

## Editorial - The Australasian Slag industry: A significant contributor to the Economy

The Australasian iron and steel slag products sector is valued at \$M140 pa with some \$M500 of invested capital directly, and in downstream processing. This generates significant economic value in the steel centres of Australia and New Zealand and in those places where slag products are further processed by grinding and blending to form further value added products. Iron and steel slag in Australia up until the 1960's was generally used on or near the steelworks site as good clean construction fill. Some blast furnace slag was processed for aggregate in concrete during the rapid post WWII expansion of the Australian Steel Industry through to the 1970's. As these sites became fully developed, the need arose to find alternate uses for these co-products of manufacture.

In the 1960's, following an executive team visit to South Africa, a pilot stage blast furnace slag granulator was installed at Port Kembla, with the resulting granulate ground for cement by the then-related company, Southern Portland Cement, and used in much of the more than 1 million cubic metres of concrete placed at Port Kembla during the 1960's and 1970's major expansion phase. During this period, granulate was also supplied as sources of silica and alumina for the glass industry.

Up until the 1990's, the mostly blast furnace slag products were produced by the steelworks, handled by contractors, and with the exception of blast furnace slag aggregates at Port Kembla, (which were processed and marketed by a contract company), the marketing was mostly handled directly by the steel companies. It was not until the 1980's and 1990's - when the steel companies outsourced slag handling, processing (from the molten state to finished product) and marketing - that the actual size of the industry became apparent. At each of the major steel producing centres, stand alone service companies were formed with the aim of further credibly developing the iron and steel slag market.

Aided by the Association, likewise formed in 1990, the industry is now developed to the point where it is able to advocate to government and regulators, serve as a representative on relevant Australian Standards Committees, and provide education and information on the effective use of slag products.

In this issue we have paid tribute to one of the pioneers of the Australasian slag business and have mentioned others coming in and leaving the Association. This significant and comparatively new industry, has been, and continues to be, developed by highly skilled, passionate and dedicated people such as the persons mentioned.

## Association thanks Andrew Wilson for his contribution



Andrew Wilson (seated) with Keynote Speaker Alan Pears at the Association's Sustainability and Slag Conference in 2007.

The Association has, since its inception, attracted high profile Chairmen, generally drawn from its sustaining members. However, individuals hold this and other executive positions as representatives of the member companies. This ensures that the objectives of the Association and its supporting membership remain aligned.

Andrew Wilson served as Chairman of the Association from March 2006 to March 2008, after which he served as secretary of the Association until July this year when he moved from his position of CEO of Australian Steel Mill Services and Ecocem. Andrew was succeeded as Chairman by Jim Graham, Plant Manager Slabmaking for BlueScope Steel.

During Andrew's term as Chairman, the Association continued its education and advocacy for slag products manufactured from iron and steel slags. In a most timely manner, the Association presented the significant conference in Sydney during 2007 - Sustainability and Slag. With a good mix of speakers from industry, government and overseas, delegates were confronted with issues surrounding global warming and the avenues available - both existing and new - to lower the nation's greenhouse footprint. The conference opened by the then-Minister for Industry, Tourism and resources, Bob Baldwin.

We thank Andrew for his contribution to the Association and wish him well for his future endeavours.

# Introducing Association Chairman Jim Graham



Jim Graham hosting a visit of the PM Kevin Rudd to Port Kembla.

Association Chairman Jim Graham is currently Plant Manager Slabmaking at BlueScope Steel Port Kembla Steelworks. This role is accountable for the performance of the slabmaking plant, refractories technology, supply and installation across Port Kembla, and several major alliance contracts with companies providing services across Port Kembla Steelworks. The recycling activities at Port Kembla, including slag handling and processing, come under this portfolio.

Jim grew up in Sydney where he completed his high school education before moving to the Illawarra region in 1979 to undertake part-time study at the University of Wollongong whilst employed by Australian Iron & Steel Pty Ltd as a metallurgy trainee at Port Kembla. Working across various departments before gaining experience in frontline operations on shift at the Hot Strip Mill Department, he completed tertiary studies in Business Management and moved into an operations engineer role at the Hot Strip Mill. Here, Jim progressed into the management ranks at Port Kembla as Superintendent Hot Strip Mill Operations, Plant Manager Plate Mill, and then to Plant Manager Operations Services where he undertook responsibilities relating to Energy Services, Rail Transport, Laboratory Services, Refractories, Alliances & Recycling and the Transfield Maintenance Alliance across Port Kembla. It was in this position that he first became a member of the ASA executive, taking over from Oscar Gregory (now General Manager Iron & Slabmaking, BlueScope Steel) as the BlueScope Steel representative on the Association's executive team. In July 2007 he moved into his current position as Plant Manager Slabmaking.

Jim lives in the Illawarra region of NSW with his wife and four daughters. Outside his Bluescope Steel hours, Jim serves as the President of the South Coast and Tablelands Region of the Scouts; is a keen cyclist and motorcyclist, and also enjoys surfing, fishing and water skiing and getting away to his weekend on the south coast to relax and enjoy these activities whenever he can.

## National Waste Management Task Force Visits Port Kembla

The Association takes every opportunity to advocate on behalf of iron and steel slag utilisation. In June this year, members of the Association hosted members of the National Waste Management Task Force during an industry visit to the Port Kembla Steelworks and the slag processing activities of Australian Steel Mill Services (ASMS).

Members of the Task Force were given an appreciation of the production process of iron and steel and the slag co-products. During the steelworks plant inspection, team members saw the production facilities for Granulated Iron Blast Furnace Slag and aggregates produced from air cooled Blast Furnace Slag. The Task Force was briefed on the Association's activities and objectives, which include advising and achieving user, stakeholder and community acceptance of the materials, and increasing the recognition of slag as a valued material. Importantly, the Association continues to work hard to change a common perception of slag as a "waste".

Task Force members learnt that slag products have a well established place in the Australian Construction Industry. In particular, they learnt that products such as Ground Granulated Blast Furnace Slag are materials of choice and impart durability properties to structures whilst reducing greenhouse impact by replacing cement.

Importantly, Task Force members were given an understanding of the regulatory environments surrounding waste materials that apply across the state and territories of Australia and impediments faced by slag products used in particular applications. The important role of Australian Standards in the development and maintaining of markets for materials, such as iron and steel slag products, was also discussed.

Members of the Association are pleased to have had the opportunity to meet with Task Force members and give them an appreciation of the issues faced and the opportunities for the community and construction industry from encouraging the use of iron and steel slag products.

## Sustainability Capacity Building Program - ASA

With the support of Sustainability Victoria, the Australasian (iron & steel) Slag Association (ASA) is delivering a targeted "Sustainability Capacity Building" program designed to contribute towards the Association's broad aims of increasing the effective utilisation of Iron and Steel Slags (ISS). The program will have a particular focus on businesses operating in Victoria, who are both members and non-members of the ASA over the next 18 months.

ISS are a valuable resource. Annually, Victoria alone generates approximately 100,000 tonnes of electric arc furnace slag (EAFS) much of which is not currently effectively utilised due to many factors, such as lack of awareness and understanding of the properties and characteristics of the resource, potential areas for its reuse, and the benefits (both economic and environmental) that can be derived from its use. The ASA will be working with businesses to build the capacity to increase the current effective utilisation of EAFS.



As part of the Sustainability Capacity Building Program, a benchmarking workshop was successfully conducted in late August at the CSIRO Highett facility located in Melbourne. Dr Alice Woodhead from Link Strategy facilitated the workshops which aimed to measure the resource impacts of EAFS and to establish benchmarks for resource use across the industry supply chain.

Further details and findings from the program will be published on both the ASA website and in future editions of Connections as the program progresses.

If you require further information on the program please contact Craig Heidrich (Project Manager) on 02 4225 8466.



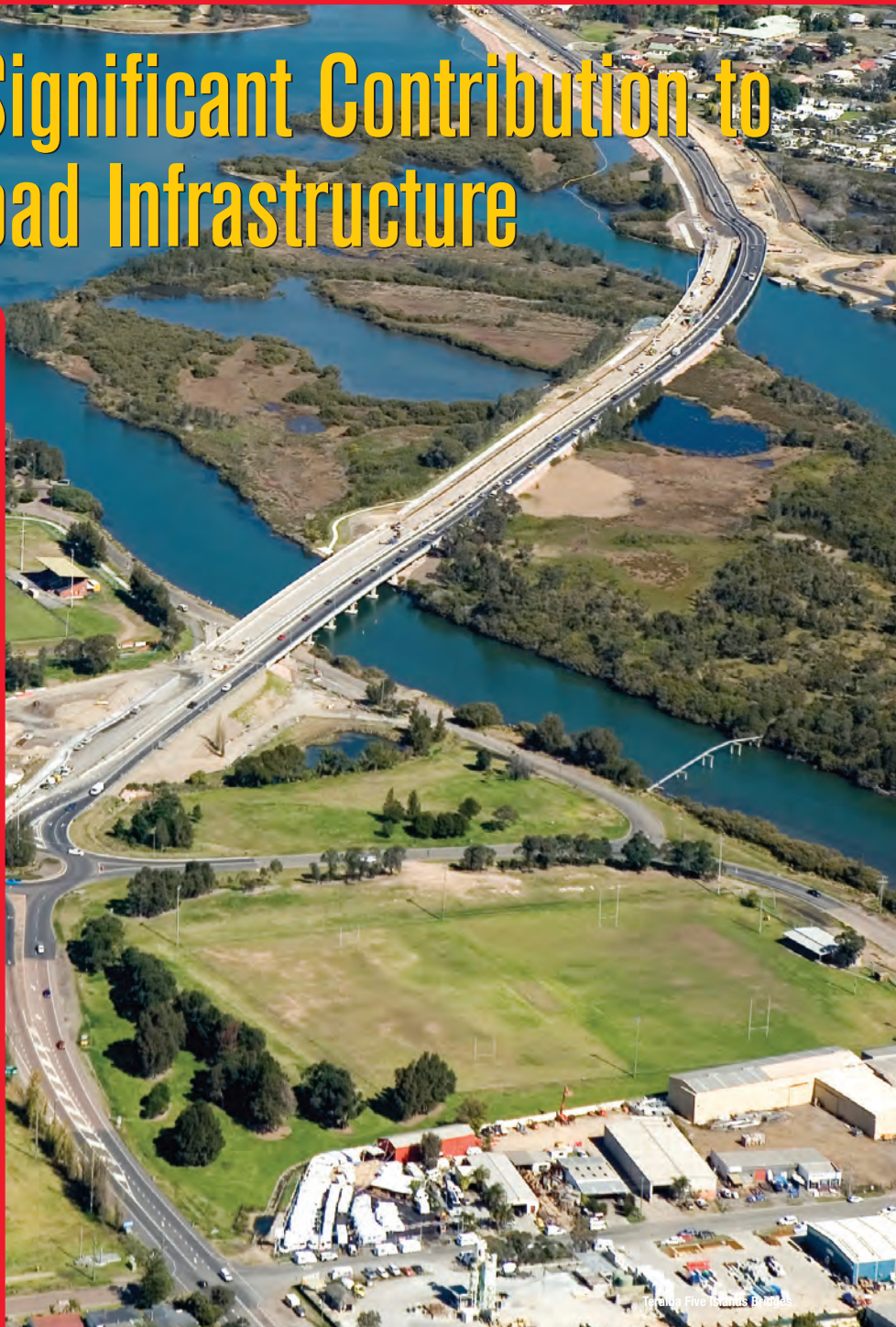
# Mix 3 Makes Significant Contribution to Five Islands Road Infrastructure

The Five Islands road upgrade constructed by Thiess – is a thirty million dollar project involving the upgrading of 1.7kms of Five Islands Road between the roundabout at Speer Point (northern end) and the roundabout at Booragul (southern end) on the north western edge of Lake Macquarie, south of Newcastle. The upgrade has provided welcomed relief to the 32,000 vehicles that utilise the road each day.

In total, approximately 20,000 tonnes of Steelstone's 'Mix 3' heavily bound road base was supplied to the project in 2007. The scope of works included widening to a four lane divided road with two new bridge crossings over cockle creek. This has significantly reduced traffic congestion along Five Islands Road.

Steelstone's Mix 3 was selected by Thiess for use on this project for its superior performance. Due to a number of critical traffic switches during construction to enable the continued flow of traffic, a material that performed well under early traffic loading was essential. The superior elastic modulus of Mix 3, non plasticity and relative moisture insensitivity made it ideal for the application, especially where early traffic-ability was required. The ease of placement of Mix 3 due to consistent grading and workability, allowed the pavement to be placed and compaction achieved with a minimum of effort avoiding costly delays.

Steelstone's unique blend of Granulated Blast Furnace and Steel Slags known as 'Mix 3' was developed in conjunction with the Hunter Branch of the RTA and has been used successfully in major projects throughout the Hunter Valley and Central Coast Regions for over 15 years. Mix 3 fully conforms to RTA Specification RN73 "Slag Based Bound Pavement and is supplied from Steelstone's Operations on the former BHP Site in Mayfield, Newcastle.



Thiess Five Islands Road

## Company Members

A primary role of our Association is to bring together Slag Producers, Processors, Customers & 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, simply complete the information section at the end of this newsletter. Current membership is as listed below.

Australian Steel Mill Services Pty  
BIS Industrial Logistics  
Blue Circle Southern Cement  
Bluescope Steel Ltd (Port Kembla)  
Cement Australia  
Concrete Pty Ltd  
CSIRO  
HiSmelt Ltd  
Holcim Pty Ltd  
Holcim NZ Ltd  
Harsco Metal Holdings Pty Ltd  
Hunter Mill Services Pty Ltd

Komatsu Australia Ltd  
Monash University  
OneSteel Limited  
Premium Tyre Service Pty Ltd  
Roads & Traffic Authority of NSW  
SCE (Steelstone)  
Steel Cement Ltd  
SteelServ Ltd (NZ)  
Sunstate Cement Ltd  
University of Newcastle  
University of Queensland  
University of Wollongong

## Personal Members

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

**Related Associations** - National Slag Association (US) | Nippon Slag Association (Japan) | European Slag Association (EU)



# DON GREEN (11/9/1947 - 5/5/2009)

## a significant contributor to the development of the Australasian iron & steel slag industry.

*Tribute prepared on behalf of the Association by Martin Venour and Paul Newman.*

Members of the Australasian (iron & steel) Slag Association note with deep regret the passing of Mr Don Green and wish to acknowledge his significant contribution to the Association and development of the iron & steel slag industry in New Zealand and Australia over a period of nearly 20 years.

Don joined New Zealand Steel as an operator in 1968. In 1971 his leadership skills were recognised and at the age of 23 years he was appointed Iron Plant Foreman. In 1977 he led the operation commissioning of the Multi Hearth Furnace. A year later he joined the Steel Making Plant as Casting Machine before serving as Steel Making Foreman.

In 1979 he was appointed General Manager of Slag Reduction New Zealand. He did a three month training course in the UK before returning to New Zealand to start the business.

In January 1989 he accepted the position of managing the steel works service operations for South Coast Equipment in Wollongong, Australia.

As a result of a joint venture between South Coast Equipment and Slag Reduction UK, Don with Jim Lawrence from Slag Reduction UK developed the concept for the tender for BHP Newcastle Steel Slag handling and processing. This was successful and in 1990 Steelstone (SCE/ SRUK joint venture) commenced operations at BHP Newcastle.

Initial operations had some issues and Don was moved to Newcastle to manage the contract and sort out the issues.

He was a man who could easily relate to all levels of the workforce, both his own and BHP. He had a profound understanding of the machinery and equipment. He did not, however, relate to those he did not respect!!

Steelstone also won the services contract to operate at BHP Rooty Hill Sydney.

Don was credited with the success of both Newcastle and Sydney operations for Steelstone and development of the steel slag market in Australia.

RTA Mix 3, as it is still known, was developed by a joint exercise between Steelstone, BHP and the RTA of NSW. This product was so successful that it became 'the material of choice' for the RTA and Councils in the Hunter Valley for road bases.

In 1995 Don's high work rate was having a serious effect on his health and he returned to New Zealand in April of that year.

Upon returning to New Zealand, Don and his children faced the passing of wife and mother, Cecily. Don later married Lynn, and together settled in Turekau, south of Auckland, where Don passed away on the 5th May 2009.

When his illness was diagnosed in late 2008, Paul Newman and Martin Venour visited Don and Lynn and were moved by their calm acceptance of his obvious fate.

In May, Paul and Martin, together with another former colleague, David Brown, attended Don's funeral in New Zealand.



# Standards changes impacting industry

Australian Standards underpin much of the construction and commercial activity in this country. The Association's focus is particularly on those standards which relate directly and indirectly to the construction industry. By reference to these standards, users are able to classify materials and gain some certainty about their performance when used in construction of roads, bridges, airport runways, commercial buildings and indeed those materials which are used in our houses.

From a materials point of view, producers want to ensure that their materials are not precluded by existing standards and specifications from markets in which they are competent to be used. Construction organisations want assurance that the materials they are using are fit for purpose. Asset owners want assurance that the materials put into that asset will not impair the intended functionality or life of the asset.

Since the 1960's, the then fledgling iron and steel slag industry has been actively involved with Standards Australia in the development of construction materials standards that accommodate the properties of iron and steel slags in areas for which they are competent and add value from both durability and environment perspectives.

Up until 2007, standards were developed by committees of appropriate consumer, producer and government agencies providing people to work on development of Australian Standards. Standards Australia provided the Project Management and coordination support for the committees. All of the research and development costs as well as the participation costs of employees including travel, time for meetings and time on the job in preparation of material for consideration by the standards committee in which they were participating.

Standards Australia's new business model has significant cost and resource implications for stakeholders in the production of standards into the future. It is only via the Standards Australia driven development process that the level of project management, secretarial and coordination support that was available under the old model will be available. For the other pathways, the project management, secretarial and coordination costs will have to be met by the other stakeholders. The Association is of the view that the Standards Australia driven pathway remains the most effective means for delivering and maintaining the important building standards on which the Association is represented.

## Belgium hosts the 5th Global Slag Conference and Exhibition

The 5th Global Slag Conference and Exhibition, took place in Brussels, Belgium on the 23-24 November 2009. The conference built on the success of events held in Düsseldorf, Bangkok, Istanbul and Strasbourg, bringing together slag producers and slag users from over 30 countries. The early delegates list suggested that about 150 delegates were expected to attend. Given that the conference has only recently concluded, the full report has not yet been completed. It will in time be placed on the Global Slag Conferences website along with reports from earlier conferences.

As well as scientific papers on the latest developments in slag science, the conference included case studies covering improvements in slag chemistry and mineralogy in addition to projects for slag utilisation. Initial papers for the conference covered slag markets and implications of the Great Financial Crisis, adding value to slag including latest analytical and process techniques, slag grinding and applications sections. Not only did the conference allow for exchange of papers, associated exhibition and site tour, it also provided the valuable opportunity for its worldwide slag industry participants to engage in informal networking.

A truly 'global' event, the conference was well-attended by registrants from all four corners of the world, including India, Turkey, South Africa, Poland, France, Luxembourg, Netherlands, Italy, Germany, Canada, Spain, China, Belgium, Turkey, Lebanon, Korea, Malta, Switzerland, UK, Japan, Kuwait, Colombia, USA, Saudi Arabia, India, Finland, United Arab Emirates, South Africa, Austria, Slovakia, Taiwan and Romania. A report on the conference and photos will in time feature on the conference web page at [www.propubs.com/gsc](http://www.propubs.com/gsc).



## Latest monitoring program confirms consistency of Australasian slag over the long term

The Australasian (iron & steel) Slag Association (ASA) annually undertakes a Material Classification Monitoring Program to monitor and assess iron and steel slags (ISS) produced and processed by its members. The current program conducted by the Association is based on seventy two ISS samples collected from its members throughout Australia and New Zealand. Formal Material Classification Monitoring of slag products has been in place since 1994. This is in addition to the routine chemical monitoring of molten slag as part of the refining processes in the manufacture of iron and steel.

The current program collects, analyses, assesses and report on the chemical concentration and leachability "potential" of the ISS products assessed against relevant government requirements. Subsequent to the testing, the Association publishes a report outlining the procedures involved in the program, its results and implications.

Test results of the seventy two iron and steel slag samples collected from across Australasia, when compared against the Waste Management Exemption guidelines and previous studies, confirm the stable and ongoing consistent nature of ISS from member sites. Further information on the 2008/9 Materials Classification Monitoring Program report compiled by the Australasian (iron & steel) Slag Association is available by contacting the Association at [info@asa-inc.org.au](mailto:info@asa-inc.org.au)

## AUSTRALASIAN



**New Business Development and Technical Services Manager for MultiServ Asia Pacific**  
Dan Cartwright recently joined MultiServ Asia Pacific from MultiServ's Europe North business, taking on the role of Business Development and Technical Manager

for the region. He has enjoyed 12 years with MultiServ, starting straight from University where he studied Environmental Engineering. Dan's career with MultiServ began concentrating on the development of EAF and BOF recycling technologies before moving into cost reduction and lean sigma roles. Following 5 years operations management in EAF melt shop environments he took on a role in the Europe North Division covering business and innovation developments.

Dan is looking forward to his involvement with the ASA, with an aim to further progress development of slag as a recognised co-product particularly in Victoria, while also expanding knowledge sharing of new applications.

NSW launches green buildings guide: NSW has launched a new Sustainable Property Guide that contains comprehensive step-by-step guidance, checklists and worksheets to integrate sustainability into property portfolios. The guide is expected to assist property managers in improving the environmental performance of commercial buildings. The resource, which can be downloaded from the Department of Environment and Climate Change website: <http://www.environment.nsw.gov.au/sustainbus/SustainPropertyGuide.htm> Management



**Changes at Australian Steel Mill Services (ASMS)**

Chief Executive Officer Australian Steel Mill Services and EcoCem Andrew Wilson left the company in July this year. Commencing in March 2003, Andrew served as Chair of the Australasian Slag Association from

March 2006 to March 2008 after which he served as secretary of the Association until July this year. Incoming Chief Executive Officer is Ian Kirk from overseas. ASMS is a joint venture company between Cement Australia and the Edward C Levy Company of Detroit.

## INTERNATIONAL

**5th Global Slag Conference and Exhibition** was held in Brussels, Belgium on 23-24 November 2009. About 150 delegates were expected to attend and the early paper and exhibitors list once more pointed to a successful conference. Once the report on the conference has been completed, highlights will be included in future issues of *Connections*.

**New Chair for Henry Ford Museum**

S. Evan Weiner has been named Chairman of The Henry Ford (Museum), succeeding William Clay Ford Jr., who has stepped down after 13 years in the role. Ford, who has served on the institution's board since 1988, will remain a trustee. Weiner, executive Vice President and COO of Edw. C. Levy Co., a Dearborn-based construction materials company, joined the board in 2004. He is also a director of Australian construction materials company Australian Steel Mill Services.

Source: NSA Slag Runner No. 9-02 at [www.nationalslag.org](http://www.nationalslag.org) and [www.thehenryford.org/museum](http://www.thehenryford.org/museum)

**Joint Meeting: Slag and Steel Environmental Teams and Steel Manufacturers Association (SMA)**

On Wednesday, May 20, 2009 a joint Environmental Committee Meeting with representatives from SMA, American Iron and Steel Institute (AISI), and NSA was held in Washington, DC at the invitation of the SMA. NSA members, Tom Green, Edw. C. Levy Co.; John Yzenas, Edw.C. Levy Co.; Glenn Hundertmark, Harsco MultiServ; David Jones, Lafarge NA; Todd Kelley, Phoenix Services; Terry Wagaman, Phoenix Services; Michael Connolly, Tube City IMS; Charles Ochola, Tube City IMS; and Bob Andrew, Tube City IMS participated in the joint meeting. The meeting was also attended by 16 members of 12 SMA member companies, 9 representatives from AISI, and 8 additional joint members of both AISI and SMA.

Source: NSA Slag Runner No. 9-02 at [www.nationalslag.org](http://www.nationalslag.org)

**Connections Goes Electronic**

From the mid year issue in 2010, *Connections* will be available to be delivered directly to your electronic mailbox. There are a number of significant benefits that will accrue from this move, including faster more timely information direct to you and the production of a third issue each year. Environmentally, and production wise, the benefits will come through elimination of the printing and postage steps, consistent with our Association's objectives.

There will be one more printed copy of *Connections* in first quarter 2010. After this, printed and posted copies will not be available.

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