

QUARTERLY
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association *Connections*

THE AUSTRALASIAN SLAG ASSOCIATION NEWSLETTER

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Connections connects...

Thank you for your positive comments and responses to our first issue of Connections. We are pleased to have the opportunity to bring you on a quarterly basis; news of our Association, its people, its services, product development, discussion of current issues and features on projects where slag products have been used to good advantage.

Change is the staff of life. Last issue, we reported on management changes and international company changes, which impact on the Australasian Slag Association and member companies. After a successful AGM, there is further change in the makeup of the Executive and Committee leadership roles. These reflect the structural changes taking place, particularly within the Iron and Steel industry. Our Chairman's report and AGM reports in this issue pick up on them in more detail. New members to the Executive and Committee leadership roles are welcomed and we look forward to their contribution in the leadership of the Association towards its goals.

Given the positive experience with slag products in construction, particularly over the past forty years in Australia, there is no shortage of applications where slag products have been

specified to enhance the performance or durability of structures. Singapore's undersea cable tunnel is discussed in this issue, together with the rationale for using high slag blended cement in concrete.

Society continues to push for innovative solutions to the questions of industry's environmental performance and impact. The use of Ground Granulated Blast Furnace Slag (GGBFS) as a significant proportion of the cementitious material in concrete conserves natural resources. It also reduces the amount of greenhouse gases generated from the production of Portland Cement that would otherwise be used. Last issue, we announced the new slag cement-processing terminal for Port Kembla. In this issue, we discuss the additional iron blast furnace slag granulation facilities being installed at Port Kembla, to meet the increase in demand.

Don't forget you can download this newsletter and gain further information about us, at www.asa-inc.org.au, our spot on the World Wide Web. Wander through this issue of Connections and allow us to show you more about our industry, its people and products. **C**

What an innings!

After 35 years with BHP, Port Kembla - David Jones resigned effective 29th January 1999. Fraser Carrie (Superintendent Waste Management) will represent BHP as a director on the ASA board.

David was instrumental in the development of the Association, which led to the official formation of the ASA on 11th February 1990. In addition to becoming the Inaugural Treasurer for a period of three years, David has held the position of Chairman of the Education and Promotion Committee since the ASA inception.

In recognition of his efforts, the Association awarded him personal membership for 1999. The Association wishes David and his family the best in their future endeavors.

EDITORIAL

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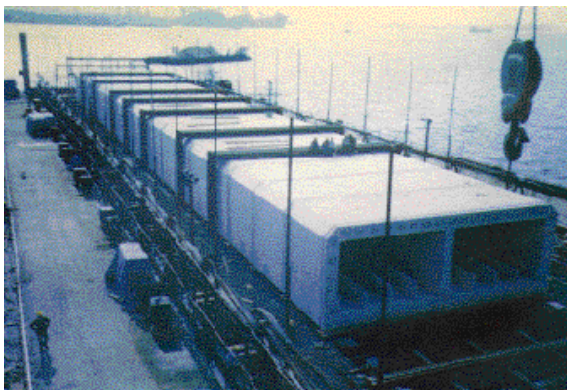
Publisher: ASA
Bus. Development Manager: Craig Heidrich

Contributors: ASMSJCLBHP, Pasminco, Nichines Aust., SsangYong Cement, David E. Jones.

Singapore's newest undersea cable tunnel

Sydney residents no longer wonder at the reality of driving under Sydney Harbour in a pre cast concrete submerged tube tunnel. Indeed this kilometer long tunnel became a speedway for late night revellers until permanent speed cameras were installed. Although a segmented pre cast tunnel of this size was a first for Australia, the principle was well known with examples in Hong Kong and Singapore.

Long term Association member SsangYong Cement (Singapore) Limited recently sent us details of the Tuas Undersea Cable Tunnel which carries power supply cables from two large new installations on the Tuas Peninsula on the western side of Singapore to electrical substations at Ayer Rajah and Labrador in Southern Singapore.



"The total length of 2.9km tunnel is 2.1km under the sea - on the ocean floor and another 0.8km is under land enabling duct routes to connect with their final destinations. (1)

The central immersed tube section of 2.1km consists of 18 straight prestressed concrete elements each 100 meters long, 11.8 meters wide and 4.4 meters high and another 4 curved prestressed concrete elements of 50 meters length each. Each element consists of 25 x 4 meter long segments cast in the casting yard and then joined together with prestressing strands on the launching jetty. After prestressing, the elements were lowered down approximately 10 meters into the ocean with the help of synchronized jacks. This is the second project in the world to adopt this scheme, however, the size of the cross-section of the elements was twice that of

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Chairman's report

A sensible **solution** for an essential industry

Winning and processing of coarse river sand suitable for use in concrete is becoming more and more difficult due to the depletion of existing reserves and difficulties of processing within tightening environmental guidelines. Meanwhile, controls on disposal of industrial by-products are becoming more onerous as restrictions are imposed.

Following rigous testing for compliance with EPA NSW requirements, black sand produced from a zinc slag at Pasminco Cockle Creek Smelter is now approved for use in premixed concrete as a replacement for coarse natural sand. For further information regarding black sand please contact Barry Butler – CemConSult International 02-49586611.

New Members

Nichimen Australia Ltd is an Australian based subsidiary of Nichimen Corporation, a Japanese trading company. Nichimen first began business in 1892, and set up their first office in Sydney in the 1930's.

One of the main activities of their Perth based office, is the supply of Granulated Blast Furnace Slag (GBFS) to various users in Australia. The ASA would like to welcome Nichimen Australia Limited to the membership.

For more information please contact Mr Greg Gregory, on telephone 08-9325 5211 or facsimile 08-9325 7818.

I feel that the last year has been one of fine achievement. It is the first full year of the Business Development Manager who has been particularly active and zealous in achieving representation of the Association and it's members in the political arena, and he has done so with a great deal of success. Both the Government and the Opposition in New South Wales have been well targeted to advise and inform them of the social, environmental and economical benefits of our product and the assistance this Association can give. A good response has been obtained from each houses of Parliament.

The Technical Committee, led by Martin Venour, continued it's important role and again was extremely well represented by most if not all Member Companies at its meetings. One of the major works of this Committee is the research being funded by some Member Companies with the CSIRO into Free Lime/Expansion which will be of utmost importance, both in many Australian States as well as the implications overseas where expansion is of great interest.

The Education Committee headed by David Jones has had a particularly good year with the production of the special industry Video, and

the compilation and preparation of a Compendium of Information and Newsletter "Connections" released early in 1999.

The Newsletter has been very well received with universal plaudits.

The Executive Committee has continued it's excellent work this year as in the past and I wish to convey my thanks to Peter Hanley who as Deputy Chairman was able to fill in for me when I was overseas in the early part of the year. To "Team Prosser" for the tremendous work they have carried out for the Association I make special mention for the Secretarial and Treasury duties so ably and diligently performed.

While Environmental challenges have continued this year, it appears that there is a greater acceptance of our products both by the community and those instrumentality's and authorities that previously had treated our industry with some suspicion.

Because of the changing structure of steelmaking in Australia, the year ahead is one of many challenges, but because of the caliber and good intentions of both the Companies and the People involved, I am sure that this Association will continue to be a forum where opportunities and challenges can be met and satisfactorily resolved for the benefit of all. **C**

Political **briefings**

The Association through the Business Development Manager – Craig Heidrich, has continued over the past 3 months to make further representation to both Houses of Parliament, i.e. Government Ministers and their respective Shadow Ministers along with key representative of various Government Agencies.

A key element of the ASA charter is to inform Government stakeholders on the benefits of slag to the construction industry, enhancing the durability of concrete and conservation of natural resources. Our industries contribution to the economy and ecologically sustainable development (ESD) is a significant one, and we therefore will continue our information seminars, thus keeping all levels of Government informed.

As part of this ongoing program, the Association recently forwarded both the Government and Opposition copies of the Slag – the ultimate renewable mineral resource Video together with an invitation to view selected member operations on a first hand basis. **C**

"Guide to the Use of Steel Furnace Slag in Asphalt and Thin Bituminous Surfacing" – Update.

The production of this guide, the third in the series following "Guide To The Use of Slag in Roads" and "Guide To The Use Of Slag in Concrete" continues to progress well. When completed it will provide valuable information for asphalt producers, specifiers and road owners on the benefits and practicalities of using steel furnace slag in asphalt and thin bituminous surfacings.

The guide has gone through a number of drafts since the last newsletter. The editorial Committee has met and resolved most of the outstanding issues. The final drafting work is nearing completion following a few sections being modified following constructive comments from the Australian Asphalt Pavement Association and VicRoads. The modifications will give the guide a more national feel. It is expected that an endorsement from AAPA will be forthcoming during April.


The editorial Committee is very appreciative of the efforts of Geoff Youdale. Geoff has written some of the sections as well as being the editor for the guide. It is hoped that the guide will be ready for release early in the second half of the year. For any further information please contact Bruce Fenton, Australian Steel Mill Services Pty, on (02) 42551142. **C**

The 9th Annual General Meeting was held on the 17th March at the Novotel Brighton Beach, Sydney. Both the AGM and subsequent dinner were attended well, with 48 members remaining for the evening's activities of networking with industry colleagues.

Office bearers for 1999; Chairman – Gordon Dobson of Steel Cement. Vice Chairman International – Rex Maddock of Slag Reduction



Company (NZ), Vice Chairman, Australia – Peter Hanley of Steelstone Australia. Chair's for the various Committees, Technical Committee --Wayne James of Australian Steel Mill Services, Education and Promotion Committee – Andrew Robson of Steel Cement Ltd, Operations Committee – Clyde Kirkwood of MetServ Australia.

A topic of some discussion during the evening was the changing faces within the membership Executive Committee for 1999. It can be said there exists a considerable amount of passion for the ASA and its continued representation of our mutual interests. We look forward to this energy being directed to the further development of our industry. 



Steel Cement *looks to the future in stabilising*

Steel Cement Ltd (SCL), is the largest producer of Ground Granulated Blast Furnace Slag (GGBFS) for the stabilisation industry in Australia. It is also a wholly owned subsidiary of Independent Cement and Lime Pty Ltd (ICL), the public face of the widest range of blended cementitious products to the stabilizing industry in Victoria and New South Wales.

For many years ICL has supplied the stabilising industry from its blending plant at Footscray in

“The four silos are used to store GGBFS, fly ash, hydrated lime and a spare silo for various products. The system is currently capable of producing 100 tonne of blended product per hour, increasing output by approximately 50% over existing systems.”



Victoria. This plant required all potential stabilisation components to be transported from the point of manufacture. The facility was also labour intensive requiring skilled manning during the entire blending and loading operation.

Due to the growing need for a diverse range of cementitious road stabilising materials and technology improvement in blending equipment and contract systems, SCL undertook the construction of a new blending facility at their Port Melbourne slag grinding plant.

The project consisted of an extension of the existing weighbridge to accommodate B-Double bulk tankers, new silos and a fully automated blending and loading system. The new fully automated operation is designed for truck drivers to simply select the desired product and the system discharges blended materials to any recipe or straight product discharge as required.

Our Association

Our Association's 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 section at the end of this newsletter. Current membership is as listed below.

Company Members

- Australian Cement Ltd
- Australian Steel Mill Services Pty
- Australian National Industries (ANI Comsteel)
- BHP Integrated Steel Div (Port Kembla)
- BHP Rod Bar & Wire Products Div (Newcastle)
- Blue Circle Southern Cement Ltd
- Boral Concrete & Quarries
- Brambles Equipment
- Brambles Industrial Services (Whyalla)
- Cleary Bros (Bombo) P/L
- CSIRO
- CSR Readymix Group
- University of Wollongong – Dr Denis Montgomery
- Finlay Screens
- Gough & Gilmour
- Hecckett Multiserv (UK)
- Heggies Bulkhaul
- Kress Corporation
- Mahaffey Associates
- Metserv Australasia Pty Ltd
- Milburn New Zealand Ltd
- Mountain Industries P/L
- University of Newcastle – Mr Brian Heaton
- Nichimen Australia Limited
- NS Komatsu
- Pioneer Construction Materials
- Premium Tyre Service P/L
- Queensland Cement Ltd
- Roads & Traffic Authority of NSW
- Slag Cement Sdn Bhd, Malaysia
- Smorgon Steel
- South Coast Equipment
- SsangYong Cement (S) Ltd, Singapore
- Steel Cement Ltd
- Steelstone Services (Aust)
- Sulphide Corporation P/L
- The Slag Reduction Company (NZ) Ltd
- UBE Industries Ltd
- Wormald Fire Systems

Personal Members

- Anderson L
- Butler W B
- Dobson G
- Haber EW
- Jones D E
- Maric M
- Marosszeky M
- Prosser S D
- Reeves C M

Related Associations

- National Slag Association
- Nippon Slag Association

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steel cement


The initial work consisted of driving 34 piles to a depth of 12 meters through the Coode Island silt. The silo pile cap required approximately 120 cubic meters of 32MPa, superplasticised, 50% slag blended cement low heat concrete to reduce the possibility of micro-cracking and due to the congested reinforcing.

Steel Cement's engineering division chose Tylden Equipment Sales for majority of the blending plant supply installation and commissioning due to the close working relationship they have had over the past 10 years. The plant took just 14 weeks to design, manufacture and install.

The four silos installed are used to store GGBFS, fly ash, hydrated lime and a spare silo for various products. The system is currently capable of producing 100 tonne of blended product per hour, increasing output by approximately 50% over existing systems.

Stabilising materials of various blends such as slag and lime and slag, lime and fly ash from this facility are currently supplied to ICL customers as far afield as Kaniva, Mildura, Griffith, Bega and Goulburn.

All products are controlled to the strict requirements of the specifiers such as Government Main Road departments, Councils and private contractors.

If you would like any further information regarding this story please contact ICL or SCL on phone 03 9646 4983. 

UPCOMING ISSUE

- Airport Tunnel
- Slags ain't Slags
- Concrete 99
- New Granulator

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undersea cable tunnel


the former project." (1)

Naturally the concrete required for such a project must be of the highest quality, particularly when because of prestressing, a high early strength of 10Mpa at 24 hours was specified. Some 83,000m³ of concrete was used in this project.

"OPC was not to be used for the marine works. Instead, high slag blast furnace cement - HSPBFC (PBFC conforming to BS 4246) with a fixed blend proportion of 30% (OPC) and 70% (GGBS) was to be used to reduce heat of hydration of thick sections and to provide better marine durability characteristics especially with regards to chloride and sulphate attacks. Minimum cement content specified was 380kg/m³ and maximum w/c specified was 0.45." (1)

Placing temperatures of concrete for the pre cast segments could not exceed 280C so chilled water and crushed ice had to substitute the free water in the concrete mix.

All cement, superplasticisers and water proofers were supplied by SsangYong Cement (Singapore) Limited which played a major role to produce the special concrete required for this most interesting project.

Copies of this paper are available from the Associations Office. 

Reference:

1.23rd Conference on Our World in Concrete and Structures. 25-26 August 1998. Singapore (Pre-conference Workshop on Quality in Ready Mixed Concrete. 24 August 98.Singapore.

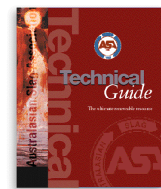


Slag – "the ultimate renewable mineral resource" video has proved to be a favourite with many members. A considerable amount of new additional

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.

Since our last issue we have had to produce another 100 copies to meet further demand. 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.

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 has developed a Technical Compendium for the purposes of storing these important documents and more.

The Compendiums are an invaluable reference tool for engineers, specifiers, consultants, government authorities, and various slag users. Copies are available to members at a cost of \$15.00 each, non-members \$20.00 plus postage and handling. Please note that as amendments are made to the contents of the compendiums, registered holders will receive updates. Just complete and fax back the subscription/order form indicating your requirements.

Subscription: Connections

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

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