



## The first of many to come!

**WELCOME** to our first association newsletter. Founded in 1990, from members representing producers, processors, marketers, customers and suppliers the Australasian Slag Association's major focus is to promote the use of slag products.

Whilst the majority of members are involved with iron and steel slags, there is also representation from members involved with slags from other pyrometallurgical processes. As the Australasian association, we have members across the region, including New Zealand, Singapore and Malaysia.

In the 9 years since formation, the Association has been active in the Technical, Operational and educational areas. It has conducted educational seminars and conferences, in its own right and in company with other associations and professional bodies. The association is a forum for sharing information on slag product properties and uses, process innovation, equipment, safety and environment. One outcome is the

production of two major technical publications in conjunction with the NSW Roads and Traffic Authority. The first was the use of Slag in Roads and the second, the use of Slag in Concrete. A third major publication on the use of slag in Asphalt and Pavements is currently in preparation.

Working to a new 5 year plan, the association is expanding its communications network through this newsletter and establishing a presence on the electronic super highway. It is also seeking to make the case for slag as a material of choice to the construction industry and to Government. A view strongly held by members of the association is that the slag products have a real contribution to make, particularly in improving the durability of structures. Their use can also makes an important contribution to eco sustainability.

Read on and allow us to introduce you to the Australasian Slag Association, its members and products. 

## Welcome Peter, Farewell Paul

There is a new General Manager at Australian Steel Mill Service (ASMS), Mr Peter Taylor has taken up the position of General Manager effective 12th October 1998. Peter, an Australian, joins the ASMS team with a 30 year career in manufacturing, mainly with Tube Makers. He trained as a Metallurgist and lived in Wollongong for a period over 20 years ago. Peter and his wife will be relocating from their current residence in the Gold Coast.

Paul and Diane Ratcliff are scheduled to return to Canada in the later part of November to take up the well deserved status of semi-retired Canadian consultant's and Bed and Breakfast (B&B) operators. Diane has informed us that all Aussie's are welcome to taste their hospitality and beautiful country side for an appropriate fee, how did she explain it? "100 miles from Toronto and 1" inch from heaven" Sounds great book me in!


Paul has served three years as Chairman of the ASA - during Paul's chairmanship his professionalism and enthusiasm will be the legacy he leaves behind. The ASA wish both Paul and Diane the very best for the future.

## ASA go's Online!

One of the key objectives of the ASA business plan over next five years was the development of more effective communication methods with government, community and industry to improve awareness of the benefits which flow from effective utilisation of slag products. In support of this, the ASA has established its place on the information super highway at <http://www.asa-inc.org.au>

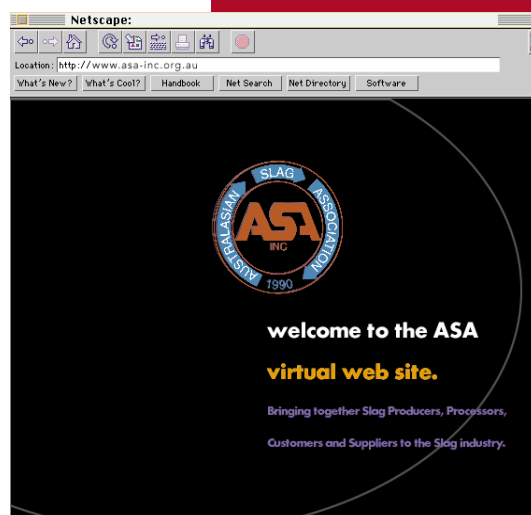
The Educational and Promotion committee together with the Business Development manager have been working hard, to ensure that the site is jam packed with relevant and timely information on industry developments. Initially this site will introduce the association and its various Committee's. Included will be member company details incorporating links to member web-sites as available. There will be product information including a broad range of construction applications for slag.

Selected case studies of recently completed projects that highlight the technical advantages arising from the utilisation of slag based products will be reported.

In due course we will further enhance the site with a library database of published papers with listing extracts and authors details as available, thus providing a valuable source of reference. Our on line downloadable newsletter "Connections" (commencing with this initial edition) will be available by using the email registration forms for electronic copies. We expect that the site will commence operations during the course of November/December of this year. 

**www.asa-inc.org.au**  
UNDER CONSTRUCTION

Website: [www.asa-inc.org.au](http://www.asa-inc.org.au)  
Email: [useslag@asa-inc.org.au](mailto:useslag@asa-inc.org.au)



*"This project represents another successful application of Ground Granulated Blast Furnace Slag (GGBFS) and Air Cooled Blast Furnace Slag Aggregates."*

### Change is Inevitable

Harsco owners of Heckett MultiServ, recently acquired interest in all Faber Prest Plc operations via an offer accepted overwhelmingly by Faber Prest shareholders. The offer was approximately \$97 million.

The UK-based Faber Prest provides a range of on site slag processing and materials handling services to worldwide steel producers, as well as integrated logistics and transportation services to the steel industry and other markets. In particular, within Australasia acquisition included operations in New Zealand, Australia, Singapore and Malaysia. Harsco plans to merge Faber Prest with its Heckett MultiServ Division.

Other recent changes at Heckett MultiServ include the appointment of Clyde Kirkwood as Group General Manager of Operations, as Scott Chalmers has taken up other responsibilities as the Regional Director Australia and East Asia. Within Clydes' new role he has also taken up the position of chair for the ASA Operations Committee, you will find his thoughts on issues that confront and challenge the Association today and in the future very interesting.

## Wollongong Entertainment Center- Another Slag success story.

**AFTER** many years of negotiations, planning and design re-considerations the new Wollongong Entertainment Center was opened by the Hon. Bob Carr MP on the 3rd September 1998.

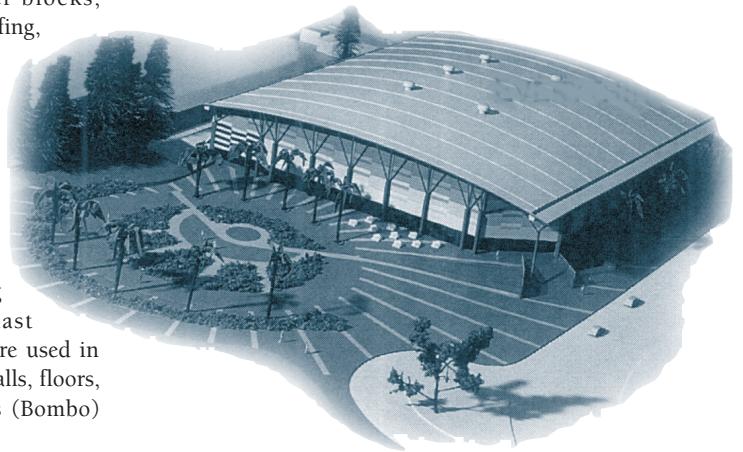
The project commenced in 1997 under the control of local construction contractors Camarda & Cantrill Pty Limited who performed to a very tight construction schedule to complete this \$16 million project, on time and within budget.

The Wollongong Entertainment Center, constructed of concrete, hebel blocks, structural steel and metal deck roofing, stands out prominently on the foreshores of Wollongong south beach. Specifications for the design and project management were provided by the Department of Public Works and Services.

This project represents another successful application of Ground Granulated Blast Furnace Slag (GGBFS) and Air Cooled Blast Furnace Slag Aggregates. They were used in the construction of the concrete walls, floors, columns and beams. Cleary Bros (Bombo)

Pty Limited supplied over 4300 m3 of high slag blended cement and slag aggregate concrete for the construction of this project.

Key reasons for the inclusion of these slag products relates to the advantages arising from the properties of reduced drying shrinkage, and increased resistance to sodium sulphate attack. Located only 150 meters from Wollongong south beach, it reassuring to know the concrete within the building will stand the test of time. **C**



## Slag gains Olympic success and builds for the future

ASMS Port Kembla slag products have achieved unprecedented levels of acceptance in the current Olympics-driven Sydney construction boom. ASMS-BHP's Port Kembla slag processing and marketing contractor, has been successful in having a number of slag products specified into various Olympic projects. Large tonnages are being utilised in projects, such as the Equestrian Center, Velodrome and the main Homebush site. Olympic-related enhancements at Sydney Airport have also seen the already high usage of slag products reach record levels.

Since the first major success with the Third Runway slag construction, well in excess of half a million tonnes of various slag products have been utilised at the airport. This tonnage will continue to increase, with future planned projects. The applications where slag products are being used in these projects range from; use as a soil conditioner, to Roadbase and civil works through to Asphalt and Concrete construction.

Whilst the Olympics projects are high profile and have gained much interest, it is pleasing to note that it is in the general market where most tones are being utilised. Port Kembla slag sales in 1998 will exceed 1.65m tones and are rapidly approaching full utilisation of the 1.8m tones generated annually. It is the success in these ongoing markets, which are not Olympic related, that will see full utilisation of all slag arisings being achieved and sustained in the foreseeable future. **C**



*The specifications required a 56 day concrete strength of 80Mpa f'c, and after stripping the formwork a surface application of tiles or paint was to be applied.*

## Melbourne Sports and Aquatic centre diving tower wins award

The APMCA-Victorian branch annual dinner and awards night was held at the Carlton Crest Hotel on 24 July 1998.

The Diving Tower at the Melbourne Sport and Aquatic Centre won the award for the "Most Innovative Use of Concrete in lieu of alternate products".

The structure required a high degree of rigidity to minimise vibration so that cameras could be mounted at the top of the structure to record diving techniques.

The Designers: Connell Wagner and Associates, Contractors: Baulderstone Hornibrook and Technical Consultants: CRL Pty Ltd were involved in the preparation and overseeing that the specifications were

compiled to.

The specifications required a 56 day concrete strength of 80Mpa f'c, and after stripping the formwork a surface application of tiles or paint was to be applied.

The concrete was supplied by Pronto Mixed Concrete and contained a cementitious blend of high proportions of Ground Granulated Blast furnace Slag supplied by Independent Cement and Lime Pty Ltd. Master Builders Technologies supplied the admixtures.

The resultant concrete achieved an f'c of 80Mpa at 28 days and due to the high quality of surface finish it was decided not to coat the structure but leave it as a plain concrete off form finish. **C**



**We welcome ANI Comsteel, John Finlay Engineering Pty Ltd. and NS Komatsu to membership of the association. We have included a short overview of the products, services and contacts just to get you re-acquainted.**

### Political briefings - Visitors and Visits.

Through the member for Keira - Mr Colin Markham, M.P. the Minister for Public Works and Services, Mr Ronald Dwyer M.P. recently viewed various member operations in the Wollongong region. The Minister toured both slag production and processing and received a presentation from the Executive Committee on slag contributions to the construction industry.

Member for the Southern Highlands, Ms Peta Seaton M.P. recently facilitated a meeting at Parliament House with the NSW Liberal Deputy Leader Ron Phillips, M.P. Subsequent to our meeting Ms Seaton will be coordinating a tour of various member operations in the Wollongong region for her colleagues.

## New Members

### ANI COMSTEEL

Commonwealth Steel Company Limited, a member of the ANI Group, has recently joined the ASA as a member. The company is known as "ANI Comsteel" and operates a 50 tone Electric Arc Furnace at the works situated in the Newcastle suburb of Waratah NSW. The steel manufacturing process combines the 50t EAF with 2 Ladle Furnaces, a Vacuum Degassing Unit, a Vertical Billet Caster and Ingot Casting. Product manufactured includes Grinding Media for the mining industry, Rolled bar, Forgings, Railway Wheels and Railway Axles.

Comsteel is exploring a range of strategies for the use of EAF slag." For further information regarding the companies operations, products and services, please contact Ralph Penn, ENVIRONMENT SUPERINTENDENT on 02 4967 0495.

### JOHN FINLAY ENGINEERING PTY LTD.

The range of equipment distributed by John Finlay Engineering Pty Ltd has won a special respect from Australian operators many of whom started in business with a single unit and subsequently built large business empires coming back time and again to increase capacity.

Active throughout Australia from a Brisbane head quarters. The equipment supplied by

John Finlay Engineering over the last 25 years can be found operating around the clock in the exacting conditions which exist in Australian Primary industries were key features such as performance, reliability, ease of maintenance and durability are of paramount importance.

John Finlay Engineering can be contacted at: Head Office, John Finlay Engineering Pty Ltd, 740 Old Gympie Road BURBENGARY QLD 4505 Contact TOLL FREE: 1800 777 300.

### NS KOMATSU

NS Komatsu commenced operations in Australia in the early 1960's as a dealership run by Australian agents importing equipment from Japan. In due course the parent company, Komatsu, purchased the agency and some seven years ago formed a joint venture with the Nittetsu Shoji company to become NS Komatsu. Nittetsu Shoji is a subsidiary of Nippon Steel and NS Komatsu are the largest customer for steel plate from the company.

NS Komatsu produce a wide range of civil construction equipment including bulldozers, excavators, haul trucks, wheel loaders, graders and mobile crushers. They currently sell the world's largest bulldozer, the D575A-2SD, which weighs in at 142,500 kg and 858 kw. Excavators range from 320 kg to 660,000 kg. A Komatsu mobile crusher is currently employed at the Olympics 2000 site.

The company is well represented throughout Australia with 18 agencies and 185 employees. For further information please contact Peter Calder on 02-97958300 or Peter Gledhill on 02 9795 8345. **C**





# Committee Reports

## Technical Committee

**Chair: Martin Venour** – The ASA Technical Committee meets 4 times per year at the CSIRO Building Technology Center at North Ryde in Sydney. With the main role of sharing technical information on slag products from both ferrous and non ferrous production.

Over recent years, our members have been involved in Research Projects, Australian Standards Committees, presentation of papers at various conferences and seminars both nationally and internationally.

Currently members are preparing the third in a series of publications on uses of iron and steel slag's, with a key focus on steel making slag's used in Asphalt and Sealing Aggregates. This publication cooperatively produced by the Australasian Slag Association, Road and Traffic Authority of NSW, Australian Asphalt Pavement Association, and VIC Roads will be a valuable resource for all specifiers and designers.

***“An initial round of discussions with both sides of Parliament, with follow up visits to the Port Kembla slag producing facilities have been a key focus in changing Government awareness of slag and its contribution, with positive feedback on the future changes.”***

Another project just completed by the Committee with the CSIRO was a research project to develop a test method to determine the potential for expansion of steel slag. The method developed is believed to be unique in the world and uses a different approach to the issue, but is believed to be a simpler test than those used elsewhere in the world.

## Education and Promotion Committee

**Chair: David Jones** – This committee is tasked with the role of communicating the advantages of slag products and providing information to users and those who would seek to know us and our materials better.

In the years since the associations formation, the committee has been involved in the organisation of conferences, seminars and events to promote the attributes of slag products. This group also has supported the publication of the major slag guides, produced in company with the NSW Roads and traffic Authority.

Development of the 5 year plan (1998/2003) has been a important step in moving the association forward. One of the outcomes of the plan has been the employment of Craig Heidrich as our Business Development Manager. Others include, improved information and communication and bringing to Government and Regulators

the needs of the industry and the potential for slag products to contribute to eco sustainability goals.

An initial round of discussions with both sides of Parliament, with follow up visits to the Port Kembla slag producing facilities have been a key focus in changing Government awareness of slag and its contribution, with positive feedback on the future changes.

This year, we are currently initiating the ASA site on the Information Super highway as discussed elsewhere in this newsletter. It is expected that this newsletter as well as other information about the association and its products will be progressively be available from this site.

Currently, the major publications produced by the association are being incorporated into a handy compendium. This will become an invaluable reference source for people using to best advantage, or needing to understand the use of slag products. These are expected to be

available from the end of November 1998, so please contact us you would a copy.

A remake of the association video and providing seminars for engineering students at Wollongong and Newcastle Universities have capped the project list for this year.

## Operations Committee

**Chair: Clyde Kirkwood** – Over-view and Objectives-The Operations committee objectives are to share our experiences with regard to the safety and environmental aspects of our industry, and hopefully learn from these events. The committee comprises of representatives from operating companies, equipment suppliers, and slag producers.

## Safety

The handling and processing of slag, historically, has been a dangerous environment in which to work, and will remain so. This, however, does not mean we have to accept any injuries or accidents in our industry. With the committee comprising of operations managers, and equipment supplier representatives we have the ability to share our safety policies, accidents that are occurring, corrective actions to these and safety advantages in equipment design.

## Our Industry Association

**Our** associations role 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 detail on the association, and how you can be come involved, just complete the information tag at the end of this newsletter. Current membership is as listed below.

## Our Members

- Australian Cement Ltd
- Australian Steel Mill Services Pty
- Australian National Industries (ANI)
- BHP Integrated Steel Div (Port Kembla)
- BHP Long Products Div (Whyalla)
- BHP Products Div (Newcastle)
- Blue Circle Southern Cement Ltd
- Boral Concrete & Quarries
- Brambles Equipment
- Brambles Industrial Services
- Butler W B
- Cement Lime Slag
- 'University of Wollongong - Civil and Mining Department
- Cleary Bros (Bombo) P/L
- Coffey Partners International
- CSIRO
- CSR Readymix Group
- Finlay Screens
- Gough & Gilmour
- Haber E W
- Heaton B S
- Heckett Multiserv
- Heggies Bulkhaul
- Kress Corporation
- Laporte Metal Services
- Mahaffey Associates
- Maroszeky M
- Metserv Australasia Pty Ltd
- Milburn New Zealand Ltd
- Mountain Industries P/L
- National Slag Association
- Nichimen Australia Limited
- Nippon Slag Association
- NS Komatsu
- Pioneer Concrete P/L
- Premium Tyre Service P/L
- Prosser S D
- Quarry Products Association
- Queensland Cement Ltd
- Reeves C M
- Roads & Traffic Authority of NSW
- Slag Cement Sdn Bhd
- Smorgon Steel
- South Coast Equipment
- Specialist Crushing & Screening Services
- Ssang Yong Cement (S) Ltd
- Steel Cement Ltd
- Steelstone Services (Aust)
- Sulphide Corporation P/L
- The Slag Reduction Company of NZ Ltd
- UBE Industries Ltd
- Wormald Fire Systems

## Committee Reports cont...

### Environment

The benchmark for environmental compliance is continually being raised, and with a high profile industry we need to be leading the improvements in this field and not following. Through the committee members we have the unique position to be able to discuss our environmental concerns and share ideas to help manage operational problems associated with our business activities.


### Objectives

It is in everybody's interest that we make the industry in which we work a safe and environmental friendly environment. To this end

the objectives of the committee are two fold:-

To help reduce the environmental effects of our activities to a practicable minimum and to encourage and demonstrate a commitment to environmental excellence.

To help stop all unsafe practices and to ensure that we aim towards zero accidents and injuries in our industry.


Inquires about becoming involved in the activities of any of the committees can be made by contacting us via our web-site, by phone, e-mail or forwarding the response coupon at the end of this newsletter. 

## "Guide to the Use of Steel Furnace Slag in Asphalt and Thin Bituminous Surfacing"

The Technical Committee of the Australasian Slag Association has been developing the third in a series guides: "A "Guide to the Use of Steel Furnace Slag in Asphalt and Thin Bituminous Surfacing". Previous guides related to Roadbase and Cement and Concrete have been very well received by the relevant industries and it is anticipated that this guide will also be very useful for specifiers, road owners, consultants and asphalt producers.

The initial text was prepared through a sub-committee of the Technical Committee, which was chaired by Brian Heaton, Newcastle University and coordinated via myself. The Technical sub-committee includes asphalt producers, Roads and Traffic

Authority representatives as well as slag producers. Geoff Youdale (former General Manager R&D - RTA) was engaged as the technical editor for the guide and has produced an initial draft from the information provided to date and has written some sections. We are indeed fortunate to have Geoff involved as he is very respected in the Roads Industry.

It is anticipated that the draft guide will be finished this year. At this time endorsement will be sought from RTA, VIC Roads and the Australasian Asphalt Pavement Association. A release in early 1999 is the goal. Please contact Bruce Fenton of ASMS if you would like any further information on 02 4255 1142. 

## New Slag Cement processing terminal for Port Kembla.

Independent Cement and Lime (ICL) has recently proposed a new development for Wollongong, a Slag and Cementitious Products Terminal using ground slag blended with other cementitious materials to create specialised cements for various construction purposes.

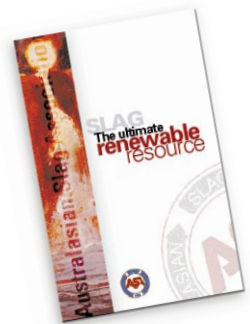
Included in the terminal will be provisions for blending both bulk and bagged products for use in the construction and DIY markets in NSW.

Within the proposal it is estimated that up to 50% of raw materials could be slag products. The company is most conscious of

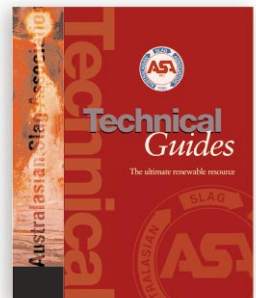
the benefits of using slag products both from an environmental and commercial viewpoint.

Reduced slag stockpiles and land-fill requirements are seen as major benefits for the region. The operation increases market access to determine sources of cementitious products. The macro-environment will likely benefit from a reduction in quarrying for raw materials for Portland Cement and a corresponding reduction in energy consumption as a result of further substitution of ground slag for Portland Cement.

This development located in an established industrial area provides several



Slag - "the ultimate renewable resource" video has recently been completed and available now. New additional footage has been incorporated demonstrating the beneficial properties of slag in various large-scale projects that have been completed in recent years. The video (15mins duration) outlines slag's historical beginning's to the various types of slag's that are produced in a modern production process. Copies are available to members at a cost of \$15.00 each. Just complete the subscription form and indicate your requirements.




Given the number of high quality guides the ASA has produced, and continues to produce (i.e. new "Guide to the Use of Steel Furnace Slag in Asphalt and Thin Bituminous Surfacing") together with bulletins, newsletters and general correspondence. The Education and Promotion Committee have developed a compendium for the purposes of storing these items and more. It is anticipated that the Compendiums will become an invaluable complete reference tool for engineers, specifiers, consultants, local government, and various slag users. Copies are available to members at a cost of \$15.00 each. Just complete the subscription form and indicate your requirements.

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environmentally beneficial features. Firstly, increasing market access to alternative materials will result in reduced slag stockpiles for the region. Another is this clean and quiet operation will lower the average intensity of industrial impact to the area. Yet another is the macro-environment will benefit from the reduction in quarrying for raw materials for Portland Cement and a

reduction in energy consumption, as a result of substitution of ground slag for Portland cement.

This investment by ICL demonstrates the enormous commitment and belief the company holds in slag materials, in particular the benefits to the environment and wider community from effective utilisation of this valuable, renewable resource. 

Views expressed in the Connections newsletter do not necessarily reflect the opinion of the ASA. All contributions are welcomed, though the publisher reserves the right to decline to publish or to edit for style, grammar, length and legal reasons.

\*Internet references in articles, stories and advertising were correct at the time of printing. The ASA does not accept responsibility for misleading views.

## CONNECTIONS

### EDITORIAL

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