

ASSOCIATION connections

australasian slag (iron & steel) association newsletter

www.asa-inc.org.au


INDUSTRY LEADING THE WAY

THE AUSTRALASIAN SLAG INDUSTRY makes a significant contribution both economically and environmentally to the nation's economy. These conclusions are well borne out not only in the experience of local producers and users but also well supported by international data. In March 2005, the Association stepped back into the conference arena, presenting a collection of research and development projects being undertaken. These ranged from the work in New Zealand on slag filter beds, to reporting on significant environmental slag classification research to some innovative suggestions from a cross functional team of University students and major slag producer Bluescope's approach to offering solutions rather than just products.

Planning for the 2007 Conference is well underway with a mix of International and local speakers being selected around the theme of sustainability. Conference venue will be one of the key Sydney City venues allowing the opportunity for networking and for accompanying persons to easily enjoy the ambience of Sydney and its attractions. The conference will conclude with a Conference Dinner, an opportunity to continue the networking or relax.

Andrew Wilson (EcoCem) was elected as the new Chairman for the Association for the next 2 years, former Chair Shani Smith retiring after 3 one year terms in accordance with the Association rules. At the AGM held recently, a number of changes were made to the rules of the

Association, changing terms of office to two years from one, and setting the rules re chairmanship to allow for up to two two year terms.

This issue highlights slag applications in important road and infrastructure projects. In this way the flexibility of slag products across a range of applications is demonstrated. The discussion around synthetic aggregates both highlights the fact that our quarried and mined resources are finite and is an opportunity to revisit some of the work done by slag producers and researchers in the lightweight and skid resistance aggregate areas. Since molten slag is the starting point for the products as we today know and use them, future beneficial applications for slag are limited only by our imagination. 

2007 CONFERENCE PLANNING WELL ADVANCED

ENCOURAGED BY THE SUCCESSFUL CONFERENCE in March 2005, the Association is now planning the May 4th 2007 Conference to be held at a central Sydney venue.

The organising committee is well advanced in its plans, and has put in place the people and facilities to make this a must for people in the construction industry, designers and specifiers as well as key people from industry and Government.

Ongoing development since the 2005 conference will enable the Association to present updates on research and showcase significant project and product applications. Presentations will be from a mix of local and international speakers.

The Conference theme is Sustainability. Much is happening here and overseas that demonstrates the significant role that slag products can and do play in lessening the construction industry's environmental footprint on the earth and contributing to the durability. Many well known structures in this country and world wide have used slag products from the iron and steel industry to advantage. 



1. Shani Smith and Hewso Team

Shani Smith Past Association Chair presenting awards to the University of Wollongong Hewso Team at the 2005 Conference.

2. Bill Bourke, ASA Deputy Chairman International

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ASSOCIATION ELECTS CHAIRMAN AND OFFICERS AT AGM 2006



ANDREW WILSON (ECOCEM) WAS ELECTED UNOPPOSED as the chairman of the Association for the next 2 years. In a departure from tradition, there was no dinner following. This is a strategic decision taken by Association executive and supported by the membership, to move the dinner to every second year, in conjunction with the biennial conference. One of the major changes to Association Governance approved at the Annual meeting was to elect officers for a two year term instead the current one year term. Along with this change, the Chairperson can stand for a maximum of two terms.


Advocacy played a significant role in the Associations activities during the year, including participation in the Cement Industry Action Agenda. The targeted focus on the slag

products from the manufacture of iron and steel has strengthened the Association and built its recognition with Industry and government Agencies. Website monthly hits continue to rise confirming the Association's position as a key point of reference for current and potential users of iron and steel slag products. Access to the online Library database, Connections, guides and other material provides a 24/7 advocacy window for slag products.

Work of the Association continues to be carried out through the main committees of Education and Promotion, Environment & Safety committee (formerly, Technical and Operations), with governance the responsibility of the Executive committee. Chairperson Shani Smith paid tribute to the work of the Executive

Director and committee members in making 2005 a successful year for the Association. Having completed three successive Annual terms, Shani Smith retired from the role in accordance with the Association's rules.

Other officers elected to guide the Association through the next year are Vice Chairman International – Bill Bourke (SteelServ NZ), Vice Chairman Australia – Oscar Gregory (Bluescope Steel), Treasurer – Shani Smith (ASMS) Secretary – Simon Hodsden (MultiServ), – Executive Committee Members – Rob Newman (SCE Group), Paul Gear (Hunter Mill Services), Michael Byrne (Steel Cement), Technical Committee Chair – Wayne James (Readymix), Education and Promotion Committee Chair – Shani Smith (ASMS), Operations Committee Chair – Chris Stuckey (MultiServ Australia).

In taking the Chair following the Elections, Andrew Wilson paid tribute to Shani Smith for her leadership of the Association over the past three years at a significant point in its history and Tom Wauer from ICL. Tom served the Association over a number of years, in a number of roles including representation on Australian Standards Committee and as the immediate past Chairman of the Technical Committee. 

MCDs Released

OVER THE YEARS, THE SLAG INDUSTRY has conducted extensive environmental leachate testing research on blast furnace, steel furnace and electric arc furnace slag. In 2004, the Association on behalf of its members conducted further extensive research reported in *Australasian (iron and steel) Slag Association Inc. Material Classification of Iron and Steel Slag By-product Waste Classification Investigation Report 2000*. [copies available from the Association].

In order to make the conclusions of this work more generally available, a series of Material Classification Data Sheets, one each for blast furnace, steel furnace and electric arc furnace slags have been produced. These are available from member companies and from the Association.

Under NSW Environmental law, it is the generator's responsibility to classify

materials they produce. The conclusions of this current work are in line with earlier testing i.e. based on experimental results all of the slag products tested can be classified by producers as INERT.

UK recognises environmental benefits from Ground Granulated Blast Furnace Slag

The Cementitious Slag Makers Association of the United Kingdom makes the case for the economic and environmental benefits from the use of Ground Granulated Blast Furnace Slag (GGBFS) in construction.

GGBS is probably one of the 'greenest' of construction materials available. Its only raw material is a very specific slag that is a by-product from the blast-furnaces manufacturing iron. Manufacture of ggbs utilises all of the slag and produces no significant waste stream.

As well as the environmental benefit of utilising a by-product, ggbs replaces

something that is produced by a highly energy-intensive process. Manufacture of Portland cement is a major contributor of greenhouse gases, responsible for about 5% of all global carbon dioxide emissions. By comparison, manufacture of ggbs requires less than a fifth the energy and produces less than a tenth of the carbon dioxide emissions.

Further 'green' benefits are that manufacture of ggbs does not require the quarrying of virgin materials, and if the slag was not used as cement it might have to be disposed of to tip.

Each year, the UK uses two million tonnes of ggbs as cement, which:

- reduces carbon dioxide emissions by some 2 million tonnes
- reduces primary energy use by 3,000 million kWh
- saves 3 million tonnes of quarrying
- saves a potential landfill of 2 million tonnes

[Source: Cementitious slag makers assoc - UK : www.ukcsma.co.uk/page4.html]

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ROADS AND THEIR ESSENTIAL PLACE in forming and linking communities and nations are well established. So too is the place of slag from iron and steel manufacture as a material of choice for pavement construction, with evidence of its use traced back to some of the early Roman roads. In the Illawarra region of New South Wales (80 km south of Sydney), slag materials have been part of much of the region's major infrastructure from ports to roads and community facilities such as parks and sporting grounds for more than four decades.

Some 30 years ago, slag pavements were used as material of choice for the then Waterfall Toll Road (now freeway) linking Wollongong and the southern reaches of metropolitan Sydney. The ASA publication, *A Guide to the Use Of Slag in Roads* (2002), available from the Association at www.asa-inc.org.au showcases some of the earlier uses and provides some technical guidance on getting the best value from the distinct properties of the various forms of the material available.

Each year, the list of major infrastructure projects grows. The NSW Roads and Traffic Authority has recently completed the \$80 million Kiama By-pass project, specifying slag roadbase RBM80 for this two lane freeway as part of the major coastal road network between Sydney and Melbourne.

The 300mm thick pavement section was placed in a single layer and compacted using conventional machines, complying with the



Slag roadbase was specified by the NSW RTA for the Kiama By-pass project

EACH YEAR, THE LIST OF MAJOR INFRASTRUCTURE PROJECTS GROWS.

demanding density requirements of the RTA. Other slag products used in this section of the road included ASMS steel furnace aggregates for the asphalt layer and 30,000 tonne of slag filter material.

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– www.asa-inc.org.au]

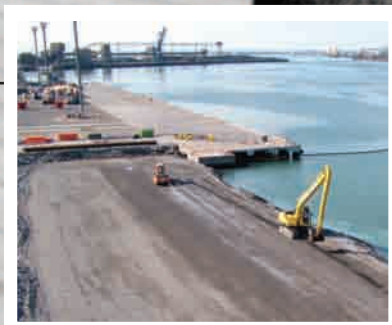


A Guide to the Use of Slag in Roads (2002)

SLAGINSIDER 2

WHILST ROAD PAVEMENTS PREDOMINATE THE PRODUCT MIX, slag products have and

continue to play an important part in the construction of durable major infrastructure projects within the Illawarra region and beyond. In both Newcastle and Wollongong areas, slag products have been materials of choice because of their availability in proximity to a number of large infrastructure projects and because of the material's ability in its various forms to add value and in many



berth extensions.

Upgrading of the runway at Illawarra Regional Airport (servicing the Wollongong, Shellharbour, Kiama and surrounding regions) to handle Dash 8 aircraft used by the

PAVEMENTS// 2

cases allow construction programs to continue even under adverse weather conditions.

Port infrastructure at Port Kembla has benefited significantly from the availability of slag products over many years. It has and continues to play a major part in berth expansions and port infrastructure developments. These include construction of the coal and grain terminals at Port Kembla and the more recent extensions of the multi purpose berth and extensions. In 2005, ASMS supplied 120,000 tonne of various slag products to the Port Kembla Multi Purpose

recently established Qantas Link air service between Albion Park and Melbourne has demonstrated again the capabilities of ASMS roadbase product RBU800 (80/20 material). Having demonstrated its worth in Sydney Airport's third runway as sub pavement and in other pavement applications at the airport since, it was used in upgrade projects there to handle the new double deck 550 seat A380 passenger airliners.

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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
BlueScope Steel Ltd (Port Kembla)

Brambles Equipment Ltd
Brambles Industrial Services Ltd (Whyalla)
Concrete Pty Ltd
CSIRO CMIT
EcoCem Pty Ltd
Fractum ApS
HiSmelt Ltd
Holcim NZ Ltd
Hunter Mill Services Pty Ltd
Komatsu Australia Ltd
MultiServ Australasia Pty Ltd
MultiServ (UK)
OneSteel Limited (Whyalla)
University of Newcastle

University of Wollongong
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
Sunstate Cement Ltd
Wormald Fire Systems Ltd

Personal Members
Anderson, L

Dobson, G
Gregory, G
Hanley, P (Hon.)
Hinczak, Dr, I (Hon.)
James, W (Hon.)
Jones, D E (Hon.)
Heaton, B (Hon.)
Maric, M
Prosser, S D (Hon.)
Venour, M (Hon.)Hon

Related Associations

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

SYNTHETIC AGGREGATES A FUTURE PATH

THE QUARRY MAGAZINE MARCH 2006, featured an article by Tom Kuennen on "Exploring the synthetic aggregates alternative". He explores ceramic aggregates made by heating shale, clay or slate to temperatures in excess of 1000 degrees in a rotary kiln. The process causes the material to expand into a synthetic or lightweight aggregate. Construction of the Australia Square Tower in Sydney during the early 1970's included lightweight aggregate formed by this method from shale.

Kuennen also reminds us of the potential to form Lightweight Aggregate from Blast Furnace Slag. Doug Prosser, foundation Executive Officer for ASA recounts some of the background concerning the use of blast furnace slag as lightweight aggregate, citing research and applications using lightweight slag products more than 20 years ago.

References to iron blast furnace (BF) slag being a source of lightweight aggregate could be misleading to some readers as production of

lightweight BF slag ceased in Australia some 20 years ago & has never been resumed. There were two types of lightweight BF slag, pelletised & foamed, manufactured in those times.


Pelletised slag was produced by passing a stream of liquid BF slag over a rapidly rotating slatted drum, which flung slag globules high into a chamber containing a fine mist of water. This caused the slag particles to solidify before reaching the ground. Crushing was not necessary as the resultant material was generally minus 25mm,

Pelletised slag was used successfully in many projects in the Sydney CBD & at one stage was marketed by Blue Circle Southern Cement.

Production ceased when it became necessary to replace the rather expensive pelletiser & its chamber, as heat & steam ensured a short life for the equipment.

Foamed slag was the result of a rather simple process whereby liquid slag was allowed to run out over a prepared moist prepared slag bed, the

resultant steam generating a vesicular structure in the quenched molten slag. Foamed slag was never produced commercially in Australia & after a few trials, the project was abandoned. However, some of the material was used in trials as skid resistance aggregate in a flush seal on a busy intersection, with quite positive results. The Roads and traffic Authority carried out this trial with researchers from the then BHP Steel Company. Given the perceived small market and inadequate return, the process was not upscaled to production phase to overcome potential factors including environmental impact, slag temperature & bed moisture content.

The vesicular appearance of contemporary BF slag may also contribute to misunderstandings. However its weight is much the same as most hard rock aggregates. Whereas lightweight BF slag is no longer available, today's BF slag concrete aggregates & road bases are accepted as materials of choice in many construction applications. 

PRESENTATIONS:

A key focus of the Association is ensuring that Universities and their Engineering and Architecture students and lecturers have an appreciation of slag products. Tailored presentations are also available upon request for representatives from Engineering and

Construction organizations
Government Departments and
Councils.

Up Coming:

- University of Wollongong
- University of NSW
- Monash University

- Australian Defence Forces Academy
- Queensland University
- Melbourne University
- University of Western Sydney
- University of Newcastle
- Australian National University

Australasian Slag Association: Technical Seminars



To arrange a technical presentation for your workplace contact info@asa-inc.org.au

WANTED AN EXCEPTIONAL WOMAN – IN CONSTRUCTION

SO DO YOU KNOW AN EXCEPTIONAL WOMAN IN CONSTRUCTION? Please assist the NWIC in recognising the achievements and contribution of women in the construction industry by promoting the Awards of Excellence Program.

The National Association of Women in Construction is a not for profit association that promotes and supports the involvement of women in the construction industry. The NSW Chapter has recently announced that nominations are now open for its 2006 NSW/ACT Awards of Excellence Program. Entry is open to all individuals and

organisations in New South Wales or Australian Capital Territory with both third party and individual nominations welcome.


This years categories are:

Rider Hunt Crystal Vision Award for advancing and furthering the interests of women in the construction industry;

- **Multiplex Award for achievement in Construction;**
- **Sinclair Knight Merz Award for contribution to a project's Development;**
- **Kell & Rigby / Master Builders Association**

Innovation Award;

- **Stockland Award for achievement in Design;**
- **Southern Cross Construction Award for contribution to Sustainability;**
- **Acoustic Logic Consultancy Award for contribution by a Tradesperson;**
- **Bovis Lend Lease scholarship for Future Leaders;**

Selection Criteria and an information flyer on the exciting renovations to the 2006 NSW/ACT Awards of Excellence Program are available from the NAWIC website www.nawic.com.au or contact NSW/ACT Awards Coordinator Eloise Aschberger on 02 9277 2162 or eloise.aschberger@lendlease.com.au 

Nominations close Monday 24th of April, 2006.

NEWS FROM AUSTRALASIA

ASA – ANDREW WILSON (ECOCEM) was elected Chairman for a two year term at the Association AGM in Wollongong recently. He succeeds Shani Smith (ASMS) who has completed three successive annual terms and retired from that position in accord with the Associations Rules. Shani was elected Association Treasurer and Chairperson of the Marketing & Promotion Committee.

ICL/ASA – TOM WAUER has retired from Independent Cement and Lime in Victoria and is following his passion to tour the country. He has served the Association as representative on various standards committees, project co-ordinator for some of the Association research projects, Member of the Technical Committee and Chair of it, leading up to the AGM. At the AGM, Tom's considerable contribution to ASA was acknowledged and we wish him all the best for the future.

ASA – ENVIRONMENT & SAFETY COMMITTEE – domiciled in Port Kembla with links to other operational units in South Australia, Melbourne and Newcastle, this group has an important

role in sharing best practice for operations, Environment and Safety. From time to time the group holds seminars and training events in support of its member companies and industrial customers. At its quarterly meetings, members share performance data on safety and environment including critical incident management and case studies. This forum is enabling world's best practice to be brought to the table and shared for the benefit of the industry and its employees and community.

MULTISERV NZ RESEARCH GOES INTERNATIONAL – National Slag Association (USA) February Newsletter Slag Runner reported on the work in New Zealand, using melter slag as a filter for dairy shed waste water. Significant reductions in phosphorus levels have been recorded, with long term performance monitoring being quantified. Regular Updates on the performance of the filters will be provided to NSA and ASA Members.

[Source NSA Slag Runner No.6.01 February 2006
www.nationalslagassoc.org Contact: asa-inc.org.au]

INTERNATIONAL NEWS

THE 5TH EUROPEAN SLAG CONFERENCE –

The board of EUROSLAG has decided to plan the 5th European Slag Conference for 19-21 September 2007. Probable the conference will take place in Luxembourg.

Details of the conference will be published in due course on the EUROSLAG website.

EUROSLAG ADVOCATING SLAG NOT A WASTE – With regard to the amendment of the Waste Framework Directive the legal status of blast furnace and steel slags is discussed on EU level in terms of the question: Slag – waste or non waste? By the position paper presented here EUROSLAG wants to support the debate to clarify a distinction between waste and non waste by-products taking blast furnace and steel slags as an example.

[Source: www.euroslag.org]

SLAG CEMENT PRODUCERS ASSOC. (USA) AGM NEW YORK CITY – April 18-21 Not only will you benefit from the latest in technical and promotional information, you can also enjoy the social networking at group events like an NHL Hockey game (Rangers v Senators), a Broadway show (Spamalot) and our signature Awards Banquet.

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.

CD TECHNICAL RESOURCES

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



Subscription Form: Connections

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

Name _____

Position _____

Organisation _____

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☐ Materials handler

☐ Industry supplier

☐ Government agency

☐ Processor

☐ Refining/value adding

☐ Specifier/Engineer

☐ Other _____

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