



# connections

QUARTERLY  
2003

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THE AUSTRALASIAN SLAG ASSOCIATION NEWSLETTER

## Editorial comment

**Change is the mantra of the 90's** and the first part of the new millennium. We have become conditioned to believe that we must change to remain relevant to the society in which we live. Recognise it or not, we are impacted daily with new opportunities, rules and societal expectations. The exploration and exploitation of energy and mineral resources of the 1950's through to the 1980's has been challenged by the discovery of the 1990's that our world is finite and that minimising the environmental footprint of our way of life has the positive of improving its quality and indeed long term viability on this planet.

New words have crept into the general consciousness since the late 1980's including greenhouse, green energy, global warming, wind farming, wave generators and even solar sailor. Such terms only existed in the minds and hearts of environmental enthusiasts for much of the last century.

Recognising that much had changed since formation of the Association in 1990, directors commissioned a review to guide it through the next decade. This included capture of the reasons for its formation, highlighting of its achievements, seeking member feedback and highlighting areas where change was needed.

*Significantly, formation of the Association in 1990 put dimensions around the economic impact of this \$100 million per annum industry. Before this, the impacts were lost inside the operating costs of the iron and steel industry and a number of its significant contractors.*

After much discussion, debate and careful consideration, a significant change in the direction was taken at the March AGM. Focus of the Association is now solely on the slag materials from the manufacture of iron and steel. This narrowing of focus recognises that iron and steel making slags form the bulk of slag generation and are the most widely marketed.

The new Executive Committee reflects the changed membership and structures. The Association is managed by the Executive Committee and has active Technical, Education and Marketing and Operations Committees. Shani Smith ASMS Manager Sales and Marketing is the new Chair of the Association.

At the Annual General Meeting each year, an award is made to the university student whose paper on a subject that adds to or advances our store of knowledge on slag products is made. This award is open to final year university students

from across Australia. Troy Fraser from the University of Wollongong was this year's winner. NS Komatsu again sponsored the award. Grant Benson from Komatsu made the presentation of a certificate and \$1000 to Troy .

Slag products have broad application in the construction industry. In this issue, the applications featured include mine pavement and roading mixes in the Hunter Valley of NSW and at bhpbilliton's new \$285 million Dendrobium coal mine development in the Illawarra region of NSW. In Victoria, the applications are assisting in reducing greenhouse gasses and conserving natural resources. In the demonstration Eco house project in St. Kilda slag is used in the mortars and the cement component in the concrete slab.

Safety and health are critical focus areas for any successful industry. The Operations Committee runs regular half-day seminars attracting employees of member companies particularly in the Port Kembla region. Incident investigation attracted considerable interest.

Read on to learn more about the way the Association is meeting the future, innovative uses for slag products and keeping safety in focus. ■

## Slag Association renews itself to confidently face the next decade

**The environment** into which the Association was launched in 1990 bears little resemblance to the one in which it now operates. The Steel industry, a key foundation member has itself undergone radical change. There are now three independent steel producers, none in the ownership of BHP (now BHP Billiton). Only two centres, Whyalla and Port Kembla are integrated iron and steel producers. The slag processing industry, in its infancy in 1990, is now well established with experienced processors and marketers operating independently of the steel company.

For any organisation, relevance is the key. Even if an organisation doesn't change, the environment in which it works does. Without noticing it, an organisation can over time become sidelined; membership loses interest and its very reason for being lost. Recognising the changes in Association membership, Directors initiated a review in 2002. This set out to review the Association's successes over the past decade, conduct a survey of current member attitudes and provide a platform on which to build a successful future.

The report highlighted the many significant contributions made by the Association during the 1990's. As an independent industry voice, Governments, their agencies and authorities have been made aware of the resource conservation and environmental benefits from using slag products. Representation on Standards Committees and Industry bodies has ensured that benefits from the use of slag products are not overlooked or discriminated against. *Formation of the Association was key in highlighting to Government the social and economic significance of this \$M100 per annum industry.*

Acting on advice coming from the report, significant changes in structure and focus were adopted at the AGM in March this year. *Core focus of the Association is now on slag products from Iron and Steel industries only, to avoid confusion with materials from other mineral extraction processes.* There is now greater connection between the objectives of the Association and its key membership base. Members have entered into a new cost sharing approach that will enable the Association to enhance and expand its activities. ■

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**“The Australasian industry is part of a wider international fraternity of slag product manufacturers, marketers and users.”**

# Focussing on the vision

**I**n pursuit of this, the Association has since inception seen its role in the areas of Education, Advocacy and Technology. These have been reconfirmed as the key focus areas for the Association moving forward. Programs within these focus areas have been evaluated, giving rise to more specific performance objectives.

Ongoing education remains a primary focus with presentations to university students in the Engineering and Architecture schools expanding in the current program. Overall the educational objective is to ensure that the slag industry, specifiers, users, the community and government have confidence in and are aware of the benefits from using iron and steel making slags in construction.

Representation on appropriate Australian Standards Committees remains a key plank in the advocacy focus area. This has ensured a place for

slag as a valuable construction material. As the Industry body for the iron and steel slag industry, the Association has and will continue to exercise a vital role in ensuring that the community and governments remain well informed. This is an ongoing process as organisations and

construction applications. The Australasian industry is part of a wider international fraternity of slag product manufacturers, marketers and users. Results of Australian studies have been published and presented internationally and are sustained in the face of international peer review.

**The vision is that: The Australasian Slag Association Inc. will be an independent, authoritative and credible central reference point to all stakeholders - Members, Community, Educators and Government on all matters regarding iron & steel slag materials.**

community groups change structure and membership over time.

The slag industry is technologically well grounded. A great deal of research has been conducted over time into its performance in most

Importantly, this work continues, with the Association providing a forum for information exchange and facilitation of co-operative industry research. It provides the basis for confident and beneficial use of iron and steel slag products. ■

## New Directors to guide the Association's future

The Annual General Meeting of the Association is held in March each year. After vigorous debate, members endorsed the changed direction for the Association and elected new committee representatives. Some of these changes came about because of personnel changes within member companies.



**Shani Smith new Chair of the Association**

Shani Smith, Sales and Marketing Manager for Australian Steel Mill Services (ASMS), was elected Association Chair. She brings to this role international experience in the slag products industry in addition to her Australian experience in the Cement and Construction Materials

industries. Deputy Chair is Michael Byrne (Steel Cement in Victoria) and International Director, Bill Bourke (Steelserve in New Zealand). Rob Newman (Steelstone), Mike Beardsell (Blue Circle Southern Cement), Oscar Gregory (BHP Steel), Paul O'Kane (MetServ Australia) and Ross Johnson (Hunter Mill Services) are the other executive committee members. Chairs

of the Committees of the Association are; Education and Promotion, Norm Clifford (Steelstone), Operations, Paul O'Kane (MetServ) and Technical, Ihor Hinczak (ASMS). Craig Heidrich is the Association's Executive Director and DR Banks was re elected as Auditor. ■



**Ross Johnson, Mike Byrne, Mike Beardsell, Shani Smith (Chair); Rob Newman, "Steelstone"; Paul O'Kane, Not present - Oscar Gregory and Bill Bourke**



**Wayne James receiving his Hon. Life Membership**

## Life Membership Award

**Former Technical Committee** Chairman Wayne James has become the sixth life member of the Association. Wayne has been involved with the Technical Committee for much of its existence, contributing significantly to its direction and effectiveness. He succeeded long serving former chairman Martin Venour in 1999 when Martin retired from BHP and served until he left ASMS in 2003.

Coming to ASMS from the RTA, Wayne brought an appreciation of the opportunities for the use of slag products, particularly in the road pavement and surfacing area. As part of the Association's working group structure, he has been involved in a

number of co-operative research projects, including the ASA/EPA/BHP/ASMS, Golder Associates Ecotox studies of iron and steel making slags.

The Technical Committee has been responsible for the development of a number of Technical Guides over the years. Wayne has been a strong contributor to these and has been an able technical advocate for the use of slag products.

In awarding Hon. Life Membership to Wayne, the Association has fittingly recognised his contribution its work and wishes him well in his current pursuits. ■





# Slag keeping mine roads serviceable in Hunter and Illawarra

**H**unter Bulk Materials Mining Services was recently approached by Beltana Highwall Mining with the opportunity to design and construct serviceable underground road pavements for their longwall mining operation in the Hunter Valley coal Fields. The aim of this operation was to provide an easily placed pavement, low maintenance with a resistance to water damage. The in-situ floor consisted of a mixture of coal fines, water and mudstone resulting in a “wet concrete” consistency in places and dry dusty conditions in the other. The challenge was not only placing and compacting a pavement without the use of conventional road building plant, but also a height restriction, which limited the pavement to a maximum thickness of 250mm in the majority of areas.

With these factors in mind a pavement consisting of 250mm thick Steelstone “Mix 3” steel slag bound pavement from Steelstone Services in Newcastle was utilised. Construction consisted of bulking out deep wet areas and replacing with 70mm slag “pit material” and trimming to subgrade level. The entire subgrade was then trimmed, filling in low areas and cropping high areas, as construction progressed. The Steelstone “Mix 3” was trailed in using conventional mining equipment and spread using the mine grader (pictured). The material was laid with a 1% crossfall and to within 500mm of the low sidewall, creating a dish-drain for water



## bhpbilliton Illawarra Coal has chosen steel slag products in the establishment of working roads in its new \$M289 Dendrobium coal mine.

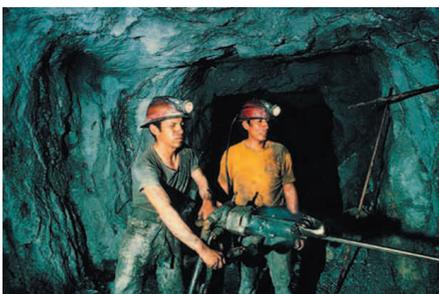
management. Compaction was undertaken using a 8t tag-a-long static smooth drum roller. The Steelstone “Mix 3” material was supplied and placed at 2% below optimum moisture. Parsons Brinkerhoff was employed to conduct pavement density testing. The Steelstone “Mix 3” material achieved 98% modified density in all tests with the static passes.

All in all the Steelstone “Mix 3” Steelstone material provided a great solution to a particularly difficult problem. It performed outstandingly in the wet conditions with minimal repairs being required in the past six months it has been in service. The ease of placement and compaction has ensured in its continued use in this mine.

bhpbilliton Illawarra Coal has chosen steel slag

products in the establishment of working roads in its new \$M289 Dendrobium coal mine. Due to be in full longwall production in 4<sup>th</sup> quarter 2004, the mine will produce 5.2 million tonne of raw coal annually. Steel slag was chosen because of its structural sound and its non-plasticity. It forms a stable platform, giving a smooth ride to the operators of the heavy construction and mining equipment. The material is used to smooth the floor and construct the roadway after removal of the development coal in the current construction of the tunnel.

ASMS has supplied products including a 70 x 30mm base course and a 40x 20mm surface course. They are also supplying a range of these products to other mines in the region. ■



# Slag caring for the environment

Slowly as a nation we are beginning to understand that the earth is a finite resource that must be cared for to sustain our living standards. Australia's federal state and local governments are turning their attention to energy conservation. Current interest in 'wind farming' and alternative energy sources to generate electricity, the innovative *Solar Sailor* (sun and wind powered boat ferrying passengers on Sydney Harbour) are part of the search to conserve energy and natural resources.

Port Phillip Shire Council in Victoria is leading by example in encouraging the construction of an *EcoHouse* at St Kilda. The project has brought together a series of energy and resource saving initiatives as a means of changing the throwaway societal attitudes of the past.

The *EcoHouse* Project was opened on World Environment Day, 5 June 2003. Launched by the Honourable Minister for Sustainability and Environment, John Thwaites MP, and Liz Johnstone, Mayor of the City of Port Philip, Victoria. The house is key to the City of Port Philip EcoCentre that aims to inspire Builders,

architects, home-owners and tenants to find environmentally sustainable ways to build, renovate and live in houses. It is a sustainable demonstration and education house, office and community centre.

A single dwelling contains significant embedded energy in its construction and ongoing use. This comes from manufacture, transport and installation of components, combinations of material used. Energy conservation includes, orientation of the house to maximise and control the sun's energy, insulation to control the internal climate, household appliances, materials used in construction and control of site emissions including water and sewage.



This *EcoHouse* has sought to lower its construction and ongoing environmental footprint by initiatives including use of recycled timbers, control and reuse of grey and septic water and selection of components for the concrete slab and the mortar.

Slag products feature as part of the contribution to embedded energy savings. Mortars used to bed the bricks contain a 50% slag cement blended product, conserving natural resources. The concrete slab uses 50% slag cement blended cement with resource conservation and embedded energy savings.

The Australasian Slag Association is currently working on an energy savings calculator to assist those undertaking design planning or construction understand the potential savings from using slag products. ■



# ASA seminars keep safety in focus

**T**hrough its operations committee, the Association maintains a focus on Occupational Health and Safety and Environment. On Thursday May 29<sup>th</sup>, the committee held another successful seminar "Health and Safety – our people are our strength." Twenty-nine people from across the membership attended.

Keynote speakers were Dr Chris Darling (BHP Steel) – Process of incident investigation; David Boyle (David Boyle and Associates) – Why corporate health can improve organisational performance and Paul O’Kane (MetServ and Chair of the ASA Operations Committee) – Incidents happen when least expected. Case Study participants included representatives from MetServ, SCE Group, ASMS, BCSC and HMS.

Participants were surveyed at the end of the seminar to provide feedback and propose topics for future events.

Of those attending 60% said the seminar met their expectations and 40% said that it exceeded their expectations in terms of information and learning. Consensus was it was informative, relevant to work place, with good cross organisational learning’s. Dr Chris Darling’s talk was well received with a number of participants seeking further information on the incident investigation procedure used by BHP.

The suggestions provided for future seminars were very comprehensive and consistent with the lively discussion during group feedback. Ranked in order of importance the following three themes emerged as preferred topics of the next seminar;

- Consequences of work place injuries
- Drug and Alcohol policy (barriers to implementation) – Work ethics, Behavioural management & consequential management, Culture, Leadership – why important, Personal Accountability
- Injury investigation (best practice) Strategies for implementation, Risk Assessment.

Although these seminars are usually held in the Port Kembla region, they are open to members across the Association. Interested in the next seminar? Further information: Craig Heidrich e-mail:info@asa-inc.org.au or visit the website at www.asa-inc.org.au ■



## Troy Fraser 2002 Winner of the ASA student award

Since 2000 the Association has conducted an education award program open to students undertaking Honours or Masters studies over a calendar year. The award is open to any applying institution. The award along with a cash prize is awarded at the Annual General Meeting (AGM) conducted in March each year in Sydney.

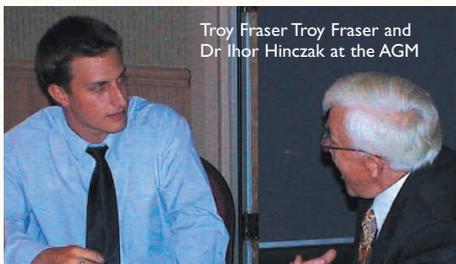
There can be up to two certificate awards including a cash prize of \$1000 each for the best papers based on the theme of "excellence and innovative use of slag materials in construction applications". The awards are open to university students across Australia.

Students are required to prepare a research paper detailing their work, conclusions and applicability for increasing slag utilisation and make recommendations for future work.

This year’s award winner was Troy Fraser from the University of



Troy Fraser receiving his award from Grant Benson, Business Development Manager – Sydney for NS Komatsu.



Troy Fraser Troy Fraser and Dr Ihor Hinczak at the AGM

Wollongong. His paper entitled The Effects Of Blended Cements On The Shrinkage Of Cement Pastes, covered work submitted towards the award of his Bachelor of Civil Engineering degree. Dr Hinczak, Chair of the ASA Technical committee stated "Troy’s work added knowledge to the performance of slag cements that would assist in further developments". It is understood that Troy is contemplating studying towards a Doctorate, continuing his work on slag.

The annual award provides encouragement to students to learn more about innovative slag applications and supports ASA’s educational and technical. Focus.

NS Komatsu has once again sponsored this award and the Association extends it sincere thanks for the support. ■

### Company Members

A primary role of our Association is to bring together Slag Producers, Processors, Customers and Suppliers to the Slag industry. Our activities cover Technical Developments, Plant Operations and Processes, Education and Promotion. If you would like more information on the Association and how you can become involved, just complete the information section at the end of this newsletter.

- Current membership is as listed below.
- Australian Steel Mill Services Pty Ltd
  - BHP Steel Ltd (Port Kembla)
  - Blue Circle Southern Cement Ltd
  - Brambles Equipment Ltd
  - Brambles Industrial Services Ltd (Whyalla)
  - Concrete Pty Ltd
  - CSIRO CMIT
  - Gough & Gilmour Pty Ltd
  - Heckett Multiserv (UK)
  - Hunter Mill Services Pty Ltd
  - Komatsu Australia Ltd
  - Mahaffey Associates Pty Ltd
  - Metserv Australasia Pty Ltd
  - Milburn New Zealand Ltd
  - OneSteel Limited (Whyalla)
  - University of Newcastle – Mr Stephen Fityus
  - University of Wollongong – Dr Denis Montgomery
  - Premium Tyre Service Pty Ltd
  - Readymix Holdings Pty Ltd
  - Roads & Traffic Authority of NSW
  - Slag Cement Sdn Bhd, Malaysia
  - Smorgon Steel Ltd (Melbourne)
  - Smorgon Steel Ltd (Newcastle)
  - Steel Cement Ltd
  - SteelServ Ltd (NZ)
  - Steelstone Services (Aust) Pty Ltd
  - Sunstate Cement Ltd
  - Wormald Fire Systems Ltd

### Personal Members

- Anderson, L
- Dobson, G
- Gregory, G
- Hanley, P (Hon.)
- James, W (Hon.)
- Jones, D E (Hon.)
- Heaton, B (Hon.)
- Maric, M
- Prosser, S D (Hon.)
- Venour, M (Hon.)

### Related Associations

- National Slag Association (US)
- Nippon Slag Association (Japan)
- European Slag Association (EU)

PRESENTATIONS

Ensuring that Universities and their Engineering and Architecture students and lecturers have an appreciation of slag products remains a key focus of the Association. During the quarter presentations were made to:

**Australian Defence Force Academy** – Canberra – Final year Civil Engineering Students, one of whom is working on a slag in construction project.

**Australian National University** – Canberra – The Energy Conservation Manager facilities and Department Managers in the Building Services areas.



# NEWS BRIEFS



## New Member - Ecocem

Previously covered by the ASMS membership, the Management Committee resolved to accept ECOCEM as a full member - represented by Andrew Wilson, General Manager.

## Housing rises on top of 25 storey slag heap

Summerset at Frick Park Pittsburgh USA is a new luxury housing development "built on top of 50 years' worth of steel by products. When the project is finished in 10 years, the slag heap - a 238 acre former industrial area - will be covered with greenery and 710 houses" - Source: greenclips.com - March 2003

## ASMS Product Manager

Marc Furlong has been appointed the new Product Manager - Concrete.

## Holcim investing in North American Growth

(comments extracted from an interview by Cement Americas with Paul A. Yhouse president, chief executive officer, and a director of Dundee, Mich.-based Holcim (US) Inc.)

"We have continued to emphasize the importance of technical service to customers and maintaining long-term commitments to our markets, not merely selling one more ton today and being gone tomorrow.

Our customers also recognize that we've been working to bring to the U.S. market new products - GranCem would be our best known brand name - that make better concretes."

## USA: Lafarge Sees No End to Slag Cement Growth

Lafarge North America's South Chicago slag grinding facility recently completed its first year of operations, at a time when the use of slag cement in the United States is accelerating at its fastest pace in history. The environmentally friendly process which converts the byproduct material from steel manufacturing uses 100% recycled materials and significantly enhances performance when blended with ordinary cement. Lafarge and other members

of the Slag Cement Association shipped a record 2.9 million metric tons in 2002, a 22% increase over shipments in 2001. This growth is particularly impressive since overall portland cement shipments decreased about 4% in 2002.

Source: *Concrete Products* 11.06.2003.

## ASA to contribute to National Glossary of Building Terms

The ASA has been approached by an organisation commissioned by the National Committee on Rationalised Building (NCRB) and Standards Australia International to update and revise the current edition of the Glossary of Building Terms, HB50, ('The Glossary').

For Further information email Craig Heidrich info@asa-inc.org.au

## US Senate Bill to legislate use of Ground Slag in Concrete

Our international affiliate organisation - National Slag Association (USA) reports "The U.S. Senate is placing a bill on the floor for discussion that has a provision to require the use of fly ash GGBFS (ground granulated blast furnace slag), and other renewable mineral resources in all concrete construction purchased by the federal government. Both the House and the senate will confer and are expected to pass the legislation in the next few months"

Source: *NSA Slag Runner* - May 2003 No. 2-03

## New ASA Director for BHP Steel

With the retirement of Fraser Carrie, Oscar Gregory - Manager Operations Services is the new BHP Steel representative. Oscar spent 7 years in New Zealand as the General Manager Primary Operations for New Zealand Steel before returning to Port Kembla. His responsibilities at New Zealand Steel included processes from the iron sands mine site through to slab making. This included the development of markets for iron sands in China and Japan. The international and operational experience Oscar brings to ASA will assist it in meeting the objectives of its new direction.

## Slag - "the ultimate renewable mineral resource"

The video has proved to be very useful to many members. New additional footage has been incorporated demonstrating the beneficial properties of slag in various large-scale projects completed in recent years. The video (15mins duration) outlines slag's historical beginnings through to the various types of slag produced in a modern production process today.



Copies are available to members at a cost of \$15.00 each, non-members \$20.00 plus postage and handling. Just complete and fax back the subscription/order form indicating your requirements.

## Technical Resources on CD

ASA produces a number of high quality technical guides (i.e. the new - "A Guide to the use of Iron and Steel Slag in Roads" and the "Guide to the Use of Steel Furnace Slag in Asphalt and Thin Bituminous Surfacing") bulletins, newsletters and general industry information on current issues. The Education and Promotion Committee has developed a Technical Compendium on CD; an invaluable readily accessible reference tool for engineers, specifiers, consultants, government authorities, and slag users. A limited number of hard copies are also available.



Copies are available to members at a cost of \$15.00 each, non members \$20.00 - plus postage and handling. Updated CD's will be available for registered users as new material is added. Stay up to date! Complete and fax back the subscription/order form today.

## Subscription Form: Connections

I received connections via a third party, please:

Add me to your mailing list     Send me only electronic copies via email     Send me hard copies only

I WISH TO PURCHASE:     ASA Video @ \$15.00\* x \_\_\_\_\_ Qty     ASA CD @ \$15.00\* x \_\_\_\_\_ Qty

Name \_\_\_\_\_

Position \_\_\_\_\_

Organisation \_\_\_\_\_

Mailing Address \_\_\_\_\_

City \_\_\_\_\_

P/Code \_\_\_\_\_

Telephone \_\_\_\_\_

Facsimile \_\_\_\_\_

Email address \_\_\_\_\_

**Business Category** (please tick ✓)

Producer                       Materials handler                       Industry supplier                       Government agency  
 Processor                       Refining/value adding                       Specifier/Engineer                       Other \_\_\_\_\_

\*Plus postage and handling • Inclusive of GST.

