyond. We want to ensure we remain and become more relevant to the precast industry."

Stratford will be joined on the Board by reappointed existing Board members, including Brett Foster from Advanced Precast, Joe Healy from Hollow Core Concrete, Michael Hudson from Hudson Civil, Riccardo Musella from Reinforced Earth, Chris Kouris from Reid Construction Systems, and Professional Associate Members Bob Connell and Simon Hughes. The organisation also welcomes a new Board member, David Cullen-Ward, Managing Director of Precast Elements, who brings with him a wealth of experience in the precast industry.

"We express our gratitude to departing Board members Michael Waeger from Waeger Constructions for his extensive years of service on the Board and for serving as President for three years, and to Alberto Ferraro from PERMAcast, another long-serving Board member," Bachmann adds.

According to Bachman, Waeger made a significant contribution during his time as President and while on the Board, guiding the organisation through challenging years amidst the COVID-19 pandemic and having led substantial structural changes during his term.

David Cullen-Ward from Precast Elements joins the National Precast Board of Directors

"Throughout this time, the Board strategically worked to position National Precast to deliver enhanced value to our members and the wider precast industry. That involved the introduction of new services and a reduction in precaster fees," Bachmann says.

Stratford, alongside the rest of the Board, is eager to continue to implement additional changes and is enthusiastic about actively promoting the organisation's efforts.

"This will contribute to achieving our planned growth in membership and further strengthening the voice of National Precast," Bachmann says.

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