

45TH ANNUAL CONFERENCE

PROFITABILITY | SUSTAINABILITY | ADAPTABILITY

16 - 19 April 2024

Townsville Entertainment & Convention Centre

AUSTRALIAN SOCIETY OF SUGAR CANE TECHNOLOGISTS

Welcome

I am delighted to announce the upcoming Australian Society of Sugar Cane Technologists (ASSCT) Conference, which will be held in the vibrant city of Townsville from 16th to 19th April 2024. As the President of ASSCT, it is my honour to extend a warm invitation to all of you to participate in this esteemed event.

The 2024 conference holds special significance as it revolves around the theme of "Profitability, Sustainability, and Adaptability" This theme aptly reflects the ever-changing landscape of our industry and the crucial role that adaptability plays in navigating the challenges and opportunities that lie ahead. By embracing sustainability and adaptability we can secure a prosperous and resilient future for the sugar industry.



As we gather in Townsville, let us seize this opportunity to share knowledge, exchange ideas, and foster meaningful connections with fellow professionals. Our collective efforts will shape the future of sugar cane technology and ensure its continued prosperity in the face of evolving global challenges.

I encourage each one of you to mark your calendars for this momentous occasion. Let us come together and celebrate the achievements of our industry while working collaboratively to chart a course towards a sustainable and adaptive future.

Stay tuned for further updates on the conference program, guest speakers, and registration details in the coming months. We anticipate a high level of interest and participation, so early engagement is encouraged.

Thank you for your continued support and commitment to the Australian Society of Sugar Cane Technologists. I eagerly await the opportunity to welcome you all in person to the ASSCT Conference 2024 in Townsville.

Mr. Jay Venning

President
Australian Society of Sugar Cane Technologists



CONFERENCE PROGRAM

The official opening of the 45th ASSCT Conference and Industry Equipment Exhibition will be held on Tuesday 16th April 2024 with the Welcome Function at the Townsville Entertainment & Convention Centre (TECC) - Entertainment Dr, Townsville City QLD 4810.

All General, Manufacturing and Agricultural sessions will follow and also be hosted at TECC concluding on Friday 19th April 2024 after the Manufacturing Field Tour.

Some key events will be:

- The Welcome Function Tuesday Evening from 18:30, 16 April (Including official opening)
- · Happy Hour Wednesday evening, 17 April
- AGM Thursday Afternoon, 18 April
- Gala Dinner & Awards Ceremony Thursday night, 18 April
- Conference Tours Agricultural Tour, Tuesday 16
 Manufacturing Tour, Friday 19

The finalised program will be published on the ASSCT website and an electronic copy of the ASSCT conference proceedings will be provided to all registered delegates attending the conference. The conference proceedings will be available to all financial members and supporting members of ASSCT in the Members Corner of the ASSCT website.

REGISTRATION

Early bird discount* ends 15 March - Register before this date to save \$50

There are several ticket types available for purchase. Please read the descriptions before placing your order to ensure you are purchasing the correct ticket.

Members\$550Life Members\$500Non-Members\$600Single Day Pass\$185Student Day Pass\$100Booth Support Staff\$175

Inclusions vary depending on ticket type.

NB: Early bird discount only available on full registration tickets

Social tickets for those who wish only to attend the networking functions are available for purchase. If any difficulties are experienced in purchasing, please contact us at admin@assct.com.au or phone 07 4954 3956.

On-site registration is available commencing 11.00am on Tuesday 16 April or 8:00 am on Wednesday 19 April at the Townsville Entertainment & Convention Centre

Click here to register.



CONFERENCE DINNER

The conference dinner and awards ceremony will be held in the Great Gallery of the Museum of Tropical Queensland on Thursday evening. This section features a replica of HMS Pandora. Parts of the museum will be opened for delegates to explore relics from HMS Pandora and other displays for about an hour prior to the start of the dinner. The Museum will also feature Brickman Cities (LEGO) from March to October.



Australia's Sugar Research Institute (SRI) offers global expertise in sugar milling and refining technology.

We draw upon 75 years of sugar-specific experience to solve the technical and operational issues of cane sugar processing.

SRI's understanding of the science of sugar processing helps sugar mills and refineries worldwide to maximise sugar recovery, and to deliver best practice in process efficiency and plant design.

Established in 1949, SRI operates on a "not-for-profit" basis and is owned and supported by Australia's sugar milling industry. Our focus is to offer our clients and owners a competitive advantage based on technical and operational excellence. This excellence arises from our unmatched understanding and application of the science of sugar processing.



info@sri.org.au www.sri.org.au

FROM THE EDITOR

The Publications Committee is excited to announce that we have scheduled a great range of papers, posters and supplier's case studies for the 2024 ASSCT conference.

There are papers outlining some exciting developments for the industry:

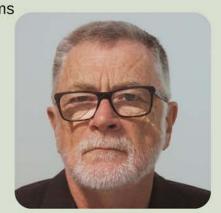
- Grower experience in reducing N inputs after legume breaks
- · Working together to achieve a sustainable outcome for industry and the environment
- Nutrients and pesticides in end-of-paddock run-off water for farming practices in the Central region
- · Enhancing efficiency and profitability through smart irrigation systems
- · The 'best' legume rotations for southern growers
- · Impact of trash blanketing and tillage on soil carbon levels
- Activated bio-char to reduce colour in juice processing
- Integration of bagasse pyrolysis into mill energy systems
- · A system for removing bagacillo from juice

So, register early for a thought-provoking conference.

Peter Allsopp

Editor

Australian Society of Sugar Cane Technologists





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greater productive capacity.



- Dr Danielle Skocaj Principal Agronomist
- Dr Barry Salter Manager Translation Research
- Emilie Fillols Weed Scientist
- · Erin Headon Graduate Agronomist
- · Nancy Rincon Senior Agronomist

- · Dr Matthew Schembri Project Officer
- · Dr Emtia Chandrima Entomologist
- Hang (Hank) Xu PhD Student in Entomology
- · Glen Park District Delivery Officer
- · Terry Granshaw District Manager Burdekin

Our purpose is to assist the Australian sugarcane industry to be competitive, productive and sustainable through innovative research and product development.

GUEST SPEAKERS:



VISION

Cr Hill is dedicated to ensuring that the future of Townsville is prosperous and progressive.

She wants to ease the cost of living for residents and focus the Council on services and programs that build a strong community, support business and employment, and safeguard Townsville's lifestyle.

Cr Hill is also committed to developing a strong council team to serve the city over the next four years.

Essential to this is ensuring that all councillors work in the best interests of the city.

CR JENNY HILL AM MAYOR OF TOWNSVILLE



BACKGROUND

Councillor Hill was born and educated in Melbourne, Victoria, and graduated from LaTrobe University with a Bachelor of Science in 1981. The following year she moved to Townsville with her fiancé who was enlisted in the Australian Army.

Cr Hill has 23 years' experience as a scientist with mining companies, the Department of Primary Industries, James Cook University and Townsville Hospital. She has also completed a Masters of Public Health and Tropical Medicine at James Cook University, which included management, economics and accounting. In 1982 she joined the Army Reserve, first serving in the Royal Corps of Australian Electrical and Mechanical Engineers (RAEME), maintaining and recovering defence vehicles. In 1987, she graduated from the Officer Cadet Training Unit (OCTU) as a General Service Officer (GSO).

Cr Hill has over 20 years' service in local government.

In 2012, she was elected the first female mayor of Townsville. Cr Hill was appointed as a Member of the Order of Australia (AM) as part of the 2023 King's Birthday Honours for her significant service to local government, and to the community of Townsville.

DR DAVID HARRIS

In his current role as Chief Research Consultant for CSIRO Energy, David leads the development of major industrial scale programs and projects which leverage state-of-the-art technologies across vital energy value and supply chains. The major focus of this work is to support development, demonstration and deployment of practical renewable and net-zero emissions energy technologies that enable large scale renewable energy production, storage, transport and utilisation. In his previous role as Research Director for CSIRO's Energy Technologies Program, David led CSIRO's development of key low emissions and hydrogen-based energy research programs for more than 25 years. He has strong personal and professional networks across the major energy research, manufacturing, transport, government and infrastructure sectors in Australia and internationally. These links and partnerships are key enablers in ensuring Australian energy initiatives are appropriately positioned to enable success of the crucial first-of-a-kind technology demonstrations currently being developed across clean energy value and supply chains underpinning major energy sector transitions that are now well underway at global scale.





DR CATHERINE O'SULLIVAN

In her current role as a senior research scientist in the Sustainability Program within CSIRO Agriculture and Food. Her work focusses on the nexus between food security, bioenergy and circular economy. She contributes to the Toward Net Zero Mission, exploring the role of the agriculture sector in the bioenergy industry, and she collaborates broadly to explore sustainable farming pathways for the grains, livestock, aquaculture and waste management industries.

TECHNOLOGY PATHWAYS SUPPORTING ADAPTABLE AND SUSTAINABLE SUGAR INDUSTRY TRANSITIONS

DR DAVID HARRIS AND DR DANIEL ROBERTS, CSIRO ENERGY

Net-zero policies and strategies are driving industrial sectors worldwide to develop, demonstrate and implement new business and operating models that support significant reductions in emissions and environmental impacts. The sugar industry has long been one of Australia's largest renewable energy generators via the use of bagasse as a source of power, heat and steam. Many industrial sectors are now seeking step changes to deploy technologies and systems to support sustainable energy, transport, manufacturing and industrial operations at the local, national and international scale. At the local scale, there are near term opportunities for technology adaptations, demonstrations and deployments directly aligned with 'in-business' sustainability challenges. At the grander scale, there are opportunities to demonstrate and establish entire new industry sectors.

The Australian sugar industry has been engaged for several decades with international consortia and leading industry partners in consideration of potential technology pathways that could be implemented to increase efficiencies of the use of bagasse and other industry byproducts in advanced energy systems. At the time of these earlier studies, the economics of high-efficiency biomass-based power generation were not sufficiently attractive to support major capital investments, and several integration challenges regarding industry scale and operability were identified. Furthermore, the demand, both locally and internationally, for higher value products such as sustainable fuels was not strong. Given the shifts in the global policy landscape, business models for these technology pathways may well be far more attractive now.

The earlier work of groups such as the Sugar Research Institute, International Sugarcane Biomass Utilization Consortium (ISBUC) and others have established an extensive and valuable understanding of the potential feedstock resource, the related logistics and handling challenges and key feedstock/technology integration needs required to underpin the design and assessment of the viability of a significant, complementary bioenergy industry in Australia. There is potentially a significantly differentiated biomass technology and market space available for a consolidated, large-scale player such as the Australian sugar industry in development of an industrial scale biofuel sector, and perhaps to leverage the ambitious scale envisaged by the potential export of sustainable hydrocarbon fuels, renewable hydrogen, or its carriers such as ammonia.

Australia could now be positioned to engage with, and potentially host, a significant international initiative to bring the key stakeholders and technologies together, potentially to demonstrate how the sugar industry could provide enabling 'baseload' feedstock and infrastructure with leverage and capacity to facilitate inclusion of other dispersed, and more complex, feedstocks into a sustainable global scale industry sector such as Sustainable Aviation Fuel.

The technology options supporting these opportunities are diverse, and many are unfamiliar to the host industries in Australia. Technology choice and configuration depends strongly on scale, product pathway, and local needs of mills and other processes. The components, however, are fairly well understood in other sectors, and there is considerable opportunity to bring the experience and knowledge from these stakeholders to supporting the sugar industry in this regard.

ARE BIOFUELS A SWEET DEAL FOR THE AUSTRALIAN SUGAR INDUSTRY? OPPORTUNITIES AND BARRIERS

DR CATHERINE O'SULLIVAN

Recent shifts in the global policy landscape towards a Net Zero future, combined with changes in consumer preferences, have created interest in Low-Carbon Liquid Fuels. Biofuels are viewed as an important transition fuel for several hard-to-abate industries including aviation, marine transport, heavy machinery, and long-distance rail and trucking.

The International Energy Agency states that biofuel demand in 2022 reached a record high of 170 000 ML and current Net Zero targets will require biofuel production growth of about 11% per year to 2030 to match rising demand. Without growth, feedstock supply will make meeting targets impossible, and without this supply being at low cost we will not deliver an economically viable biofuel value chain.

The sugar industry is well-placed to respond to this opportunity. Prior research has provided foundational knowledge on the potential role that the sugar industry can play in the energy sector, including analysis of the logistical and techno-economic factors that must be considered. However, recent developments in global markets and technologies are demanding a reassessment of past efforts and creation of a new discussion around how the Australian sugar industry can capitalise on the economic and societal benefits being created by the increasing need for low-carbon liquid fuels.

This talk will discuss some of these developments resulting from the emergence of demand from hard-to-abate industries, including;

- the prospects for energy production pathways beyond ethanol and electricity,
- the role of lignocellulosic biomass and potential for development of high biomass energy cane,
- the need for metrics to quantify sustainable farming practices and verify the carbon intensity of energy products,
- the critical role of logistics, processing and infrastructure and,
- the need for new business and farming models that enable farmers, mills, and fuel refiners to realise the value of the whole crop, including both the food and energy components.

CURRENT LIST OF ACCEPTED PAPERS

AGRICULTURAL SECTION

Lochner, Quirk - Pricing impacts and rationale for transitions in sugarcane farming in northern New South Wales and Queensland: a conversation starter

Bradshaw, Scardamaglia - Working together to achieve a sustainable outcome for the sugar industry and environment

Almeida, Hay, Dale, Lockie, Everingham - ESG analysis on-farm: a practical framework to support Australian producers

Headon, Rincon, Skocaj - Growers reduce uncertainty around adjusting nitrogen rates following legume cover crops in the Murray district

Skocaj et al - Impact of nitrogen fertiliser application timing and interaction with harvest time on crop performance

Schroeder, **Park**, **Skocaj**, **Wood** - Are urea-based enhanced-efficiency fertilisers widely appropriate for reducing nitrogen application rates in sugarcane production?

Halpin, Marshall, Rehbein, Bird, Cameron - The 'best' legume rotation for southern cane growers **Salter** - Impact of long-term trash blanketing and tillage prior to planting on soil carbon and sugarcane

Green, Larsen, Koci, Lai, Nelson - Long-term effects of gypsum on the chemistry of sodic soils under sugarcane

Larsen, Atkinson, Stringer - Nutrient content after the application of mill by-products and implications for nutrient management

Schembri, Fillols, Power - Nutrients and pesticides in end-of-paddock run-off water for farming practices in the Central region

Green, Larsen, Liu, Nelson - Removal of carbon dioxide via enhanced weathering of sugarcane mill ash under different soil conditions

Holden, Nelson, Bird - Removal of carbon dioxide through enhanced weathering of basalt in acidic soils under sugarcane

Wang, Collins, Attard, Everingham - Enhancing efficiency and profitability: the impact of smart irrigation scheduling in sugarcane production systems

Bhuiyan - Temporal development of smut, yield loss, and integrated management strategies using a fungicide and varietal resistance

Waters, Chen, Di Bella, Nielson, Harragon, Azghadi - Detection of ratoon stunting disease with freely available satellite-based multispectral imaging and machine learning

Milla, Magarey - Extension and RSD management in the Burdekin: challenges and successes **Magarey** - The BSES yield decline program: foundational research into soil factors affecting root health in the Australian sugarcane industry

Zia, Sambasivam, Tonissen, Gao, Ford, Bhuiyan, Li - Carbon nanodots as novel fungicides for driving disease prevention in sugarcane

Watts, Zia, Sambasivam, Nguyen, Tonissen, Chen, Ford, Bhuiyan, Li - Toxicity of carbon dots to sugarcane and human cells

Fillols - Post-emergent control of balsam pear

production

Emtia, Bawa, Farnan, Powell - Review of soldier flies in sugarcane and identification of some key research gaps

Bawa, Emtia, Farnan, Powell - Using novel screening methods for evaluating insecticides against canegrubs

POSTERS

Park - Effect of application of Moddus® on yield of stand-over sugarcane in the Herbert River District in 2023

Leekar, Jensen, Chumpia, Schroeder - Potential of UAV imagery and Learning Techniques for determining gaps in sugarcane rows

Robertson, Connellan, Maitland - Implications for sugarcane nutrient management following a green-manure crop of sunn hemp

CURRENT LIST OF ACCEPTED PAPERS

MANUFACTURING SECTION

Broadfoot - Potential major changes in process control of Australian sugar factories

Matsueda, Sheehan, Gilberd - Modelling the integration of bagasse pyrolysis into sugar mill energy systems

Qureshi, Ghazanfar - The journey towards sustainable business through technological advancement and diversification into the downstream industry: a role model in the Pakistan sugar industry

Wilson, Burke - Introduction of a new Laboratory Information Management System (LIMS)

Kent, Plaza, Fraga, Lucke, Ryan, Green, Ryan - Automating the handling of soft canes through the factory

Bakir, Plaza, Broadfoot - Evaluation of a pilot-scale system for removing bagacillo from juice **Attard, Sheehan, Gilberd** - Using activated bio-char to reduce colour during juice clarification in a raw sugar mill

Broadfoot, Fraga - Guidelines for cost-effectively improving sugar recovery from C massecuite cooling crystallisers

Jenssen, Broadfoot - Measured and predicted consistency values for C massecuite

Fraga, Lavarack, Broadfoot, White - Use of dry substance as the process variable to control massecuite concentration during pan boiling

Mann, Broadfoot - Effect of factory reliability on bagasse usage and surplus

Wallace, Rodman - Challenging convention to improve chemistry management of sugarmill boiler stations

Marcelo, West, Kane - Revised design of signal poles used at active level crossings of cane railways

POSTERS

Gilberd, Birch, Bakir - A clarifier scraper design to minimise nuisance lifting

Matthews - Using hydrotreated vegetable oil (HVO) as a renewable fuel in the Wilmar locomotive fleet

Philp - Retrofitting versus replacement for obsolete remote shunting unit (RSU) systems

Jennings - Analysis of diffuser juice application at Inkerman Mill

Nilon, Richter - A suspected Maillard reaction in a continuous C Massecuite pan - findings and outcomes

Biggs, McLean - Pan condenser performance versus modelled performance

Badger, Kelly - Towards zero effluent in Wilmar's Proserpine mill

Rózsa, Rukavina - Supersaturation-based control of sugar crystallization

Note: This list was correct at 24 February but is subject to change. Several more papers are still being reviewed.

AGRICULTURAL TOUR

The Agricultural tour will be on Tuesday 16th April. The tour will head to the Rocks Farming Company in the Burdekin region where they will talk about high-flow automated furrow irrigation and the journey they have taken to identify the interface they use and the positive impacts it is having on their productivity, water use and rising groundwater in the Burdekin River Irrigation Area. Following this, there will be a demonstration of the AutoWeed spot spray technology which will highlight the automatic detection and spot spraying of weeds in young plant cane, all in one pass. Alex Olsen will provide background on the AutoWeed technology including their innovative solutions to overcome the challenges that green-ongreen weed detection presents, how they use AI to process images in the blink-of-an-eye and the impact of clouds/shadows on deriving a solution all at a speed of 8 km/h. Finally we will head over to the Farmacist Research Facility Shed where they will showcase the latest advancements in precision irrigation by using Observant™ automation technology, in field monitoring and data platforms. Also on display is a higher resolution GPS positioning system using NTrip and a demonstration of our AgLeader AutoSwath controlled independent chemical application sprayer.



Live flow and nitrate sensor mod on centrifical pump



Seven row seven section flatboom with Isobus rate control and Swath control



AutoWeed Dual Tank Sprayer - Fallow



AutoWeed Dual Tank Sprayer - Soybean

Contact: Peter Larsen 0437 938 393

Dress code Requirements:

Long Sleeve Shirt Long Pants Enclosed Shoes Hat

To be provided:

Morning Tea Lunch

Itinerary

7:30am: Arrive at TECC for 8am departure

9:30am: Rocks Farming Presentation

11:30am: AutoWeed Presentation

12:30pm: Travel to Farmacist Research Facility

1:00pm: Lunch

1:30pm: Farmacist Presentation

3:30pm: Travel to TECC **4:45pm:** Arrive TECC

Itinerary is a guide only - Subject to change based on numbers and weather.

MANUFACTURING TOUR

The Manufacturing tours will be on Friday 19th April. The tour will visit Pioneer Mill in Brandon and the future SunHQ Hydrogen Hub and Solar farm at the Sun Metals Zinc Refinery south of Townsville. We intend to offer these tours in two groups.





Pioneer Mill was first established in 1883 along with 5064 acres of land for cultivation of sugar cane under a partnership called the Drysdale Bros and Co. Pioneer Sugar Mills Ltd. took over ownership and operation of the business in 1914 along with the establishment of Inkerman Mill on the banks of the Burdekin River. Pioneer Sugar Mills Ltd. was acquired by CSR in 1988 and then acquired by Wilmar in 2012 along with seven other sugar mills.

Pioneer Mill surpassed 2 million tonnes of cane crushed in 2011 however normally crushes an average of 1.7 million tonnes of cane and produces about 260,000 tonnes of sugar annually. In 2005, Pioneer Mill commenced significant cogeneration activities and is now the largest biomass-based power generator in Australia, with the ability to generate outside of the crushing season with a dedicated Boiler and Condensing Turbine for power generation. Along with the installation of the cogeneration plant, major energy efficiency upgrades were made including full electrification of the shredder and milling train, boiler pressure upgrades and process vapour bleeding to reduce steam on cane requirements.

Pioneer is currently undergoing a major evaporator replacement project which seeks to replace 10 old evaporator vessels with the latest evaporator technology. The first of these replacements is currently underway which will see the removal of the two final evaporators installed in 1964 and 1974 and installation of a single SRI Robert evaporator. Pioneer is also undertaking generator compliance testing during the time of the tour where parts of the factory required to run the two large turbogenerators will be online.

Located within the Sun Metals Green Industrial Precinct in Townsville, Australia, SunHQ will involve a 1 MW polymer electrolyte membrane (PEM) electrolyser that will produce green hydrogen from a behind-the-meter connection to the colocated 124 MW Sun Metals Solar Farm. SunHQ will be one of the largest fully integrated, green hydrogen production and refuelling facilities in Australia. The facility will have a production capacity of 155 tonnes of green hydrogen per annum, ~90 tonnes of which will be used to power five 140 tonne-rated Hyzon Motors fuel cell electric trucks (FCET). These FCETs are expected to be the largest of their kind in the world. The zero-emission trucks will replace their diesel equivalents and avoid 1,300 tonnes of CO² emissions each year.

Contact: Jonathon Gilberd 0447 690 912

Dress code Requirements:

Long Sleeve Shirt Long Pants Enclosed Shoes (Steel Caps preferred)

To be provided:

Morning Tea Required PPE

Itinerary

07:15am: Arrive at TECC for 7:30am departure

08:35am: Arrive Pioneer Mill

08:45am: Tours of mill and workshops **10:00am:** Travel Sun Metals & Morning Tea

11:10am: Commence tour of Sun Metals

12:10pm: Depart for TECC **12:50pm:** Arrive TECC

Itinerary is a guide only - Subject to change based on numbers and weather.





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Redbacks Engineering

Renold

Retrocast

SEW Eurodrive

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SRI

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Sulzer Australia Teco Australia

Timken

Tsubaki Australia Pty Ltd

Vantage BMS

VEGA Australia

WEG Australia

Weir Minerals

Wulguru Group

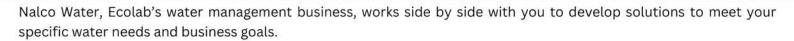


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INDUSTRY EQUIPMENT EXHIBITION

The 2024 ASSCT Industry Equipment Exhibition will be open on Wednesday 17 April and Thursday 18 April 2024, in the TECC.

It is proposed that the Exhibition will be set up on Tuesday 16 April and will be officially opened during the Welcome Function. The exhibition will close late Thursday afternoon.

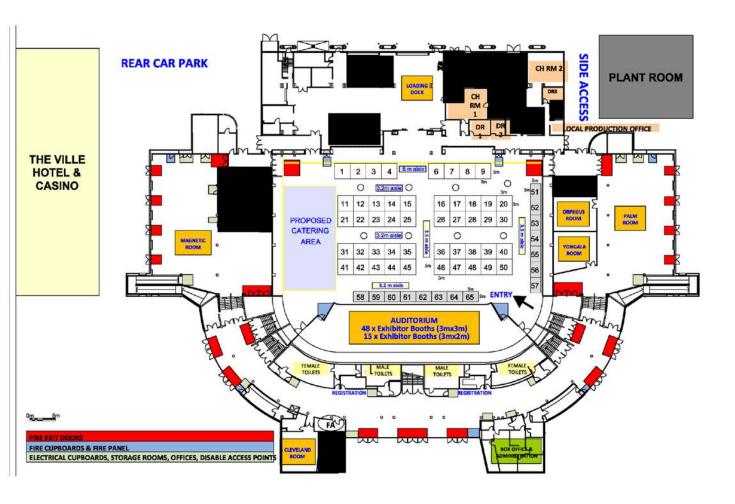
We have had an outstanding response to exhibition booths this year with 53 exhibitors confirmed to showcase.

Are you considering exhibiting at the Industry Equipment Exhibition? Contact Monica Lumsden on 07 4954 3956 or Email: admin@assct.com.au to find out more.





TOWNSVILLE ENTERTAINMENT & CONVENTION CENTRE





Accommodation

For our 2024 Conference, we have teamed up with <u>The Ville Resort</u>. Please contact the reservations team on 07 4722 2333 and advise Discount Code ASSCT24 for 15% off.

Due to Townsville's popularity, we recommend booking your accommodation early.

Parking

TECC provide free parking at the rear of the building and in the reserved parking only space in front of the building. There are a number of other free parking areas for guests to utilise as outlined on the map marked with P.

Flights to TSV* Arriving 16 April

CNS -TSV 07:25, 08:55, 11:45, 15:50 BNE-TSV 08:10, 08:35, 12:25, 14:05, 16:35 MKY-TSV: 10:30,12:25, 14:30

Flights from TSV* Departing 19 April

TSV-CNS 09:20, 12:55, 17:25, 18:30 TSV-BNE 06:00, 08:50, 13:05, 14:45, 17:15 TSV-MKY 12:15, 16:15

*Note: Flights listed are with Oantas Australia



Transport

Townsville offers a number of transport options for those commuting in and around Townsville CBD. The main bus service offered is through Kinetic. You can find ticketing, Route information and timetables on <u>Translink</u>.

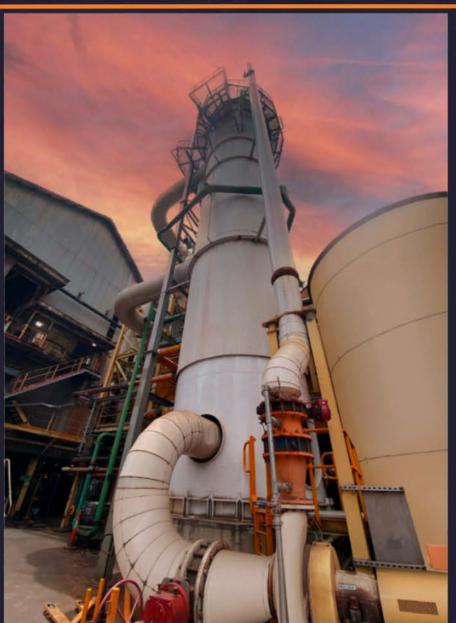
Townsville taxi services is through 13CABS (13 2227) or you can book online or through the 13CABS app. The alternative Taxi company is Black & White Cabs, you can book online or by calling 133 222

Many ride share options are available such as: Uber, Ola, DiDi & Shebah - For these options, you are required to have downloaded the app via google play or app store and book via the corresponding app.

Another great alternative offered in Townsville CBD, Castle Hill & The Strand are E-Scooters. There are two companies - Beam (Purple) or Neuron (Orange). Both of these options require you to have their corresponding app downloaded in order to unlock and utilise the E-Scooter.









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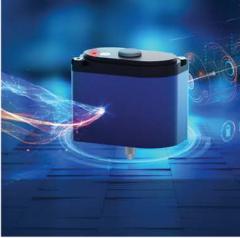


















For further information or to request a quote, contact your nearest WEG office below:

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