

HiTeMP-2 Forum: Zero Carbon High Temperature Minerals Processing

Addressing the transition of high temperature minerals processing towards net-zero-CO₂ emissions.

16 – 18 March 2020 | The National Wine Centre, Adelaide

Speaker line up featuring:



Prof Markus Reuter,
Director, Helmholtz
Institute Freiberg for
Resource Technology,
Germany



Dr Vincent Chevrier,
General Manager,
Business Development,
Midrex



Ms Lina Hockaday,
Senior Engineer,
Mintek, South Africa



Craig Wood, CEO,
Vast Solar



Prof Greg Metha,
Dept. of Chemistry,
the University of
Adelaide



Prof Ross Garnaut,
the University of
Melbourne



Mr Toru Ono, Director,
Nippon Steel
Research Institute
and Policy Advisor,
Japan Iron and Steel
Federation



Mr Nick Johns Hatch,
Process Engineer,
Hatch



Prof Ellen Stechel,
Co-Director, ASU
LightWorks, Arizona
State University



Prof Karen Scrivener,
Swiss Federal Institute
of Technology



Cedric Philibert
Energy and Climate
Analyst



Dr Wes Stein, Chief
Technologist, CSIRO



Matthew White,
Senior Engineer,
Hatch



Dr Lars Amsbeck,
Managing Director,
HelioHeat



Darren Miller, CEO,
Australian Renewable
Energy Agency



Mr Steve Schell
CTO, Heliogen



Prof Edward Buckingham,
Monash Business School



Ms Suzana Carp,
Head of EU Engagement,
Sandbag



Mr David Varcoc,
State Manager (NSW,
ACT), Australian Steel
Institute



Dr Alessio Scarsella,
Director Bauxite and
Alumina Technology,
Outotec



Felicity Lloyd, Business
Improvement and
Sustainability
Manager, Adelaide
Brighton



Dr Keith Lovegrove,
Managing Director,
ITP Thermal Pty Ltd



Dr Matti Lubkoll, Project
Manager, German
Aerospace Center,
(DLR)



Dr Warren South, Director,
Research and Technical
Services at Cement Concrete &
Aggregates Australia



Prof Willy Kracht,
Head, Department
of Mining, University
of Chile



Dr Kristen Jordal,
Research Scientist,
SINTEF



Dr Robert Trezona,
Partner, IP Group and
Head of Cleantech



Dr Dominique Hes,
Principal Researcher,
Beyond Zero
Emissions



Mr André Vidal, Head
of Project Support
Energy, Norsk Hydro
Brazil



Mr Geoff Matthews
Head of Strategy,
Energia Potior



Dr Habib Zughbi,
Senior Research Engineer,
BlueScope



Prof GJ 'Gus' Nathan,
Director, Centre for
Energy Technology,
the University of
Adelaide



Prof Jamal Chaouki,
Polytechnique
Montreal



Kobad Bhavnargi,
Global Head of
Special Projects,
BloombergNEF



Dr Asem Mousa, Principal,
Low Emissions
Technology, BHP

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DAY 1

Monday 16 March 2020

Session 1: Global drivers

8:30am	Coffee and registration	
9:00am	Welcome from the Chair	Ms Susan Jeanes, Chair CET Advisory Board, The University of Adelaide
9:05am	Welcome to the University of Adelaide	Prof Richard Hillis, Pro Vice-Chancellor (Research Performance)
9:10am	HiTeMP-2 introduction and overview	Prof GJ 'Gus' Nathan, Director, Centre for Energy Technology, The University of Adelaide
9:25am	Intro to Slido	Dr Alfonso Chinnici, Centre for Energy Technology, The University of Adelaide
9:30am (via teleconference)	Global economic opportunities for trade in green, energy-intensive products	Mr Cédric Philibert, Energy and Climate Analyst
9:50am (via teleconference)	Keynote Address: Australia's opportunity for carbon neutral metals	Prof Ross Garnaut, Professor of Economics, The University of Melbourne
10:20am (via teleconference)	ARENA support for industry to reduce emissions	Mr Darren Miller, CEO, Australian Renewable Energy Agency (ARENA)
10:40am	Panel discussion	
11:00am	Coffee break	
11:20am	Chairs	Ms Susan Jeanes, and Prof Mike Young, Centre for Global Food and Resources, The University of Adelaide and Future Fuels CRC
11:20am (via teleconference)	Global drivers and finance opportunities for the sector	Dr Robert Trezona, Head of Cleantech, IP Group
11:40am (via teleconference)	Overcoming barriers to industrial decarbonisation in the EU: Complementing ETS with additional supportive policies	Ms Suzana Carp, Head of EU Engagement, Sandbag
12:00pm (via teleconference)	Global drivers for co-investment in large scale demonstrations - climate, regions and company hedging strategies	Mr Jason Nielsen, Director Strategic Projects, Climate-KIC
12:20pm	Panel discussion	
12:45pm	Lunch	

Session 2A: Sources for carbon-free high temperature heat – hydrogen, electrical and CO₂ capture

1:30pm	Introduction by the Chair	Prof Mike Young, The University of Adelaide
1:35pm (via teleconference)	BNEF hydrogen economy outlook - can hydrogen be the molecule to power a clean economy?	Mr Kobad Bhavnagri, Global Head of Special Projects, BloombergNEF
1:55pm	Emerging novel technologies for production of renewable hydrogen and oxygen from water	Prof Greg Metha, University of Adelaide
2:15pm	Closing the carbon cycle: Carbon dioxide removal and verifiable offset mechanisms	Prof Ellen Stechel, Co-Director, ASU LightWorks, Arizona State University
2:35pm	Panel discussion	
3:20pm	Coffee break	

Session 2B: Sources for carbon-free high temperature heat – solar thermal

3:40pm	Introduction by the Chair	Prof Ellen Stechel, ASU LightWorks
3:45pm (via teleconference)	Pathway to high temperature solar thermal technology	Dr Wes Stein, Chief Technologist, CSIRO
4:05pm (via teleconference)	24/7 renewable high temperature heat utilising ceramic particles as heat carrier	Dr Lars Amsbeck, Managing Director, HelioHeat
4:25pm (via teleconference)	Advanced heliostat field for carbon-free, high temperature heat	Mr Steve Schell, CTO, Heliogen
4:45pm (via teleconference)	CSP: cost-effective carbon-free heat and electricity for high temperature process industries	Mr Craig Wood, CEO Vast Solar
5:05pm	Panel discussion	
5:40 – 6:00pm	Facilitator summary and reflection from day one	
6:30 – 8:30pm	Cocktail function	Opening address by the Hon Dan van Holst Pellekaan MP, SA Minister for Energy and Mining

DAY 2

Tuesday 17 March 2020

Session 3: Iron/Steel – technology and research

8:45am	Coffee	
9:00am	Introduction by the Chair	Mr John Tsalapatis, Metallurgy Manager, Liberty OneSteel
9:05am	Sustainable steelmaking: a national priority	Mr David Varcoe, State Manager (NSW, ACT), Australian Steel Institute
9:15am	Commercial pathways into low-carbon steel export markets	Prof Edward Buckingham, Professor of Management and Director of Engagement, Monash Business School
9:35am (via teleconference)	A China-Australia green steel industry?	Dr John Pye, Research School of Electrical, Energy and Materials Engineering, ANU
9:55am (via teleconference)	Electrifying industry - community drivers and transition pathways	Dr Dominique Hes, Beyond Zero Emissions
10:15am	Panel discussion	
10:50am	Coffee break	
11:15am (via teleconference)	Challenges of the circular economy: A process metallurgical and product design perspective	Prof Markus Reuter, Director, Helmholtz Institute Freiberg for Resource Technology, Germany
11:35am (via teleconference)	JISF long-term vision for climate change mitigation, "A challenge towards zero-carbon steel"	Mr Toru Ono, Director, Nippon Steel Research Institute, Policy Advisor, Japan Iron & Steel Federation (JISF)
11:55am (via teleconference)	Recent activities at BlueScope aimed at reducing iCO ₂ emissions	Dr Habib Zughbi, Senior Research Engineer, BlueScope
12:15pm (via teleconference)	The changing role of iron-making in the transition to the hydrogen economy	Dr Vincent Chevrier, Midrex Technologies Inc
12:35pm	Panel discussion	
1:00pm	Lunch	

Session 4A: Alumina and aluminium

2:00pm	Introduction by the Chair	A/Prof Maziar Arjomandi, Centre for Energy Technology
2:05pm (via teleconference)	Carbon neutrality in the aluminium value chain: Bauxite to smelter grade aluminium	Dr Alessio Scarsella, Vice-President Alumina and Director Bauxite and Alumina Technology, Outotec
2:25pm (via teleconference)	Alternatives to reduce Norsk Hydro's CO ₂ emissions	Mr Andre Ramos Salles Vidal, Head of Project Support Energy, Norsk Hydro, Brazil
2:45pm (via teleconference)	The role of aluminium smelters in decarbonising our future	Mr Geoff Matthews, Head of Strategy, Energia Potior
3:05pm	Emerging opportunities to decarbonise the Bayer alumina process	Prof GJ 'Gus' Nathan, Director, Centre for Energy Technology
3:25pm	Panel discussion	
4:00pm	Coffee break	

Session 4B: Cement and lime

4:20pm	Introduction by the Chairs	Ms Ros DeGaris, DeGaris Consulting and A/Prof Maziar Arjomandi
4:25pm (via teleconference)	Concrete challenges and opportunities	Dr Warren South, Director, Research and Technology, Cement Concrete & Aggregates Australia
4:35pm (via teleconference)	Opportunities for CO ₂ capture from the cement industry: Findings from the CEMCAP project	Dr Kristin Jordal, Research Scientist, SINTEF
4:55pm (via teleconference)	Reducing CO ₂ emissions from cement and concrete	Prof Karen Scrivener, Head, Laboratory of Construction Materials, EPFL Switzerland
5:15pm (via teleconference)	1 mt refuse derived fuels	Ms Felicity Lloyd, Business Improvement Sustainability Manager, Adelaide Brighton
5:25pm	Panel discussion	
5:45 – 6:00pm	Facilitator summary and reflections from day two	John Tsalapatis, A/Prof Maziar Arjomandi and Ros DeGaris
7:00 – 9:30pm	Forum dinner, National Wine Centre Dinner speaker	Dr Paul Heithersay, Chief Executive, SA Department of Energy and Mining

DAY 3

Wednesday 18 March 2020

Session 5A: Copper and other metals – strategy and pathways

8:45am	Coffee	
9:00am	Introduction by the Chair	Prof Bassam Dally, Deputy Director, Centre for Energy Technology
9:05am (via teleconference)	Technology options to decarbonise copper	Mr Matthew White, Hatch
9:25am (via teleconference)	BHPs strategy to decarbonise copper and nickel	Dr Asem Mousa, Principal Low Emissions Technology, BHP
9:45am	Chilean pathway towards low-carbon copper production: Institute of Clean Technologies	Prof Willy Kracht, Head, Department of Mining Engineering, University of Chile
9:55am (via teleconference)	The development of industrial (thermal) processes in a context of sustainability: application to phosphate industries	Prof Jamal Chaouki, Polytechnique Montreal
10:15am (via teleconference)	Lithium - Its role in vehicle decarbonisation	Mr Nick Johns, Process Engineer, Hatch
10:35am	Panel discussion	
11:00am	Coffee break	

Session 5B: Copper and other metals – technology options

11:20am	Renewable energy options for industrial process heat	Dr Keith Lovegrove, Managing Director, ITP Thermal
11:40am	Case study: Supplying solar thermal process heat at 1000C to a South African manganese sinter plant	Ms Lina Hockaday for Dr Matti Lubkoll, Project Manager, German Aerospace Center, DLR
12:00am	Emerging opportunities for solar thermal process heat in beneficiation of South African mineral resources	Ms Lina Hockaday, Senior Engineer, Mintek, South Africa
12:20pm	Panel discussion	
12:45pm	Facilitator summary and reflections from day three	Prof Bassam Dally, Deputy Director, Centre for Energy Technology
1:10pm	Lunch	

Session 6: HiTeMP-2 Outlook and Future Challenges

2:00pm	Introduction by the Chair	Prof Bassam Dally, Deputy Director, Centre for Energy Technology
2:05pm	Slido summaries - delegate feedback summaries from Slido software	Presented by Slido facilitators
2:15pm	Sector Outlooks - Outlook on lowering cost of CO ₂ neutral H ₂ /CST/electrification/CO ₂ management	Dr Tom Campey, HiTeMP-2 Outlook and Future Challenges Facilitator
2:45pm	Open Discussion - Outlook on Future Challenges	
3:50pm	Closing comments	Prof GJ 'Gus' Nathan
4:00pm	Forum close	

Information and registration at
<https://www.adelaide.edu.au/hitemp/hitemp-2/registration>

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