Ash Development Association of Australia

COAL ASH matters

22 April

CCPs - *a valuable resource*

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MEMBERSHIP

COMPANY MEMBERS

A primary role of the ADAA is to bring together producers and marketers of coal combustion products (CCPs). Our activities cover research and development into CCP usage, advocacy and technical assistance to CCP producers and users, as well as a forum for the exchange and publication of CCP information.

For more information visit us at **www.adaa.asn.au**

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- Boral Construction Materials
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- Delta Electricity
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- Energy Australia
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- InterGen Australia (Millerran)
- Latrobe Magnesium
- NRG Gladstone Power Station
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  UK Quality Ash Association www.ukqaa.org.uk
- American Coal Ash Association www.acaa-usa.org
- World Wide Coal Combustion Products Network (WWCCPN) www.wwccpn.org

EDITORIAL

Welcome to another issue of Coal Ash Matters, and the first one for 2022!

Hopefully as you read this, life has begun to feel normal again. Maybe you're lucky enough to be back in the office, sipping on a café coffee and wondering, 'what happened to the last few months?' as if you involuntarily got trapped in a time warp. If this is you, don't worry- we're here to run you through the industry news you might've missed in those crazy last months of 2021 and early 2022.

I don't know about you, but although we have become accustomed to online meetings, we're really looking forward to face-to-face, including the much-anticipated World of Coal Ash (WOCA) 2022! All the details about the conference so far are in this issue, including some new updates on the speaking schedule.

Have you read up on the latest winners of the Cement Concrete & Aggregates Australia (CCAA) 2021 Innovation Awards? If you haven't, we have a story up next that showcases Boral, who has won 8 awards. What an achievement!

We also discuss Wollongong's new dual-fuel gas and hydrogen power plant. Not just a project with a big name, this story demonstrates how Wollongong is decarbonising fuel with hydrogen- a hot topic in industry this year.

Next up is a feature story on BG&E and how they're improving the connectivity of WA's railway network through a joint venture with other industry partners. The joint venture has greatly improved the project's timely schedule and is a big achievement for our members.

Our article on Latrobe Magnesium's (LMG) demonstration plant that was co-written by LMG Chief Executive, David Paterson. After graciously answering many of my questions about the plant, David explained, LMG is starting the construction of its $50 Million magnesium demonstration plant that will produce magnesium metal from fly ash that will come from EnergyAustralia's Latrobe Valley mine in Victoria.

This edition of Coal Ash Matters features TWO exclusive articles! The first sheds a light on CS Energy and their journey to Net-Zero. This commitment includes the construction of a 'Renewable Hydrogen Plant' produced in QLD. The next is an update on our American counterpart, the American Coal Ash Association (ACAA). They've collated a literature review that assesses current standards and practices in Autoclave Expansion Testing.

Finally, The Ash Development Association of Australia would like to say a big thank you to our members!

This issue of CAM wouldn't be possible without your amazing achievements. We look forward to reporting on your 2022 achievements later this year and continuing to work together into the future.

WOCA 2022
Finally a Reality!

The World of Coal Ash

IT'S THAT TIME OF YEAR AGAIN... AT LAST!

In 2021, WOCA was postponed due to the COVID-19 pandemic. This year as the battle against COVID settles, WOCA 2022 has been announced- that's right! the World of Coal Ash Conference returns on May 16th in the US!

After what seems like a lifetime, join friends, colleagues, and industry leaders in Northern Kentucky this coming year for The World of Coal Ash Conference (WOCA). WOCA 2022, will be the 9th biennial meeting, organised by UK CAER and the first WOCA Conference post-COVID-19!

Register now - *DON'T MISS OUT!*

Online registrations are still open for WOCA 2022. The conference officially runs from Monday, May 16th until Thursday, May 19th (EDT). The conference this year is predicted to be popular because it was postponed from last year. Make sure you get ahead and secure your space before it's too late- you don't want to miss another year!

Date and time

Monday, 16 May 2022	7:00pm - 10pnm EDT
Tuesday, 17 May 2022	7:00pm - 10pm EDT
Wednesday, 18 May 2022	7:00pm - 10pm EDT
Thursday, 19 May 2022	7:00pm - 10pm EDT

Location

Northern Kentucky Convention Center
1 West Rivercenter Boulevard, Covington, KY 41011 United States

Prices

Prices range depending on different circumstances. **Click here to find the right ticket for you!**

Speaking Schedule- Now Available!

The WOCA speaking schedule has recently been released for viewing by attendees. Our CEO Craig Heidrich will be presenting the following presentations along with some industry legends you can't miss out on:

- Pavement Innovation down-under, CCPs rigid and flexible pavement applications: Craig Heidrich (ADAA), Bill Martin (ADAA), Justin Moss (ARCADIS), Geoff Hines (SCL).
- Global opportunities and challenges for coal combustion products within a Circular Economy: Craig Heidrich (ADAA), Joachim Feuerborn (ECOBA)
- Standard Specification for Low Carbon Concrete using Fly Ash and Slag: Craig Heidrich (ADAA)

FOR MORE INFORMATION & TICKETS VISIT:

www.worldofcoalash.org

Photo: John A. Roebling Suspension Bridge, Covington, KY USA

HOW WOLLONGONG IS TRANSFORMING THE ENERGY SECTOR IN AUSTRALIA

The Illawarra is being put on the map for clean energy, with the announcement of a dual-fuel capable natural gas/hydrogen power plant being constructed at EnergyAustralia's Tallawarra B Power Station in Wollongong, NSW Australia. This project is considered a landmark achievement for the development of the sector in NSW, including the Port Kembla Hydrogen Hub which will provide new opportunities for the region. The project aims to accelerate the energy transition to net-zero in Australia using gas that can be further decarbonised by using hydrogen and hydrogen-blended fuels.

To make the transition possible, ADAA member EnergyAustralia has ordered one of GE Power's gas turbines to power the station. This turbine ensures that consumers retain access to reliable and sustainable power before the 2023 closure of the Liddell coal-fired plant in the Hunter Valley. The plant will operate with a high level of operational flexibility as a "peaker" plant- which EnergyAustralia describes as "the process of firing up rapidly when needed to stabilise the power grid during demand peaks and it will use partial loads of hydrogen to decrease its carbon emissions footprint," they said.

"Our new open-cycle, hydrogen and gas capable turbine will provide firm capacity continuously and paves the way for additional cleaner energy sources to enter the system," said Catherine Tanna, Managing Director of EnergyAustralia.

The 316-megawatt (MW) Tallawarra B Power Station will be adjacent to EnergyAustralia's existing Tallawarra A 435 MW gas plant, located in Yallah, just outside of Wollongong City.

The Federal Government called on the private sector to identify new opportunities to deliver up to 1,000 megawatts of dispatchable power to ensure a reliable transition to a lower-carbon energy future with the closure of the Liddell power station in the Hunter Valley region. EnergyAustralia will, as outlined in the funding agreement signed on May 3rd, will offer to buy green hydrogen up to 5% of the plant's fuel use from 2025 and offset direct carbon emissions from the project over its operational life as a response to the government's proposition.

EnergyAustralia also intends to invest in engineering studies examining upgrades for Tallawarra B so that it can use more green hydrogen in its fuel mix in the future.

New South Wales Minister for Energy, Matt Kean, told GE Technology that, "This project sets a new benchmark for how gas turbine technology can be consistent with NSW's plan to be net-zero by 2050 by using green hydrogen and offsetting residual emissions," encouraging the transition to a more circular economy.

Not only is this project an amazing opportunity for the transition to a more circular economy, but it will also additionally provide employment opportunities.

GE Power and EnergyAustralia estimate that the Tallawarra project will contribute $300 million to the economy and create 250 jobs during construction.

CERTIFIED SUCCESS FOR BORAL AT THE CCAA INNOVATION AWARDS

Boral has been recognised by Cement Concrete & Aggregates Australia (CCAA) for its commitment to innovation at the CCAA 2021 Innovation Awards.

CCAA is a national body for the heavy construction materials industry in Australia. As part of its mission, the CCAA aims to maintain industry standards whilst supporting innovation amongst its members and the wider industry. The CCAA Innovation Awards are a two-year program involving state awards held annually, the winners of which compete for the national awards that are held biennially. CCAA's CEO, Ken Slattery said, “These awards underline the industry’s genuine commitment to continuously raising the bar for the betterment of its workforce and the community at large... Despite the additional responsibilities that businesses are facing in managing COVID health and safety, it’s great to see the entries showcasing a continuing focus on the day-to-day challenges around workplace health and safety and environmental management," he said.

Boral has been fortunate enough to be recognised in not only one award, but 8, in 4 states in Australia this year. On Boral's LinkedIn page they expressed their joy saying, "We are extremely proud to have won multiple Innovation Awards from Cement Concrete & Aggregates Australia (CCAA) this year! Well done to the Boral team and thank you to CCAA for recognising Boral's commitment to innovation".

NEW SOUTH WALES

Winner - Environmental Innovation Award	Stockton Quarry - Quarry Foredune Rehabilitation
Highly Commended - Health and Safety Award	Tippers North Air Operated Tailgate Prop

QUEENSLAND

Winner - Environmental Innovation Award	Electronic Soil Over-pressure detection and prevention
Highly Commended - Health and Safety Award	National Heavy Vehicle Accident Investigation & Standardisation

SOUTH AUSTRALIA

Winner - Diversity & Inclusion Innovation Award	Diversity and Inclusion at Boral
Highly Commended - Health and Safety Award	Linwood Quarry- Edge Protection Height Indicator stickers

WESTERN AUSTRALIA

Winner - Environmental Innovation Award	Canning Vale- Reuse of returned concrete
Highly Commended - Health and Safety Award	Auditing and Inspection Process During COVID-19

Congratulations to Boral on these fantastic achievements!

CEMENT CONCRETE & AGGREGATES AUSTRALIA

FULL STEAM AHEAD FOR BG&E

ADAA member, BG&E, has been awarded a new project to improve the connectivity of railway services in Western Australia.

The Western Australian Government announced on August 25th that The Midland Junction Alliance (an alliance made up of McConnell Dowell, Georgiou Group, Arcadis Australia and BG&E) has been named 'the preferred proponent to deliver the new METRONET Midland Station in WA that directly links to Perth Central Station.

Reasons for the upgrade

Perth and the Peel Region in WA have experienced dramatic population growth in recent history. The WA Government is predicting further growth over the next three decades, with the city population expected to reach 3.5 million people. During this time, rail patronage is expected to triple, resulting in the need for Midland's 53-year–old station to be upgraded and accommodate this growth accordingly.

Continued over

Current statistics supporting the upgrade

- **67% increase** in public transport patronage in the last decade due to population increase and an increase in the proportion of people using public transport
- **44%** of public transport trips are made using rail services. This is a significant increase from 10% of trips in 1990
- **56%** of public transport trips are made using the bus network. Buses provide most transfers to rail services
- **330,000** public transport journeys per day
- **35%** of trips use more than one public transport vehicle
- **82%** of all rail passengers go to or pass-through CBD stations
- **2/3** of trips are for work and education, largely during the peak periods

Statistics: Department of Transport WA

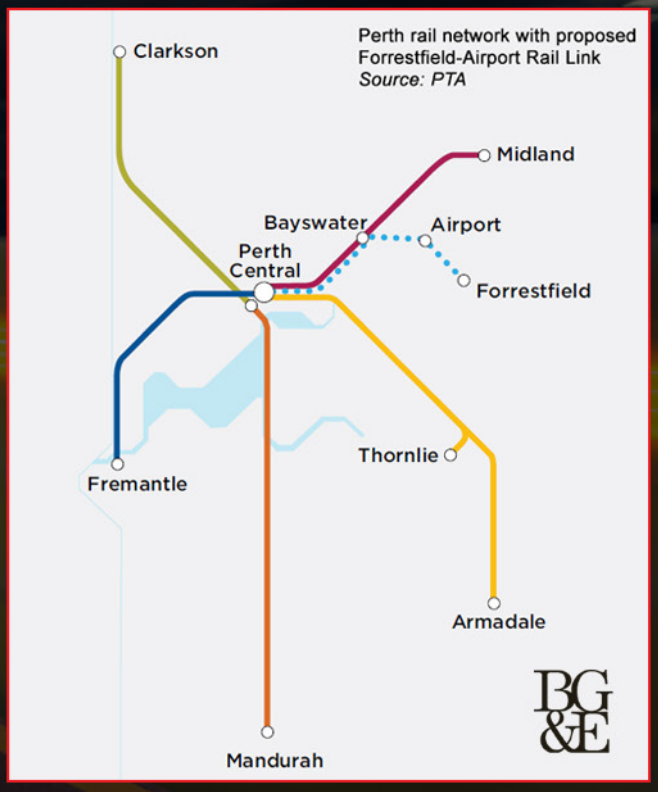
Work to be done by the Alliance

- **Decommissioning and demolishing the existing train station.**
- **The design of a modern, three-platform facility between Helena and Cale streets that includes a north-south pedestrian overpass.**
- **The construction of additional facilities including passenger toilets, lifts and stairs, a kiosk and up to 100 secure bike parks.**

The new station upgrade aims to improve public transport connectivity across WA. When completed, the upgrade will allow passengers to connect to the station from a new 12-stand bus interchange or multi-storey car park that reportedly has more than 600 parking bays, which will be built where the existing station is located.

Once operational, the new station will have 3,300 daily boarding, growing up to 3,700 by 2031. Peter de Bruin, BG&E's WA Director said in a recent article, "After more than 50 years of experience in delivering projects that improve connectivity across the state, it continues to be rewarding to work with alliance partners on city-shaping infrastructures, like the METRONET New Midland Station. The positive impacts for our client and the surrounding communities are considerable," he said. Stating his excitement for the upcoming project, the Midland Junction Alliance General Manager, Leonard Munday, said he is proud to be leading the delivery of the Midland Station; "I am excited and look forward to working with PTA on a project that will expand connections, set a platform for invigoration and importantly, leave a legacy for the Midland community," he said.

The contract for this project will be finalised by the end of 2021, as the Sydney Metro project ends. The ADAA will monitor project progression for updates and wishes BG&E success in the completion of this project.



LMG'S PATHWAY TO CO_2 EFFICIENCY AND SUCCESS

Latrobe Magnesium

Magnesium is a critical mineral and is usually made from dolomite, the Earth's 7th most common element. Its main uses are in the automotive, aluminium and steel industries among others, and it's seen as a hot commodity overseas and especially in China. Currently, it is estimated that one million tonnes of this metal is produced and sold every year, with demand expected to double within this decade.

Having recognised this opportunity and intending to support principles of the circular economy, ADAA member Latrobe Magnesium (LMG) stepped in to seize an important opportunity. LMG has is starting the construction of its $50 Million magnesium demonstration plant that will produce magnesium metal from fly ash. The materials will come from Energy Australia's Latrobe Valley mine in Victoria (who is also a member of the ADAA). Once the plant is operating successfully, an "upscaled" magnesium plant is set to be constructed, using the processes developed in the demonstration plant.

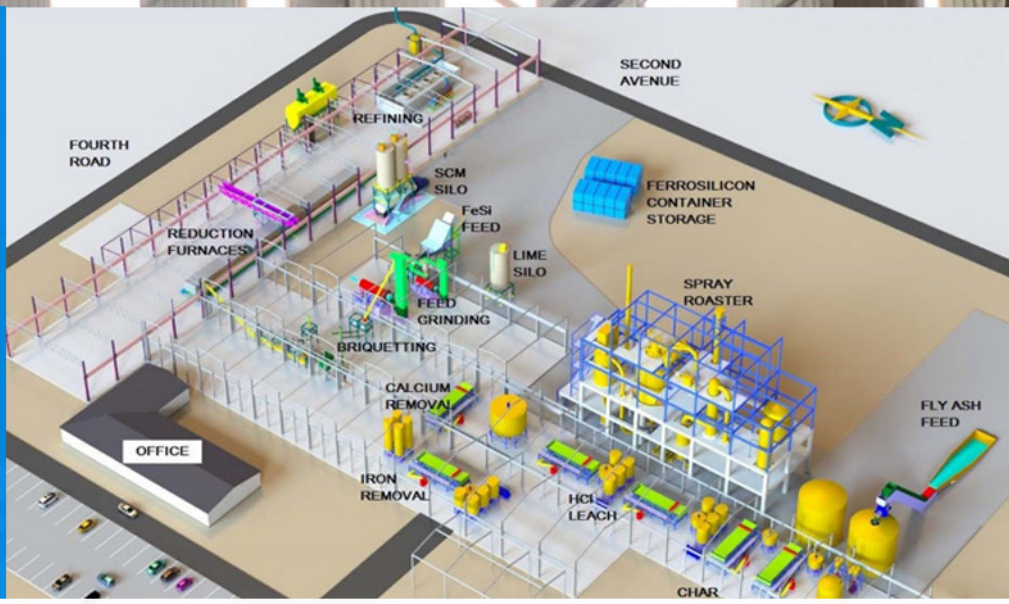
Having been accumulated over 20 years in the mine's repositories, the fly ash will be repurposed for a greater cause. This fly ash will be the main ingredient to the final product that is to be sold under long-term contracts in the United States and Japan.

Continued over

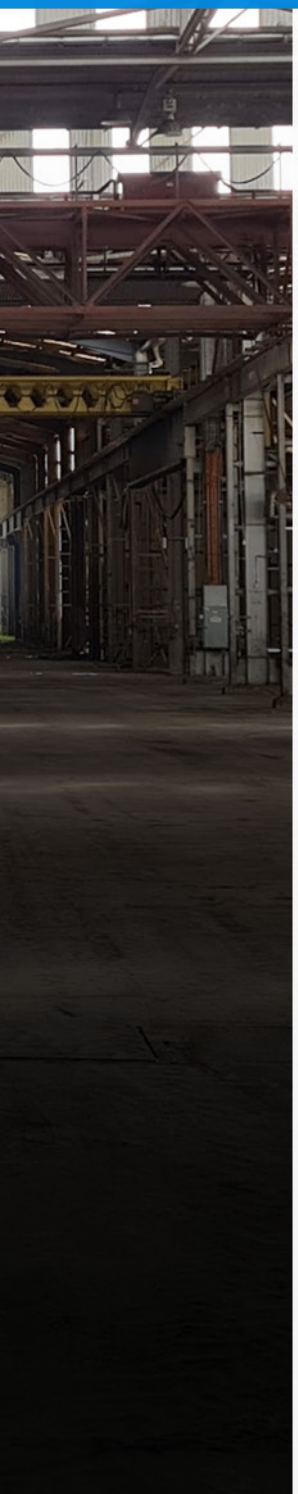
Photo: Latrobe Magnesium Website - https://www.latrobemagnesium.com/latrobe-valley-project

Currently, LMG is the only entity on the ASX with exposure to magnesium, meaning the opportunity for success is almost guaranteed with the growing demand for this project.

LMG says that the plant is on track to begin production at the end of 2022/ beginning of 2023, which is the perfect time to utilise the benefits of the growing automotive industry. This expanding industry uses magnesium to create aluminium sheet panels in cars but in particular, EVs (electronic vehicles).



Proposed layout of the demonstration plant (artist's interpretation)" Credit: Latrobe Magnesium



The Demonstration Plant - A Pathway to CO_2 Efficiency and Success

In efforts to predict the level of success the final plant will achieve, LMG is constructing a demonstration plant in partnership with Mincore Pty Ltd (Mincore).

On the 28th of June 2021, LMG awarded an Engineering Procurement & Construction Management (EPCM) contract to Mincore for Latrobe Magnesium's Demonstration Plant which has been built in Hazelwood North, Victoria. The plant will produce magnesium metal and a cementitious material from fly ash produced at Yallourn's brown coal power station. The cementitious material made will emit no CO_2 and can be blended up to 30% with Portland cement which make a cement which can set within 7 days. The upscaled plant will use the ash generated yearly by Yallourn and also its ash landfill.

ADAA member, Commonwealth Scientific and Industrial Research Organisation (CSIRO) is assisting Mincore in supporting LMG in testing and refining new technologies to improve operations inside the plant. In addition to this, prototypes and plant trial runs are also underway, which appear to be carbon efficient. LMG shared a post on LinkedIn stating the demonstration plant is progressing successfully but also contributing to its carbon emission goals. "Our Demonstration Plant produces Magnesium from recycled fly ash and emits 53% fewer CO_2 emissions than major global Magnesium producers," it said.

The industry average of producing magnesium is currently 21.8 tonnes of CO_2 per tonne of Magnesium which is not ideal for a company that is aiming to reduce its emissions. This isn't a problem for LMG so far, "LMG is only producing 10.2 tonnes of CO_2 per tonne of Magnesium, championing a cleaner, greener way of producing Magnesium," they continued.

LMG says they are proud of their low emission processes, "(we) hope to see greater use of green Magnesium to lightweight vehicles, electric or not, and make them more energy-efficient".

LMG CEO, David Paterson, told the ADAA that, "LMG's net zero emissions plan is to incorporate a renewal energy source in its upscale plant. LMG's emissions are generated from the gas it currently uses as the energy source for the plant. If gas is replaced with a renewal source, there would be very little CO_2 emitted," he said.

LMG's hydromet extraction processes incorporate an alkali and an acid to treat different fly ashes. LMG's acid approach will be used to treat Yallourn fly ash by:

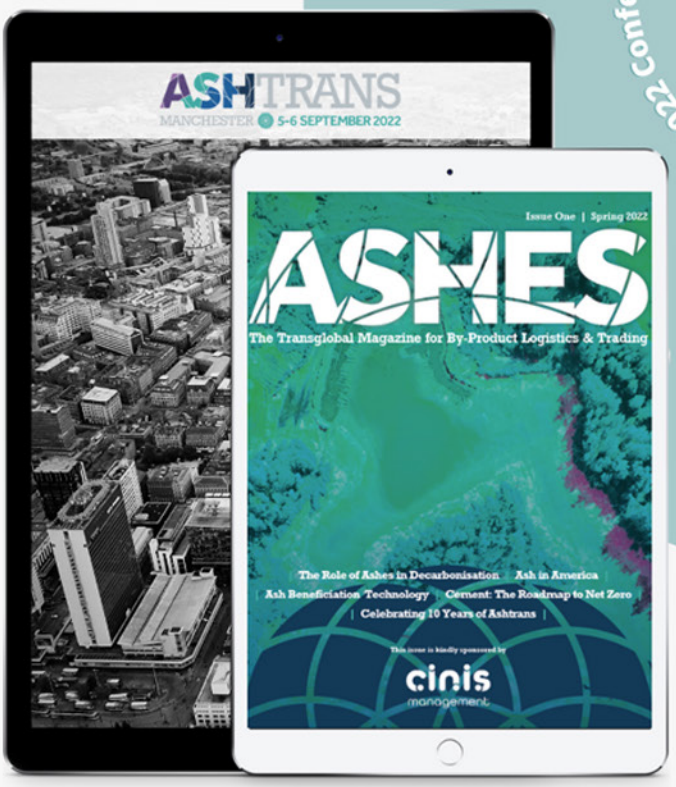
- Dissolving Magnesium (Mg), iron and calcium minerals with Hydrochloric Acid (HCl), & leaching out magnesium as $MgCl_2$
- Removing Iron Oxide (Fe_2O_3) & calcium as Calcium Carbonate $CaCO_3$
- Converting $MgCl_2$ into Magnesium Oxide (MgO) & recovering the HCl for reuse in the process
- Processing MgO into Mg and SCM using the thermal reduction process.

Over the next few months, LMG will be continuing its design and engineering work and preparing the tender package for the construction of the new plant. Upon completion of this work, the construction will start with the commissioning of the plant expected by the end of December 2022. The work that is associated with this project is a fantastic opportunity for LMG and some of our other members that contributes to a better, more green future for Australia and the rest of the globe. The future is bright for LMG, and we look forward to seeing where it takes you on this endeavour.

A special thanks to Mr David Paterson for his assistance with providing information and guidance for this story.

Have you heard of the ASHTRANS 'ASHES' Magazine and Conference?

Subscribe to the ASHES Magazine and Register for the ASHTRANS 2022 Conference!



EVERYTHING YOU NEED TO KNOW ABOUT ASHES MAGAZINE AND THE ASHTRANS CONFERENCE

ASHES is a **FREE** magazine that encourages industry professionals and interested parties to engage with key individuals within the ash sector; from thought leaders and innovators to senior executives and decision-makers, all over the world and at all kinds of ash-related companies. The magazine is released alongside the annual ASHTRANS conference taking plaec in Manchester, England from the 5th-6th September 2022.

Opportunities

- The magazine features a variety of different news stories from around the world. Featured topics include: Global news, Trading, Ash types, Technologies and more! ASHTRANS allows an opportunity for any interested parties to submit their own stories to be featured in the next edition which will be due to come out in April next year. Please note that the editorial deadline is January 28th, 2022, to ensure the issue is released in time. Those who would like to feature should email editor@ashesmagazine.com and talk with the ASHTRANS Chief Editor.
- In efforts to bring more companies together across the globe, there is also an Association Directory within the magazine where contact details of global ash trade associations will be listed. The listing fee is free but upgraded and fully branded options are additionally available for a small fee.
- To compliment the magazine, the AshTrans annual conference is being planned for September 2022.

An amazing opportunity such as this is rare. If you would like to make an inquiry on featuring a story of your own, advertising or listing your business in the directory, contact: enquiries@ashesmagazine.com or **subscribe to the FREE magazine here: www.ashtrans.global**

How to Register for the ASHTRANS conference here - Visit www.ashtrans.global

CS ENERGY'S PATHWAY TO NET-ZERO FOLLOWING COP26

Renewable energy and the quest to reach net-zero hit the headlines following COP26 (the 26th conference of the parties at the UN Climate Change Conference) in Glasgow. In Australia, ADAA member, CS Energy, has been working hard behind the scenes to develop a plan to bring the country to the front of the race.

What are they doing?

CS Energy has announced that a renewable hydrogen plant will be produced on the Darling Downs, over the next two years, at a planned demonstration facility near Kogan Creek Power Station in Chinchilla, QLD.

Queensland's Premier, Annastacia Palaszczuk, has stated that the new hydrogen plant would be owned by the state government and produce around 50,000kg of renewable hydrogen per annum. "We're investing in renewable energy to create long-term, sustainable jobs for Queenslanders...To position our state to capitalise on the renewables revolution, as a state, we must invest in new assets and partner with the private sector to create jobs. That's exactly what we're doing," the Premier said.

Following the success of CS Energy's feasibility study in February alongside Japanese industrial giant IHI Corporation Japan, CS has been approached by many domestic off-takers.

QLD Minister for Energy, Renewables and Hydrogen, Mick de Brenni, said that the investment in renewable energy is a key component of Queensland's plan for economic recovery. "The Kogan Creek project is an opportunity for publicly owned CS Energy to stake its territory in the hydrogen sector and expand Queenslanders' ownership of renewable energy assets," he said.

Mr de Benni labelled transport as Australia's second-largest emitter and emphasized the potential for the decarbonisation of this industry. "CS Energy is looking to support the decarbonisation of the heavy transport and haulage market with their locally produced zero-emission fuel and discussions are well advanced with multiple potential off-takers," he said.

Mr de Brenni said the project was unique because the hydrogen produced will use "behind the meter" renewable energy rather than power from the grid. Doing so allows for traditional sectors to innovate and expand their market offering. The plant will be built beside the highly efficient Kogan Creek Power Station and will include the co-location of a solar farm, battery, hydrogen electrolyser and hydrogen fuel cell.

CS Energy Chief Executive, Andrew Bills, said the feasibility study had confirmed the optimum design of the renewable hydrogen plant and that Kogan Creek Power Station was a good location with existing assets and plenty of space for expansion opportunities. CS Energy will source water for the plant from its existing bore water licences and current Kogan Creek Power Station operations demineralised water infrastructure.

"This project offers multiple benefits for CS Energy because of hydrogens ability to be used as both a fuel and as a way to store energy," Mr Bills said.

A great deal of reskilling will need to be undertaken by CS employees in order to operate efficiently. CS Energy has partnered with Toowoomba and Surat Basin Enterprise on a hydrogen skills mapping exercise that will ensure that existing skills in the region (including within CS Energy's workforce) can be utilised to support the growing hydrogen supply chain.

"We're also really excited about the skill development opportunities this project will provide our people," Mr Bills said.

Since 1997, CS Energy has been committed to providing reliable electricity to homes and businesses. As the new decade begins, they are adapting to thrive in the changing energy world.

"Our purpose is Delivering energy today, powering your tomorrow captures the dual nature of what we aim to do – run a successful thermal generation business and evolve into a diversified energy company... This evolution of our business is critical as Australia's energy landscape changes in response to renewable generation, technology innovation, and a rise in the active, involved energy customer," they say.

Construction of the new plant is expected to commence in 2022 and commissioning in early 2023.

ACAA EVALUATES AUTOCLAVE EXPANSION TESTS IN THE US

ACAA has submitted the following report to ASTM International and is requesting elimination of the C618 requirement for autoclave testing for soundness.

ASTM International (formerly known as the American Society for Testing and Materials) is an international standards organisation that develops and publishes voluntary consensus technical standards for a wide range of materials, products, systems, and services. ADAA partner, American Coal Ash Association (ACAA), has submitted a literature review to ATSM International, evaluating autoclave expansion tests for Fly Ashes. After reviewing a collection of literature and various studies for this report, it became evident that a change is needed to bring autoclave testing into the future alongside new products in the market.

There are three main test methods to assess the potential for expansion caused by hydration of calcium oxide and magnesium oxide. The autoclave test (ASTM C151) is the only one that is specified for testing in the United States even though various "pat" tests and Le Chatelier method are used in Europe and other countries.

The Autoclave Expansion Testing Process

"The results of this testing, as the differences in the length measurement before and after autoclaving, is reported as expansion or contraction," ACAA said. "Specimens" in the autoclave expansion test are made using specialised moulds designed to test for the determination of length change of hardened cement paste. The paste is stored in moulds and cured for 24 hours. After removal from the moulds, the bars are placed into an autoclave in a way that the specimens can be exposed to saturated steam during testing. The pressure and temperature of the saturated steam (2 MPa or 295 psi and 216°C or 420 °F) of the autoclaving process are expected to convert the un-hydrated f-Ca_0 and Mg_0 to hydrates. The percentage of increase (decrease) in the length of the specimen bar before and after autoclaving is reported as expansion or contraction.

The Soundness of Cement-Fly Ash Mixtures and Stand-out Findings

ACAA found through their research that current versions of ASTM C618 and AASHTO M 295 include specific limits for autoclave expansion or contraction, which is 0.8% for test specimens containing 20% fly ash or natural pozzolan. ASTM C618 references ASTM C311, which in turn references ASTM C151, as the test method for determining autoclave expansion of cement-fly ash mixtures.

One of the authors whose work included in the report stated, the testing of portland cement-fly ash-standard system according to ASTM C151 can sometimes result in excessive expansion due to alkali-silica reaction (ASR). This author concluded that ASTM C151 is not a suitable test to assess cement-fly ash systems due to the prospect of ASR, and "such an application can misidentify the beneficial functions of alkali to promote the pozzolanic reaction" of fly ash.

With this in mind, ACAA concluded that a review of current processes is needed. The outlined factors for review are based on all information collated from this study including, control cement, the ratio between cementitious material and water as well as curing time, testing conditions precisions and more.

A variety of problems have been highlighted throughout this study concerning current testing standards, especially in the US. Bringing light to these issues is an important step in changing processes to suit the current climate in industry that aligns with new and improved products and standards.

Click here if you would like to read the report for yourself and take a look at what papers were included in the study.

ACAA

Abbreviations:

- ASTM C151, Test Method for Autoclave Expansion of Hydraulic Cement.
- AASHTO M 295, Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
- ASTM C618, Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.

A BRIGHT FUTURE FOR ERARING POWER STATION

February 17th, 2022 saw an announcement from ADAA member, Origin Energy (OE), revealing a notice was submitted to the Australian Energy Market Operator (AEMO). The notice indicated the potential early retirement of the Eraring power station, seven years ahead of schedule.

The iconic Eraring power station is the largest in Australia and accounts for approximately 25% of the New South Wales power requirements, generating a total capacity of 2,922 MW. Eraring was acquired from the NSW Government by Origin in 2013 and stands alone, being their only coal-fired power station.

Origin says the proposed exit from coal power represents the rapid transition to a cleaner future that employs naturally sourced energy outputs and recycled materials. In a recent press release, OE said, "Australia's energy market today is very different to the one when Eraring was brought online in the early 1980s. The reality is, the economics of coal-fired power stations are being put under increasing, unsustainable pressure by cleaner and lower-cost generation, including solar, wind and batteries," they said.

The eventual closure of this iconic power station may be the end of an era but doesn't come without presenting considerable opportunities. The closure presents the chance to shine a light on the beneficiation and recycling of the station's considerable amount of coal ash, stored in the site's heavily populated ash dam.

Origin Energy has a history of repurposing the stored ash that comes as a by-product of burning coal. OE's Long Term Ash Management Strategy (LTAMS) showed in the financial year of 2020, OE's ash reuse rate increased from 35% to 40%, allegedly making them the largest recycler of ash in NSW. This ash was supplied mainly to suppliers in the cement and concrete industry and had stated its intentions to continue the supply of Eraring's ash to these suppliers. Enabling this to occur, means Origin will continue to support the circular lifecycle for ash (without it going to waste) and reinstate its commitment to the circular economy.

OE has made its intentions clear that the harvesting of CCPs remains a high priority despite the early closure in their most recent press release.

MORE INFO ABOUT THE FUTURE OF THE ASH AT ERARING

The future of Eraring's ash remains certain, with sights set on transitioning to a battery source as renewable energy plays an increasingly more important role in the future of energy generation. OE has stated, "We have carefully weighed Eraring's future for some time, which has included extensive consultation with the NSW government to identify what options might exist for the future of the plant. To enable Origin to support the market's continued transition to renewables, we intend to utilise the Eraring site beyond any retirement of the coal-fired power station, with plans to install a large-scale battery," they said.

In the meantime, OE assures that a roadmap is set to ensure the closure is conducted appropriately and at the right time, assessing future market predictions over time and ensuring the right decision is made.

Though no final decisions have been made, the inevitable closure of Eraring presents an array of opportunities for both the station and its ash dam. With the ash being put to use, OE's contribution to the development of ash usage in Australia is profound. This transition also allows room for the development of new technological advancements to be surfaced. While the premature closure of Eraring is unfortunate, it will ensure the industry continues to adapt to the ever-changing landscape of future energy development.

THE CCGP JOURNAL NEEDS OUR HELP!

REMEMBER THE CCGP JOURNAL?

The CCGP Journal is a joint publication between the University of Kentucky Center for Applied Energy Research and the American Coal Ash Association. The CCGP is an international peer-reviewed, online journal that encompasses the science and technology of the production, sustainable utilisation, chemistry, and environmentally sound handling of all by-products.

Since 2008, CCGP has played an important role in keeping track of new advancements in the industry, with around 4 papers a year being published and advertised. This year, the journal has received 0 published papers, with 3 submissions, which requested to be published without undergoing the review process.

The Journal's livelihood depends on new, submitted papers submitted by various researchers and authors. The Ash Development Association of Australia would like to encourage its members to reach out if there is anything you believe may be helpful to The Journal.

Topics of Interest

- **Fly Ash**
- **Bottom Ash**
- **Boiler Slag**
- **Geotech**
- **FGD Products**
- **Ponds**
- **Beneficial Use**
- **Landfills**
- **Chemistry**
- **Regulations**
- **Gasification Residues**
- **Mining and Reclamation**
- **Cement and Concrete**
- **Construction Materials**
- **Disposal**
- **Aggregates**
- **Chemical Classification**
- **Rare Earth Elements**
- **Coal-Fuel Blend By-Products**
- **Groundwater and Environment**

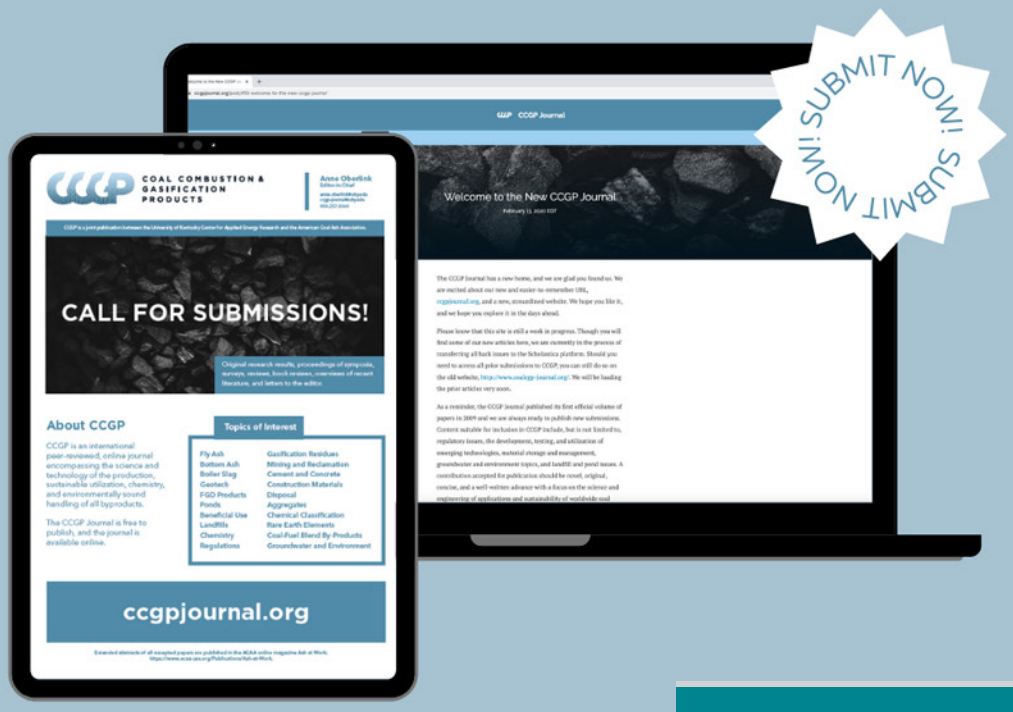
What can be submitted?

- **Original research results**
- **Proceedings of symposia**
- **Surveys**
- **Reviews**
- **Book reviews**
- **Overviews of recent literature**
- **Letters to the editor**

The CCGP Journal is free to publish and is available online creating a great opportunity for those who enter in The Journal.

Please send us an email at: info@asa-inc.org.au if you wish to make a submission.

SUBMIT NOW!



ACAA Center for Applied Energy Research

WRITE FOR COAL ASH MATTERS

Coal Ash Matters is the ADAA's main educational publication that is produced twice a year for the benefit of ADAA members and readers. Before each publication is drafted, an email is sent out to all members, urging them to contribute stories that they think are of interest. The types of content we are looking for include:

- **NEW DEVELOPMENTS**
- **TECHNOLOGICAL INNOVATIONS**
- **NEW PROJECTS**
- **NEW EMPLOYEES**
- **INDUSTRY RESEARCH**

If you have an idea or some content that you think should be shared with the CCP community, get in contact with the editor, May Anderson at info@adaa.asn.au

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