

The Extract



Final showcase

CSRP recently hosted its final conference for its Participants and industry affiliates. To maximise the use of precious time and resources, the conference was divided into two one-day sessions – one in Brisbane on 16 February and the other the following week in Perth on 23 February.

The presentations at each location were similar however in Brisbane the emphasis was on sustainable development and minerals processing, and in Perth the emphasis was on by-product utilisation and geopolymers. With an underlying theme of “looking back, looking forward”, the dual location format was designed to open the dialogue and allow better engagement between researchers and industry on potential collaborations.

Each full-day session was chaired by CEO, Stevan Green, and began with an overview of CSRP’s achievements and highlights from the past six years. CSRP

program leaders then presented specific highlights from their areas of work, which led into discussions for advancing the R&D outputs and plans for going forward.

Amidst bouts of heavy Brisbane rainfall, the audience of fifty listened to program leaders from the University of Queensland. Dr Glen Corder (Centre for Social Responsibility in Mining) presented on the evolution of sustainable development research within CSRP, tools and metrics, regional synergies and the SUSOP® mechanism. Prof Malcolm Powell (JKMRC) then presented CSRP’s research on improving the energy efficiency of crushing and grinding (comminution) circuits – including coarse particle liberation, high pressure grinding rolls, computer modelling and simulation, mill liner design, abrasion, and ore breakage tests.

In Perth where the weather was dryer and warmer, yet another fifty attendees

listened to program leaders from Curtin University of Technology and Alcoa World Alumina. Prof Arie van Riessen (Curtin) presented work from the Geopolymer Program including alternative cementitious materials, utilisation of industry residue, paths, railway sleepers, sewer pipes, acid resistance, fire resistance, mine backfill, evaluation of geopolymer formulations, sustainability and cost metrics, and the Geopolymer Alliance. Dr Evan Jamieson (Alcoa) then presented on the Bauxite Residue Program including physical separation processes, using ReSand® (coarse sand fraction) for road construction trials, broad acreage use of Alkaloam™ (finer fractions) to improve acid soils, roadside nutrient stripping filters, soil amendments, community understanding and perceptions, and using bauxite residue as a feedstock for geopolymers.

Thanks to all for making this final CSRP conference a great success.



Delegates at the CSRP conference in Perth © CSRP

From the CEO

Since the news about the CBU bid not being selected for funding, I have had much feedback from Participants, the Board and the CRC Program – all of which has been very encouraging and supporting the view that the CBU proposition is very worthwhile and a valuable contribution to a more sustainable Australia.

The feedback from the CRC Program was in two parts: written feedback followed by verbal feedback at a private meeting in Canberra recently. In summary, the CRC Program is strongly encouraging of a re-bid this July. Although there can of course be no guarantees, the very specific feedback that we received suggests that if we can address these issues then we would stand a very good chance of success.

In summary the Selection Committee felt that there were no “fatal flaws” to the bid, but rather a number of relatively minor factors that together led to the perception of a degree of risk that needs to be managed.

In addition, we are encouraged to build

on our strong track record. In January, the Chair of the CRC Committee wrote to me saying in part:

“The CRC Committee commented on the performance and achievements of CSRP including the continued strong performance of the CRC in all programs; the strong financial position of the CRC with contributions well above contract; the high level of participation in the CRC’s PhD program; and the high level of engagement with end users.”

With encouragement from the Board, I would like to invite your organisation to consider continuing support for the CBU bid and to provide early feedback to me such that we can concentrate on putting together the best possible bid. The bid would be very similar to the original bid plus addressing the issues raised by the selection committee.

We will confirm support for a second formal CBU bid (due 2 July 2010) during April. If we have sufficient commitments from key Participants then we will develop the full bid. If not, we



will continue with the wind-up plan to maximise the significant value of CSRP’s outputs and cease operations on 31 October 2010.

It is clear that the CBU proposition responds to a number of significant industry and community issues. It is equally clear that what we are proposing is innovative and potentially transformational. Having considered a number of alternative schemes I firmly believe that a CRC is the right vehicle for the current stage of development of the CBU value proposition.

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Calendar

CSRP staff will be involved in a number of events over the coming months:

→ **Prime Minister’s Task Group on Energy Efficiency**, submission to issues paper, **3 May 2010**

Department of Climate Change and Energy Efficiency

www.climatechange.gov.au/en/government/submissions/pm-task-group.aspx

→ **Pathfinders 2010: The innovators conference**, Alice Springs NT, **26-28 May 2010**

CRC Association, www.crca.asn.au/conference/

→ **Sustainable Mining 2010: The business case**, Kalgoorlie WA, **17-19 August 2010**

AusIMM, www.ausimm.com.au/sustainablemining2010/

→ **SD2010: The business of sustainability**, Mandurah WA, **11-15 October 2010**

Minerals Council of Australia, www.sdconference2010.com.au

→ **Major Projects Conference**, Brisbane QLD, **19 October 2010**

QLD Department of Infrastructure and Planning, www.dip.qld.gov.au/mpc/

Prize winning research

Congratulations to Zeljka Pokrajcic for being awarded the prestigious 2010 Vittorio de Nora Prize for Environmental Improvements in Metallurgical Industries. The prize recognises outstanding materials science research and development contributions to the reduction of environmental impacts and particularly greenhouse gas emissions, as applied in global metallurgical industries, especially focussed on extractive processing.

Zeljka is a CSRP doctoral candidate at the University of Queensland and has been researching ways to minimise the energy usage of crushing and grinding (comminution) circuits. Comminution is typically the largest consumer of electrical energy in a mineral processing plant. Her approach involves reducing the mass of material in the comminution circuit by rejecting coarse-sized, commercially worthless material before milling, as well as using more efficient crushing and grinding equipment. She also utilised modelling and ore characterisation technology that had been developed at the Julius Kruttschnitt Mineral Research Centre.

"It is difficult to accurately predict the combined benefit of the energy-efficient strategies proposed in the research," said Zeljka. "However, the ideas intuitively make economic and 'energy saving' sense. Approaches such as the use of more efficient grinding equipment and limiting the amount of grinding consumables can provide energy savings as high as 30 percent. So if these ideas were widely adopted, either in combination or individually, the energy savings would be huge. They can also improve productivity and the bottom line."

Zeljka said she was honoured to be the first winner of the Vittorio de



2009 TMS President Ray Peterson presents Zeljka Pokrajcic with her award © TMS

Nora Prize. "I feel strongly about the environment and the choices we can be making as individuals and professionals to ensure the sustainability of our planet," she said.

The award was established by the Minerals, Metals & Materials Society (TMS) to commemorate Vittorio de Nora, a pioneer in the materials processing field and one of the great Italian technologists for the 20th century. Formal presentation of the award was made at the annual dinner of the TMS during their 139th Annual Meeting in Seattle, Washington, in February. Zeljka received a cash award and a certificate and made a presentation at the TMS 2010 Annual Meeting.

Zeljka is currently a senior process design engineer for WorleyParsons at their Mineral and Metals Division in Melbourne.

Integrating sustainability

CSRP is currently working on two case studies with its Participants to examine the sustainability opportunities of proposed improvements to existing mine operations and potential new mine sites. The aim of the project is to apply CSRP's SUSOP® (SUStainable OPerations) mechanism for identifying sustainability opportunities and evaluating the sustainability benefits and impacts of the proposed options.

The SUSOP® mechanism is a new and practical approach for incorporating sustainable development principles into the design and operation of industrial processing plants. **SUSOP® assists operations to link performance imperatives to sustainability objectives** by facilitating a structured, methodical, process to identify and implement ways to use less water and energy, generate lower greenhouse gas emissions and minimise waste volume and toxicity.

Led by the Sustainable Minerals Institute at the University of Queensland, the CSRP research and development team includes industry participants, Hatch and GHD, and other research providers, University of Technology Sydney, CSIRO, University of Newcastle and Curtin University of Technology.

Through these case studies, CSRP can help deliver innovative sustainability opportunities for its Participants and further progress the development of SUSOP®. The aim of SUSOP® is to be a sustainable development analogy to the way in which safety has been rigorously and systematically incorporated into industrial operations.

Teaching concrete, copper and heat



Teachers attending laboratory sessions and presentations during Future Science © CSRP

The Science Teachers Association of Western Australia (STAWA) held their annual Future Science event at Murdoch University on Friday 7 December with some 240 teachers in attendance. CSRP co-sponsored two teacher laboratory sessions at the event. The sessions were:

“Geopolymers: New building materials from old by-products” – this 90-minute workshop was presented by two CSRP doctoral students, Ross Williams and Will Rickard. This was the first time

“test drive” for the geopolymer workshop and it was well received by the teacher participants.

“Copper recovery from oxide ores by leaching, cementation and electrowinning” – CSRP staff members Dan Churach and Ken Seymour along with CSRP doctoral candidate Graeme Thompson facilitated the 90-minute, hands-on laboratory session.

The 2010 Western Australia Science and

Engineering Summer School for years 10 and 11 students was held from 13-18 January. Approximately 60 students participated in the event which included a day of laboratory work and mineral processing workshops at Murdoch University. Dr Jim Avraamides gave three lectures presenting an overview of the industry to the students and CSRP doctoral candidate Graeme Thompson hosted a series of laboratory sessions in pyrometallurgy.

Geopolymer Alliance inaugural meeting

CSRP is hosting the inaugural meeting of the Founding Members of the Geopolymer Alliance. The meeting will be held on **4 May 2010** at 1pm at the ARRC Building, 26 Dick Perry Avenue, Kensington, WA. All Members are welcome to the informal gathering to discuss future plans and activities.

The current Founding Members are: Alcan International Pty Ltd, Alcoa World Alumina Australia, Ash Development Association of Australia Inc, Australasian (Iron and steel) Slag Association Inc, Australian Green Infrastructure Council, Blue Circle Southern Cement, Cement Australia Pty Ltd, CSIRO, Curtin

University of Technology, Hatch and Associates Pty Ltd, Independent Flyash Brokers, Parsons Brinckerhoff Australia Ltd, University of Melbourne, University of Southern Queensland.

For more information on the Geopolymer Alliance, visit www.geopolymers.com.au