



The South African Chapter of the International Geosynthetic Society

Established in 1983 and Dedicated to the Scientific and Engineering Development of Geosynthetics and Associated Technologies

A newsletter of the Geosynthetics Interest Group of South Africa In Association with the South African Institution of Civil Engineering

June 2005

www.gigsa.org

Engineered Linings – 21 Years Of Continuous Business In The Lining Industry.

Engineered Linings is a specialist contracting company, concentrating on the supply and installation of geosynthetic products for the purposes of containment, environmental protection and corrosion protection. The company was established in 1984 with offices in Cape Town and Johannesburg.

Peter Hardie, Engineered Linings Marketing Manager, comments: "In order to meet the demands of our clients and still offer a competitively priced lining solution, we have built up a product range that enables us to offer a complete solution for almost any lining application. These lining products include smooth or textured Vitaline HDPE, Geoflex LLDPE and Vitaflex fPP. We have also recently included an HDPE cusped drainage layer in our product basket. We have a few distribution agreements in place and are the Sub Saharan agents for the well-established Bentofix range of GCL's. Through our close links with Anchor Lining Systems, the manufacturer of Anchor Knob Sheet (AKS), we are also the distributor and installer of this highly regarded concrete protection liner."



Mafeteng dam wall, Lesotho

Peter continues: "We have not limited our activities to South Africa as we have found that our client base has lining requirements further afield. We have therefore become active throughout Sub Saharan Africa (Ghana,

Mali, Uganda, Angola, etc) and have completed some very interesting and challenging projects as far afield as Kazakhstan and Singapore. Currently we are mobilizing for the lining of a heap leach project in Tajikistan.



Heap leach pads in Ghana

Engineered Linings have always been committed to raising the awareness amongst Consulting Engineers and Clients with regards to the importance of designing and specifying a good quality lining system. To this end, they have volunteered two of their Directors to serve on the SANS committees that recently rewrote the SANS 1526 and SANS 10409 standards. They also continue to offer their design and technical assistance to both local and international clients and consultants".



Bentofix installed at Newcastle

GIGSA wishes Engineered Linings all the best for the next 21 years and trust that these years will be as interesting and successful as the last 21 have been.

Engineered Linings can be contacted in Cape Town on (021) 551-2430 (Peter Hardie) or Johannesburg (011) 974-1397 (Falk Hedrich).

ENGINEERED LININGS



Benefactor Members (in order of joining)

Engineered Linings · Kaytech · Aquatan · Geotextiles Africa · SRK Consulting · Jones & Wagener · DuPont SA Gundle API · Land Rehabilitation Systems · I-Corp International · Gast International SA · ARQ Consulting Engineers Naue GmbH & Co. KG · Reinforced Earth South Africa · Tensar International

President's Comment

Firstly, I would like to apologise for the late issue of our GIGSA newsletter. It would appear that I am not alone in being totally snowed under with work, which I suppose bodes well for our industry. Your committee has met twice since our last newsletter was published in December last year.

Congratulations to our IGS President, Dr Daniele Cazzuffi and his wife Susanna on the birth of their third child Lucia on 7 May. Congratulations also to my good friend and colleague Riva Nortjé and her husband Richard on the birth of their first child Ryan. May your recent family additions bring you much blessing and joy!

I would like to welcome our three new Benefactor members, viz., Naue, Reinforced Earth and Tensar Earth Technologies. We appreciate your benefactor sponsorship, and trust that you reap the benefits of the additional exposure afforded to benefactor members.

As most of you are aware, the KwaZulu-Natal Landfill Interest Group of the Institute of Waste Management together with GIGSA is hosting a two day Seminar, "**Landfill 2005**", on the 20th and 21st October in KwaZulu-Natal. Judging from the provisional programme, there are a number of papers dealing with geosynthetics in landfill applications, and I would encourage you to support the event. The attendance fees are extremely reasonable for a two-day seminar, and it is an ideal opportunity to get away from the office and network with friends and colleagues in the landfill and geosynthetics industry. See the LIG / GIGSA **Landfill 2005** announcement later in this newsletter for more details.

Work on the 3rd Edition of the Department of Water Affairs & Forestry's Minimum Requirements Series is nearing completion, and publication is expected within the next two months. I have just learned that the official launch of the Minimum Requirements 3rd Edition will take place at "**Landfill 2005**" as well. Make sure that you are there!

May I remind members of the Call for Nominations for IGS Awards as published in the March 2005 IGS News. Closing date for nominations is 31 January 2006. In addition, GIGSA will be calling for nominations for the Chapter IGS Student Award, which must be made by 31 July 2006. In this regard, I would like to encourage young engineers involved in geosynthetics to publish papers on their work, as this will be one of the criteria for this award.

I am extremely proud to announce that South African expertise in drainage and filtration has received recognition amongst international peers. After the oral presentation made by Kelvin Legge at Geofilters 2004 which recorded his last 20 years of research and observations of geotextile and granular filter performance in civil engineering structures, our IGS President Dr Daniele Cazzuffi proposed that South Africa approach the International Commission on Large Dams (ICOLD) with a motivation to amend and revise

the ICOLD Bulletin #55 on geotextiles as filters in embankment dams.

Miss Henriette Anderson of the Dam Safety Office obliged and a submission to this effect was considered by the ICOLD committee on materials in fill dams during its 73rd meeting held in Tehran earlier this month. The proposal to organise a sub-committee to produce an updated version of the bulletin was accepted and it was agreed that the South African member would be the leading person for developing this new Bulletin. GIGSA is delighted to see that Mr Heinrich Elges will be leading the sub-committee in the production of the bulletin with contributions from the individuals identified. The revision will then be reviewed by all the other ICOLD committee members.

Lastly, I have been invited by Professor Ed Kavazanjian to be a regional co-author representing Africa in a keynote paper on Landfill and Environmental Issues at the 8th International Conference on Geosynthetics in Yokohama in September 2006. This is certainly an honour and as I will be representing you, I would welcome relevant material on geosynthetic liner effectiveness in South African applications.

A late newflash! Daniele Cazzuffi has advised me that J.P. Giroud has chosen South Africa as one of the three locations for the delivery of the Mercer Lecture on geosynthetics in October this year. We will keep you informed of details regarding this exciting and important event.

Enjoy the newsletter!
Peter Legg
peter@jbawaste.co.za

Sans 10409: Ensuring that Geomembranes are up to Scratch

The recent publication of SANS 10409 (Full title: *Design, selection and installation of geomembranes*) is important news to all involved in water supply, waste disposal, and civil engineering projects that involve geomembranes. Together with SANS 1526 (in full, *Thermoplastics sheeting for use as a geomembrane*), there are now two standards that are essential reading for anyone involved in using these extremely versatile liners.

Kelvin Legge, Senior Specialist Engineer at the Department of Water Affairs and Forestry (DWAF), who championed the specification update, comments as follows: -

"A geomembrane is a factory - assembled structure of synthetic or natural polymeric materials, in the form of a sheet which acts as a barrier. Polymers essentially fulfil the barrier function. Geomembranes are used in contact with soil and/or other materials in geotechnical and civil engineering applications".

"Their extremely low permeability and resistance to chemical attack make geomembrane use attractive in structures for environmental protection, industrial use and social benefit. Geomembrane liners are thus used in conjunction with clay layers to line the bottom area of landfills so as to prevent contaminants migrating from



Kelvin Legge, Senior Specialist Engineer at DWAF

landfills into the surrounding area and polluting ground water. Geomembranes are also used in engineering structures to contain valuable materials such as in industrial processes storage facilities and in heap leach mining applications. Geomembranes are also found in the linings of ornamental ponds and water features on golf courses, as well as in the water proofing of roofs especially where such are used as car parks.

"In brief, SANS 1526 and SANS 10409 were compiled by the SABS with valuable input from many GIGSA members, and address quality of manufacture and the utilization of geomembranes respectively. These standards are extremely valuable to the South African industry as they offer a mechanism of measuring performance against a minimum standard to protect users against poor quality products available on the world market.

"Most geomembranes are thin, black in colour and their differences cannot readily be seen, and thus the range of tests and required results give performance criteria to ensure longevity and security. SANS 10409, a code of practice, offers sound guidance on installation practices so as to ensure that the physical construction of barrier systems does not cause significant deterioration in the geomembrane performance for its particular application. The regulatory authority for landfills has recently introduced the requirement that where geomembranes are used for environmental protection in base liners, such geomembranes are required to comply with the SANS 1526 specification."

Contacts To purchase the standard/s: Standards Sales, Tel: (012) 428-6883, fax (012) 428-6928, or email sales@sabs.co.za

For further information on the standard/s: Kelvin Legge, DWAF. Tel: (012) 336 8677, Fax (012) 336 8561, or email leggek@dwaf.gov.za

Media enquiries: Chris Meyer, Standards Communicator, SABS. Tel: (012) 428-6732, fax (012) 428-6889, or email (meyercm@sabs.co.za).

Kaytech's Sealgrid™ Signals Significant Savings

To combine the positive effects of a nonwoven paving fabric and the high strength, high modulus, low creep paving grids a reinforced composite paving fabric Sealgrid, consisting of high strength glass fibre woven roving stitched to nonwoven polyester fleece was formally introduced into asphalt reinforcement applications in South Africa in 2003.



Rehabilitation under construction. KayTech's Sealgrid™ is installed prior to the asphaltting.

This relatively new product from the Kaytech stable can potentially save the Ethekwini (Durban) Municipality significant costs normally incurred through their conventional methods of asphalt overlay rehabilitation. It was recently shown that by taking the Sealgrid route, more than R200 000 was saved on a 335-metre long trial section of two lanes of the M4 rehabilitation project at La Lucia. This section of the thoroughfare (better known as the Leo Boyd Highway) needed special attention as the surface had deteriorated badly under the huge traffic volume. More than 22 000 vehicles use the coastal road each day.

Just under 3 000 square metres of the specialist composite Sealgrid product was used for the rehabilitation of the M4 northbound between Aubrey Drive and Inca Drive. It is a locally manufactured product which is easy to install and can be quite cost-effective

Standard rehabilitation consisted of milling out the top 80-millimetres of the original 235-millimetre thick asphalt and replacing it with new asphalt and then overlaying it with 50 mm of mix 'D' asphalt comprising three percent latex and pre-coated chips for strengthening.

For the purposes of the trial the Sealgrid was tacked with bitumen directly onto the existing, cracked surface and overlaid with 50 mm of mix 'D' asphalt. The

Ethekwini Municipality is closely monitoring this trial section.



Typical problem that Sealgrid addresses

To gauge Sealgrid's cost-effectiveness, it should be compared to the otherwise additional cost of milling out and replacing 80-millimetres of asphalt that amounts to R25 per square metre and R74 per square metre respectively. The installation of Sealgrid onto the existing, cracked surface – including the extra bitumen required – was only R24 per square metre. This resulted in the considerable saving of R75 per square metre to the municipality.

Kaytech's Sealgrid consists of high-strength glass fibre woven roving stitched to the company's tremendously successful and widely used Sealmac to form a reinforced composite paving fabric.

The reinforcing effect of the glass filaments in combination with the sealing, stress relieving and bonding properties of Sealmac, leads to a dramatic reduction of reflective cracking. Sealgrid is used when exceptionally high stresses occur, caused by temperature or high daily traffic volumes.

Prior to this trial this "new generation", locally produced 50 x 50 kN/m composite paving fabric was successfully installed on sections of the N1 National Route near Koppies and Winburg in the Free State under a continuously graded 40 mm asphalt overlay. More recently it was laid beneath 40 mm of SMA on Road K90 near Kempton Park, Gauteng.

This composite paving fabric was also used as part of the "special repairs" of the N11, between Newcastle

and Ladysmith, where the sections requiring milling of less than 100 mm to eliminate the cracks that were exposed. The cracks were sealed and covered with the composite paving fabric set into a tack coat. A 60-80 mm base course inlay was then placed and compacted before the 40 mm overlay wearing course was laid. In some areas the exposed cracks were sealed and then overlain with a 40 mm levelling course inlay before the composite paving fabric was placed. The balance of the 80 mm inlay was laid before the final asphalt wearing course of 40 mm.

For more information, contact Garth James:
Tel (031) 717 2300 / (031) 702 0435
ktechgmj@kaymac.co.za

**A fine is a tax for doing something wrong
A tax is a fine for doing something right**



KWAZULU-NATAL LANDFILL INTEREST GROUP

An Association with



An Interest Group within the KwaZulu-Natal Branch of the
Institute of Waste Management of Southern Africa
Secretariat: PO Box 1051, Westville, 3630
Tel: 021 563 2630 / Fax: 021 563 2456

The Geosynthetic Interest Group of North Africa

**Dr J.P. Giroud to present the first
Mercer Lecture to be delivered in
Africa at *Landfill 2005***

Seminar: 20 - 21 October 2005

"Landfilling in Challenging Environments"

In a scoop facilitated by IGS President Dr. Ing. Daniele Cazzuffi, GIGSA Past President Kelvin Legge, and GIGSA President Peter Legge, world-renowned geosynthetics expert Dr. Jean-Pierre Giroud (who coined the terms "geotextile" and "geosynthetic") will deliver the Mercer Lecture – the first time it will ever have been given in Africa.

Waste management strategies and technologies are undergoing rapid development, and in particular, the role of landfilling is changing. Nonetheless, landfilling is still, worldwide, the predominant waste management option, and landfills are still characterized by many problems related to technology and emissions, including leachate and biogas.

The KwaZulu-Natal Landfill Interest Group (LIG) of the Institute of Waste Management of Southern Africa, in association with GIGSA confirms the sixth biennial seminar dedicated to capacity building and technology transfer in the science and practice of waste disposal by landfill. **Landfill 2005** continues the highly successful series initiated by the LIG of the Western Cape (organisers of the seminar on five previous occasions),

who have now passed the torch on to the KZ-NLIG for the 2005 seminar.

The **Landfill 2005** seminar takes place two weeks after the conference on waste management in Sardinia over 3 -7 October 2005. See the conference web site www.sardiniasymposium.it/mainpage.htm for info.

Many South African waste practitioners may be unable to attend the Sardinia conference due to time constraints, and / or the substantial total cost of attendance. With this in mind, **Landfill 2005** is designed to create a low-cost local forum where a high standard of technology transfer may be experienced – with the focus firmly on landfill issues rather than on waste management in general. While it may be low-cost (initial estimates give the registration cost at R 500 per delegate for the two days) it is going to offer extremely high value. In addition to the Mercer Lecture and the Keynote address by Peter Lukey of the DEAT, the programme will include the official DWAF launch of the third edition of the *Minimum Requirements*.

Seminar themes

- Design, construction, and operation of landfills on steep slopes, near aquifers or dolomitic strata, and other challenging environments.
- Landfill barrier design and performance.
- Landfill policy and legislation: National and Provincial guidelines; regulation and planning requirements.
- Sustainable landfill concepts for municipal and hazardous waste.
- Landfill processes and emissions; leachate and gas management.
- Waste mechanics.
- Landfill remediation, aftercare and reuse.

Contact details

All enquiries, information on registration, exhibition, accommodation, sponsorship etc., should be addressed to the conference secretariat. Lia Russell can be contacted on Tel: (031) 717 2300 / Fax: (031) 702 0435 on ktechptn@kaymac.co.za. For more information and to download a reply form, visit <http://www.gigsa.org/GIGSA/Events/Landfill2005CallPapers.pdf>



Welcome to our new Benefactor Members

Naue GmbH & Co. KG

International geosynthetics player Naue has joined GIGSA as *Benefactor Member*. Find out more about the range of products that Naue offers at <http://www.naue.com/> Engineered Linings represent Naue in South Africa and can be contacted in Cape Town on (021) 551-2430 (Peter Hardie) peterh@englining.co.za or Johannesburg (011) 974-1397 (Falk Hedrich) jhb@englining.co.za



Reinforced Earth



Reinforced Earth (Pty) Ltd
South Africa

International soil reinforcement company Reinforced Earth, has joined GIGSA as *Benefactor Member*. Find out more about this company at <http://www.recosa.co.za/> Contact Andrew Smith at Tel: (011) 726 6180 / Fax: (011) 726 5908 or on acssmith@intekom.co.za

Tensor International Ltd

International geosynthetics player Tensor International, represented in South Africa by Geotrac (Pty) Ltd, has joined GIGSA as *Benefactor Member*. Find out more about the range of products that Tensor offers at www.tensor-international.com/ Contact Cobus Venter of Geotrac at 082 564 5594 or Tel: (012) 347 4129 / Fax: (012) 347 4129 or on geotrac@webmail.co.za



The mission of GIGSA is to be a non-profit organization dedicated to the scientific and engineering development of geosynthetics and associated technologies in South Africa.

For membership application, please contact GIGSA Secretary Mathew Gordon-Watt at Tel: (011) 452 5310 / Fax: (011) 452 1983 or ktechmgw@kaymac.co.za

← Airlines we would rather *not* fly with (N° 4 in a series)