

IGS NEWS



NEWSLETTER OF THE INTERNATIONAL GEOSYNTHETICS SOCIETY

Dedicated to the scientific and engineering development of geotextiles, geomembranes, related products, and associated technologies

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President's Corner:

Wrapping Up a Four-Year Plan of Continued IGS Growth



**Jorge
Zornberg**

The 10th *International Conference on Geosynthetics* (10ICG) in Berlin, Germany, is looming, and promises to be a major celebration of the technical achievements of the geosynthetics industry. The 10ICG will also serve as a framework for much of the business of our Society, including the induction of new IGS officers and council members. On the personal side, the 10ICG will mark the completion of my role as your president, which I was so honored to fulfill for the last four years. I take this opportunity to revisit the strategic goals and measurable outcomes that the IGS Council set forth in 2010, during its meeting held at the 9th *International Conference on Geosynthetics* (9ICG) in Guarujá, Brazil, when I initiated my tenure as your president.

Listing the strategic goals and measurable outcomes is perhaps just fine, but what about reporting on the actual outcomes and achievements of the last four years? Well, the plan is that these outcomes will be reported during the *IGS General Assembly*, which will take place in Berlin on 24 September 2014. At this point, I'll let you speculate which (if any) of the six specific measurable outcomes listed below were actually met after four years of intense work by the IGS Council, its chapters, and its operating units.

The IGS Council, during its 2010 meeting in Guarujá, developed a long-term plan in order to organize and prioritize its efforts for the subsequent four years. The plan included identifying the Core Purpose of the IGS. That is, we wanted to articulate the IGS's very reason for being or existing. As an outcome of this rich discussion, we concluded that:

The Core Purpose of the IGS is to provide the understanding and promote the appropriate use of geosynthetic technology throughout the world.

Key to the stated Core Purpose is the underlined term "appropriate." This is because the IGS does not seek to promote the mere use of geosynthetics, but the "appropriate" use, which is quite different.

In order to meet this Core Purpose, the IGS Council also identified a Big, Audacious Goal that stretches beyond the current four-year strategic goals. Because it is "audacious" it represented a significant challenge and its achievement was expected to require the IGS to move outside of its comfort zone. This long-term goal, as identified by the IGS Council, was:

That geosynthetics become indispensable to the point that they are regularly included in engineering curricula and relevant design standards.

This long-term goal was expected to be achieved within a timeframe of 10 to 15 years, and was useful in setting the direction for the current and future four-year strategic plans.

After having articulated the IGS Core Purpose and the long-term, audacious goal, the IGS Council defined a set of specific measurable outcomes that we aimed to achieve during the four-year term of this council. These specific measurable outcomes, on which we will report during the upcoming IGS General Assembly, include:

- 1. Increasing the IGS membership by 50%**
- 2. Increasing traffic on our web site by 200%**
- 3. Increasing the number of chapters in regions not represented by the IGS (e.g. Africa, parts of Asia and the Americas)**
- 4. Integrate more completely the IGS Council with the IGS Chapters**
- 5. Increasing the number of formal agreements with international sister societies**
- 6. Begin our efforts to increase geosynthetics education at the undergraduate level**

These self-imposed objectives, which the IGS Council pledged to achieve in a four-year term, were all particularly challenging. While the bar was set high, the members of our diligent IGS Council have been working hard toward achieving them. Did we fail miserably in achieving these six difficult goals? Or did we achieve them, perhaps with flying colors? We'll have a detailed report on these outcomes soon... in Berlin!

All best regards,



Jorge G. Zornberg, Ph.D., P.E.
IGS President

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IGS Election Update



**Elizabeth
Peggs**

The 2014 IGS Elections have closed. With a field of 21 extraordinary candidates from 19 countries applying for 8 council positions there was significant competition! In keeping with IGS tradition the successful candidates will be announced in Berlin at the 10th ICG during the General Assembly to be held at 4:30 pm on Wednesday 24th September 2014. The newly elected council members will stand for the term which begins at the 2014 General Assembly and will conclude in Seoul at the 11th ICG. Thank you to all of the nominees and the members who voted.

*Reported by
Elizabeth Peggs, IGS Secretary*

Invitation to the 2014 IGS General Assembly, Awards Presentation & Reception



It is my pleasure to invite all IGS Members to the **2014 IGS General Assembly, Awards Presentation & Reception**. It promises to be like no other! During this event we will review the progress of the IGS over the last four years, be introduced to the newly elected council, and recognize some of our Society's outstanding service & technical contributions. We will debut the IGS Movie on "Geosynthetics in Sustainability" and conclude with a brief cocktail reception before the Gala.

The Presentation of IGS Awards

- The IGS Award – Our society's highest award, given to members for a substantive technical contribution to the geosynthetics discipline.
- Honorary Membership – An award to distinguish a person who has made a vast and long-term commitment to the Society and its aims.
- The IGS Service Award – Recognizes members of the IGS who have served the IGS in such a way as to significantly impact the IGS, its members and its aims.
- The Young IGS Service Award – To be presented here for the first time, the IGS Young Member Service Award is given to a Young Member of the IGS for outstanding contribution(s) to the society.

Don't miss...

The IGS Education Committee will proudly debut its movie, which has been developed to promote a better understanding of the economic, environmental, and technical benefits of geosynthetics to the Civil and Environmental Engineering communities.

And much more...

We hope to see you in Berlin! We welcome your questions. Contact IGS Executive Council member Elizabeth Peggs (Elizabeth@Geosynthetica.net, +1.561.3093.099 Mobile).

*Reported by,
Elizabeth Peggs, IGS Secretary*

Summary of 2013 IGS Chapter Activities



Russell Jones

The use of the standard reporting form for chapter reports allows IGS to understand the activities being carried out at local, regional and international level. This summary report for the year 2013 again shows an impressive number of technical activities being undertaken around the world. Out of the 41 chapters asked to submit a report, disappointingly 8 chapters did not submit a report by 28 July 2014. Figure 1 summarises the total number of technical activities carried out in 2013 by IGS chapters. These include activities where the chapter acted either independently or as a collaborating organisation.

It can be seen from the figure that the IGS chapters were involved with:

- 18 technical conferences;
- 11 workshops;
- 27 short courses; and
- 15 main lectures

These technical activities were supported by over 170 reported board/committee meetings (in-person and conference calls), which shows the effort being put in by the chapter officers and members.

An assessment of the most active IGS chapter has again been carried out and it should be noted that this is based on the number reported by the chapters. It is felt that this is a worthwhile exercise not only to identify chapters that are worth recognition, but also to identify chapters that may benefit from more support and help in coordinating future activities.

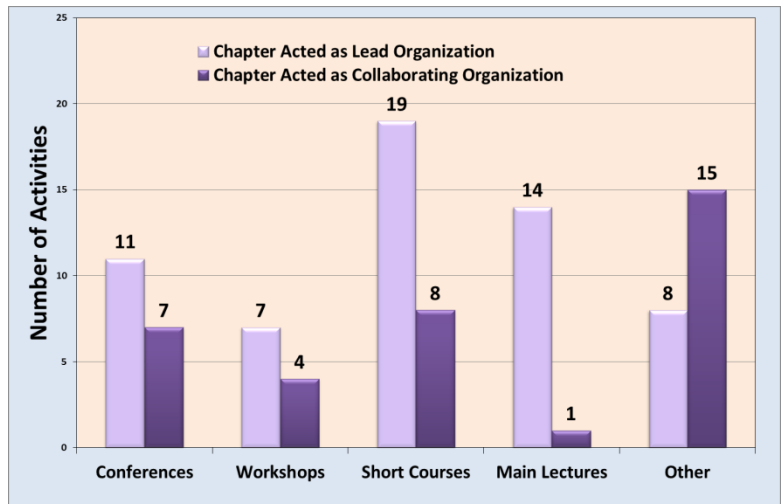


Figure 1: Number of activities carried out in 2013 reported by the chapters of IGS

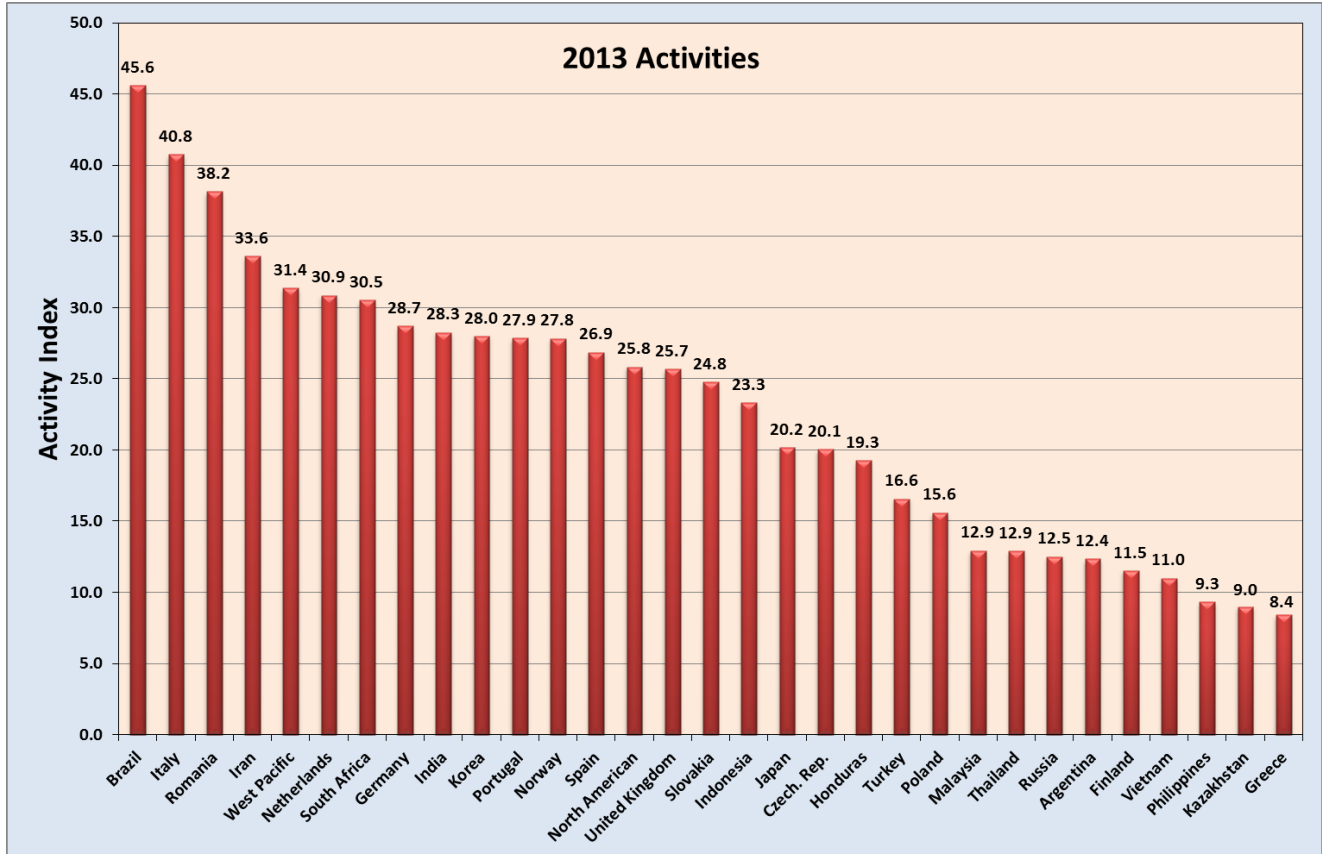


Figure 2: Activity Index for 2013 as reported by the chapters of IGS

Figure 2 shows a measure of the level of activities conducted by each of the IGS chapters in 2013. As previously, the Activity Index was defined as a weighted average of the self-reported technical activities. The weighting

methodology used allows, for example, that conferences are worth more than workshops, which in turn are worth more than main lectures. Also, activities conducted by chapters are worth more than those conducted by chapters acting as a collaborating organisation. While the approach used to calculate the Activity Index is certainly subjective, the distribution within Figure 2 is expected to be insensitive to the weighting approach.

The chapters have also reported a healthy number of technical activities planned for 2014. Figure 3 summarises the number of conferences, workshops, short courses and main lectures planned. Based on this information, the level of activities is expected to continue to be significant, which is very encouraging.

In summary, the overall level of activity is very high as clearly illustrated by a total of 94 technical events reported by the chapters for 2013. This is slightly less than the record 102 technical events reported for 2011, but this may be attributed to the higher number of non-reporting chapters. With 132 technical events planned for 2014, it certainly looks like the activities show no sign of slowing down.

*Reported by
Russell Jones, IGS Vice President*

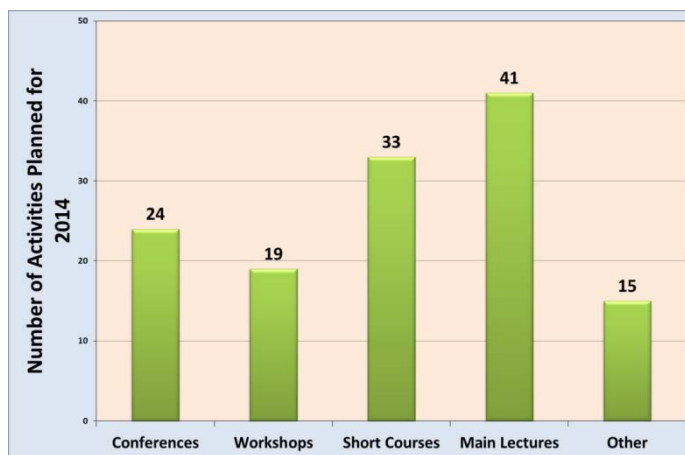


Figure 3: Number of activities planned for 2014 by the chapters of IGS

Conference Reports

The 2nd African Regional Conference: GeoAfrica 2013 Accra, Ghana 18 – 20 November 2013



AKWAABA! The Ghanaian chapter of the International Geosynthetics Society (GhIGS), formed in 2012, accepted the challenge to host the Second African Regional Conference, GeoAfrica 2013, from the 18 - 20 November 2013, in Accra, Ghana. The conference comprised a three day programme full of events, technical sessions and parallel meetings, welcoming international and local participants from government agencies, manufacturers, consultants and contractors. Akwaaba in Ghanaian language means welcome!

The conference was planned to address both the civil and mining industries as Ghana is rich in minerals and some of the most important international mining companies have operations based in Ghana. The organizing committee decided to dedicate the first day of the conference to two parallel training lecture series, general and mining applications of geosynthetics. The general lectures included topics on liners in landfills by Prof Neil Dixon, reinforced structures by Prof Chungsik Yoo and road pavement applications by Prof Jorge Zornberg. The mining lectures were hosted by Dr Russell Jones with geosynthetics in mining infrastructure, Tim Martin with liners in mining projects and Sam Allen closed with quality control of geosynthetics in mining. Just the first day was worth the presence!

The conference programme was greatly supported by three keynote lectures from Prof Kwasi-Badu Tweneboah (a son of Ghana), Prof Malek Bouazza and Alan Parrock. Three specialty sessions on innovative mining projects, landfills in developing countries and roads over challenging subgrades were planned to allow more in depth discussion, especially amongst the Ghanaian as the subjects are of particular interest in Ghana and in most of the African countries.

There were 10 technical sessions in which 71 papers were presented, covering topics such as barriers, reinforcement, drainage and erosion-control. The conference was attended by 248 people, of which 32% were from Ghana. The success of GeoAfrica 2013 was emphasised even more through the fully subscribed exhibition area, with exhibitors from all over the world. This reinforced the message that Africa presents huge opportunities for geosynthetic applications in mining and infrastructure development.

The GhIGS efforts were rewarded by the presence during the conference of the spokesperson for the Ghanaian Ministry of Roads, as well as authorities from the Ministry of Environmental Affairs. A wonderful keynote lecture by Kwasi-Badu Tweneboah on geosynthetics for sustainable development in Africa highlighted the challenges of Africa and the possible solutions using geosynthetics considering the socio-economic aspects of development of Africa.

ca. Kwasi is a proud Ghanaian who moved to America more than 40 years ago, however after a first day of feeling lost, Kwasi wiped off the dust and he showed us his truly Ghanaian side!

Malek's keynote lecture highlighted the benefits of geosynthetics in addressing many technical and practical problems faced in mining operations, and was particularly relevant due to the significant amount of mining



Conference delegates outside the Accra International Convention Centre

development currently being undertaken in Africa. Alan's keynote lecture on geosynthetics in pavement reinforcement and road rehabilitation was greatly appreciated by the Ghanaian participants who are regularly faced with having to design and construct roads on low bearing capacity soils (typical of tropical soils in Africa) with high traffic loading road transport provides the main trade link in Africa.

One of the biggest highlights of GeoAfrica 2013 was the social programme! The Ghanaian vibe reached everybody by the end of the conference; local music, dress and food made a unique experience for all attendees feeling after the conference a bit more Ghanaian - a bit more African. Many delegates tried to master the Ghanaian handshake of clicking the fingers at the end of the handshake. The gala dinner or "Akwaaba dinner" held on the Accra beachfront of Lambadi beach with the ocean breeze was priceless and the GhIGS members (especially Celestina and Nii) showed and encouraged everybody to join the Ghanaian dance.

GeoAfrica 2013 would not have been a success without our sponsors Aquatan, CETCO and GAST (platinum sponsors); Admir-Africa, Agru, Fibertex, Huesker, Kaytech, Maccaferri Africa, Tencate, Tensar and TMP (gold sponsors). Gast and Kuhne sponsored the bags, and Geosynthetica.net and Maccaferri Africa sponsored the CD of Proceedings. The Ministry of Roads and Highways sponsored the Gala Dinner. Thank you for making GeoAfrica 2013 such a resounding success.

Report by
Edoardo Zannoni, IGS Council Member



Ghanaian dancers at the conference opening ceremony



Prof Samuel Kofi Ampadu, GhIGS President and GeoAfrica2013 Chair, with Dr. Kwasi Badu-Tweneboah, keynote lecturer - a true son of Ghana!



Ghanaian Government VIPs with Prof Ampadu and Prof Tatsuoka, IGS Past President



Ghanaian VIPs with Conference Organising Committee Members



Prof Jorge Zornberg, IGS President, and Prof Samuel Kofi Ampadu, celebrating a successful conference at the AKWAABA dinner



The AKWAABA Dinner



The AKWAABA Dinner



Dancing at the AKWAABA Dinner

14th Portuguese National Congress on Geotechnics Covilhã, Portugal, 6 - 9 April 2014

The fourteenth edition of the Portuguese National Congress on Geotechnics, organized by the Portuguese Geotechnical Society (SPG) and the University of Beira Interior (UBI) was held in Covilhã, one of the main urban centres of the Beira Interior region, from April 6th to April 9th, 2014. The event was attended by 393 participants from 5 different countries.

The keynote lecture presented by the IGS President Dr. Jorge Zornberg focused on recent advances in reinforced soil technology, including advances in reinforced soil design for conventional and unconventional (reinforced bridge abutments) loading and advances in reinforcement materials.

The Thematic Session organized by the Portuguese Chapter of IGS (IGS-Portugal) took place on the morning of April 6th and included the following presentations:

- Synergisms in the Chemical Degradation of Polypropylene Geotextiles – Some Experimental Results, by Carneiro et al.
- Design of a Structure of Fine Soil Reinforces with Geosynthetics – Parametric Study, by Carlos et al.
- A Study about the Sustainable Application of Recycled Construction and Demolition Wastes in Geosynthetic Reinforced Structures, by Vieira et al.
- Influence of Soil Moisture Content on Soil-Geosynthetic Interfaces Behaviour on Slopes, by Ferreira et al.
- Soil-Geosynthetic Interaction: Interface Parameters in Granular Soils, by Oliveira et al.
- Waste Landfilling Systems: Semiautomatic Equipment for Detecting Holes in Geomembranes (GeoSafe), by Barroso et al.

It should be mentioned the active participation of Dr. Jorge Zornberg during all the Congress, strengthened by the fact that he speaks Portuguese fluently.



Dr Jorge Zornberg, IGS President, delivering the Keynote Lecture



Dr. Jorge Zornberg among the audience during a discussion moment

The event was a great success to the Portuguese Geotechnical Community and an opportunity to consolidate knowledge and promote geosynthetics application on geotechnical projects.

*Reported by
Castorina Silva Vieira, Secretary of IGS-Portugal*

Index 14 – Nonwovens Exhibition with Geotextile Workshop and CEN TC 189 meetings Geneva, Switzerland, 8 – 11 April 2014



The most senior members of the IGS will remember that the Society was founded in November 1983 in Paris on the initiative of Jean-Pierre Giroud, with the invaluable support of Guy Massenaux, EDANA’s first Secretary General and also IGS first Secretary.

Almost 30 years later, geotextiles remain an important sector for not only the world we live in, but also for many of the 250 member companies of EDANA, now the leading International Association serving the Nonwovens and related Industries.

Thanks to an idea born at EuroGeo 5 in Valencia during a special meeting between Daniele Cazzuffi, IGS Past President, from CESI SpA, Milano, and Pierre Wiertz, EDANA’s General Manager in Brussels, geosynthetics were recently given a prominent place again in the world’s leading nonwovens exhibition.

INDEX™ 14, held in Geneva, Switzerland, from 8 – 11 April 2014, closed its doors on the largest ever global nonwovens exhibition, and certainly one of the most successful ever. With representation from across the nonwovens and related industries, displaying a diverse range of products and services, INDEX™ has again delivered on its commitment to be the ‘global meeting point’ for our industry.



General view of Hall 4 at INDEX™ 14

More than 12,500 visitors made their way through the doors of the Geneva Palexpo exhibition centre, keen to meet the 586 exhibitors (an increase of 10 % from the previous edition in 2011), from 41 countries, in more than 22,000 m² of stand space.

Visitors attending the 2014 exhibition were able to engage with a larger portion of the industry than ever before, as well as take advantage of the special events organised during the exhibition, with special reference to the Geotextiles Workshop.

Brilliantly introduced with a keynote by Daniele Cazzuffi, who also moderated the session, this workshop covered the traditional application sectors of nonwoven geotextiles including: construction of roads, railways, canals, water reservoirs and dams, tunnels and other underground structures; retaining structures and other geotechnical works; storage and disposal of liquid and solid waste; drainage and erosion control systems.

Videos of the presentations can be found on the website:

<http://www.klewel.com/conferences/index14/geotextile-workshop-0-2651.htm>

The speakers, Steve Corbet (UK), Silke Brand-Kirsch (Germany), Antonella Senese (Italy), Mikael Møller (Denmark) and George Arditzoglou (Greece) reviewed design, specification and installation processes, and also focused on market dynamics and growth opportunities for geotextiles.

More specifically, recent applications of nonwoven geotextiles were presented in relation to their effects at reducing snow and ice melt in glaciers in Europe, to their use for separation and geomembrane protection in one of the largest coal-fired power stations in the world in Africa, and finally to their ability for dust mitigation at the site of one of the worst PM-10 airborne dust sites in North America.

The success of the Geotextiles Workshop, reinforced by the organisation also during INDEX™14 of the annual meetings of CEN TC 189 on Geosynthetics, together with some meetings of WG's of ISO TC 221 (as reported separately in this issue of IGS News), prompted the organisers, EDANA and PALEXPO, to announce their decision to again hold a series of events focused on Geotextiles and Geosynthetics, of course with the great support of Daniele Cazzuffi, at the next edition of INDEX™ in 2017.



Geotextiles Workshop at INDEX™ 14

Reported by

Pierre Wiertz, EDANA's General Manager, Brussels

First National Conference on Geosynthetics – Honduras 2014

Tegucigalpa, Honduras. 16 - 18 June 2014

With the support of the IGS and the College of Civil Engineering of Honduras (CICH) and the organization of IGS Honduras, the “First National Conference on Geosynthetics – Honduras 2014” took place in Tegucigalpa from 16 to 18 June 2014. See figure 1.

The conference was structured in three principal parts: keynote lectures, workshops and case studies in the region. The keynote lectures were presented by Dr. Jorge Zornberg (President of IGS), Dr. Fumio Tatsuoka (Immediate Past President of IGS), Dr. Russell Jones (Vice President of IGS) and Mr. Peter Legg (Treasurer of IGS) who covered topics as ingenuity in geotechnical design using geosynthetics and pavement



Figure 1. Seated are Mr. Augusto Alza (Perú), Mr. Mario Medal (CICH), Mr. Danilo Sierra (President of IGS Honduras), Dr. Russell Jones (U.K.), Dr. Jorge Zornberg (USA), Dr. Fumio Tatsuoka (Japan) and Mr. Peter Legg (South Africa)

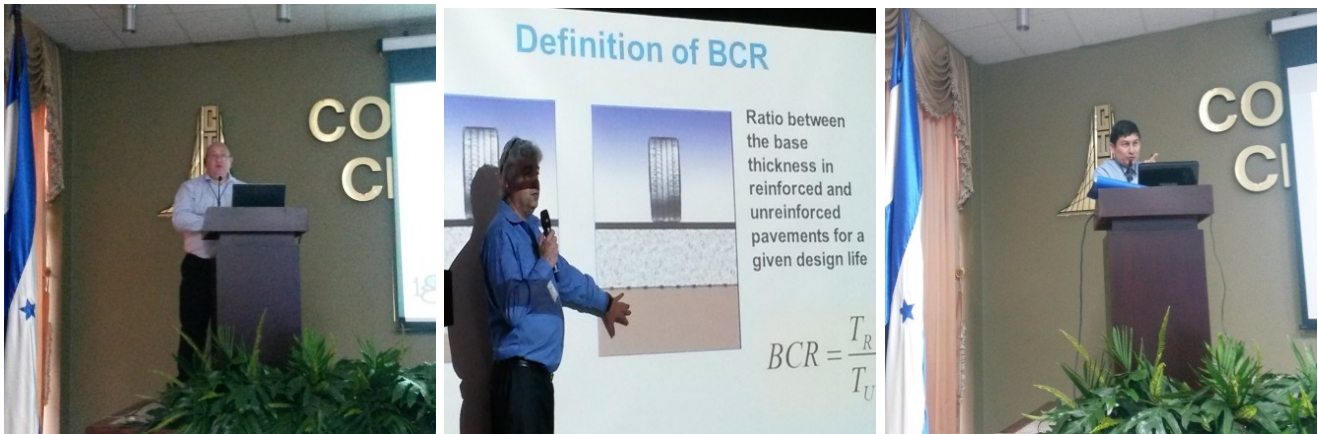


Figure 2. Dr. Russell Jones; Dr. Jorge Zornberg (USA); Mr. Augusto Alza (Perú) (left to right).

design, retaining walls (GRS structures in railways in Japan), geosynthetic barriers for waste containment and closure and rehabilitation of waste disposal facilities, respectively. See figure 2. Moreover, the design workshops were conducted by Mr. Augusto Alza, President of IGS Peru who attended as IGS Ambassador. Furthermore, the case studies were presented by different civil engineers from Honduras and other countries from Central America showing the interesting number of projects that has been constructed in Honduras and the region using geosynthetics.

This conference will represent a milestone in the Central America Region. There attended more than 115 civil and environmental engineers corresponding to different public state institutions and private companies from different countries from North, Central and South America, like United States, México, El Salvador, Honduras, Costa Rica, Panama, and Ecuador. With less than a year of its creation, the Honduran Chapter of IGS has organized a successful conference, a task accomplished under high standards. See figure 3.



Figure 3. Conference room where attended more than 115 civil and environmental engineers from public institutions and private companies

Also, at the end of the conference, Professors of the Academia (UNAH), Members for IGS Honduras and other assistants showed a great interest in continuing in the future with this type of events (conferences, seminars or congress) because, they recognize the relevance of the subject and the important of the correct use and application of geosynthetics. Moreover, the IGS Honduras gave recognition to the IGS Officers and IGS Ambassador for their significant participation. See figure 4.



Figure 4. At the left, a real proof of the effect of geogrids in soils; at the center, Mr. Peter Legg is receiving a diploma from Mr. Danilo Sierra, President of IGS Honduras; at the right Dr. Jorge Zornberg is receiving a diploma from Mr. Rigoberto Moncada, Secretary of IGS Honduras.

Furthermore, the IGS Honduras wants to recognize to the principal sponsor of the Conference, ICA Inversiones (Honduras), who through its leadership, Honduran Chapter was created and has been boosted. Moreover, companies and institutions as Tensar, Polytex, Maccaferri, Geosynthetics.Net, Cetco and Geobrugg gave a great support to the conference. Also, the conference had a space to promote the products of different companies from industry where all the sponsors mentioned above and Polyweld USA, Durman and Tencate who also participated with a booth. See figure 5.



Figure 5. Booths area of the “First National Conference on Geosynthetics-Honduras 2014”.

*Reported by
Alex Galindo, Vice President of Honduran Chapter of IGS*

“The Honduran Chapter of the IGS did an exemplary job of arranging this event. This was an incredibly strong start for this 7 month old chapter. They succeeded in feeding the interest of the attending engineers, demonstrating the value of geosynthetic materials and creating a strong networking foundation for the country & the region. I am confident this chapter will have an impact on the positive growth of our discipline in Honduras and beyond!”

Elizabeth Peggs, IGS Secretary, Director – Minerva - Technology, Resources & Information

“Congratulations IGS-Honduras! As the first chapter of the IGS in Central America, you have already provided the finest service to the Society. The technical program, the educational activities, and the welcoming atmosphere of the First National Conference on Geosynthetics - Honduras 2014 were all superb. I thank you for the leadership and the fantastic example. All best wishes.”

Jorge G. Zornberg, IGS President, Professor, The University of Texas at Austin

Announcements of Conferences of IGS

10th International Conference on Geosynthetics – 10ICG Berlin, Germany, 21 – 25 September 2014



The German Geotechnical Society (DGGT) and the International Geosynthetics Society (IGS) German Chapter, as a special group within the DGGT, cordially invite you to participate in the 10th International Conference on Geosynthetics (10ICG) in 2014 in Berlin, Germany.

The conference will be held from 21 to 25 September 2014 in direct connection with the 33rd Baugrundtagung (BT - German Soil Mechanics Conference) of DGGT (23 to 26 September 2014).

As the Baugrundtagung expects 1200 participants, great synergy and interaction is expected between these events, especially in the co-organized, co-located exhibition.

The overlapping of lectures from both events will also attract many additional experts from the geotechnique and geosynthetics professions. The BT and the Young Geotechnical Engineering Session will be translated simultaneously to English and a combined ticket for 10ICG and the BT with a fairly reduced price will be offered.

Venue

The 10ICG will be held in the south-eastern part of Berlin at the ESTREL convention centre. ESTREL offers about

50 rooms for lectures and meetings in different sizes, integrated exhibition halls (approx. 5000 m²) and a 4-star hotel (1125 rooms). Travelling time from there to the centre of Berlin is about 20 minutes.

Language

The official language of 10ICG will be English.

Berlin

Berlin is the capital city of Germany and offers a tremendous number of interesting cultural events, museums and sightseeing attractions directly in the city and its surrounding area.

Berlin is the "gateway" to the eastern part of Europe. The city is easily reachable and the site of many significant political milestones not only in the history of Germany but of Europe and the world as well.

Accommodation

Parallel to the 10ICG the International Trade Fair for Transport Technology - Innovative Components, Vehicles, Systems will take place in Berlin also: INNOTRANS 2014 (23 to 26 September 2014). Railway Infrastructure, Interiors (incl. Travel Catering & Comfort Services), Public Transport and Tunnel Construction are main topics and could of interest for our geotechnical and geosynthetics specialists as well.

If you have not booked yet you should hurry. Many rooms are already booked. Check the www.10icg-berlin.com website for more details and book there.

Technical Program

The final papers are prepared, submitted and most of them are reviewed. The provisional program is set up by the International Paper Coordinating Committee. The authors should already have received their letters of acceptance.

The program is published at the webpage www.10icg-berlin.com following the item "Technical Program".

The overview schedule for the entire conference is shown in the following table, followed by more detailed tables on a daily basis with the schedule, the locations and the titles of the technical sessions.

| Time | Sun, 21.09. | Mon, 22.09. | Tue, 23.09. | Wed, 24.09. | Thu, 25.09. | Fri, 26.09. |
|---|--|--|--|---|---|-------------------------|
| 08:30 - 09:00 | Registration | | Keynote Lectures by Fumio Tatsuoka Michael Heibaum Dennes Bergado | | | Technical Excursions |
| 09:00 - 09:30 | | Opening Session and Opening of Exhibition | | Keynote Lecture by Holger Wallbaum | Keynote Lecture by Barry Christopher | |
| 09:30 - 10:00 | | | | | | |
| 10:00 - 10:30 | | Coffee Break and Official walk around in Exhibition | Coffee Break | Coffee Break | Coffee Break | |
| 10:30 - 11:00 | | Giroud Lecture by Richard Bathurst | Parallel Sessions Young IGS Members | Parallel Sessions | Parallel Sessions | |
| 11:00 - 11:30 | | Welcome Lecture by Georg Heerten | | | | |
| 11:30 - 12:00 | | | | | | |
| 12:00 - 12:30 | | | Lunch / TC Filtration 10 - 15 Pax | Lunch / TC Reinforcement up to 30 Pax | Lunch / TC Barriers up to 30 Pax | |
| 12:30 - 13:00 | | Lunch | | | | |
| 13:00 - 13:30 | | | | | | |
| 13:30 - 14:00 | | | | | | |
| 14:00 - 14:30 | | | | | | |
| 14:30 - 15:00 | | Parallel Sessions | Parallel Sessions | Parallel Sessions | Parallel Sessions | |
| 15:00 - 15:30 | | | | | | |
| 15:30 - 16:00 | | | | | Closing Ceremony | |
| 16:00 - 16:30 | | Coffee Break | Coffee Break | Coffee Break | Coffee Break | |
| 16:30 - 17:00 | | | | | | |
| 17:00 - 17:30 | | Parallel Sessions | Parallel Sessions | IGS General Assembly and IGS Awards | | |
| 17:30 - 18:00 | | | | | | |
| Baugrund- tagung (BGT) / Soil Mechanics Conference | | | Forum junge Geotechniker / Young Geotechnical Engineers | Haupttagung / Main Sessions of BGT | Haupttagung / Main Sessions of BGT | |
| Evening Events | 17:00 - 19:30 Uhr Welcome Reception (Estrel) | Happy Hour in the exhibition | IGS Football Match (Soccer) Informal Meeting Young Geotechnical Engineers and Young IGS Members | Conference Dinner | | |

| Monday, 22.09.2014 | | | | | | | |
|--------------------|---|--------------------------------|---|------------------------------------|--|----------------------------|---------------------------------------|
| | ECC A | ECC 1 | ECC 2/3 | Estrel C | ECC 5 | Estrel A/B | ECC 4 |
| 08:30 - 09:00 | | | | | | | |
| 09:00 - 09:30 | Opening Session and Opening of Exhibition | | | | | | |
| 09:30 - 10:00 | | | | | | | |
| 10:00 - 10:30 | Coffee Break and Official walk around in Exhibition | | | | | | |
| 10:30 - 11:00 | Giroud Lecture by Richard Bathurst | | | | | | |
| 11:00 - 11:30 | | | | | | | |
| 11:30 - 12:00 | Welcome Lecture by Georg Heerten | | | | | | |
| 12:00 - 12:30 | | | | | | | |
| 12:30 - 13:00 | Lunch | | | | | | |
| 13:00 - 13:30 | | | | | | | |
| 13:30 - 14:00 | | | | | | | |
| 14:00 - 14:30 | A1 Reinforcement - Behavior of MSE walls and slopes | B1 Durability, Quality Control | C1 Roads and Transportation Application - Roads, Railways, Parking Area | D1 Landfill - Sealing Applications | E1 Mechanisms of geosynthetic reinforcement in unpaved roads | F1 Postersession I | G1 Drainage - Performance and Testing |
| 14:30 - 15:00 | | | | | | | |
| 15:00 - 15:30 | | | | | | | |
| 15:30 - 16:00 | Coffee Break | | | | | | |
| 16:00 - 16:30 | | | | | | | |
| 16:30 - 17:00 | A2 Reinforcement - Numerical and physical modelling | B2 Regulations | C2 Roads and Transportation Application - Testing and Research | D2 Landfill - Barrier Performance | E2 Design of geosynthetic-reinforced unpaved roads | F2 Quality Control Systems | G2 Filtration - Design and Testing |
| 17:00 - 17:30 | | | | | | | |
| 17:30 - 18:00 | | | | | | | |

| Tuesday, 23.09.2014 | | | | | | | |
|---------------------|--|--|--|---------------------------------------|--|------------------------------|-------------------------------|
| | ECC A | ECC 1 | ECC 2/3 | Estrel C | ECC 5 | Estrel A/B | ECC 4 |
| 08:30 - 09:00 | Keynote Lectures by Fumio Tatsuoka, Michael Hebaum, Dennes Bergado | | | | | | |
| 09:00 - 09:30 | | | | | | | |
| 09:30 - 10:00 | | | | | | | |
| 10:00 - 10:30 | Coffee Break | | | | | | |
| 10:30 - 11:00 | A3 Reinforcement - Seismic behavior | B3 New Developments | C3 Roads and Transportation Application - Miscellaneous Applications | D3 Landfill - Testing and Performance | E3 TC Filtration | F3 Young IGS Members Contest | G3 Hydraulic Applications I |
| 11:00 - 11:30 | | | | | | | |
| 11:30 - 12:00 | | | | | | | |
| 12:00 - 12:30 | Lunch | | | | | | |
| 12:30 - 13:00 | | | | | | | |
| 13:00 - 13:30 | | | | | | | |
| 13:30 - 14:00 | | | | | | | |
| 14:00 - 14:30 | A4 Reinforcement - Case history I | B4 Design Procedures - Reinforced structures | C4 Soil Reinforcement - In-Situ Testing and Conclusions | D4 Landfill - General Concerns I | E4 Piled Embankments | Sessions of Baugrundtagung | G4 Hydraulic Applications II |
| 14:30 - 15:00 | | | | | | | |
| 15:00 - 15:30 | | | | | | | |
| 15:30 - 16:00 | Coffee Break | | | | | | |
| 16:00 - 16:30 | | | | | | | |
| 16:30 - 17:00 | A5 Reinforcement - Case history II | B5 Design Procedures - Waste containments | C5 Asphalt Applications | D5 Landfill - General Concerns II | E5 Liner action leakage rates: factors to consider | Sessions of Baugrundtagung | G5 Hydraulic Applications III |
| 17:00 - 17:30 | | | | | | | |
| 17:30 - 18:00 | | | | | | | |

| Wednesday, 24.09.2014 | | | | | | | |
|-----------------------|----------------------------|---|---------------------------------------|--|---------------|--|--|
| | ECC A | ECC 1 | ECC 2/3 | Estrel C | ECC 5 | Estrel A/B | ECC 4 |
| 08:30 - 09:00 | | | | | | | |
| 09:00 - 09:30 | Sessions of Baugrundtagung | | | | | Lecture Keynote by Holger Wallbaum | |
| 09:30 - 10:00 | | | | | | | |
| 10:00 - 10:30 | Coffee Break | | | | | | |
| 10:30 - 11:00 | Sessions of Baugrundtagung | B6 Case Histories - Slope reinforcement, Liners | C6 Soil- Geosynthetics Interaction I | D6 Geosynthetic Clay Barriers - Testing and Performance I | E6 Durability | F6 Green Engineering, Sustainability I | G6 Geomembrane - straightening out terminology |
| 11:00 - 11:30 | | | | | | | |
| 11:30 - 12:00 | | | | | | | |
| 12:00 - 12:30 | Lunch | | | | | | |
| 12:30 - 13:00 | | | | | | | |
| 13:00 - 13:30 | | | | | | | |
| 13:30 - 14:00 | | | | | | | |
| 14:00 - 14:30 | Sessions of Baugrundtagung | B7 Case Histories - Foundation, Waste Treatment | C7 Soil- Geosynthetics Interaction II | D7 Geosynthetic Clay Barriers - Testing and Performance II | E7 Seismic | F7 Piled Embankment I | G7 Green Engineering, Sustainability II |
| 14:30 - 15:00 | | | | | | | |
| 15:00 - 15:30 | | | | | | | |
| 15:30 - 16:00 | Coffee Break | | | | | | |
| 16:00 - 16:30 | | | | | | | |
| 16:30 - 17:00 | Sessions of Baugrundtagung | | | | | IGS General Assembly and IGS Awards | |
| 17:00 - 17:30 | | | | | | | |
| 17:30 - 18:00 | | | | | | | |

| Thursday, 25.09.2014 | | | | | | | |
|----------------------|----------------------------|------------------------------|--|---|---|--------------------------------------|--------------------------------------|
| | ECC A | ECC 1 | ECC 2/3 | Estrel C | ECC 5 | Estrel A/B | ECC 4 |
| 08:30 - 09:00 | | | | | | | |
| 09:00 - 09:30 | Sessions of Baugrundtagung | | | | | Keynote Lecture by Barry Christopher | |
| 09:30 - 10:00 | | | | | | | |
| 10:00 - 10:30 | Coffee Break | | | | | | |
| 10:30 - 11:00 | Sessions of Baugrundtagung | B8 Challenging Environments | C8 Soil- Geosynthetics Interaction III | D8 Geomembranes - Performance Concerns I | E8 Factors affecting the performance of GCLs both alone and in composite liners | F8 Piled Embankment II | G8 TC Barrier - Technical Concerns |
| 11:00 - 11:30 | | | | | | | |
| 11:30 - 12:00 | | | | | | | |
| 12:00 - 12:30 | | | | | | | |
| 12:30 - 13:00 | Lunch | | | | | | |
| 13:00 - 13:30 | | | | | | | |
| 13:30 - 14:00 | | | | | | | |
| 14:00 - 14:30 | Sessions of Baugrundtagung | B9 Light weight construction | C9 Soil- Geosynthetics Interaction IV | D9 Geomembranes - Performance Concerns II | E9 TC Reinforcement - Innovation in geosynthetic-soil reinforcement | F9 Postersession II | G9 Full Scale Testing and Monitoring |
| 14:30 - 15:00 | | | | | | | |
| 15:00 - 15:30 | | | | | | | |
| 15:30 - 16:00 | | | | | | Closing Ceremony | |
| 16:00 - 16:30 | Coffee Break | | | | | | |
| 16:30 - 17:00 | | | | | | | |
| 17:00 - 17:30 | | | | | | | |
| 17:30 - 18:00 | | | | | | | |

There are six parallel sessions throughout the days – five with presentations of the technical papers and one for training lectures, workshops and discussions. The main topics for this are

- Mechanism and design of unpaved roads,
- Piled embankments,
- Quality control systems,
- Liner action leakage rates,
- Durability of Geosynthetics,
- Seismic and heavy rainfall.

Integrated in the program are also special sessions organized by the IGS Technical Committees Filtration, Barrier and Reinforcement.

Authors whose papers are especially selected for **Poster Presentation** will have two sessions (one in the beginning and one at the end of the conference), where they may present a conclusion in 1 or 2 slides. Each poster will be shown at least for 1 or 2 days in the lecture room.

As a special benefit for the **Young IGS Members** there has been a pre-selection to find 10 presenters that will show their work in a special session. A jury will choose the best lecturer and he / she will present his / her lecture in a keynote-like position in the program as well!

Exhibition

The 5000 m² technical exhibition space is directly connected to the conference rooms, being located half-way between the hotel and lecture rooms and accessed without having to leave the centre. The exhibition space will be used both by 10ICG and the Baugrundtagung event. **The exhibition is sold out.** Companies that are late for getting a booth may be interested in joining the sponsoring possibilities!

The registered exhibitors are listed on the webpage (<http://www.10icg-berlin.com/en/exhibition.html>)

For more information

Please visit the website that will be updated continuously: www.10icg-berlin.com

For further information please contact:

Gerhard Bräu (Gerhard.Braeu@bv.tum.de)

Dr. Kirsten Laackmann (service@dggt.de)

Special Lectures at 10ICG in Berlin

The 10ICG is proud to announce the following special lectures to be held in Berlin 2014.

Giroud Lecture given by Richard Bathurst, Canada



**Richard
Bathurst**

Challenges and recent progress in the analysis, design and performance prediction of geosynthetic reinforced soil walls

Geosynthetic reinforced soil retaining walls are a mature technology with proven success extending back more than three decades. Nevertheless, new approaches to design and analysis of these systems are required to improve performance predictions for operational conditions, to extend their utility to harsher environments including earthquake areas, and to allow for the use of alternative backfill materials. The use of probabilistic-based design and analysis has lagged that in other branches of geotechnical engineering. In North America, the move toward load and resistance factor design (LRFD) has highlighted the impact of conservativeness and inaccuracy of current limit equilibrium-based models to predict reinforcement loads and load capacity in limit state equations for internal stability design. Better accuracy is also a prerequisite to perform probabilistic-based analysis and reliability theory-based calibration for selection of load and resistance factors within a LRFD framework. The increasing use of advanced numerical modelling using finite element and finite difference methods has refocused attention on the need for more accurate constitutive models for the component soil and polymeric materials and their interactions. The lecture reviews a body of work by the lecturer and co-workers that addresses the issues identified above. Included in the lecture are examples of databases of instrumented field walls and full-scale laboratory test programs that have been collected from many sources and have been used to guide understanding of the performance of reinforced soil wall systems including those constructed with both geosynthetic and relatively inextensible steel reinforcement. These databases have been important for the development of empirically-calibrated stiffness-based working stress methods that are seamless across both geosynthetic and steel reinforced soil wall systems. A comparison of two production walls constructed with conventional and stiffness method approaches is presented. Examples of the use of synthetic data to fill in the gaps in the knowledge base of physical test results are discussed. Examples of the influence of details of numerical modelling on predicted behaviour are given. A novel experimental technique using a pullout box in combination with a transparent granular soil is described. The results are used to provide quantitative insight of soil-geosynthetic interaction mechanisms and to develop interface shear models for numerical modelling. New strategies to mitigate dynamic loads due to earthquake using seismic geofoam buffers are described and the quantitative benefits demonstrated using large shaking table results. The lecture demonstrates a number of complimentary research programs that have been carried out over the last three decades by the lecturer and co-workers to find answers to practical issues related to geosynthetic reinforced soil walls and to develop new approaches for the design, analysis and performance prediction of these systems.

Welcome Lecture given by Georg Heerten, Germany



**Georg
Heerten**

History and actual state of Geosynthetic Applications in Germany (Abstract)

The history of using synthetic materials in construction applications in Germany is going back to the use of polyisobutylene membranes for the sealing of buildings in the thirties of the last century. In the fifties and sixties of the 20th century woven fabrics and PVC membranes have been the beginning of synthetic material applications mainly in hydraulic engineering in Germany. The 10th ICG being held in the former divided city of Berlin just before the 25th anniversary of the "fall of the Berlin Wall" gives the opportunity to highlight the different developments of geosynthetics in the two German States (BRD / DDR) with different political and social systems. The lecture will also deal with the German pioneering application of needle-punched nonwoven geotextiles as filter layer in revetments of canals and rivers, but also in high dams. The development of shear-resistant geosynthetic clay liners has its roots in Germany, too, a development which changed the world of sealing systems in environmental and hydraulic engineering. For landfill engineering the unique certification system established in Germany by law for all geosynthetics being used in landfill sealing systems and developed by the Federal Institute for Materials Research and Testing will be presented. Finally, the state of the art of the use of geosynthetics in reinforcement applications and new developments for scour protection at offshore wind turbines by using sand containers will be highlighted.

Keynote Lecture: Natural Desasters Mitigation by using construction methods with geosynthetics (Landslides, Flooding, Earthquake) by Dennes Bergado (Thailand), Michael Heibaum (Germany) and Fumio Tatsuoka (Japan)

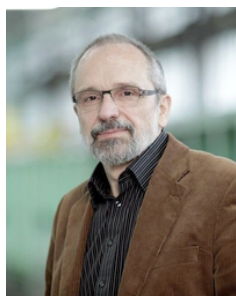


**Dennes
Bergado**

Landslides (Abstract)

Landslide is the natural disaster that affected the society in many ways. Landslide triggering by rain infiltration have occurred in most mountainous landscapes and can cause significant damage. In Thailand, the mountainous northern and southern areas are most vulnerable to landslide hazards during rainy seasons with extreme weather conditions. It has been possible to use detailed geotechnical data in a landslide hazard area to combine with triggering rainfall intensities that induce occurrences of landslides. This critical rainfall enveloped has been applied successfully for warning and evacuation of residents. Furthermore, deterministic hazard mapping technique incorporating modern day geospatial technologies can also provide a number of scenarios including rainfall and land cover/land use variations. Geosynthetics have been increasingly used for many applications in civil/geotechnical engineering including road and railway embankments, retaining walls, slope and erosion protection, drainage/filtration and seepage control, waste containment and lining, geotextiles and geobags, etc. For mitigations of landslide geosynthetics is mainly utilized to provide tensile strength and added stiffness to the soil which is basically strong in compression in order to provide the required safety level. The mitigations of landslide using construction methods with geosynthetics have been applied successfully in case studies and full scale tests. However, there are still remaining problems with regards to vertical and lateral deformations when subjected to wetting due to rainfall.

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**Michael
Heibaum
Germany**

Flooding (Abstract)

Flooding is an unavoidable element originating in the complex weather system of our planet. Flooding always implies interaction of water and ground. Serious damage is caused, if the water is stronger than the ground. To find solutions to cope with origin and outcome of flooding, a distinct evaluation is necessary of the kind of flood and its development. Only then a protection approach can be exercised. There is different assessment, if the flooding is caused by rainfall and runoff, due to saturation of the ground and percolation of pore water. As to the latter distinction is made between man-made earth structures and natural ground. Structures to give shelter from flooding are discussed, as well as reliable stream bank stabilization. Special problems arise in areas that are hydraulically loaded only during flood water level, i.e. the upper bank and the floodplain. A related impact is overtopping of earth structures, bearing the risk of regressive erosion at the landward side. Finally coastal flooding and possible defense measures are addressed. For all categories flood protection and mitigation measures are discussed, wherefore geosynthetics can contribute significantly.

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**Fumio
Tatsuoka
Japan**

Earthquakes (Abstract)

The objective of this paper is to show the following:

a) When designed and constructed properly, geosynthetic-reinforced soil (GRS) structures are much more cost-effective for the mitigation of seismic disasters, as well as for efficient construction and long-term maintenance, than conventional type sloped embankments and retaining walls (RWs).

b) Relevant seismic design of soils structures, including GRS structures, can mitigate seismic disasters by realizing a higher seismic stability (i.e., by better structure; better compaction, better drainage) and then enhances the use of

GRS structures in place of conventional type soil structures.

c) The core of the cost-effective high seismic stability of GRS structure is reinforcing the backfill and structurally integrating the structure components (i.e., backfill and facing, and also bridge girder with GRS integral bridge), as demonstrated by recent case histories of construction of various types of GRS structures for high speed train and restoration of a railway that was seriously damaged by the 2011 Great East Japan Earthquake.

The lecture comprises the following sections

1. Lessons from performance of soil structures with and without geosynthetic-reinforcing;
2. Seismic design;
3. Restoration of damaged soil structure based on seismic design;

4. Reinforcing of existing GRS RWs based on seismic design; and
5. Case study: Sanriku railway.

Keynote lecture: Environmental benefits by using construction methods with geosynthetics by Holger Wallbaum (Switzerland)



**Holger
Wallbaum
Switzerland**

Abstract

Geosynthetic materials are used in many different applications in the civil and underground engineering. In most cases, the use of geosynthetic material replaces the use of other materials. The question occurs if such a replacement leads to lower environmental impacts, a.o. in accordance with the requirements from Construction Products Regulation (CPR) by the European Commission. The presentation will present the results of a study with the goal to quantify the environmental performance of commonly applied construction materials (such as concrete, cement, lime or gravel) versus geosynthetics. A comparative life cycle assessment studies have been carried out

concentrating on various application cases, namely filtration, foundation stabilised road, landfill construction and slope retention. The specifications of the four construction systems are established by the members of the European Association for Geosynthetic Manufacturers (EAGM) representing the European market of geosynthetic materials. The study adheres to the ISO 14040 and 14044 standards and assessed the environmental performance with eight impact category indicators. These are Cumulative Energy Demand (CED), Climate Change (Global Warming Potential, GWP100), Photochemical Ozone Formation, Particulate Formation, Acidification, Eutrophication, Land competition, and Water use.

Keynote lecture: Costs savings by using construction methods with geosynthetics by Barry Christopher (USA)



**Barry
Christopher
USA**

Abstract

This presentation provides a summary of cost savings that can be directly attributed to the use of geosynthetics in the construction of civil works features such as roads, retaining structures, erosion control features, drainage systems, reservoirs, and waste containment systems. Both immediate and long term cost benefits will be reviewed including:

- Immediate savings through substitution or reduction of select soil materials
- Immediate savings through ease of installation and/or increased speed of construction
- Life cycle cost savings through improved performance as measured by increased longevity or reduction of maintenance
- Improved sustainability as compared to alternate construction methods

In many applications, combinations of cost benefits are identified and in some cases, the value far exceeds the cost of the geosynthetic, including its installation. Project information from bid price records and project examples where specific cost savings results have been documented will be used to support the identified cost benefits.

Announcements of Conferences under the Auspices of IGS

7th International Congress on Environmental Geotechnics Melbourne, Australia, 10 - 14 November 2014



The International Society of Soil Mechanics and Geotechnical Engineering (ISSMGE), TC 215 Environmental Geotechnics is pleased to announce the 7th International Congress on Environmental Geotechnics (7ICEG2014), which will be held in Melbourne, Australia between the 10 - 14 November 2014.

This Congress is being organised by Engineers Australia and supported by the Melbourne Convention Bureau (MCB), City of Melbourne and the Australian Geomechanics Society. Furthermore this Congress will be held under the

auspices of the International Geosynthetics Society (IGS). Connected to the Congress there will take place an exhibition as well.

Environmental Geotechnics has evolved dramatically from the 80s/90s practice where the focus was on addressing problems related to contaminated sites as well as hazardous and non-hazardous waste management. Nowadays it deals also with emerging contaminants (nanoparticles, etc.), energy geotechnology (geothermal energy, CO₂ sequestration, coal seam and shale gas, methane hydrates, etc.), oil and gas resources, mining, reservoir engineering, effect of climate change on built structures and biogeotechnical engineering, attracting new challenges and new set of skills to the profession. These had the effect of bringing the different disciplines even closer than before.

This Congress aims to bring together practitioners and researchers in Environmental Geotechnics and related disciplines to discuss the advances which have been achieved in the past 20 years or so. Since the organisation of the 1st Environmental Geotechnics Congress in Edmonton, Canada in 1994, great progress has been made but we must address the new challenges of a rapidly changing world. In so doing, this Congress will contribute to the ongoing process of consilience between the different disciplines so that current and future challenges are addressed efficiently by our profession.

The Congress-Theme is “Lessons, Learnings and Challenges”

- Different lectures will be held to the following Topics: Planning, legislation and regulatory control
- Containment and management of waste
- Contaminant fate and transport assessment
- Soil, ground vapour and groundwater remediation and redevelopment of derelict land
- Landfill gas management and greenhouse emission abatement
- Energy related geoenvironmental technology
- Waste containment facilities closure and aftercare
- Waste management of disaster affected areas
- Biogeotechnical Engineering
- Developments in geosynthetics for environmental protection

Keynote Speakers

- Prof. Charles Shackelford Bs, Msc, PhD. P.Eng *Department of Civil and Environmental Engineering Colorado State University, Fort Collins, USA*
- Prof. R. Kerry Rowe PhD, D.Eng, FEng, FRSC, FCAE, FEIC, FACE, FIEA, FCSE, P.Eng. *Professor and Canada Research Chair – Tier I Department of Civil Engineering, Ellis Hall Queen’s University, Kingston, Canada*
- Dr Stephan Jefferis MA MEng, MSc, PhD, CEng, FICE, CGeol, FG *Director, Environmental Geotechnics Ltd., Oxford, UK*
- Dr Paul Brown Principal Advisor *Mineral Waste Management Rio Tinto, Melbourne, Australia*
- Prof. Craig Benson Bs, Msc, PhD. P.Eng *Wisconsin Distinguished Professor and Chair Director of Sustainability Research and Education University of Wisconsin, Madison, USA*
- Mike Summersgill *Chair, CLAIRE Technology and Research Group (TRG), UK*
- Shaun Davidge *Manager, Water Strategies – GLNG Project, Santos Ltd*

| | |
|---------------------------------------|-----------------------|
| Deadline for Presenter Registrations | 31 July 2014 |
| Deadline for Early Bird Registrations | 10 September 2014 |
| Congress Dates | 10 – 14 November 2014 |

Further Information

E-mail: 7iceg2014@wsm.com.au

www.waldronsmith.com.au

Geosynthetics 2015 **Portland, Oregon, USA, 15 – 18 February 2015**

The biennial geosynthetics conference organized by the Industrial Fabrics Association International (IFAI) will be held 15 - 18 February 2015 in Portland, Oregon at the Oregon Convention Center and will be co-locating with International Erosion Control Association's (IECA) annual Environmental Connection conference. The biennial Geosynthetics conference is a must-attend event for the geotechnical, civil and geo-environmental communities. The conference is complete with full educational components - featuring informative technical sessions, thought provoking plenary speakers and detailed short courses. At Geosynthetics 2015 industry experts from across the globe will gather to network, attend top-notch education and take in the shared show floor filled with exhibitors from both conferences. Geosynthetics 2015 is organized by IFAI and the Geosynthetics Materials Association (GMA), a division of IFAI. The conference is supported by the North American Geosynthetics Society (NAGS) and is conducted un-

der the auspices of the International Geosynthetics Society (IGS).

Geosynthetics 2015, the largest geosynthetics trade event in North America, puts you face-to-face with qualified buyers and decision makers from geotechnical companies, agencies and contracting organizations.

Align yourself with the industry's top manufacturers and service providers showcasing the latest products, services and equipment, and presenting geotechnical solutions, technologies and innovations.

Topics of the Short Courses

- Design of Bottom Liners and Final Cover Systems for Containment Facilities
- Design of Geosynthetic-Reinforced Unpaved and Paved Roads
- Designing and Specifying Planar Drainage Geocomposites
- Geomembranes for Potable Water Applications
- Geosynthetic Reinforced Soil
- Geosynthetic Test Procedures and Material Specifications
- Nanotechnologies for Geosynthetics: Opportunities and challenges
- Static and Seismic Slope Stability for Lining and Cover Systems

Topics of the tentative Technical Sessions

- Application of Geosynthetics in Environmental Remediation
- Beneficial Reuse Opportunities for Geotextile Tubes in Environmental Dredging
- Containment Applications for Mining and Waste
- Dams and Levees
- Electro-Kinetic Geosynthetics and Electro-osmosis
- Emerging Vistas in Geosynthetics
- Excellence in Lining System Design
- Geomembranes for Oil and Gas Applications
- Geomembranes for Potable Water Applications
- Geomembranes in extreme temperature applications
- Geosynthetics in Drainage Applications
- Geosynthetics in Extreme/Critical Environments
- Geosynthetics in Landfill Cover and Liner Systems
- Geosynthetics Properties
- Innovative New Hard Armor Solutions for Erosion Control applications
- Long-Term Field Performance of "Permanent" Rolled Erosion Control Products
- MSE Retaining Walls
- New Research on GCLs
- New Technologies for Road Construction
- Novel test methods replacing traditional test methods
- Performance Monitoring Geosynthetic Stabilized Pavements for Model Calibration and Prediction Relevance
- Reinforced Slopes and Embankments
- Role of Numerical Methods in Design of Geosynthetic Reinforced Structures
- The Possibility of Zero Leaks
- Towards a Better Understanding of Geosynthetic Reinforcement in Unbound Geomaterials
- Use of Geosynthetics for Foundations and Ground Improvement
- Use of Polymeric Fibers in Enhancing the Performance of Geotechnical Infrastructure

Introduction Series

Geosynthetics 2015 features the launch of the Introduction Series. Designed for beginners, this free series of short, targeted presentations will teach you what geosynthetics are and how they fit into various projects.

Current Topics include

- Introduction to: Geomembranes and GCLs
- Introduction to: Reinforcement Geosynthetics
- Introduction to: Drainage Composites
- Introduction to: Geotextiles
- Introduction to: Erosion Control Products

Featured Topic

- Geosynthetics 101, David Elton, PhD, P.E. This complimentary two hour session will be offered twice during the conference.

For more details please visit

<http://geosyntheticsconference.com>

15th Asian Regional Conference on Soil Mechanics and Geotechnical Engineering (15ARC)

Fukuoka, Japan, 9 - 13 November 2015



Call for abstracts for Special Session on Geosynthetics Engineering at 15ARC, Fukuoka, Japan

The 15th Asian Regional Conference on Soil Mechanics and Geotechnical Engineering (15ARC) will be held at Fukuoka, Japan, 9 -13 November 2015 under the auspices of the JGS (Japanese Geotechnical Society).

A special session on Geosynthetics Engineering will be organized in collaboration with IGS. The call for abstracts for this special session is now open. The IGS members are invited to submit paper abstracts by 30 September 2014 to 15tharc@kumamoto-u.ac.jp.

Please check the conference official website (<http://www.15arc.org/index.html>) for more details about the format of the paper abstracts.

News from the IGS Chapters and the Membership

International Conference on Advances in Civil Engineering for Sustainable Development Nakhon Ratchasima, Thailand, 27 - 29 August 2014



The School of Civil Engineering, Suranaree University of Technology, being determined and dedicated to excel in instructions, research, academic service, and transfer of technology, will host a conference on Progress in Civil Engineering for Sustainable Development (ACESD 2014), from 27 - 29 August 2014, to commemorate its two decades in 2014, in cooperation with Research Center for Excellence in Civil Engineering, Association of Engineering Institutes of Thailand under Royal Patronage and the auspices of the IGS Thailand Chapter.

The Main Congress Topics will be

- Pavements and Railways
- Ground improvements and Ground controls (with one special focus on “Geosynthetics Applications”)
- Smart materials and Smart structures (with special focuses on “Composite Material and Structures”, “New Construction Materials”, “Geopolymer composite materials” and “Lightweight materials”)
- Water Supply (with special focuses on “Water leakage management” and “GIS (application & Technology)”)

For further information please contact

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International Seminar GEOSYNTHETICS INDIA 2014 and Workshop on “Design of Geosynthetic Barriers” New Delhi, India, 15 - 17 October 2014



To be abreast with the latest development in the field of Geosynthetics, an International Seminar “**Geosynthetics India 2014**”, preceded by a **Workshop on “Design of Geosynthetic Barriers”**, is being organised by the Indian Chapter of International Geosynthetics Society and the Central Board of Irrigation & Power (CBIP).

The following will be the main topics during the seminar

- Geosynthetics Materials
- Testing & Evaluation, Specifications and Standardization

- Reinforced Soil Structures
- Soil Slopes Stabilisation and Landslide Mitigation
- Filtration and Drainage
- Roads and Railways
- Hydraulic Structures
- Hazardous Waste Management - Landfills and Ash Ponds
- Erosion Control
- Ground Improvement
- Natural Fibre Geotextiles
- Hill Area Development

Official Language

English will be the official language of the seminar.

Dates and Venue

The event will be held at Central Board of Irrigation and Power, Malcha Marg, Chanakyapuri, New Delhi during 15-17 October 2014.

Call for Case Studies

Case studies on the topics proposed and allied topics are invited. Intending authors may send the synopsis(es) of their proposed case study (ies) in about 800-850 words, typed in single space, on A4 size (210 mm x 297 mm) paper, in English, to the Seminar Secretariat.

Only original contributions that have not been published, or presented at other events, need be submitted.

Dates to remember

| | |
|--|-------------------|
| Deadline for submission of synopses | 14 August 2014 |
| Notification of acceptance of synopses | 29 August 2014 |
| Submission of full texts of the accepted presentations | 30 September 2014 |

Seminar Secretariat

Central Board of Irrigation & Power Malcha Marg, Chanakyapuri New Delhi 110 021, India

For further information please contact

Mr. V.K. Kanjlia, Secretary/ Mr. A.C. Gupta, Director (WR)

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E-mail: uday@cbip.org; cbip@cbip.org, Web: <http://www.cbip.org>

XXVII Italian Conference on Geosynthetics **Bologna, Italy, 22 October 2014**

The Italian Chapter of the International Geosynthetics Society (AGI-IGS), together with the Association of Engineers of Bologna and with BolognaFiere-SAIE 2014, organizes the XXVII Italian National Conference on Geosynthetics, this year dedicated to "New design concepts and innovative applications".

The Conference will be held in Bologna on Wednesday 22 October 2014, i.e. the first day of the huge SAIE exhibition, the main important event in Italy in the field of constructions and civil engineering.

The morning session will be chaired by Daniele Cazzuffi (President of AGI-IGS, the Italian Chapter of IGS) and it will be opened by the invited lecture presented by Gerhard Braeu (Germany) who will illustrate the experience with German regulations for geosynthetic-reinforced fill structures (EBGEO).

The other contributions will be devoted to some innovative concepts for the design of structures reinforced with Geosynthetics.

The afternoon session will be chaired by Stefano Aversa (President of AGI, the Italian Geotechnical Society) and it will be opened with the presentation of the AGI-IGS Award for the best thesis on geosynthetics engineering discussed in the last two years in an Italian University.

The other contributions will be focused on real case studies on applications to dams, glaciers, railways, landfills and river & coastal protection.

More information on the Conference program and registration will be available in September by contacting the following email: agi@associazionegeotecnica.it

Reported by

Daniele Cazzuffi, President of AGI-IGS, and Nicola Moraci, IGS Council member

GeosPeru – 3rd National Geosynthetics Congress

Lima, Peru, 04 March - 06 March 2015



Following the International Geosynthetics Society (IGS) Peru Chapter hosting of the Pan-American Conference on Geosynthetics (2012), the chapter was encouraged to hold another geosynthetics event. Geos Peru 2015 will be held 4 – 6 March 2015 in Lima in Hotel Los Delfines.

Key speakers will be:

- Dr. Braja M. Das
- Dr. Jorge Zornberg
- Dr. George Koerner
- M. Sc. Torrealva
- M. Sc. Alfredo Mansen

For further information visit: <http://www.geosperu.com/index.html>

39th Meeting of CEN/TC 189 "Geosynthetics"

Geneva, Switzerland, 8 - 10 April 2014

CEN/TC 189, the technical committee for European standards on Geosynthetics, organised its annual meeting of 2014 in Geneva, Switzerland. The venue of the meeting was the Palexpo Conference and Exhibition Centre and the meeting was organised in conjunction with the Index 14 nonwovens exhibition. The meeting was hosted by EDANA and by SNV, the Swiss standardization body.

As usual the plenary meeting on the last day was preceded by two days of working group and project group meetings. The groups presented their activity reports at the plenary session.

The plenary session was chaired by Daniele Cazzuffi, Italy, whose term of office was confirmed for another three years by a unanimous TC decision.

The meeting was attended by delegates from United Kingdom, Netherlands, Germany, Belgium, Italy, France, Luxembourg, Switzerland, Finland, Turkey, Denmark, Spain, Norway and Poland and by observers from EDANA and EUPC. Guests from Brazil, India and Greece were also present.

Working groups 1 and 6 can be considered as the core groups of the committee, since they are responsible for development and maintenance of the harmonised application-related standards in support of the European construction products legislation (CPR), respectively for geotextiles and geotextile-related products (WG 1) and for geosynthetic barriers (WG 6). Other working groups develop terminology and test methods for geosynthetics. Over the past recent years the work of WG 5 on durability in support of WG 1 and WG 6 has been a key issue.

From the reports on the technical work we can retain that

- WG 1, product requirements for geotextiles and geotextile-related products (convenor Ph. Delmas, France), will propose a new amendment to its package of 10 standards. This amendment will contain a number of small – but not necessarily unimportant – changes to the recently revised standards. A more fundamental revision will start afterwards
- The project group "surface erosion control" (convenor H. Zanzinger, Germany) agreed on an inventory of requirements and will now put a first working draft on paper.
- The project group "asphalt reinforcement" (convenor A. de Bondt, the Netherlands) continued its work on the revision of EN 15381.
- WG 2, terminology and identification parameters (convenor: E.Güler, Turkey) prepared a revised text for a test method for the mass per unit area of clay liners. The terminology work of this group has been transferred to the corresponding ISO working group.

- There were no meetings of the CEN working groups 3 (mechanical testing) and 4 (hydraulic tests). WG 4 has finished its work programme for now and WG 3 is at present without a convenor. A meeting of the corresponding ISO TC 221 WG 3 was organised instead (chaired by D. Cazzuffi, Italy). The meeting was dedicated to the revision of the tensile test EN ISO 10319, in particular to the inclusion of metallic mesh products in the standard.



“Survivors” at 25th anniversary of the CEN/TC 189 committee

- WG 5, durability testing (convenor J. Retzlaff, Germany), continued its work in support of WG 1 and WG 6 standards with regard to long-term durability. This will lead to further amendments in these standards, but also to a revision of the current test methods. In particular for geosynthetic barriers there is a need of including durability requirements for all types of polymers and polymer blends used in these products.
- WG 6, product requirements for geosynthetic barriers (convenor K. von Maubeuge, Germany) started the revision of their package of standards in order to align them with the new European legislation (CPR). The work done by WG 5 will be of key importance to this.

The next meeting will be held in Istanbul, Turkey, on kind invitation of the Turkish delegate Erol Güler, from 28 to 30 April 2015.

CEN/TC 189 kept up its good tradition to organise a delegates' dinner on the evening before the plenary session. The Swiss hosts invited all experts to a typical restaurant in the old town off Geneva. All appreciated the fine food and the enjoyable atmosphere. It was also an opportunity to celebrate the 25th anniversary of the committee – which was created in 1989 on the initiative of Jean Marie Rigo, Belgium – and to bring together the "survivors" of these 25 years of fruitful standardisation activities.

Reported by

Fred Foubert, Secretary of CEN TC 189 and IGS member

Report on the North American Geosynthetic Society

The North American Geosynthetic Society (NAGS) is in the midst of some changes that hopefully will result in the ability of the society to be more active and have a higher profile within the North American geosynthetic community. Unlike other IGS chapters, NAGS is only one of many geosynthetic organizations within North America. NAGS and these organizations have similar objectives and goals, which include geosynthetic education, improve communication and promotion of the geosynthetic field. NAGS is seeking to either combine or coordinate efforts of NAGS and these organizations, in order to minimize duplication and improve the future success of our mutual objectives and goals. NAGS is revising its By-Laws to allow for designated Board seats, to be filled by these organizations. Current agreements have been reached to allow three organizations to appoint one of their members to the NAGS Board. These organizations include the Geosynthetic Manufacturers Association, the Geosynthetic Committee of the Canadian Geotechnical Society, and the Geosynthetic Committee of ASCE's Geo-Institute. The change should occur upon approval of the revision to NAGS's By-Laws.

NAGS has recently developed a NAGS Webinar Series, to be given quarterly. The series is being developed by Dr. Richard Brachman, Queens University, Kingston, Ontario, Canada. The webinars performed to date include

- 19 March 2014, by Dr. Kerry Rowe, titled "Recent insights on the performance of GCLs in bottom liners and covers".
- 9 July 2014, by Bob Mackey, P.E., titled "Composite Drainage Nets."

Other activities of NAGS include

- NAGS members are assisting in the organization of the Geosynthetics '15 Conference, Portland, Oregon, USA, 15 - 18 February 2015
- Continued efforts for the organization of the GeoAmericas 2016 Conference, 11 - 14 April 2016
- Committee of the future establishment of NAGS Recognition Awards, chaired by Mr. Jay McKelvey, P.E., Earth Engineering, Inc.
- Attempting to establish a method for NAGS members to be communicate with each other through the NAGS website.
- Continued discussion on a future name change for the chapter. Since Mexico now has its own IGS chapter, many members believe the title "North American" Geosynthetic Society is no longer appropriate. A suitable alternate name has not been found acceptable by the NAGS Board.

Reported by

Bob Mackey, P.E., BCEE, Committee Chairman and President of NAGS

NAGS Launches Successful Webinar Series

When the North American Geosynthetics Society (NAGS) made its 2014 plans, it decided to bring US and Canadian IGS members closer not through more face-to-face activities but through the cross-border convenience of webinars. The decision has been a successful one. The chapter is open to sharing its experience with other IGS chapters that may be interested in trying out webinar education.

The first NAGS webinar took place in March 2014 and was led by Prof. Kerry Rowe, one of the most distinguished experts on geosynthetics in the world. Dr. Rowe's talk, "Recent insights on the performance of GCLs in bottom liners and covers," shared insight on geosynthetic clay liner (GCL) system performance and challenges (e.g., water retention curve, effect of hydration, panel shrinkage), GCL-geomembrane composite liner system performance, wrinkles in geomembranes, and much more.

"Attendance was very good and exceeded our initial expectations," says Prof. Richard Brachman, P.Eng, a colleague of Prof. Rowe's at Queen's University in Kingston, Ontario, Canada. "The technology platform worked remarkably well. Overall, we deemed our first webinar to be a great success."

Brachman is a member of NAGS and is helping lead the initiative, working with experts to create a strong technical schedule.

Rowe's session served as an exceptional opening act, spurring dialogue among US and Canadian experts. It was exactly what this IGS Chapter hoped the webinar series could be.

A Piece of the Future

The moment for advancing geosynthetics education with webinars has seemed to be the right one.

Engineers have become more comfortable with live webinars and recorded presentations, and many companies now utilize them routinely for meetings, internal training sessions, and client and prospective client presentations. They also have encouraged them as more affordable professional development opportunities.

Also, regulators have extremely tight rules or outright bans on travel right now, and not just in the United States.

Webinars have helped bring these diverse professionals back together. NAGS has seized upon this opportunity to advance geosynthetics education.

The organization is not alone. The Geosynthetic Institute (GSI) and Dr. Robert Koerner have only recently concluded a 12-month program of offering live webinars every second Wednesday of a month. Those sessions were recorded and are now available on www.geo-u.com along with presentations from Dr. Ian D. Peggs. Also, engineer Alan Berry has launched www.GeoengineeringPDH.org with presentations from multiple IGS members.

NAGS' program is keeping its organization at the forefront of engineering education options.

The work has been well-received and key members of NAGS and the Geosynthetics Division of the Canadian Geotechnical Society (CGS) have stepped up to share their expertise.

NAGS Webinar #2, which took place on July 9 as this issue of IGS News was in production, was delivered by NAGS President Robert Mackey, P.E. Mackey's presentation focused on "Composite Drainage Nets – Design and Testing."

Prof. Jonathan Fannin (University of British Columbia) is scheduled to deliver the third quarter 2014 webinar. The date will be announced shortly at www.nags-igs.org.

"We would be happy to share our experiences with the webinar delivery platform with other Chapters of the IGS,"

says Prof. Brachman. He can be reached at brachman@civil.queensu.ca. Interested Chapters may also contact NAGS President Robert Mackey, P.E., bmackey@s2li.com.

Reported by

Chris Kelsey, editor of Geosynthetica (www.geosynthetica.net) and member of the IGS Communications Committee.

President Obama Signs WRRDA into Law

US President Barack Obama signed the Water Resources Reform and Development Act (WRRDA) into law on Tuesday, June 10. This bill is significant for its lack of earmarks, its extraordinary bipartisan and bicameral support, its approval of all major projects the US Army Corps of Engineers (USACE) had been waiting on, and its specific mention of geosynthetics.

Said the President, "...this bill gives a green light to 34 water infrastructure projects across the country, including projects to deepen Boston Harbor and the Port of Savannah, and to restore the Everglades. And with Congress's authorization, these projects can now move forward. So this bill will help towns and cities improve their commerce, but it's also going to help them prepare for the effects of climate change — storms, floods, droughts, rising sea levels — creating more adaptability, more resilience in these communities."

To fight climate change, protect the nation, and improve the competitiveness of the country's ports and related infrastructure, USACE will have Section 130 of the bill to lean on. In it, under "Resilient Construction and Use of Innovative Materials," **the bill instructs the USACE to consider "durable, resilient, and sustainable materials and practices, including the use of geosynthetics, advanced composites, and innovative technologies" in carrying out its work.**

For more information on how the geosynthetic language got inserted into the US law, please contact Boyd Ramsey, GSE Environmental's Chief Engineer and the Geosynthetic Materials Association (GMA) Executive Council Chairman, bramsey@gseworld.com (Source: www.geosynthetica.net)

Reported by

Bob Mackey, P.E., BCEE, Committee Chairman

Report on the Efforts of ASTM International Committee D35 on Geosynthetics

The ASTM D35 Committee met in Toronto, Ontario, Canada, 25 - 27 June 2014. It was a well attended meeting with much activity. The highlight of the meeting was the presentation of ASTM's "Award of Merit" to Mr. Gary Kolbasuk, Subcommittee Chairman on Geomembranes. The Award of Merit is ASTM highest award given for outstanding leadership and service to D35 Committee. It carries with it the distinguish title of "Fellow" recognition of the society. Subcommittee reports are as follows

D35.01 Subcommittee on Mechanical Properties, Chair - Sam Allen

Emphasis is being placed on updates to ASTM D 4595, *Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method*, including a gage length change to 60 mm and additional gripping guidance. In addition, a project to draft a sister standard to ASTM D 6638, *Standard Test Method for Determining Connection Strength Between Geosynthetic Reinforcement and Segmental Concrete Units (Modular Concrete Blocks)* has been initiated. This new standard will establish a procedure for the performance of connection creep testing of the reinforcement adjacent to the block-reinforcement interface. Finally, an effort to draft ASTM standards for geocells has been established. Early efforts are focused on specific test procedures and a draft product specification.

D35.02 Subcommittee on Durability, Chair – George Koerner

The committee is continuing to focus on critical applications that have service lifetime requirements of 30 to 100's of years. In some cases, failure may be dramatic and result in high cost and even loss of life. This complicated answer is largely dependent on the polymeric type and its specific formulation as well as its in-situ exposed environment over time.

D35.03, Subcommittee on Permeability and Filtration, Chair – David Suits

The committee is currently working on several areas. The first is a new proposed specification for suspended geosynthetics storm water sewer-inlet filters, which are used in highway drainage applications. The second is a new test method for flexible wall gradient ration testing to measure the clogging potential of fine grained soils. The third is a new test method for determining the air transmissivity of geosynthetics. In addition to these new standards work is under way to guidance using information obtained in the pore size distribution test, D6767, in calculating the permittivity and apparent opening size of a geotextile. It is proposed that this guidance be added as an appendix to both D4791, the permittivity standard, and D4751, the apparent opening size standard.

D35.04, Subcommittee on Geosynthetic Clay Liners, Chair J.P. Kline

The committee has been assessing what language, if any, needs to be incorporated in current test standards to address multi-component GCLs; GCLs with an attached film, coating or membrane. Round robin testing has been done to evaluate how swell Index and fluid loss tests can be improved. Checklists have been developed to aid users in performing Direct Shear, Swell Index and Fluid Loss tests. A new standard is being developed regarding guidelines for a test pad prior to installation to determine what equipment may be acceptable to dry over install GCL product.

D35.05, Subcommittee on Geosynthetics in Erosion and Sediment Control, Chair - Joel Sprague

The committee has been meeting with D18.25.02 outside of D35 committee meetings for the last several years. D35 Leadership has noticed a significant decline in standards activity within D35.05 and, thus, has asked D35.05 to return to meeting within the D35 committee days beginning with the June 2014 meetings. A full day of meetings was held with a primary focus on

- 1.) updating commonly used rolled erosion control (RECP) index tests; and
- 2.) initiating new test methods and specification efforts, especially related to new geosynthetic types and sediment control applications.

New initiatives established during the recent meeting include developing

- 1.) a sample preparation practice for geosynthetic concrete composite mats (GCCM);
- 2.) specification for turf reinforcement mats (TRMs);
- 3.) a test method to look at the horizontal permeability of sediment retention devices (SRDs); and
- 4.) a test method to quantify the "functional longevity" of RECPs and SRDs.

Subcommittee activities will strive to respect the following agreement between D18 and D35 that was re-affirmed during a meeting of officers from both committees on June 23, 2014.

D35.10, Subcommittee on Geomembranes, Chair – Gary Kolbasuk

The committee is in the midst of a flurry of activity on electronic leak location testing. Abigail Beck is working on revising five existing standards and has just finished a new Standard Practice for Electrical Leak Location on Exposed Geomembranes Using the Arc Testing Method. Tim Bauters has also been very active in this area and recently passed a new Guide for Placement of a Blind Leak during Electrical Detection Survey in Geomembranes, D7909. Upcoming efforts being considered include additional specifications and a test method for the permeability of geomembranes to VOCs.

D35.93, Subcommittee on Terminology, Chair – Robert Lozano

Current committee efforts are the reorganization and clarification of terminology that affects geosynthetics and geosynthetics testing. A mayor revision of terminology related to geosynthetics used as fluid barriers is in progress within the committee. These changes will expand the current definitions for geomembranes and GCLs allowing better consensus between standardization entities and allowing new materials current in the market to be correctly classified.

Reported by

Bob Mackey, P.E., BCEE, Committee Chairman

Reducing the environmental impact of construction through use of geosynthetics

A 4 year Engineering Doctoral project is taking place at Loughborough University sponsored by the International Geosynthetics Society; UK Chapter. The project titled 'Reducing the environmental impact of construction through use of geosynthetics' commenced in December 2012 and is extending an existing study carried out in the UK by the Waste & Resources Action Programme (WRAP). The main aim of this research is to establish and quantify anticipated sustainability benefits of geosynthetic based solutions. It will develop awareness and provide guidance with the aim of using geosynthetics to reduce the carbon footprint of construction projects. The findings of the research will help to form a framework or tool that could be used to compare the carbon footprint of both geosynthetic and traditional solutions.

The initial phase of the research involved a survey of IGS UK chapter corporate sponsors, to understand the constraints or barriers to the use of geosynthetics. The survey results showed that lack of education in clients, consultants and contractors was the biggest barrier to the application of geosynthetics. These findings were published and presented at the Geosynthetics Middle East 2011 conference in Abu Dhabi. Follow on research led to an investigation in to the use of marginal/cohesive fills. This involved reviewing the literature to understand the state of practice and understanding of designing reinforced structures with cohesive fills. The study provided a number of key conclusions, in particular, the need for clearer guidance on the use of cohesive fills. A paper was produced from this study and an oral presentation was provided at EuroGeo 5.

Now in its final phase the project has moved on to investigating key issues such as embodied carbon values and

comparing carbon calculation techniques and tools currently being employed. Case studies have been produced for a range of applications to compare the carbon footprints of geosynthetic and non geosynthetic solutions. One such case study will be presented at the upcoming 10th ICG conference in Berlin. The research has also focused on developing geosynthetic specific embodied carbon values, which would help improve the accuracy of CO₂ calculations and promote the sustainable benefits of geosynthetics. Feedback and input from IGS members is encouraged.

For any further details please do not hesitate to contact Jamil Raja (J.raja@lboro.ac.uk) or Dr Gary Fowmes (g.j.fowmes@lboro.ac.uk)

Reported by

Gary Fowmes, Lecturer in Engineering Geology

Obituary of Gianmario Beretta - founder of the TENAX Group



Gianmario Beretta (1941 - 2014)

On Wednesday 28th of May, the founder of TENAX Group, Gianmario Beretta, passed away unexpectedly following an aviation accident in Northern Italy. Gianmario had been at the helm of the Group for several decades.

An outstanding pioneer in the plastic production sector, he developed innovative geosynthetics for use in civil engineering projects and in soil and environmental protection. His initial ideas led to the issuing of huge amounts of patents, and his management helped the company to become an international group, with branches and production plants in Europe, China and America.

His exceptional business nous, combined with perseverance and the ability to handle any technical or productive aspect of the company with a brilliant sense of eclecticism, were the key to his extraordinary career and also to Tenax's growth in the last decades.

Gianmario Beretta devoted himself to all his activities with boundless passion and enthusiasm. His love for gliding is emblematic of this: he was so dedicated that he founded a company which specializes in the production of top-of-

the-range aircraft that were even designed by Gianmario himself.

Partners, employees and even competitors will always have a special memory of Gianmario Beretta: the lasting memory of a sober and elegant man, bashful, with little desire to stick to the mundane, always ready to accept any challenge, at times impulsive, a quality typically found in those who are capable of producing real "strokes of genius".

Reported by

Daniele Cazzuffi, IGS Past President, CESI SpA, Milano, Italy

2nd Cross-Industry Russian Conference "Geosynthetics in Road Construction" Moscow, Russia, 16 May 2014

On 16 May 2014 in Moscow, SIBUR together with the Russian Federal Road Agency Rosavtodor and the State Company Avtodor, organised the 2nd Cross-Industry Conference named "Geosynthetics in Road Construction: Agenda for 2014". Held annually, the conference aims to find ways for a more intensive and appropriate use of geosynthetic materials in Russian road construction and maximise their benefits to improve the quality and to prolong the useful life of roads.

The conference saw the first ever public speeches in Russia made by Daniele Cazzuffi (CESI SpA, Milano, Italy), Chairman of the European Committee for Standardisation on Geosynthetics (CEN TC 189), and Francesco Fontana (Manifattura Fontana, Valstagna, Italy), CEN TC 189 WG 1 member. Their reports proved to be extremely interesting for the participants, who also were engaged in a professional discussion focused on comparing the European and Russian technical and regulatory requirements for geosynthetics.

When opening the conference, Kirill Shamalov, Deputy Chairman of SIBUR's Management Board, highlighted the necessity to establish industry-wide rules accepted by all producers. He pointed out that in order to create a regulatory and technical framework for the geosynthetics use, the industry requires prompt targeted development of specifications for geosynthetic materials to be applied in road construction and renovation based on best available techniques. As part of the construction working documents, these specifications shall establish explicit requirements for

parameters that define the functional properties of materials. These requirements shall be clearly enforced and controlled on site.

Igor Astakhov, Deputy Head of Rosavtodor, and Alexander Bukhtoyarov, Head of Rosavtodor's Scientific and Technical Research and Information Support, said that several roads constructed using state-of-the-art technologies and materials had already been successfully commissioned. Among them are Federal Highway M7 (Volga Highway), Federal Highway M8 (Kholmogory Highway), Chita–Khabarovsk Road as well as the reconstructed Yuzhno-Sakhalinsk-Okha road (820–832 km) and M53 (Baikal) Highway (Krasnoyarsk–Irkutsk segment).

Igor Astakhov views quality standardisation and strict incoming lab control as industry priorities: “Under the existing legislation, the state as a customer cannot select a regular producer at its discretion, whether we like it or not, and this is right. In this environment, today we all need to focus on developing self-regulatory controls and improving the regulatory framework to benefit both the quality of roads and qualified producers.”

Igor Urmanov, First Deputy Chairman of Avtodor's Board, commented, “The number of highway construction, reconstruction and repair projects implemented by Avtodor is growing every year, contributing to a greater consumption of geosynthetic materials, which we see as one of the ways to prolong the useful life of roads.”

Igor Urmanov also discussed problems restricting the use of geosynthetics in road construction and maintenance, including the lack of long-term on-site monitoring data and methodology to determine areas of effective application. To address these problems, Avtodor is working towards higher design standards within the Customs Union. The efforts of the geosynthetics working group involving Rosavtodor, Avtodor and SIBUR are expected to contribute to technical improvement of project solutions. At the end of his speech Igor Urmanov stressed that “joint efforts are the most effective way to address the problems.”

In his turn, Nikolay Bystrov, General Director of Avtodor Engineering, said that incoming control needs to be put in place to prevent low-quality geosynthetics from penetrating the market. This will make producers choose to either invest in good quality or leave the federal road market.

The participants deliberated on their prospective cooperation with a view to implementing the Agreement for Cooperation in Geosynthetics Standardisation made between Rosstandard and CEN/CENELEC on 17 September 2013, including sharing information on standards in progress, monitoring the quality of geosynthetic materials and road facilities, and promoting R&D. The participants supported the proposal to put geosynthetics standardisation on the agenda for prospective cooperation between Rosstandard and CEN.

Reported by

Maria Burova, SIBUR, Moscow, Russia



Lecturer Daniele Cazzuffi at the 2nd Russian Geosynthetics Conference Moscow

Report from “Educate the Educators” - Workshop Cieszyn, Poland, 23 – 24 June 2014

The first course in Europe of the Educating the Educator (on Geosynthetics) initiative took place on the 23rd and 24th of June 2014 at Hotel Mercure in Cieszyn, Poland. In fact, this training was the first one in the whole Eastern Hemisphere apart from one organized in Argentina in 2013.

Educate the Educators training in Poland was organized by PSG – the Polish chapter of IGS – in cooperation with IGS chapters from Czech Republic and Slovakia. The event was prepared for 40 attendees representing more than 20 different universities. In attendance were professors, lecturers, and Ph.D. students who teach students at various technical universities within Poland, Czech Republic, and Slovakia.

Apart from IGS and local chapter financial support there were four main sponsors (Inora, Geosyntetyki Naue, Huesker, and Tensar International) as well as two supportive sponsors (Drotest and Chemia Servis).

The agenda of the workshop was extremely filled up with content including the following topics:

- Teaching geosynthetics at undergrad classes. Objectives and Philosophy of the "Educate the Educators" program
- Basics class on types and functions of geosynthetic materials
- Discussion on the basic class and how to incorporate it in current civil engineering curricula
- Seminar on recognizing different geosynthetic materials
- Basic properties and related tests on geosynthetic materials
- Basic class on geosynthetic reinforced walls
- Embankments on soft soils
- Advanced topics on geosynthetic reinforced walls and slopes
- Basic class about the application of geosynthetic materials in land-fill liners and covers and in contaminated facilities
- Polymers properties for contaminated applications
- Quality Control/Quality assurance during installation of geosynthetic materials
- Drainage systems in geoinvironmental applications
- Application of geosynthetics in hydraulic structures and for erosion control problems
- Geosynthetics in railway infrastructure
- Geosynthetics in road infrastructure
- Geosynthetic in pavements



Seminar in progress (taken by J. Kawalec)



Trainers in complete (taken by J. Kawalec)

All above topics were prepared and presentations were presented by the IGS trainers Jorge Gabriel Zornberg (USA), Erol Güler (Turkey) and Madalena Barroso (Portugal).

In addition to the above presentations there were four IGS corporate member presentations:

- Comparison of designing methods commonly being used in Poland (Janusz Sobolewski - IGS Germany and IGS Poland)
- Case study of practical use of the geosynthetics in roads (Konrad Rola-Wawrzecki - IGS Poland)
- Milestones in Polish geosynthetics projects - sections A1 and A2 motorways (Janusz Sobolewski - IGS Germany and IGS Poland)

- Non-reinforcing geogrids for stabilisation of unbound granular layers by way of interlock with aggregate (Jacek Kawalec - IGS Poland)



Seminar Organizing committee almost in complete:

First line from left: Prof Erol Güler (President of IGS Turkey), Prof Jorge Zornberg (IGS President), Dr Madalena Barroso (Vice President of IGS Portugal), Dr Jacek Kawalec (President of PSG-IGS Poland), Prof. Adam Bolt (Immediate Past President of PSG IGS Poland)

Second line from left: Dr Witold Sterpejkowicz-Wersocki (PSG-IGS Poland Treasurer), Dr Radovan Baslik (President of IGS Slovakia), Dr Lumir Mica (President of IGS Czech Republic), Dr. Angelika Duszyńska (PSG-IGS Poland), Mr Bogumił Lipiecki (PSG-IGS Poland Secretary)

On both days each of the IGS Chapters had 20 minutes for a presentation of local Case Studies so all attendees had a chance to learn about many interesting projects in Czech Republic, Slovakia and Poland. Presentations were delivered by Adam Bolt (IGS Poland), Radovan Baslik (IGS Slovakia) and Lumir Mica (IGS Czech Republic).

Both days were very busy as sessions started at 8:00 a.m. and continued until 7:30 p.m. every day.



Few moments without presentations (taken by J. Kawalec)

Reported by
J. Kawalec, Project Chair and President of PSG-IGS Poland

Malaysian Chapter of IGS (MyIGS) - Inaugural AGM

Wednesday, 28 May 2014, Kuala Lumpur, Malaysia.

The MyIGS' inaugural AGM cum membership drive was a success as it brought together for the first time the Malaysian geosynthetics community with members of more than 30 year experience right down to graduate students. The inaugural meeting was attended by representative from 3 corporate members, 3 company members, 36 individual members, 3 student members and 1 affiliate. The members' professional background is a healthy mix of Academicians, Consultants, Contractors, Manufacturers, Installers and Distributors. MyIGS has made its office at the Engineering Campus of University Sains Malaysia (USM), Nibong Tebal, Penang.



MyIGS members at the Inaugural AGM

The officers of MyIGS



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Prof. Dr. Fauziah Ahmad



Vice - President
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Elected Executive Members

Marcus Jong Ching Joo, Danny Ng, Edward Thanarajah, Dr. Chan Chee-Ming, Jason Lim Kian, Huat Tee Choon Heng, I Senthilrajah, Chung Chee Wai, Lim Yu Jeen, Ang Cheng Hooi, Daniel Duffy, Bryan Lee

Reported by

Professor Dr. Fauziah Ahmad, President of MyIGS

Brazilian Chapter - Publication of two New Recommendations

The Brazilian Chapter published two new recommendations:

- IGSBrasil 002 - Characteristics required for geosynthetics employment(Part 1 Geotextiles & Geotextiles Related Products and Part 2 Geosynthetic Barriers)
- IGSBrasil 003 – Supplemental terms and definitions.

IGSBrasil 002 represents an important instrument to ensure geosynthetics quality. It allows manufacturers to describe geosynthetics on the basis of declared values for the relevant characteristics of the intended use, when tested according to the specified methods. The recommendation includes procedures for assessing conformity and quality control of manufacturing and considers geosynthetics used in: drainage and erosion control systems; tunnels and underground structures; earthworks, foundations and retaining structures; railways; roads and other trafficked areas; reservoirs, dams and canals, and solid and liquid waste disposals. It may also be used by designers, end-users and other interested parties in the matter to define which functions and conditions of use are relevant.

IGSBrasil 003 complements terms and definitions to be employed in geosynthetic design and specification and do not presented in NBR ISO 10318:2013.

Reported by

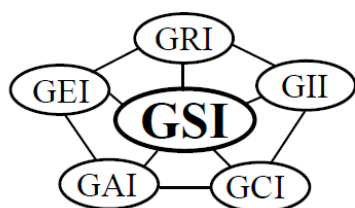
Delma Vidal, Vice President of Brazilian IGS Chapter

Korean Chapter – Two Previous Events

| | |
|---|--|
| Title of the event | Korea Geosynthetics Society (KGSS), Spring Conference |
| Date, location, country | 2014.4.11.(Friday), Jai Gallery, Seoul, Korea |
| Type of event | Invited lecture, presentation, poster session |
| Number of participants | 61 |
| Participation of IGS members and/or officials | 20 |
| Content of technical part | Theoretical and Experimental research results for wide range of geosynthetics area |
| Highlight, result, need, success of the event | Successful |

| | |
|---|--|
| Title of the event | 26th Continuing Education Seminar cohosted by Korean Geotechnical Society and KGSS (Regarding Geosynthetics) |
| Date, location, country | 2014.2.20.(Thurs)-02.21(Fri), Jai Gallery, Seoul, Korea |
| Type of event | Lecture |
| Number of participants | 57 |
| Participation of IGS members and/or officials | 40 |
| Content of technical part | Application of geosynthetics in geotechnical engineering |
| Highlight, result, need, success of the event | Successful |

GSI Fellowship Announcement



GSI and its Board of Directors have made their selections for the GSI Fellowship awards for A.Y. 2014 – 2015. The program recognizes and supports outstanding graduate students researching Geosynthetics. The following were selected from 12 new proposals and 3 renewals.

Class 7(a) – 1st Year Funding at \$10,000 per Student

| No. | Name | University | Advisor | Topic |
|------|-------------------------|--|-----------------|---|
| 1-14 | Asli Yalcin Dayioglu | University of Maryland | Ahmet Aydilek | Clogging Behavior of Recycled Concrete Aggregate in Geotextile Systems |
| 2-14 | Michelle (Mingyan) Deng | Missouri Univ. of Science and Technology | Ronaldo Luna | Reliability Based Optimization Design of Geosynthetics Reinforced Embankment Slopes |
| 3-14 | Yonggui Xie | Oregon State University | Ben Leshchinsky | MS Wall Abutments: an Analytical Solution for Evaluating Service State Deformations with Geosynthetic Reinforcement |

Class 5(c) – 3rd year funding at \$5,000 per Student

| | | | | |
|------|--------------|------------------------|----------------|--|
| 3-11 | Felix Jacobs | RWTH Aachen University | Martin Ziegler | Laboratory and Numerical investigation of Geogrid Reinforced Soil in Biaxial Compression Tests |
|------|--------------|------------------------|----------------|--|

Requests for proposals (RFP's) for the eighth year, i.e., A.Y. 2015 – 2016, of the program, will be announced this winter. In order to be eligible, students must focus on a Geosynthetic topic, have passed their doctoral candidacy examination, and be recommended by their advisor.

Please contact Jamie Koerner at jrkoerner@verizon.net for additional information on the students and their respective projects or go to www.geosynthetic-institute.org/gsfellows.htm for a complete history of the fellowship program.

List of IGS Chapters

| Country | Name of IGS Chapter Year of Foundation | IGS Chapter President | webpage further email address |
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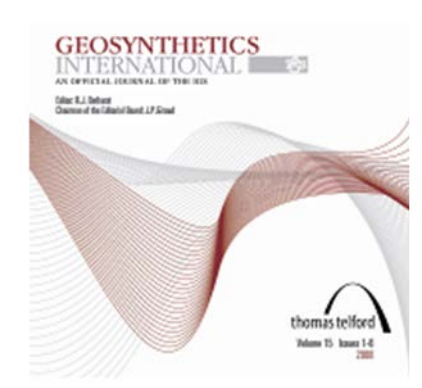
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- If you find your information is incorrect please contact your chapter secretary or if you are not affiliated with a chapter contact the IGS secretary. Please also advise the IGS News editor

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Geosynthetics International is an official journal of the IGS and has established itself as a premier peer-reviewed journal on geosynthetics. The Journal publishes technical papers, technical notes, discussions, and book reviews on all topics relating to geosynthetic materials (including natural fiber products), research, behaviour, performance analysis, testing, design, construction methods, case histories, and field experience.

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Content of Volume: 21, Issue: 2 (2014)

Effects of EPS bead inclusions on stress–strain behaviour of sand, A. Edinçliler; A.T. Özer

Model tests on single and groups of stone columns with different geosynthetic reinforcement arrangement, K. Ali; J.T. Shahu; K.G. Sharma

Cationic starch flocculants as an alternative to synthetic polymers in geotextile tube dewatering, M.M. Khachan; S.K. Bhatia; R.A. Bader; D. Cetin; B.V. Ramarao

Diffusion of phenolic compounds through polyethylene films, M. Mendes; N. Touze-Foltz; M.dG. Gardoni; L. Mazéas

Overview of performance compatibility issues of GCLs with respect to leachates of extreme chemistry, A. Bouazza; W.P. Gates

Content of Volume: 21, Issue: 3 (2014)

Hyperbolic models for a 2-D backfill and reinforcement pullout, C.-C. Huang; H.-Y. Hsieh; Y.-L. Hsieh

Performance of reinforced soil walls during the 2011 Tohoku earthquake, J. Kuwano; Y. Miyata; J. Koseki

Performance of three GCLs used for covering gold mine tailings for 4 years under field and laboratory exposure conditions, M.S. Hosney; R.K. Rowe

A parametric study of geosynthetic-reinforced column-supported embankments, N.N.S. Yapage; D.S. Liyanapathirana

Treatment of an expansive soil by mechanical and chemical techniques, A.R. Estabragh; H. Rafatjo; A.A. Javadi

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For direct connection to the home page of the journal with the possibility to download PDF-files of the full papers (IGS members and abonnents only) please follow the link at the end of the following content listing.

Content of Volume 42, issue 3 (June 2014)

Effect of FeCl₃-conditioning on consolidation property of sewage sludge and vacuum preloading test with integrated PVDs at the Changan landfill, China, Weian Lin, Xinjie Zhan, Tony Liangtong Zhan, Yunmin Chen, Yawei Jin, Junnan Jiang

Model testing and numerical investigation of interference effect of closely spaced ring and circular footings on reinforced sand, Erfan Naderi, Nader Hataf

Micro-scale tensile properties of single geotextile polypropylene filaments at elevated temperatures, Tanay Karademir, J. David Frost

Nonwoven geotextiles to filter clayey sludge: An experimental study, Sébastien Bourguès-Gastaud, Guillaume Stoltz, Fabienne Sidjui, Nathalie Touze-Foltz

Landfill side slope lining system performance: A comparison of field measurements and numerical modelling analyses, Katarzyna A. Zamara, Neil Dixon, Gary Fowmes, D. Russell V. Jones, Bo Zhang

Numerical experiment-artificial intelligence approach to develop empirical equations for predicting leakage rates through GM/GCL composite liners, Hossam M. Abuel-Naga, Abdelmalek Bouazza

A new approach to evaluate soil-geosynthetic interaction using a novel pullout test apparatus and transparent granular soil, Fawzy M. Ezzein, Richard J. Bathurst

Failure of a geomembrane lined embankment dam – Case study, Sophie Messerklinger

General solutions for consolidation of multilayered soil with a vertical drain system, Jia-Cai Liu, Guo-Hui Lei, Ming-Xin Zheng

Content of Volume 42, issue 4 (August 2014)

Analysis of geosynthetic tubes inflated by liquid and consolidated soil, Wei Guo, Jian Chu, Wen Nie

Effect of high temperatures on antioxidant depletion from different HDPE geomembranes, Fady B. Abdelaal, R. Kerry Rowe

Instability of a geogrid reinforced soil wall on thick soft Shanghai clay with prefabricated vertical drains: A case study, Jian-Feng Xue, Jian-Feng Chen, Jun-Xiu Liu, Zhen-Ming Shi

Shear behaviour of a geogrid-reinforced coarse-grained soil based on large-scale triaxial tests, Xiaobin Chen, Jiasheng Zhang, Zhiyong Li

Modeling the pullout behavior of short fiber in reinforced soil, Hong-Hu Zhu, Cheng-Cheng Zhang, Chao-Sheng Tang, Bin Shi, Bao-Jun Wang

A simplified approach for evaluating the bearing performance of encased granular columns, Cho-Sen Wu, Yung-Shan Hong

Effect of leachate composition on the long-term performance of a HDPE geomembrane, Fady B. Abdelaal, R. Kerry Rowe, M. Zahirul Islam

Numerical evaluation of a granular column reinforced by geosynthetics using encasement and laminated, Iman Hosseinpour, Mario Riccio, Marcio S.S. Almeida

Geosynthetics for waterways and flood protection structures – Controlling the interaction of water and soil, Michael Heibaum

Force equilibrium-based finite displacement analyses for reinforced slopes: Formulation and verification, Ching-Chuan Huang

Observational method for field performance of prefabricated vertical drains, S.G. Chung, H.J. Kweon, W.Y. Jang

A simple method to assess the wettability of nonwoven geotextiles, Abdelmalek Bouazza

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Corporate Membership

Case studies – use the chance!

All corporate members are invited to announce a case study at any time. For each issue 3 to 4 case studies are planned to be placed in (up to 1 page with pictures). If there are more announcements we will place them on a list and will use them on a “first come, first serve” basis. A corporate member may have a second case study published if the list is finished with corporate members not been considered yet. As we know that some of our corporate members are very hard-working on such a type of publication, please be aware that the only possibility to prevent a publication series by one company is to send in your own case study!

With a distribution of more than 3000 samples/downloads of IGS News this is a good promotion of the geosynthetics technique and your company. We would be happy if this chance is used frequently.

*Reported by
Gerhard Bräu, IGS News Editor*

Shore Protection Work



The project : The Federal Planning Ministry commissioned in 2010 to ENARSA-YPF SA the construction and operation of a second gas port, capable to inject 13 million m³ of gas per day to the network. The project, located at the Parana de las Palmas, contemplated the execution of an inner harbor on an island near Escobar port, that allowed locating the regasification vessel and transport ships off the navigable course of the river. For this purpose, YPF, hired Compañía Sudamericana de Dragados SA (from Jan de Nul Belgian group) the basin dredging of 1,100 m of development and the filling by dredge material of the adjacent lowlands.

Problem to solve: The slopes from the dock (inner harbor) has to be protected against the erosive action of the river current as well as from the swell, both those submerged, and those who, even being above the water level average, are exposed to the river flood. The first ones were formed with 1V: 4H of slope by excavation and dredging sandy-loam soils of soft consistency, and the second ones, with 1V: 2.5H of slope on embankments executed with fill material on grounds of very low bearing capacity. The geotechnical characteristics imposed the need for a flexible liner, and the constructive conditions the possibility to run it under water. In addition to this the period for the work to be done was limited, since the port should be operating before winter 2011

The solution: The protection of the new waterfront (shoreline), called for approximately 30,000 m² of BetonFlex® cladding over nonwoven geotextile Bidim® filter. The submerged slopes were coated with 17 m length precast blankets and 0.15 m tall blocks, installed by cranes operating from pontoons. For the berm and the dry slopes the cast-in-situ of 0.20 m tall blocks was adopted.

The geotextile fabric binding was a Hate® HLT 110-55 for precast blankets, and Hate® HLT 80-60 for the dry lining, in both cases high modulus fabrics with highly thermo and Photo oxidation levels of stabilization. The anchoring of the blocks was done by using specific design synthetic pins or loops from the geotextile itself

Advantages of the solution: BetonFlex® system adoption allowed to materialize a highly flexible and draining coating. Thanks to the possibility of being executed in situ, or placed under water by precast blankets linked by stainless steel cables, allowed fulfill with the technical requirements of the project within a tight work schedule.



Dredging of the basin and filling the flood-plain with dredge material



Precast blankets before installation



Installation of the precast blankets



In – situ execution of the coating over the superior berm



Coating of the berm and the superior slopes



Completed work and operating dock

For more information please contact: info@coripa.com.ar

www.coripa.com.ar

Reinforced soil containment slope in a Landfill

MACCAFERRI
GEOSYNTHETICS

The urban waste landfill in La Spezia, Italy, was designed and completed in 1998 to contain an initial total volume of 383,000m³ of waste. Subsequently, as the landfill neared capacity, it was planned to increase the capacity to 455,000m³.

The landfill is situated at the head of a small valley, using the natural slopes on three sides as containment. The existing containment embankment on the open side of the landfill would be moved forward and raised to increase the waste capacity. As a result of the extremely limited space available due to the morphology of the valley and the presence of the rainfall collection tank at the foot of the embankment, the embankment was raised by constructing three reinforced soil embankments using MacGrid[®] WG geogrids. The downstream expansion also made it necessary to consolidate the soil at the base of the embankment by means of jet-grouting and to construct a tied-back bulkhead to protect the aforementioned rainwater collection tank. The raising of the downstream embankment made it necessary to extend the waterproofing to the upstream face of the reinforced soil containment embankment and increase the length of the wells for extraction of the leachate next to the existing embankment.



Project engineers Studio Geotechnica of Milan, designed the structure using Maccaferri MacSTARS soil reinforcement geotechnical design software. The construction methodology was different for each face of the raised embankment;

Downstream face: Constructed using a system of sacrificial formwork made from bent weldmesh behind the MacGrid[®] WG geogrid wrapped face. The “L shaped” formwork supported the MacGrid[®] WG geogrid and a biodegradable Biomac[®] erosion protection mat, whilst the structural backfill was placed on the geogrids. The Biomac matting prevents backfill materials spilling through the apertures in the geogrid.



Upstream face: Constructed using a reusable rising formwork method so that upon completion of the reinforced soil slope, all elements would be geosynthetic and would not mechanically damage the landfill barrier system. The formwork temporarily supported the MacGrid[®] WG geogrid whilst the structural backfill was placed. The geogrid was then wrapped back upon the compacted structural backfill, enveloping and containing it. As the height of the embankment increased, the formwork from the lower levels was removed and reused at the higher levels.



The barrier system against the inner face of the new reinforced soil embankment is a bentonite geocomposite in conjunction with

an HDPE membrane.

This project emphasises the flexibility of Geosynthetics and their construction methodology to suit specific client and project requirements. The MacGrid® WG geogrid reinforced soil enabled the containment embankments to be constructed with steeper face angles than unreinforced soil, thereby reducing the footprint of the structure and providing increased landfill capacity. The use of a geosynthetic liner package further increased storage capacity compared to a traditional mineral barrier layer.

Geosynthetic technology and advanced design techniques are increasingly being used to enhance landfill performance. Not only in the provision of impermeable linings, containment embankments and drainage systems, but also to reinforce the waste itself through the use of high resistance, self-draining geogrids such as Paradrain®. These solutions save landfill owners and operators money by increasing capacity, whilst providing the reassurance of long-term performance.

For more information please contact: Matt Showan, International Marketing Manager,
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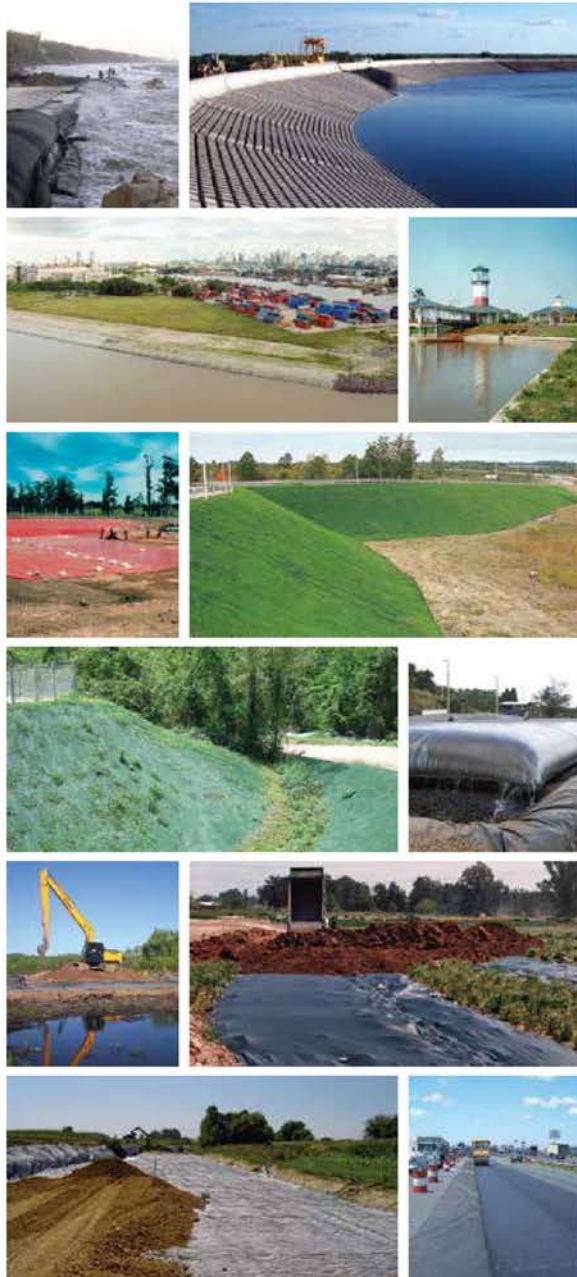
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In 2013, we had revenues of over €120M from Geosynthetics alone, positioning us among the leaders in the civil and geotechnical engineering, non-commodity geosynthetic market.

Maccaferri now has 32 factories, 70 subsidiaries and operations in over 100 countries. This expertise and manufacturing footprint enables us to support clients locally, yet provide global technical experience and capacity when needed.

Good quality products is one component of our success. By offering a vertically integrated complete package from engineering design support to on-site services, we provide tailored solutions to our clients problems, reducing their risk, cost and environmental footprint. We also have dedicated design software across our solution portfolio.

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The International Geosynthetics Society was formed with the following objectives:

- to collect, evaluate, and disseminate knowledge on all matters relevant to geotextiles, geomembranes, related products, and associated technologies;
- to improve communication and understanding regarding geotextiles, geomembranes, related products, and associated technologies, as well as their applications;
- to promote advancement of the state of the art of geotextiles, geomembranes, related products, and associated technologies; and
- to encourage, through its Members, the harmonization of test methods, and equipment and criteria for geotextiles, geomembranes, related products, and associated technologies.

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First, to contribute to the development of our profession.

By becoming an IGS Member you can:

- help support the aims of the IGS, especially the development of geotextiles, geomembranes, related products, and associated technologies;
- contribute to the advancement of the art and science of geotextiles, geomembranes, related products, and their applications;
- provide a forum for designers, manufacturers, and users, where new ideas can be exchanged and contacts improved; and
- become increasingly informed, involved, and influential in the field of geotextiles, geomembranes, related products, and associated technologies.

Second, to enjoy the benefits.

The following benefits are now available to all IGS Members:

- the online IGS Membership Directory, updated in real time;
- the newsletter, IGS News, published three times per year;
- free electronic issues of Geosynthetics International and Geotextiles & Geomembranes;
- 19 IGS Mini Lecture Series are available online;
- information on test methods and standards;
- discount rates on the purchase of any future documents published by the IGS and on the registration cost of all international, regional, or national conferences organized by or under IGS auspices;
- preferential treatment at conferences organized by or under the auspices of the IGS; and
- the possibility of being granted an IGS award.

Please check whether there is a local IGS Chapter in your country (list at page 33)!
Otherwise please use the online form at <http://www.geosyntheticssociety.org>
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IGS Membership Application

Membership of the Society is open to Individuals or Corporations "...engaged in, or associated with, the research, development, teaching, design, manufacture or use of geotextiles, geomembranes and related products or systems and their applications, or otherwise interested in such matters." The annual fee for membership is (US) \$45 for Individual Members and (US) \$1000 for Corporate Members. Individuals or Corporations who voluntarily contribute a minimum of (US) \$200 annually to the Society, in excess of

their membership dues, will be mentioned in the IGS Membership Directory in a separate list as benefactors.

Send this completed form to:

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Calendar of Events

| Event | Location | Date | E-Mail, Website |
|---|----------------------------------|-------------------------|--|
| TC204 ISSMGE 8 th International Symposium on "Geotechnical Aspects of Underground Construction in Soft Ground" - IS-Seoul 2014 | Seoul, Korea | 25 - 27 Aug 2014 | www.is-seoul2014.org csyoo@skku.edu |
| Conference on Advances in Civil Engineering for Sustainable Development | Nakhon Ratchasima, Thailand | 27 - 29 Aug 2014 | natthaya@sut.ac.th http://acesd.sut.ac.th/index.php |
| International Symposium on Geomechanics from Micro to Macro (TC105) | Cambridge, United Kingdom | 01 - 03 Sep 2014 | ks207@cam.ac.uk |
| XV Danube-European Conference on Geotechnical Engineering | Vienna, Austria | 09 - 11 Sep 2014 | igb@tuwien.ac.at www.decge2014.at |
| COBRAMSEG 2014 | Goiania, GO, Brazil | 09 - 13 Sep 2014 | www.qeeventos.com.br/qeeventos/site/cobramseg-2014-en.aspx |
| MECC14: 7 th MID-EUROPEAN CLAY CONFERENCE | Dresden, Germany | 16 - 19 Sep 2014 | www.mecc2014.de |
| 10th International Conference on Geosynthetics (10ICG) | Berlin, Germany | 21 – 25 Sep 2014 | g.braeu@bv.tum.de www.10icg-berlin.com |
| 33rd Baugrundtagung with Exhibition „Geotechnik“ | Berlin, Germany | 23 – 26 Sep 2014 | www.dggt.de |
| 2 nd Eastern European Tunneling Conference | Athen, Greece | 28 Sep. – 01 Oct 2014 | www.eetc2014athens.org |
| 2014-ISRMS International Symposium - ARMS 8 | Sapporo, Japan | 14 -16 Oct 2014 | www.rocknet-japan.org/ARMS8 |
| International Seminar “Geosynthetics India 2014”, and a Workshop on “Design of Geosynthetic Barrier” | New Delhi, India | 15 - 17 Oct 2014 | uday@cbip.org www.cbip.org |
| XIV Colombian Geotechnical Conference- XIVCGC and IV South American Young Geotechnical Engineers Conference -IVCSIGJ | Bogota, BOGOTA D.C., Colombia | 15 - 17 Oct 2014 | scg1@etb.net.co ; scg1@colomsat.net.co www.scg.org.co |
| XXVII Italian Conference on Geosynthetics | Bologna, Italy | 22 Oct 2014 | agi@associazionegeotecnica.it |
| Korea Geosynthetics Society(KGSS), Fall Conference | Chonbuk, Korea | Nov 2014???? | kgss-adm@kgss.or.kr / www.kgss.or.kr |
| 7th International Congress on Environmental Geotechnics | Melbourne, Australia | 10 – 14 Nov 2014 | 7iceq2014@wsm.com.au www.7iceq2014.com |
| GEMATE 2014: Fourth International Conference on Geotechnique, Construction Materials + Environment | Brisbane, Australia | 19 - 21 Nov 2014 | www.geomate.org |
| XXVII National Meeting of Geotechnical Engineering | Puerto Vallarta, Jalisco, Mexico | 19 - 21 Nov 2014 | smmsgerencia@prodigy.net.mx www.smig.org.mx/en/rnig-en |
| Geohazards 2014 International Symposium on Geohazards: Science, Engineering and Management | Kathmandu, Nepal | 20 - 21 Nov 2014 | netra@ehime-u.ac.jp www.ngeotechs.org/ngs/index.php/geohazards-2014 |
| VIII Chilean Congress in Geotechnical Engineering | Santiago, Chile | 26 - 28 Nov 2014 | cledezma@ing.puc.cl www.sochige2014.cl |
| 7 th International Conference on Scour and Erosion (ICSE-7) | Perth, Western Australia | 02 – 04 Dec 2014 | iang.cheng@uwa.edu.au www.2014icse.com/index.html |
| 6IGS Chennai 2015: Sixth International Geotechnical Symposium on Disaster Mitigation | Madras, Chennai, India | 21 - 23 Jan 2015 | robinson@iitm.ac.in www.igschennai.in/6igschennai2015 |
| 2015 Geosynthetics Conference - Co-locating with IECA's Environmental Connection 2015 | Portland, OR, USA | 15 – 18 Feb 2015 | http://geosyntheticsconference.com |

| Event | Location | Date | E-Mail, Website |
|---|-------------------------------------|---------------------------|--|
| 12 th Australia and New Zealand Conference on Geomechanics–The Changing Face of the Earth: Geo-Processes & Human Accelerations | Wellington, New Zealand | 22 - 25 Feb 2015 | secretary@nzgs.org |
| GeosPeru 3rd National Geosynthetics Congress | Lima, Peru | 04 - 06 Mar 2015 | difusion@geosperu.com www.geosperu.com |
| 10th Rencontres Géosynthétiques | La Rochelle, France | 24 - 26 March 2015 | www.rencontresgeosynthetiques.org |
| FS-KGEO 2015 | Munich, Germany | 26 March 2015 | g.braeu@bv.tum.de www.gb.bv.tum.de/fskgeo |
| XVI African Regional Conference on Soil Mechanics and Geotechnical Engineering- Innovative Geotechnics for Africa | Hammamet, Tunisia | 27 - 30 April 2015 | organisation@cramsg2015.org www.16cramsg.org |
| ISP7 - PRESSIO 2015 | Hammamet, Tunisia | 01 - 02 May 2015 | sp7_organisation@cramsg2015.org www.cramsg2015.org/isp7-pressio2015/?lang=en |
| ISFOG 2015 | Oslo, Norway | 10 - 12 Jun 2015 | isfog2015@ngi.no www.isfog2015.no |
| 3 rd International Conference on the Flat Dilatometer DMT'15 | Rome, Italy | 15 - 17 Jun 2015 | simona@marchetti-dmt.it www.dmt15.com |
| XVI European Conference on Soil Mechanics and Geotechnical Engineering | Edinburgh, Scotland, United Kingdom | 13 - 17 Sep 2015 | derek_smith@coffey.com www.xvi-ecsmge-2015.org.uk |
| Workshop on Volcanic Rocks & Soils | Isle of Ischia, Italy | 24 - 25 Sep 2015 | agi@associazionegeotecnica.it www.associazionegeotecnica.it |
| Geosintec 2 2 nd Spanish Conference on Geosynthetics | Madrid, Spain | 7 - 8 Oct 2015 | Pedro.abad@igs-espana.com Beatriz.Mateo@igs-espana.com |
| 6 th International Conference on Earthquake Geotechnical Engineering | Christchurch, New Zealand | 02 - 04 Nov 2015 | www.6ICEGE.com |
| The 15th Asian Regional Conference on Soil Mechanics and Geotechnical Engineering - New Innovations and Sustainability | Fukuoka, Kyushu, Japan | 09 - 13 Nov 2015 | 15tharc@kumamoto-u.a.c.jp www.jgskyushu.net/uploads/15ARC/ |
| Sixth International Symposium on Deformation - Characteristics of Geomaterials | Buenos Aires, Argentina | 15 - 18 Nov 2015 | http://saig.org.ar/ISDCG2015 |
| 15 th Pan-American Conference on Soil Mechanics and Geotechnical Engineering | Buenos Aires, Argentina | 15 - 18 Nov 2015 | presidente@saig.org.ar www.panam2015.com.ar |
| NGM 2016, The Nordic Geotechnical Meeting | Reykjavik, Iceland | 25 - 28 May 2016 | has@vegagerdin.is www.ngm2016.com |
| 3rd PanAmerican Regional Conference on Geosynthetics | Miami South Beach, USA | 11 - 14 Apr 2016 | NAGSDirector05@gmail.com epiggs@minervatri.com |
| 3rd ICTG International Conference on Transportation Geotechnics | Guimaraes, Portugal | 04 - 07 Sep 2016 | agc@civil.uminho.pt www.webforum.com/tc3 |
| EuroGeo 6 – European Regional Conference on Geosynthetics | Istanbul, Turkey | 25 – 29 Sep 2016 | eguler@boun.edu.tr |
| 6th Asian Regional Conference on Geosynthetics | New Delhi, India | 28 - 11 Nov 2016 | uday@cbip.org |
| 11th International Conference on Geosynthetics (11ICG) | Seoul South Korea | 16 - 20 Sep 2018 | cyyoo@skku.edu |

Note:

The conference announcements are shown with different graphics due to their priority for IGS:

| | | |
|-----------------------|--|---|
| IGS Conference | Conference organized under the auspices of the IGS | Conference under the auspices or with the support of an IGS Chapter |
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GERMANY



21 to 25 SEPT 2014 BERLIN

10

10th International Conference on Geosynthetics

www.10icg-berlin.com



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10 ICG will be held in connection with the 33rd Baugrundtagung (German Soil Mechanics Conference) of DGGT (23 to 26 Sep. 2014)

VISIT

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10ICG Conference Themes

- Green Engineering, Sustainability and Durability
- Use of Geosynthetics for Renewable Energy
- Mining, Waste Management, Contaminated Sites and Environmental Protection
- Roads, Railways and Transportation Applications
- Reinforcement in Walls, Slopes, Embankments and Base Courses
- Flood Control, Levee and Canals, Dams, Reservoirs and other Hydraulic Applications
- Drainage and Filtration with Geosynthetics
- Geomembrane and Geosynthetic Clay Liner Barrier Systems
- Case Histories and Innovative Uses of Geosynthetics
- Quality Control, Quality Assurance and Accreditation
- On-site Installation Technologies and Monitoring Programs
- Soil-Geosynthetic Interaction and Large-Scale Performance Testing
- Design Approaches
- Regulations and Recommendations
- New Geosynthetic Products

More than 2,000 participants and 100 exhibitors for both events, 500 abstracts, 7 keynotes and several training lectures.