

# Hazardous Areas & Energy Safety Conference



30th April & 1st May 2025  
Brisbane, Australia



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# Overview

## Hazardous Areas & Energy Safety

Dust explosions pose significant risks. They can destroy facilities and cause fatalities and serious injuries. Dust may be a manufactured product, or a by-product generated during manufacturing, handling, storage, or waste disposal activities.

Examples of everyday combustible dust include agricultural materials - such as grain, pharmaceuticals, forest products, metals, organics and 3D printing.

The Hazardous Areas & Energy Safety Conference will cover dust hazard analysis procedures, providing an in-depth look at managing materials and activities in facilities with combustible dust. Case studies focusing on food and agricultural products will illustrate hazard identification and mitigation strategies for new and existing facilities.

Australia's lack of significant dust explosion incidents has resulted in complacency towards combustible dust safety, with the prevailing "It won't happen here!" mindset. The presentation will address combustible dust safety specialists' challenges in Australia and discuss the need to change regulations and standards to overcome current complacency before disaster strikes.

Day Two will bring together industry leaders and experts to discuss the latest advancements, challenges, and best practices in ensuring safety across hazardous environments and emerging energy technologies. As industries continue to evolve, the need for robust safety strategies, regulatory compliance, and innovative solutions has never been more important.

This year's program features various topics, from process safety in energy projects to advanced hydrogen safety considerations, the importance of international standardisation, and the risks associated with battery energy storage systems.

Attendees will gain valuable insights into navigating complex regulatory landscapes, enhancing risk management strategies and driving innovation in energy safety. The conference offers practical takeaways for the oil and gas,

chemical processing, renewable energy, and industrial safety sectors. It will cover operational safety and compliance with local standards.

### Benefits of Attending:

- **Safety Awareness.** Gain critical insights into mitigating explosion and fire risks, particularly in combustible dust environments and hazardous energy storage systems
- **Regulatory Compliance.** Understand evolving safety regulations and standards, including IEC 60079, and how they impact the industry.
- **Risk Management Strategies.** Learn about best practices for hazard identification, safety planning, and emergency response to prevent catastrophic incidents.
- **Industry Case Studies.** Explore real-world applications and lessons learned from industry leaders in oil and gas, chemical processing, renewables, and manufacturing.
- **Innovation and Technology Insights.** Stay ahead of trends in process safety, hydrogen technology, and battery energy storage risk management.
- **Combustible Dust Safety & Hazard Analysis.** Learn how to manage materials and chemicals, focusing on food and agriculture products, and learn new strategies to mitigate risks.
- **Networking Opportunities.** Connect with industry professionals, regulatory authorities, and safety specialists to exchange ideas and build professional relationships.

## Who Should Attend?

This conference is essential for professionals across various sectors, including:

- Oil and Gas
- Chemical Processing
- Renewable Energy
- Hydrogen Production and Utilisation
- Food and Agriculture
- Industrial Safety
- Electrical Engineering/Mechanical Engineering
- Safety Management

## 2025 Keynote Speakers

### International Keynote Speaker - Dr Chris Bloore

**B.Sc. (Chem), B.E. (Chem) Hons, M.Sc., Ph.D., FNZIFST, FIChemE**

Chris has been a leading figure in the food processing and safety industry for over five decades. From 1972 to 1990, he worked at the New Zealand Dairy Research Institute, holding multiple research and management roles.

Since 1990, Chris has been a self-employed consultant providing expert advice to food industries across New Zealand, Asia, Australia, Europe, and North America. His core expertise is process and product optimisation, training, and dust explosion safety.

Chris is a recognised global leader in his field. He has investigated major Australasian milk powder plant explosions and contributed to developing explosion protection measures for spray drying and powder handling plants. He also served on the Standards Australia subcommittee for drafting the AS/NZS 4745 Code of Practice for Handling Combustible Dusts.

In 1999, he was a Research Fellow at the Dairy Process Engineering Centre in Werribee, Australia. Over his career, he has conducted over 70 formal Dust Hazard Analyses and delivered over 175 half-day training courses for food and feed plants worldwide.

Chris is also an experienced expert witness in dust explosion safety cases, providing critical insights and testimony in legal proceedings. His extensive knowledge and hands-on experience make him a sought-after consultant and trainer in the industry.



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### Keynote Speaker- Nigel Cann

**BE (Chem&Mats), CEng, CEnv, FIChemE, RPEQ**

Nigel has been active in the Australian Process Safety community since the Longford Gas Plant explosion, when, as the manager of a PVC resin plant, he led the development of the first significant hazards facilities-based safety case in Australia.

During the early days, he shared lessons learned with the significant hazard communities and regulators nationwide. After overseeing the replacement of the plant distributed control system at Arup, he has consulted on planning, environmental impacts, and renewable energy projects. He is Arup's Global Chemical Engineering Skills Network Leader. He undertakes several IChemE and RPEQ volunteer roles.



# Day One | Wednesday 30<sup>th</sup> April, 2025

9:00am

## Session One | Keynote Presentation

### Identifying Lurking Combustible Dust Hazards

**Dr. Chris Bloore:** B.Sc. (Chem), B.E. (Chem) Hons, M.Sc., Ph.D., FNZIFST, FICHEM

Dust explosions can destroy facilities and cause multiple fatalities and severe injuries. The combustible material may be a manufactured product, or a by-product generated during manufacturing, transport, handling, storage or waste disposal activities. Common combustible dusts include agricultural materials, chemicals, pharmaceuticals, forest products, solid fuels, metals subject to grinding, polishing and 3D printing and plastics.

This presentation will outline dust hazard analysis procedures that cover all materials and activities associated with facilities where combustible dusts may be generated, used, or handled. Case studies that cover food and agricultural products, will illustrate hazard identification and mitigation for new and existing facilities.



10:00am

## Morning Tea



10:30am

## Session Two

### Challenges Promoting Combustible Dust Safety in Australia

**Michael Rice:** Combustible Dust Specialist, *Zero Industries*

Australia has been lucky to avoid the catastrophic dust explosion events experienced in other countries. The lack of newsworthy disasters has led to a low emphasis placed on combustible dust safety by Australian industry and safety regulators.

This presentation will focus on the challenges of working in a country where there are severe dust risks, but where the, "It won't happen here!" attitude dominates. The presentation will conclude with a discussion about the changes to regulations and standards which have been designed to mitigate dust explosions in a complacent environment.



11:15am

## Session Three

### High-stakes Housekeeping: How to choose the right specialist vacuum for your hazardous area

**Chris Callicott:** Industrial Vacuum Systems Specialist (PACIFIC), *Nilfisk*

Effective housekeeping is essential in hazardous environments, where the wrong equipment can lead to serious risks. This presentation explores the importance of selecting the right specialist vacuum technology, using real-world case studies to highlight both successes and failures. Attendees will gain insights into available solutions, key decision-making factors, and lessons learned from past incidents. By emphasising information-driven choices and expert consultation, we will demonstrate how the right equipment enhances safety, reduces risk, and ensures compliance. Join us to discover best practices for maintaining a safe and efficient workspace.



**12:00pm****Lunch**

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**1.00pm****Session Four (Virtual Session)****The surprising effect of explosion isolation on dust explosion venting****Kees Van Wingerden: VP Industrial Risk, Senior Principal Consultant, Vysus Group**

To counteract the possible consequences of dust explosions in dust handling equipment explosion venting is the most common technology used. Standards are available to design explosion vents (e.g. EN14491 and NFPA68) and are based on numerous experiments. To protect connected equipment explosion isolation devices are used. The testing of explosion isolation valves mounted onto pipes connected to vented vessels showed that explosion pressures during the testing were considerably higher than one would expect based on the standards. This would imply that when applying explosion isolation devices and especially valves in practice in combination with explosion venting one should mount larger vents to protect the equipment.

An overview of available experimental evidence will be given, showing the degree of pressure increase occurring, the main factors of influence and a most likely explanation of the phenomenon

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**1.45pm****Session Five****Importance of sound dust-free design principles, housekeeping, and employee culture in maintaining a safe hazardous area****James Austen: Process Engineer, Kymera International**

A dust explosion typically consists of a primary explosion followed by a more severe secondary explosion. Secondary explosions occur when surrounding dust is dispersed into the air by the primary blast and ignited by the heat of the initial explosion. The secondary explosion is far more severe than the first.

There are many techniques, methods, and technologies for preventing the primary explosion; this is often the focus. The Secondary explosion often lacks consideration but is usually avoided by using sound, dust-free design principles, housekeeping, and employee culture.

This presentation will examine how the Ecka Granules Australia plant, in Bell Bay, manages its highly explosive Aluminium dust hazard. It will also cover some of the significant changes that have occurred over the years.

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**2.30m****Afternoon Tea**

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**3.00pm****Session Six****Explosion Protection System Methods****Chris Trapnell: National Sales Manager, Fire Protection Technologies**

An explosion is generally defined as a destructive chemical reaction that occurs in milliseconds and produces noise, heat, rapid expansion of gases, and pressure.

The explosion hazard is, however, very often not eliminated by trying to prevent explosions. Over the years, experience has shown that explosions occur, even in adequately managed plants and where explosion prevention measures are in place. Protection against the effects of possible explosions is very often also needed to ensure a safe plant. Therefore, it is necessary to implement explosion protection systems to satisfy the protection objective. This can be achieved through various methods such as passive protection, active protection/suppression or a combination of both. This presentation outlines the available options and how they are implemented into a process.

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### 3.45pm **Session Seven**

#### **A Look at Static Electricity Incidents, Regulations & Standards in Hazardous Areas**

**Carmello (Cem) Novella: Managing Director, Novella Group Pty Ltd TA Static Electricity Control**



In 2024, Australian regulators met in Melbourne to discuss concerns relating to static electricity in the aftermath of three severe fires and two fatalities. Facilities that store and/or blend dangerous materials have been identified as workplaces where static electricity is considered a “significant” ignition risk. These places of work are required to understand, identify, and control static electricity, but in practical terms, what does this mean?

How does a workplace control static electricity and comply with the requirements of Australian Standards and that of the regulators?

In this presentation, we will examine what a site must do to comply with Australian Standards. We will demonstrate some of the “practical” static electricity controls, paying particular attention to:

IBCs, Drums and Pails, Vats, Vessels, Storage Silos and Tanker Unloading.

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### 5:00pm **Networking Soirée**

**Arup Soirée @ Pool Deck**



# Day Two | Thursday 1<sup>st</sup> May, 2025

## 9:00am Session Eight | Keynote Presentation

### Process Safety and the challenges of the renewable energy transition

**Nigel Cann: Process Safety Engineer, Arup**

Process safety plays a wide and varied role in new and developing energy projects. It ranges from establishing inherently safer inventories and layouts, to creating planning information, and detailed HAZOPS and safety cases for larger-scale developments. The renewable energy transition adds to the complexity of this work due to the ongoing development of new technologies, the tendency towards assumptions of safety, and the inherent properties of the materials being handled.

This presentation will draw on the real experiences of those who have been involved in renewable energy projects, from energy farms to battery storage, green hydrogen and chemical derivatives, to new uses such as data centres in the age of AI.



### Achieving Better Safety Outcomes with a Risk-Based Approach to Fire Safety

**Ben Smith: Risk & Process Safety Lead, Arup**

Renewable technology advances, particularly hydrogen (and derivatives) and lithium-ion batteries, are introducing new fire hazards to energy and adjacent sector projects. The risks that the process industry has been managing for decades are being introduced to the built environment in novel ways. Standards and building codes are struggling to keep pace.

This presentation will outline the introduction of a risk-based approach that utilises process safety principles to the projects. This is often through a Fire Safety Study which allows cutting-edge enterprises to proceed with better safety outcomes and with the buy-in from regulators and fire brigades alike.



## 10.00am - 10.15am Q&A Arup

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## 10.30am Morning Tea



## 11.00am Session Nine

### Advanced Hydrogen Process Safety

**Derek Cross: Engineering Team Lead, Gexcon Australia**

Industry has been talking about hydrogen and its properties for a few years now. As such, many people are familiar with the general process safety characteristics of hydrogen, such as its flammability, ignitability, buoyancy, etc.

Given this increased awareness and understanding of hydrogen there is limited value in revisiting its basic characteristics.

Instead, this presentation will look at some of the more interesting and advanced process safety characteristics of hydrogen, such as the impact of increased O<sub>2</sub> concentrations, specific ignition mechanisms and detonations.



## 11.45am Session Ten - Panel Discussion

### Gas and Electrical Safety in Queensland – Legislative Clarity & Compliance

**Hassan Mahmud:** Principal Inspector Future Fuels, Electrical Safety Office, *Petroleum and Gas Inspectorate Resources, Safety and Health Queensland*



**Martin Driscoll:** Lead Inspector Electrical Safety (Renewables), *Electrical Safety Office of Industrial Relations*

**Scott Rogers:** Chief Advisor Hazardous Chemicals, *Workplace Health and Safety Queensland Office of Industrial Relations*

Each presenter will give a brief presentation about the legislation administered by Queensland's Electrical, Resources, and Workplace Regulators in the renewable hydrogen space. Delegates will gain an understanding of the licensing requirements for Major Hazard Facilities and the upstream duties and responsibilities of designers, manufacturers, importers, and installers involved in hazardous chemical (Hazchem) plant operation. This will be followed by a panel discussion.



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## 12.45pm Lunch

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## 1.30pm Session Eleven

### Your path to safety: The world of standards and an introduction to the IEC 60079 series

**George Sfinas:** Engagement Manager (Electricity & Gas), *Standards Australia*



Have you ever considered becoming involved in standards development to set international standards in hazardous areas and energy safety? Join us for an insightful presentation on the significance of standardisation. Discover how contributing to standards development can enhance your professional growth, drive innovation, and shape the future of your industry.

This session will also cover the key aspects of the IEC 60079 series, including equipment protection methods, classification of hazardous areas, and specific requirements for different types of protection, like flameproof enclosures and intrinsic safety. It will explain how these standards ensure safety and reliability in industries such as oil and gas, chemical, and mining.

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## 2.15pm Session Twelve

### Mitigating Battery Energy Storage Systems risks: An industry-wide perspective on fire hazards, chemical spills and the emergency response

**Adrian MacHunter:** Director, *MWS Risk*



Mitigating Battery Energy Storage Systems risks: An industry-wide perspective on fire hazards, chemical spills and the emergency response.

In the evolving landscape of energy storage technologies, Battery Energy Storage Systems (BESS) are often key elements in improving grid stability, renewable energy integration, and providing emergency power supplies. The deployment of these systems is not without risks; fire hazards and chemical spillages, particularly, pose significant challenges to business continuity, operational safety, emergency response and environmental protection.

This presentation will provide a comprehensive review and analysis of the fire and chemical spillage risks associated with Lithium Iron Phosphate (LFP) and flows battery technologies, including all iron and zinc-bromine systems. It will focus on their applications within energy networks. The risks associated with the integration of BESS into existing infrastructures will be evaluated, including its impact on accompanying systems, such as inverters and cooling.

**3:00pm**

**Afternoon Tea**



**3.15pm**

**Session Thirteen**

**A Look at Lightning Protection, Incidents Regulations & Standards in Hazardous Areas**

**Carmello (Cem) Novella: Managing Director, Novella Group Pty Ltd TA Static Electricity Control**



Installing conventional lightning protection systems in non-hazardous areas generally minimises the effects of lightning. These have successfully protected some of Australia's most important cultural landmarks and buildings for decades.

Can the same be said for hazardous area applications and worksites? What are the requirements of Australian Standards and regulators to control lightning as an ignition source specific to hazardous areas?

In this presentation we will examine why this is a contentious issue amongst the lightning protection community and what a site must do to comply with Australian Standards, regulations, and codes of practice. We will also demonstrate some of the practical lightning protection controls, paying particular attention to gas venting, forward ionisation and storage, and unloading and loading of dangerous goods practices.

**4.00pm**

**Session Fourteen**

**Modelling Battery Hazards for Safer Operations**

**Sonia Ruiz Pérez: Effects & RISKCURVES Product Manager, Gexcon Australia**



We know that the storing of electricity in lithium ion batteries is a growing area and that it is only going to keep growing from here. We also know that lithium ion batteries can cause dangerous accidents. However, up until recently, accurately modelling and understanding the consequences of lithium ion battery incidents has been difficult.

Now new tools and techniques are changing and improving our ability to model the consequences of thermal runaway events. This presentation will talk generally to lithium ion battery risks, what can go wrong and how to assess those consequences to better control them.

**5:00pm**

**Close of Conference**

**An opportunity for delegates to collaborate with speakers for a Q&A.**



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