

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

The Technical Committees of the IGS



Jorge Zornberg

Dear IGS member,

exciting new IGS technical initiatives are looming. This is because in addition to the many technical activities of the IGS Chapters, IGS Conferences, and IGS Journals, our membership at large will benefit from the added initiatives of our **new IGS Technical Committees (TCs)**. I believe that the activities of our new Technical Committees will serve not only as a catalyst for activities that are not being currently conducted under the IGS umbrella, but also as a forum in order to provide continuity for those technical activities that have long been a part of our IGS portfolio.

The creation of the IGS TCs fits well within our strategic goal of capitalizing on the existing success of our society while improving communications. Specifically, I believe that the new TCs will aptly serve our strategic goal of improving communication among members interested in specific technical issues. We are proud of the high level of technical excellence that has been regularly offered in our conferences, short courses, and technical journals. However, the continuity of ad hoc technical groups formed in these venues has often been constrained by distance and time. The IGS strategy is to foster these technical interest groups under the newly formed TCs, just as IGS Members currently affiliate into geographically organized chapters. Members can now affiliate into topically organized TCs.

The IGS Council has recently compiled a guidance document for the operation of TCs (see related article by Council Member Neil Dixon in page 4 of this issue of IGS News). Immediately after completion of this

guidance document, proposals for the formation of three IGS TCs were submitted to the IGS Council. Accordingly, the first three TCs of the IGS were approved in the recent IGS Council Meeting held in Guarujá in May 2010. Leaders of our geosynthetic industry have been actively planning for the initial steps of the TCs on "Reinforcement," "Barrier Systems," and "Filtration." Participation in these TCs is open to the IGS Membership at large (see related articles by Council Members Otani, Palmeira and Bouazza starting in page 6 of this issue of IGS News). Additional IGS TCs are expected to continue to be created in the near future.

The IGS TCs are expected to add significant value to the IGS Membership by providing continued forum for activities such as:

- Integration between TC efforts and those of organizers of upcoming IGS Conferences in order to organize technical sessions,
- Collaboration with sister international organizations to produce joint technical documents
- Collaborative work with IGS Chapters to offer short courses and other educational activities
- Engagement of young professionals who will then stimulate the use of geosynthetics among the next generation of engineers
- Organization of conferences or series of conferences focused on specialty topics
- Creation of new communication channels among IGS Members through innovative approaches such as online forums
- Promotion of the IGS and the geosynthetics industry at large in events and venues where geosynthetics have traditionally been underrepresented
- Contribution to our IGS Journals by working with our journal editors on special thematic issues

Figure 1 illustrates how the new **IGS TCs fit within the context of the IGS Operating Units**. The figure also shows the officers for each of the current IGS TCs. Since

the creation of the TCs in May 2010, the TC officers have been working hard on completing the organizational aspects of the committees, and they are now ready to accept members. Please refer to the call for members within this issue of IGS News. The IGS TC on Soil Reinforcement builds on the past successful activities of the former TC9 of the International Society of Soil Mechanics and Geotechnical Engineering (ISSMGE). While ISSMGE served as an umbrella organization in the past, most of its former activities, including the very successful series of IS-Kyushu Conferences on Soil Reinforcement, had been organized in collaboration with the IGS (1988, 1992, 1996, 2001, and 2007 in Fukuoka, Japan). It will be now up to the Reinforcement IGS TC to continue and enhance the past series of successful activities. The IGS TC on Filtration also builds on the success of past activities. Specifically, this Committee follows the initiative of the IGS pioneers who organized the successful series of Geofilters Conferences (1992 in Karlsruhe, Germany; 1996 in Montreal, Canada; 2000 in Warsaw, Poland; 2004 in Cape Town, South Africa). In this case, the Filtration IGS TC may continue the previous effort by conducting activities not only towards new technical developments but also towards implementation of geosynthetic filters in fields such as earth dams, where unfounded skepticism has prevented the widespread use of geosynthetics. Finally, the IGS TC on Barrier Systems will take on centralizing a number of activities in the area of waste and liquid containment. The continuity of activities in this important field has been achieved in the past through organization of IGS Conferences as well as through collaborative activities with sister societies (e.g. the series of International Conferences on Environmental Geotechnics, the series of Sardinia Conferences, as well as ISO, CEN and ASTM activities). The Barrier Systems TC will now be able to provide continuity to activities involving infiltration barriers under the IGS umbrella.

In summary, we expect significant breakthroughs with the new technical arms offered by the IGS Technical Committees. If you are interested in volunteering your time in new, technically rewarding activities, I encourage you to consider joining one of the new TCs of our Society.



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IGS President

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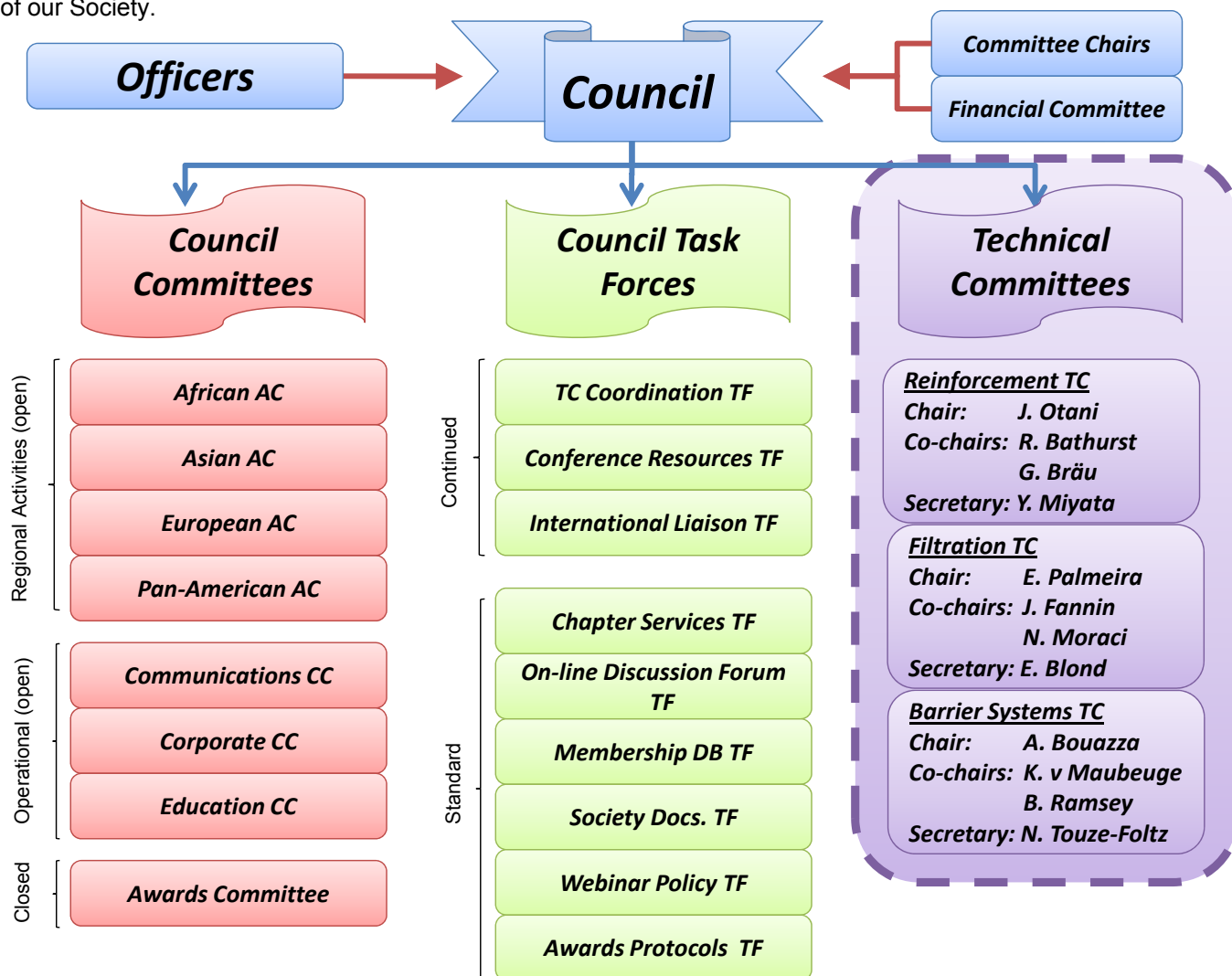


Figure 1. The IGS Technical Committees within the context of the IGS Operating Units.

Reports of IGS Meetings, Activities and Documents

Establishment and Call for Technical Committees



Neil Dixon

The IGS is dedicated to the scientific and engineering development of geosynthetics and associated technologies. In support of this aim, the IGS Council wishes to encourage and facilitate the formation and operation of Technical Committees (TCs) and the wide dissemination of their outputs. At the 9th International Conference on Geosynthetics, Brazil, Council agreed the formation of

the first three TCs. These are in the areas of: Filtration, Barriers and Reinforcement. A summary of the objectives, terms of references and planned activities of each of the TC is provided below and Members are encouraged to engage with the TCs and to consider joining a TC in order to be actively involved in their development and production of outputs. In particular, IGS Members

are asked to encourage and support younger colleagues to get involved in order to develop the next generation of practitioners and researchers who will provide technical leadership in the future around the world.

Expressions of interest/proposals for the establishment of new TCs are welcomed from both Members and Chapters. These should be sent to Professor Neil Dixon, Chairman of the Technical Committee Coordination Task Force

(n.dixon@lboro.ac.uk). The rules of operation for TCs are described below. Any proposal for a new TC should address the key membership and operational conditions established through these rules.

Rules for Establishment and Operation of Technical Committees

Topic of a TC

The topic of a TC shall be clearly defined. It must be focused on addressing specific and current technical issues that can only be progressed and outputs widely disseminated through the collaboration of an international group of researchers and practitioners. In order to minimize overlap among TC efforts, the topic shall be centered on properties and/or functions of geosynthetics (e.g. filtration, reinforcement, durability, barrier etc), including interaction between geosynthetics and with other materials, and/or relating to issues of sustainability (e.g. water conservation, mitigation and adaptation strategies for reducing the impacts of climate change). This is because topics that are application specific (e.g. railways, highways, landfills etc) may overlap with property or function-specific topics.

TC operation

TCs will operate by facilitating communication both between members and with the wider geosynthetics community. This will be achieved via email exchanges, webinars, web forums and through meetings and workshops normally organized to coincide with IGS sponsored conferences, symposia and workshops. It is expected that such meetings will enable wide international participation in TC activities and it will also increase participation at IGS events, which should be viewed as providing an opportunity for dissemination of TC outputs.

TCs are encouraged to engage with organizers of international events held under the auspices of the IGS at an early stage, in order to propose and organize technical sessions. Specifically, it is expected that TCs will be involved with the IGS International and Regional

Conferences. In addition, TCs can propose to organize symposia, workshops or short courses under the auspices of the IGS on the condition that they do not interfere with other events organized under the auspices of the IGS.

TCs operate independently of other IGS Committees. However, TCs are expected to interact with Council initiatives on technical, communication and education activities, and with Regional Activities Committees in organization of technical meetings (e.g. specific sessions in Regional Conferences). Council has formed a Technical Committee Coordination Task Force to encourage and support the formation of new TCs and to prepare an annual report on each TC to Council. Each TC will be allocated a Council Member to act as a liaison officer. They will be included in all TC communications and they will be the point of contact with the Technical Committee Coordination Task Force, and hence Council, for any issues relating to TC operation.

It should be noted that no specific financial support is provided from the IGS for activities of TCs. The approved IGS TCs will be numbered chronologically based on the day of the approval. Professor Neil Dixon, Chairman of the Technical Committee Coordination Task Force (n.dixon@lboro.ac.uk) can be contacted to provide advice on proposed TCs, including topics, terms of reference and membership.

Production and reporting of outputs

It is expected that TCs will report the outcome of activities through production of state-of-the-art reports, proceedings of workshops and symposia, guidance documents and position papers. The TC shall submit to the Chairman of the Technical Committee Coordination

Task Force all documents produced so that they can be considered at the first IGS Council Meeting following the event. In addition, each TC shall submit an annual report on their activities to the Task Force Chair. They should also periodically (i.e. at least once every two years) report their activities in IGS News. A summary of all documents, and preferably the full report, shall be posted on the IGS webpage so that all IGS Members can benefit from the TC outputs.

Timescale of activities

The term of operation for a TC shall normally be four years. Shorter terms can be proposed where there is a clearly defined output by an agreed deadline. TCs will be reviewed by the Technical Committee Coordination Task Force, and hence Council, after 4 years. A TC can start its activities upon the approval of the proposal by the Council.

Performance of TCs will be reviewed by the Council annually. In preparation for this review, the Technical Committee Coordination Task Force will assess reported activities and outputs against the original proposal. After four years the TC can be renewed if a request is received by Council, performance has been satisfactory and a plan for the next term is agreed.

How to form a TC

Any group of IGS Members can propose to organize an IGS TC. The proposal shall be made to the Chairman of the Technical Committee Coordination Task Force and must include the following information.

- *Name*: The name of IGS TC should clearly reflect the area and scope of the activities.
- *Aim, objectives and activities*: These should clearly define the

purpose of the TC, including the terms of reference, topic, scope, objectives, mode of operation, type of activities, anticipated outcomes and timescale of activities.

- **Membership:** Each IGS TC shall have a named chairperson and a secretary and both shall be IGS Members. (Note that the three TCs established to date have three co-chairs, with one allocated as the lead, to ensure subject coverage and wide geographical representation). A list of possible group members shall be submitted to the Chairman of the Technical Committee Coordination Task Force and a minimum of two thirds must be IGS Members. TCs

are encouraged to recruit young scientists and engineers as members. It is suggested that more than a third of the TC should be younger than 36. This requirement is designed to encourage and nurture young researchers and practitioners, and hence to develop the future technical leaders in geosynthetics. Any member of the IGS can request to join any IGS TC without restriction. Members of TC that do not take an active part in activities can be removed from membership. There is no specific restriction on the number of TC members from each chapter/country, however the TC members should be geo-

graphically distributed so that the TC does not become "an exclusive club" in terms of geography, theory or practice.

- **Approval:** The Technical Committee Coordination Task Force will review the proposal and take it to the next Council Meeting for approval as required. If urgent approval is required then Council approval by email may be requested.

Reported by

Neil Dixon, IGS Council Member and Chairman of the Technical Committee Coordination Task Force

IGS Technical Committee on Reinforcement



Jun Otani

Objectives

The objective of TC Soil Reinforcement is to focus on the discussion of current and future of soil reinforcement technique with its design method and to enlarge this community by finding younger researchers/engineers and also collaborating with any other geotechnical researchers and engineers who are currently not IGS Members. Internet communication will be mainly used among TC members, although we have meetings whenever related conferences and symposia are held.

Terms of references

1. to continue enhancement in developing and spreading knowledge and practice on soil reinforcement;
2. to promote research and development on soil reinforcement;
3. to develop new generation who are young engineers / researchers for soil reinforcement activities; and
4. to give a strong support to the

next ICG in Berlin 2014.

Planned activities (tentative)

1. to establish a data base for previous technical papers related to soil reinforcement for the purpose of clarifying what is known and what is unknown;
2. to have a periodic meetings to exchange current topics on soil reinforcement, whenever the related conferences and symposia are held;
3. to summarize worldwide design procedures by conducting design competition on one typical reinforced structure

Examples

1. TC Soil Reinforcement is going to establish "International Symposium on soil reinforcement" under this TC and the first this symposium will be held in the year of 2012.
2. TC Soil Reinforcement is going to develop the database for previous research papers on soil reinforcement to make clear what is known and also what is unknown. This activity will be done by internet communication with all the TC members.

Chairmen and Call for Members

The TC is currently led by the following chairmen and core mem-

bers:

Chairman: J.Otani

Co-Chairmen: Prof. R. Bathurst (Canada) and G. Braeu (Germany)

Core members: 4 to 5 (under consideration)

Secretary: Prof. Y.Miyata (Japan)

And also in order to enhance TC activities, we will have a Japanese supporting committee under Japan Chapter of IGS in which Prof. Miyata is the chairman.

As far as the membership is concerned, we would like to invite you for two categories:

1) individual members

2) members recommended by chapters

As assigned by the IGS Council, each TC should have at least one third members with the age of younger than 36. Under this circumstance, the members recommended by each chapter will be expected within this category.

Reported by

J. Otani, IGS Council Member and Chair of IGS TC on Reinforcement

IGS Technical Committee on Filtration



**Ennio
Palmeira**

Objectives

Geotextiles have been used in filtration and drainage works very successfully for decades. Nevertheless, in several instances it has been identified that they were not used properly or were used without attending some basic design, specification and construction principles. Even under such adverse conditions, few failures of geotextile filters have been reported in the literature, although this by no means should be viewed as encouragement for careless uses of such materials as filters. In this context, the IGS Technical Committee on Filtration aims to promote and develop the use and knowledge on geosyn-

thetics in filtration.

The objectives of the committee are:

- To promote a sounder and scientifically based use of geotextiles in filtration.
- To promote the dissemination and expansion of the use of geotextile filters in geotechnical and geoenvironmental works.
- To encourage and to provide assistance to the organization of national, regional and international scientific events on filtration.
- To encourage and to provide assistance to the organization of educational initiatives (training courses, training lectures, etc) and to produce educational material related to filtration.
- To interact with other IGS committees for the advance of the use of geotextile filters.
- To work in conjunction with IGS Chapters and/or related geotechnical and civil/environmental engineering societies or organisations to promote the dissemination and expansion of the use of

geotextile filters.

Chairmen and Call for Members

The committee is composed of members of the academia and of the geosynthetic industry and it is currently co-chaired by Prof. Ennio M. Palmeira (University of Brasilia, Brazil), Prof. R. Jonathan Fannin (University of British Columbia, Canada) and Prof. Nicola Moraci (University of Reggio Calabria, Italy). The Secretary of the Committee is Mr. Eric Blond (SAGEOS, Canada).

All IGS Members interested in taking part or being informed on the activities of the committee, please contact Prof. Ennio M. Palmeira (palmeira@unb.br) and deliver at least name, affiliation, position and e-mail address.

Reported by

E. Palmeira, Chair of IGS TC on Filtration

IGS Technical Committee on Barrier Systems



**Abdelmalek
Bouazza**

Objectives

The Technical Committee on Barrier Systems (TC-B) will be dedicated to the scientific and engineering development of geosynthetic barrier systems and associated technologies. It will provide a forum for active participation by the members of IGS and will promote the dissemination of knowledge, technology, research findings, design and construction methodologies related to geosynthetic barrier systems in geotechnical and geoenvironmental engineering.

Terms of references

- Assist with technical programs

and organise technical sessions of international and regional IGS Conferences within the TC subject area (i.e., EuroGeo2012, Geosynthetics Asia2012, GeoAmericas2012, IGC2014, GeoAfrica)

- Preparation of special issues in the TC subject area in Geosynthetics International and/or Geotextiles and Geomembranes
- Set up a task force to promote interaction with sister learned societies such as ISSMGE, FedIGS, ISWA, and others; with the view of organising joint publications, workshops, seminars and sessions, establishing collaboration and exchanging information
- Set up a task force to compile summary of regulations in various countries
- Organise a workshop on installation procedures and quality control
- Set up a task force to collect information from monitored projects

& dissemination

- Preparation of white papers on topics relevant to the members of IGS
- Interact with industry working in areas relate to barrier systems

Chairmen and Call for Members

The International Geosynthetics Society's (IGS) newly formed Technical Committee on Barrier Systems (TC-B) seeks active and fully committed participants from all of the Society's International Chapters. The TC-B aims to include two members, one of whom should be under the age of 36, from each IGS Chapter. Also, nominees and the Committee's membership should reflect the field's range of professions: academia, design engineering, manufacturing, regulators, research, etc.

The Technical Committee on Barrier Systems (TC-B) will be dedicated to the scientific and engineering development of geosynthetic barrier systems and associated

technologies. It will provide a forum for active participation by the members of IGS and will promote the dissemination of knowledge, technology, research findings, design and construction methodologies related to geosynthetic barrier systems in geotechnical and geoenvironmental engineering.

Activities may include but are not limited to: workshops with affiliated societies, white papers, technical session planning and organization, compiling summaries of regulations in various countries, recommenda-

tions for geosynthetic utilization in specific applications (e.g., mining, landfills), attracting young members to the committee, project and research monitoring, and conference and publication participation (see TC-B mission statement and terms of references).

The TC-B chair is Malek Bouazza, Australia (malek.bouazza@monash.edu). Co-chairs are Kent von Maubeuge, Germany (kvmaubeuge@naue.com) and Boyd Ramsey, USA (bramsey@gseworld.com). Secretary is Natha-

lie Touze-Foltz, France (nathalie.touze@cemagref.fr).

The first full membership meeting is planned to be held during the Geo-Frontiers 2011 conference in Dallas, Texas, 13-16 March 2011. Please contact any of the above if you want to contribute to this technical committee.

*Reported by
A. Bouazza, Chair of IGS TC on
Barrier Systems*

How to Access the IGS Journals On-Line



**Secretary:
Elizabeth
Peggs (USA)**

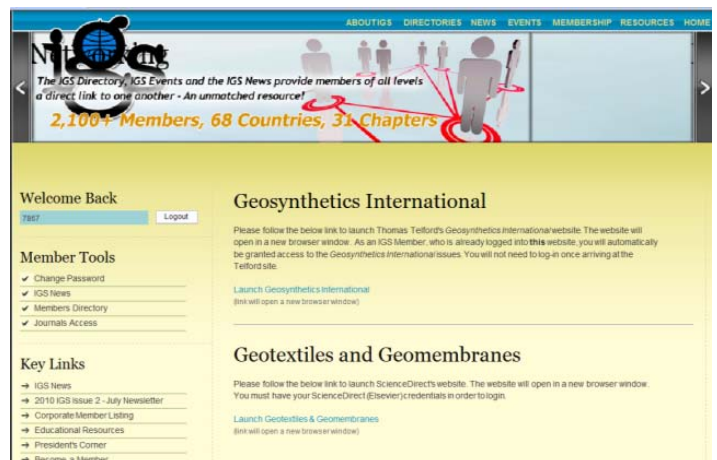
One of the significant benefits of IGS Membership is full access to both of the IGS Journals: **Geosynthetics International** and **Geotex-**

tiles & Geomembranes on-line. Our challenge is that we must access the two Journals using two very different systems managed by the two different Journal publishers. As such we have not been able to bring you, the IGS Member, a single system of delivery – this has in many cases made it difficult for our members to gain access to the Journals! We are however making progress in this regard – and we will not cease to work toward making the access more direct.

*Reported by
Elizabeth Peggs, IGS Secretary*

If you come away with one thing from this article please remember In order to gain access, as an IGS Member, to these journals you must first log-in to the IGS Web site and navigate to the Journal pages from within the IGS site.

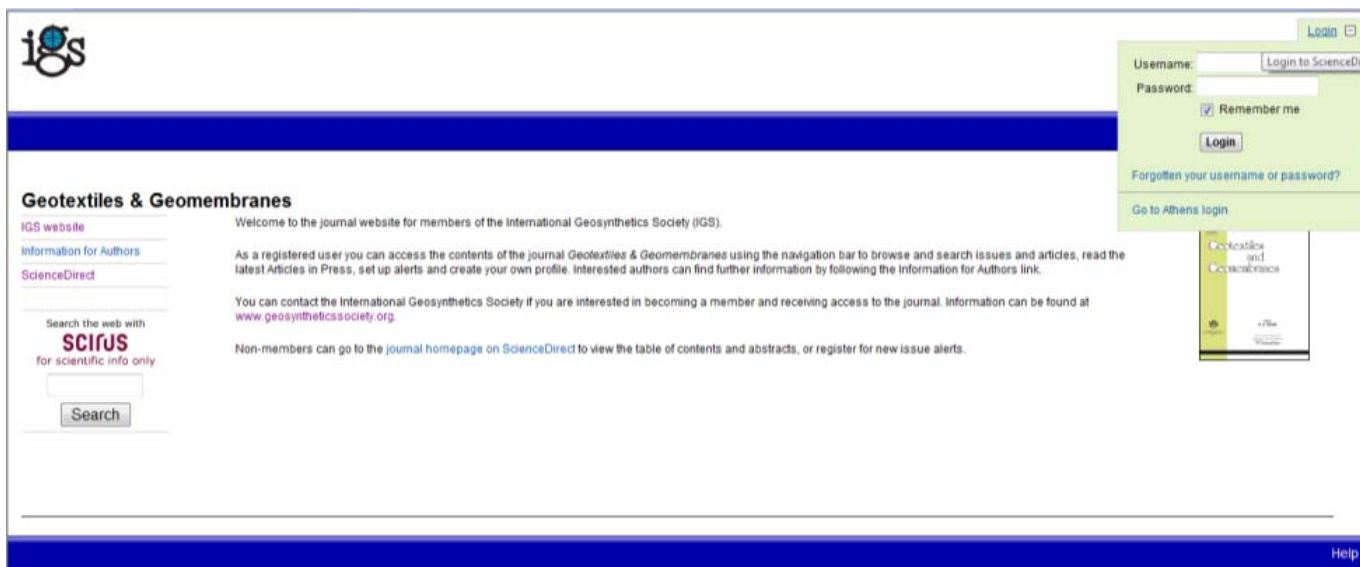
1. Log in to the IGS web site (geosyntheticssociety.org)
2. go to resources > journals >
3. Select the link near the middle of the page which says "for direct access to the journals click here"
4. Select the journal you wish to view by clicking on the appropriate "Launch Journal" link



If you are accessing **Geosynthetics International** (Telford) you will be logged in to the **ICE Virtual Library** at this step. Simply search for the paper of choice



If you are going to **Geotextiles & Geomembranes** you will be delivered to a special **IGS Member Log-In page** where you must log-in with your **Geotextiles & Geomembranes (G&G)** user-name and password.



NOTE: your IGS **G&G** log-in will not work from the standard Elsevier/Science Direct pages - your IGS G&G log-in will only from the page shown to the left - you may however book mark this page for direct access later.

Mercer Lecture Series – New Website is open

The Mercer Lecture is a biennial lecture sponsored by Tensar International, with the endorsement of the International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE) and the International Geosynthetics Society (IGS).

The series was established in 1992 to provide individuals who have made significant technical contributions to the advancement of geosynthetics the opportunity to present their work at international conferences around the world. They are held in honor of the late Dr Brian Mercer, the inventor of geogrids and a strong advocate for innovation, research and development.

The key objective of the lecture is to help promote the co-operation of information exchange between the geotechnical engineering profession and the geosynthetics industry by giving an eminent practitioner the opportunity to undertake a lecture tour on the subject of Geosynthetics in Geotechnical Engineering.

A new webpage has been established (www.mercerlecture.com) to promote the Mercer Lecture Series. The webpage shows the upcoming events as well as is giving proceedings of the past lectures for free download.

The previous mercer lectures were: [Soil-geosynthetic interaction: Modelling and Analysis](#) (PDF 517kb)

Ennio M. Palmeira
2007 - 2008

[Contribution of Geosynthetics to the Geotechnical Aspects of Waste Containment](#) (PDF 2.1mb)

J.P.Giroud
2005 – 2006

[Reinforcement Loads in Geosynthetic walls and the case for a new working stress design method](#) (PDF 651kb)

Richard J. Bathurst, Tony Allen, Dave Walters
2003

[The Behaviour of Geosynthetic Reinforced Soil Systems in Various Geotechnical Applications](#) (PDF 1.35mb)

A. McGown

2000

[Geosynthetic-Reinforced Soil Retaining Walls as Important Permanent Structures](#) (PDF 3.01mb)

F.Tatsuoka, M, T. Uchimura and J. Koseki

1996 – 1997

[Geosynthetics and Environmental Engineering](#) (PDF 3.85mb)

J.-P. Gourc

1994

[Remaining Technical Barriers to Obtaining General Acceptance to Geosynthetics](#) (PDF 1.34mb)

Robert M. Koerner, Y. Hsuan & Arthur E. Lord, Jr
1992

The recent Mercer Lecture has been presented by Professor Junichi Koseki at the 6th International Congress on Environmental Geotechnics (6th ICEG), New Delhi, 8th –

12th November 2010 and will next be given at the 15th African Regional Conference on Soil Mechanics & Geotechnical Engineering (15th ARC), Maputo - Mozambique, 18th – 21st July 2011

Reported by

Michelle Lee, Tensar Corp, UK

IGS Success Stories

The number of technical and educational activities conducted every year by different constituents within the IGS family is, simply, amazing. However, we are often not fully aware of the good job conducted worldwide by our fellow members towards the advancement of geosynthetics. In an effort to improve such communication, the IGS Council has initiated a series of presentations, the "IGS Success Stories" series, which aims at providing motivation and examples to

Council Committees, Task Forces, and Technical Committees. Three "IGS Success Stories" were presented during our recent IGS Council Meeting held in Guarujá in May 2010: one on a successful conference organized by our UK Chapter, a second on a successful educational series organized by our Peruvian Chapter, and a third on a successful chapter newsletter organized by our South African Chapter. Two of these three stories are summarized in this article (the third

will follow next issue). While these three activities constitute just a small fraction of the many successful initiatives of the IGS, they illustrate the creativity, dedication, and competence of our members while serving the IGS.

Reported by

Jorge G. Zornberg, IGS President

IGS Success Story 1: The Careful Planning of the EuroGeo4 Conference by the IGS UK Chapter



Neil Dixon

A real strength of the IGS is integration of commercial and technical activities at both national and international events. IGS Conferences are unique in the scale of commercial participation that complements the technical programme. Corporate Members are a critical part of an event through participation in the exhibition. This helps to attract delegates and contributes much needed revenue that often underpins financial success. However, there is a danger that the exhibition is visited only by delegates attending the IGS scientific programme and that the exhibitors gain little benefit from talking to these partici-

pants, many of whom are regular attendees at such events.

During planning for EuroGeo4 held in Edinburgh 2008, it became clear that there was concern among a significant number of the traditional exhibitors at EuroGeo Conferences. Many stated that they would not be exhibiting at the conference as they were disappointed with the access that was traditionally provided to potential new customers. The organising committee for EuroGeo4 led by Derek Smith responded to this situation by developing a strategy aimed at increasing the number of new visitors to the exhibition, and hence to persuade manufacturers to re-consider non-participation. As EuroGeo4 was to be the first international conference on geosynthetics held in the UK, it was decided to run a series of training courses in parallel with the conference technical programme. The training courses were designed for those

engineers in the UK who required introductory and mid-level training on geosynthetic functions and applications. It was envisaged that the target audience for these courses were unlikely to attend EuroGeo4 as full delegates to the technical programme. A key aspect of each training course was access to the exhibition hall during specifically timetabled periods, enabling participants to meet and discuss geosynthetic materials and applications with the exhibitors. This significantly enhanced the training course experience of the delegates and at the same time provided the exhibitors with access to new potential customers. The strategy was communicated to the Corporate Members as part of the publicity for EuroGeo4 and this helped sell out the exhibition hall weeks before the conference, leading to the need to provide additional space.

The training courses attracted in the order of 90 additional participants to

EuroGeo4, and hence to the exhibition. The feedback was positive both from the delegates who found the opportunity to talk to the exhibi-

tors a significant benefit, and the exhibitors who appreciated the exposure to new faces.

*Reported by
Neil Dixon, IGS Council Member
and Chairman of IGS UK Chapter*

IGS Success Story 2: The Creative Educational Initiative by IGS Peruvian Chapter



Germán Vivar

The IGS Peruvian Chapter (IGS-Perú) was founded in January, 2001, and one of its first initiatives was to create six Committees: Geomembranes, Geotextiles, Geogrids, Geocomposites, Educational, and Bulletin. The Educational Committee was directed by Germán Vivar, President and founder of the IGS-Perú. One of the first courses organized by the Educational Committee was the *1st Course on Geosynthetics for Geotechnical Engineering Professors* which had participation from 17 Peruvian universities. The course was conducted over two days, May 18-19, 2002, in La Hacienda Best Western Hotel in Miraflores-Lima. It was sponsored by Maccaferri de Perú S.A.C., an Organizational Member of the Peruvian Chapter, who covered all expenses of Eng. Jaime Durán (Brazil) and 17 other invited professors (Picture 1). The objective of the course was to disseminate knowledge of geosynthetics to related disciplines.

Between November 28th and 29th, 2002, the Educational Committee developed the *1st Specialization Course on Geosynthetics: Geosynthetics Overview*, which was held in the "Centro de Convenciones SENCICO" (Picture 2). The course was sponsored by its Organizational Members (Maccaferri, SL, PAVCO, TDM and CIDELSA) who brought specialists from Chile (Eng. Mauricio Ossa), Colombia (Eng. Enrique Alvarez), and Perú (Engs. Augusto Alza and Néstor Sifuentes). The curriculum of this course was based on the first part

of Robert M. Koerner's book: *Designing with Geosynthetics*, the "Geosynthetics Overview" segment, translated (with copyright permission) into Spanish by members of the Educational Committee.

The *2nd Specialization Course on Geosynthetics: Designing with Geotextiles*, was held on May 30th and 31st, 2003, in the Auditorium of the National Engineers Society (Picture 3), and was based on the 2nd part of the Robert M. Koerner's book: *Designing with Geosynthetics*, the "Geotextiles" segment, translated (with copyright permission) into Spanish by members of the Peruvian chapter. It was sponsored by Organizational Members: AMANCO, TDM and GEOTECNIA & PAVIMENTOS. This course was dictated by Eng. Néstor Sifuentes from Perú and Eng. Javier Calderón from Colombia.

The *3rd Specialization Course on Geosynthetics:*



Picture 1. Former President of Peruvian Chapter, Germán Vivar and Former Treasure, Virgilio de la Piedra with participants at First Course on Geosynthetics for Geotechnical Engineering Professors in May, 2002.



Picture 2. Former President giving a present to Eng. Néstor Sifuentes, at 1st. *Specialization Course on Geosynthetics: Geosynthetics Overview*, held in November 2002.



Picture 3. Eng. Néstor Sifuentes's presentation at 2nd *Specialization Course on Geosynthetics: Designing with Geotextiles* in May, 2003.



Picture 4. Participants at 3rd Specialization Course on Geosynthetics: *Designing with Geogrids and Geonets*, in September, 2003.

Designing with Geogrids and Geonets, was held on September 5th and 6th, 2003, in the Auditorium of the National Engineers Society (Picture 4), and was based on the 3th and 4th parts of the Robert M. Koerner's book: *Designing with Geosynthetics*, the "Geogrids and Geonets" segments, translated (with copyright permission) into Spanish by several members of the Peruvian chapter. It was sponsored by Organizational Members: TDM, Maccaferri, CIDELSA and GEOTECNIA & PAVIMENTOS. This course was dictated by Eng. Augusto Alza from Perú, Eng. Enrique Alvarez from México, Eng. Rodrigo Valencia from Colombia, Pablo Porri from Argentina, and Eng. Alexandre Texeira from Brasil.

The 4th Specialization Course on Geosynthetics: *Designing with Geomembranes*, was held on December 5th and 6th, 2003, in the Auditorium of the National Engineers Society (Picture 5), and was based on the 5th part of the Robert M. Koerner's book: *Designing with Geosynthetics*, the "Geomembrane" segment, translated (with copyright permission) into Spanish by several members of Peruvian chapter. It

was sponsored by Organizational Members: TDM, CIDELSA, AMANCO, SL, and GEOTECNIA & PAVIMENTOS. This course was dictated by Eng. Fred Rohe from the USA, Engs. Fernando Castillo and Mauricio Ossa from Chile, Eng. Scott Elfen from the USA, and Eng. Sean Currie from Perú. The 5th Specialization Course on Geosynthetics: *Designing with GCL, Geopipes, and Geocomposites*, was held on April 2nd and 3rd, 2004, in the Auditorium of the National Engineers Society (Picture 6), and was based on the 6th to 8th parts of the Robert M. Koerner's book: *Designing with Geosynthetics*, the "GCL, Geopipes, and Geocomposites" segments, translated (with copyright permission) into Spanish by several members of Peruvian chapter. It was sponsored by Organizational

Members: TDM, and GEOTECNIA & PAVIMENTOS, and by CETCO, EMIN, and DS. This course was dictated by Eng. Fernando Castillo from Chile, Eng. Alexandre Texeira from Brasil, Engs. Gerardo Freiberg and Néstor Sifuentes from Perú, and Eng. Ignacio Pérez from the USA.

Upon conclusion of these Specialization Courses, the Peruvian chapter completed the translation into Spanish of Robert Koerner's text book: *Designing with*



Picture 5. Eng. Sean Currie showing a practical case of geomembranes weld in 4th Specialization Course on Geosynthetics: *Designing with Geomembranes*, in December, 2003.

Geosynthetics, 4th edition. The translated book is now being used by students in Geosynthetics courses at the Catholic University and National University of Engineering in Peru.

Reported by
Germán Vivar, IGS Council Member



Picture 6. Participants at 5th Specialization Course on Geosynthetics: *Designing with GCL, Geopipes, and Geocomposites*, in April, 2004.

Conference Reports

9th International Conference on Geosynthetics – 9ICG Guarujá, Brazil, 23 - 27 May 2010



The final report of the 9ICG is available for download on ppt format from the 9ICG website. It may also be download from the same site a pdf reprint of the article published on the IGS News issued on July 2010, with general information of the 9ICG event.

Site in English:

<http://www.9icg-brazil2010.info/ingles/arquivos.html>

Site in Portuguese:

<http://www.9icg-brazil2010.info/portugues/arquivos.html>

It was a great opportunity to have so many people from the geosynthetics community in Brazil for the

9ICG. IGS Brasil and the 9ICG Organizing Committee congratulate all the participants and thank all the guests and friends that took part on such a nice event.

Reported by

André Estêvão Silva, IGS Brasil / 9ICG Treasurer

3rd International Symposium on Geosynthetic Clay Liners Würzburg, Germany, 15 - 16 September 2010

GBR-C 2k10

The Third International Conference of Geosynthetic Clay Liners, or GBR-C 2k10, was held on 15 and 16 September 2010 in Würzburg, Germany, the home of organizer SKZ. Chairman Helmut Zanzinger (SKZ) and Technical Committee members Nathalie Touze-Foltz (Cemagref) and Bob Koerner (GSI) selected 36 of the submitted papers for presentation in this very focused event. Previous GCL conferences were held in Nuremberg, Germany in 1994 and 2002.

Almost 100 registrants from 20 countries heard keynote papers from Kerry Rowe "Role of GCLs in Controlling Leakage Through Composite Liners", Patrick Fox "Internal and Interface Shear Strengths of Geosynthetic Clay Liners", and Craig Benson "Hydraulic Conductivity of Exhumed Geosynthetic Clay Liners From Composite Barriers" and other papers grouped into sessions on Bottom Lining Systems and Composite Liners, Unsaturated Bentonite, In-situ Behaviour of GCLs in Cover Lining Systems, Chemical Compatibility, Shear and Mechanical Behaviour of GCLs, Hydraulic Applications, and Regulations and Further Developments. The full program

can be seen at www.gbr-c-wuerzburg.com. Interestingly at least 14 GCL manufacturers from around the world were represented, among which 4 as exhibitors: Geomas (Turkey), Kaytech (South Africa), Naue (Germany) and Rawell (UK), and 10 as participants: Cetco Europe (UK and Poland), Eurobent (Poland), Geofabrics Australasia (Australia), GSE (USA), Huesker (Germany), Laviosa (Italy), Lentex (Poland), Ober Geossintéticos (Brazil), Terrafix (Canada) and Sinoma (China).

Some highlights from the presentations:

- Abbas El-Zein stating that the purpose of his contaminant transport modelling work "is not to predict practical performance" and the ensuing discussion.
- Kent von Maubeuge comparing the "green-ness" of GCLs and CCLs.
- Rick Thiel discussing loss of GCL overlaps under exposed

geomembranes and the use of heat tacking overlaps to prevent same.

- Georg Heerten's comments and questions after every presentation!
- Jozef Soltys' proposal to blend Halloysite nanoparticles with bentonite to minimize cation exchange.
- Ian Peggs' thoughts on whether laminated GCLs should be placed film-up or film-down.
- Kerry Rowe on significant (>30 mm) geomembrane wrinkles and the need to cover the geomembrane early in the morning or late in the afternoon.
- Craig Benson on the need for rapid hydration and avoiding sub-



Jorge Zornberg (IGS President), Nathalie Touze-Foltz (Technical Committee) and Helmut Zanzinger (Conference Chairman), from left



Conference attendees at day two at Fortress Marienberg

sequent dehydration. He showed an interesting video of preferential hydration along needle punched fibres.

- Pat Fox on the critical need to use site soils for direct shear testing and the need to select a meaningful shear displacement rate.
- Helmut Zanzinger discussed the effect of temperature on shear creep rupture tests and the need to use de-mineralized water to avoid ion exchange in order to keep the shear strength of the sodium bentonite in the GCL low during testing.
- Werner Müller used tap water for long-term shear testing and found shear strength to increase as ion exchange occurred and formed a bentonite/geotextile/NP fibre "composite".
- Sam Allen discussing GCLs as puncture protection for geomembranes and whether large puncture deformation or high puncture strength (or both) indicated "good"

puncture resistance. He showed the use of a 3D laser profilometer to evaluate puncture deformations.

- Michael Heibaum and Janne-Kristin Pries separately showed the success of lining canals without de-watering them. Full cation exchange occurs over 3 to 4 years.
- Ennio Palmiera added clay and sand to bentonite and found no effects at concentrations up to 50%.

Attendance remained good to the last paper – Peter Davies on the new South African NP GCL standard / specification.

On the social side, speakers enjoyed a pre-conference dinner in the Ratskeller, and all enjoyed Franconian wine tasting (seven of them – wines not people!) in the cellars of The (Bishop's) Residence, a world heritage site.

At the same time as the conference, location filming for the new

"Three Musketeers" movie was underway in the Fortress Marienberg, just outside the conference rooms. Transportation from car park to conference rooms was dictated by the shooting schedule – no car engines, slamming doors, conversations, etc. allowed as filming in "Paris" was going on. Conference chairman Zanzinger had dinner one night on the next table to Orlando Bloom, the Duke of Buckingham!

Many thanks to Irina Bender (SKZ) for her administration work that resulted in such a successful conference.

Note: Perhaps we should consider more focused conferences / workshops on specific geosynthetics.

*Reported by
Ian D. Peggs*

Fourth Remediation Technology Exhibition and Conferences, RemTech 2010

21 - 23 September 2010, Ferrara, Italy



REMTECH 2010
REMEDICATION TECHNOLOGIES

Remediation Technologies and Requalification
of the Territory Exhibition - 4th Edition

21-22-23 September 2010

From Tuesday 21 to Thursday 23 September 2010, the fourth edition of **RemTech Expo** – Remediation Technologies Exhibition and Conferences, took place in Ferrara, Italy, with the auspices of various leading societies, including the IGS Italian Chapter (AGI-IGS). RemTech Expo is an unique event entirely dedicated to remediation techniques and to territory requalification, the ideal place for meetings between operators, manufacturers, contractors, institutions and academics, in order to build together workable solutions for the environment. Other qualifying element of this fourth edition was the special section **Coast Expo 2010**, first edition, dedicated to coastal protection and in particular to dredging issues. More than 2.500 visitors attended



Opening Session of the RemTech 2010 event in Ferrara.

From the left, Gianni Andreottola (Trento University), Marco Lupo (Ministry for Environment, Roma), Daniele Cazzuffi (CESI, Milano), Sergio Polito (Syndial, Milano) and Claudio Mariotti (Sviluppo Italia, Roma)

the overall event. At the end of the Opening Conference chaired by Daniele Cazzuffi, coordinator of the RemTech Scientific Committee and IGS Past President, the ceremony

insurances, services, design companies and environmental communication firms.

At least 14 booths were related to geosynthetics manufacturers, distri-



Ceremony of the second RemTech Awards, assigned to the two best PhD theses and to the four best Master thesis discussed in Italian Universities and related to reclamation technologies items.

In the first row in the centre, Nicola Zanardi (President of Ferrara Exhibition Conference Centre) and Daniele Cazzuffi (IGS Past President and also coordinator of the RemTech Awards Committee)

of the second RemTech Degree Awards took place. The Awards were assigned to the six best theses discussed in Italian Universities and related to reclamation technologies items: in particular, two were related to PhD thesis, while four were referred to Master thesis.

Renewed exhibition area was characterized by over 110 booths, coming from the sectors of: characterization, analysis, remediation, monitoring, demolitions, general contractors, dredging, geosynthetics, asbestos, requalification,

butors and applicators.

The focus of RemTech was not only represented by the exhibition, but also by 11 Official Conferences, both national and international, coordinated by the Scientific Committee, and by 9 Special Events coordinated by the Advisory Committee.

Marco Pietrangeli Papini (Roma Sapienza University) and Luca Bonomo (Politecnico of Milano), with the support of Laura D'Aprile (ISPRA, Roma), coordinated the international session, **Comparison between International experiences of contaminated sites remediation** with the participation of international speakers as Carlos Pachon, EPA Office of Superfund Remediation and Technology Innovation (USA) and Martin Bittens from UFZ (Germany).

The **Proceedings of the Official Conferences** (Editors: Daniele

Cazzuffi and Ilaria Pietrini) are available on a CD-Rom containing 52 papers for a total of 440 pages published by DEA Edizioni: the proceedings are available at a cost by contacting info@deaedizioni.it

The **international** component of RemTech 2010 had a particularly important role within the exhibition area and the conference program, with the presence of international speakers in many sessions, including IGS Council member Neil Dixon (Loughborough University, UK), James Peale (Maul Foster & Alogi Inc. Oregon, USA), Jim Mueller (Adventus Americas Inc. Illinois, USA), Elli Argyrou (Adventus Europe GmbH, Oberhausen, Germany), Matteo Biancardo (Plougmann & Vingtoft, Copenhagen, Denmark), Robert Colangelo (National Brownfield Association, USA) and Eric Pringle (Hemmera Environchem Inc. Canada).

Thanks to the support of ICE (Institute for International Commerce) and Emilia-Romagna Region, foreign delegations from **Algeria, Morocco, Tunisia** and **Israel** came to RemTech as well. Delegations were composed by governmental representatives for B2B meetings with the exhibitors for verifying the pos-

sibility of future collaboration and business. Delegation from Israel was represented by Lachman Avri, Asbestos and Waste Sector Director of Environmental Protection Ministry and Elbaz Haim, Environmental Inspection Division Director of Environmental Protection Ministry. Delegates from Morocco included Youssef Bel Abbas, Environmental Department Director, from Algeria Melboucy Abdelmalik, Develop Director of Amenyd S.p.A., from Tunisia Rim Guizani of CITET (Centre International Pour Les Technologies de l'Environnement) and Najed Dali, ANPE General Director (Agence Nationale de Protection de l'Environnement).

Moreover, about twenty Technical Meetings were organized directly by the exhibitors, all with a huge number of participants.

Special Events, as Workshops and Round Tables, were also organised



Foreign delegations officially present at RemTech 2010 in Ferrara (Algeria, Morocco, Tunisia and Israel)

by the leading societies and by Ferrara Fiere Congressi during the three days of RemTech.

For the next edition of RemTech, that will take place from 28 to 30 September 2011, just before Sardinia 2011, new sectors will be included, on the basis of the suggestions from all interested parties.

See you at RemTech 2011 in Ferrara!

*Reported by
Daniele Cazzuffi, IGS Past President, and Coordinator of RemTech Scientific & Advisory Committees*

XXIII Italian National Conference on Geosynthetics 27 October 2010, Bologna, Italy

The *XXIII Italian National Conference on Geosynthetics* was held on 27th October 2010 in Bologna. The Conference theme was "**Sheltering and mitigation interventions against landslides**". The Conference was jointly organized by the Italian Chapter of the IGS (AGI-IGS) and the Bologna Engineers and Architects Association (ASSIABO) with the participation of GEAM (Italian National Association for Geo Environment), under the auspices of the Bologna University.

More than 150 participants attended to the Conference, which was divided in two different sessions. The first session was chaired by Stefano Aversa (President of AGI, the Italian Geotechnical Society) and focused on "**Triggering of landslides and mitigation interventions**". One keynote lecture, one invited lecture

and three papers were presented.

The keynote, presented by Michele Maugeri (AGI-IGS Vice President)

was addressed to a comprehensive review and a careful analysis of landslide phenomena. The invited



Speakers and organisers of the XXIII Italian National Conference on Geosynthetics, including Manuel Pastor (Spain), Claudio di Prisco (Keynote lecturer), Stefano Aversa (AGI President), Michele Maugeri (AGI-IGS Vice-President) and Daniele Cazzuffi (AGI-IGS President and IGS Past President)

lecture was presented by Pasquale Versace (University of Calabria) and focused on the influence of rain events and described also the key issues in the Sarno catastrophic event.

The other contributions were devoted to intervention policies to hazard mitigation and to present some possible solutions to prevent possible trigger of a landslide.

The second session was chaired by Daniele Cazzuffi (AGI-IGS President and IGS Past President) and focused on the **"Evolution of fast landslides and protection measures"**. In this case one keynote lecture, one invited lecture and four papers were presented.

The keynote, presented by Claudio

di Prisco (Politecnico Milano) was mainly addressed to the fundamentals of the design methods for protection measures, while the invited lecture, presented by Manuel Pastor (Universidad Politecnica de Madrid & CEDEX Madrid), illustrated some techniques able to numerically reproduce the evolution of fast landslides, with some applications to real case studies.

The other four contributions focused on real case studies of protection and sheltering structures.

At the end of each session, a fruitful and interesting discussion on the different topics took place.

In occasion of this conference, the ceremony of the best Italian Master

thesis on geosynthetics took place: the winner was Sara Puma (Politecnico Torino) with an experimental study of the behaviour of geosynthetic clay liners.

The next Italian National Conference on Geosynthetics will be organised in Bologna on 7th October 2011 and will be dedicated to the use of geosynthetics for roads and railways infrastructures and for tunnels applications.

*Reported by
Daniele Cazzuffi (AGI-IGS President and IGS Past President) and
Nicola Moraci (AGI-IGS Secretary)*

International Seminar "Application of Geosynthetics" 12 November 2010, New Delhi

An international Seminar on "Application of Geosynthetics" was organized by the Indian Chapter of IGS at New Delhi on November 12, 2010. More than 50 participants from various Geosynthetic industries in India, universities and Government organizations have attended the seminar

The following four lectures were presented to highlight the current trends of geosynthetics in USA, Japan and India.

- Advances in Landfill Design Practice in the USA – Prof. Jorge G. Zornberg, The University of Texas at Austin and IGS President
- Recent Practice and Research of

Geosynthetic-Reinforced Soil Structures in Japan – Prof. Fumio Tatsuoka, Tokyo University of Science, Japan and IGS Immediate Past-President

- Geosynthetics – Developments in India (1985-2010) – Dr. G.V. Rao, Honorary Professor, Osmania University, Hyderabad, India and Immediate Past President, Indian Chapter of IGS
- Overview of Geosynthetic Constructions in India – Dr. K. Rajagopal, Professor, Department of Civil Engineering, IIT Madras and President of Indian Chapter of IGS.

After the seminar, an interactive session between the IGS officers

(Prof Jorge Zornberg, Prof. Tatsuoka, Dr. Russel Jones, Elizabeth Peggs and Diana Davis) and the office bearers of the Indian Chapter of IGS was held. Discussions were held on how to improve the membership of the Indian chapter and the different means of promoting the awareness of geosynthetics in India.

*Reported by
Uday Chander, Indian Chapter of
IGS*



Sitting on the dais (L to R) : A.C. Gupta, Director (WR), CBIP & Treasurer Indian Chapter of IGS, Fumio Tatsuoka (IGS Past President), Jorge G. Zornberg (IGS President) and K. Rajagopal



A.C. Gupta delivering the Welcome Address



M. Gopalakrishnan, Secretary General, International Commission on Irrigation & Drainage addressing the participants



A view of participants

1st International GSI-Asia Geosynthetics Conference 16 – 18 November 2010, Taichung, Taiwan

The 1st International GSI-Asia Geosynthetics Conference was organized by the National Pingtung University of Science and Technology and GSI-Taiwan under the auspices of the Geosynthetic Institute (GSI) and the International Geosynthetic Society (IGS). Geosynthetic Institute (GSI) is an independent, no-for-profit organization. The goal and objective of GSI are to develop, investigate and implement the various facets of geosynthetics recognizing them as engineering materials. In order to provide geosynthetics-related global outreach, numbers of associations call “affiliated organizations” have been implemented, e.g. GSI-Korea and GSI-Taiwan. The annual GSI conference is held each year in December in

the North American since 1987.

GSI-Taiwan is an affiliated organization with GSI since 2000. GSI-Taiwan provides research, technical consulting, certification, education, and training services to the regional geosynthetic society. Currently, GSI-Taiwan consists of around 20 members. The members include government agencies, consulting firms, designers, geosynthetic manufacturers, distributors, and installers. GSI-Taiwan also organizes annual conference near the end of each year since 2006. International and local researchers and experts will be invited to provide current geosynthetic information, technology, and new findings to the attendants.

This is the first GSI organized Asian

regional conference. The 1st International GSI-Asia Geosynthetics Conference was held at Windsor Hotel, Taichung on November 16 to 18, 2010. The conference theme is Geosynthetics in Infrastructure Applications. The main topics include: Mechanical Stabilized Earth (MSE) Structures, Coastal and Hydraulic Engineering, Erosion Control and Sustainable Engineering, and Transportation and Pavement Engineering. Dr. George Koerner, Associate Director, GSI, Professor, Jorge G. Zornberg, President of the IGS, Professor Imad I. Al-Qadi, Director, Illinois Center of Transportation, USA, and Professor Guangxin Li, Tsing Hua University, China gave the Keynote lectures. Six Guest Special Lectures, including Professor R.H. Chen, National



Attendees of the opening ceremony of 1st International GSI-Asia Geosynthetics Conference in Taiwan



Banquet (first row left to right: Jorge Zornberg, Eun-Chul Shin, Chian Wayne Hsieh, Chris Lawson)



Attendees of the Technical Tour to 921 Chi-Chi Earthquake Educational Museum

Taiwan University, Professor S.H. Chew, National University of Singapore, Dr. T.Y. Soong, CTI and Associates, Inc., Mr. C.R. Lawson, TenCate Geosynthetics Asia Sdn Bhd, D.T. Bergado, Asian Institute of Technology, and H.Y. Jeon, Inha University, were scheduled. More than 45 papers are contributed by more than 100 delegates from 12 countries in the 1st GSI-Asia program. The conference had a three-day program consisting the Keynote Lectures, Guest Special Lectures, Discussion Sessions, Poster sessions, and Technical Exhibitions. Technical Tour was arranged for

attendees to visit the 921 Chi-Chi Earthquake Educational Museum. Around 20 exhibitors from 5 countries demonstrated their products and over 50 international and 200 domestic engineers, government officers, and technicians attended the conference.

Special thanks are due at this stage to all the delegates, the members of the technical committee. The supports given by the members of the Organizing Committee and Conference Committee are gratefully acknowledged. Thanks are also due to those individuals and organiza-

tions who have supported and assisted either financially or in other manner. Without all these supports, a successful 1st International GSI-Asia Geosynthetic Conference cannot be reached.

*Reported by
Chin-Der Ou, Chair of the Organizing Committee, Chairman & CEO, Taiwan High Speed Rail Corporation*

Yuan-Kuang Guu, Chair of the Conference Committee, President, National Pingtung University of Science and Technology

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 (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.

Venue

The 10ICG will be held in the southeastern part of Berlin at the ESTREL convention centre, just 15 minutes from the new international airport Berlin-Schönefeld.

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.

Exhibition

The 5000 m² technical exhibition space is directly connected to the conference rooms and is half-way between the hotel and the lecture rooms inside the centre.

The exhibition space will be used both by 10ICG and the Baugrundtagung event.

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.

More than 6.5 million visitors per year experience Berlin. The 10ICG programme for accompanying persons will cover guided city tours, visits to museums and galleries - such as the Museumsinsel (a

"World Cultural Heritage" site of UNESCO since 1999) and the Brandenburg Gate) – as well as special offers for individual trips and visits to the surrounding area (e.g., Spreewald, Potsdam, Mecklenburg Lakes).

10ICG Conference Themes

- Green Engineering, Sustainability and Durability with Geosynthetics
- Use of Geosynthetics for Renewable Energy
- Mining, Waste Management, Contaminated Sites and Environmental Protection
- Roads, Railways and Other Transportation Applications
- Reinforcement in Walls, Slopes, Embankments and Base Courses
- Flood Control, Levee and Canals, Dams, Reservoirs and Other Hydraulic Applications
- Drainage and Filtration Properties of 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
- Looking to the Future with New Geosynthetic Products

For more information

Please visit the website that will be updated in due time:

www.10icg-berlin.com

For further information please contact:

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Announcements of Regional Conferences of IGS

GEOAMERICAS 2012

II Pan-American Congress on Geosynthetics

Lima, Perú, May 2012



The II Pan-American congress will take place from May 2012, and will bring together researchers, consultants, environmental engineers, contractors, geosynthetic courses and exhibitors. It will be held at the modern Swissôtel in Lima, Peru. Lima is the capital city of Peru, which is the fifth-most populous and the third-largest country in South America. Geoamericas 2012 will be organized by the IGS Perú under the auspices of the IGS.

Technical Program

The congress will highlight the main

topics in the geosynthetics industry and application. Keynote lectures and selected papers will be presented on the main themes:

- Geosynthetics in Environmental Applications
- Geosynthetics in Dynamic Applications
- Geosynthetics in Hydraulic Applications
- Geosynthetics in Mining Applications
- Geosynthetics in Highways Applications
- Geosynthetics in Sanitary Applications
- Case Histories
- New Geosynthetics Products

Exhibition

During the Geoamericas 2012 an exhibition will be available to all

interested companies and organizations that are willing to present latest technologies, innovations and services to delegates and visitors. The conference venue offers exhibition facilities with 1340 m² of available space for consultants, contractors, suppliers, installers, agencies, project offices, and all organizations interested in the geosynthetic community.

Language

English will be the official language of the congress. However there will be simultaneous translation from English to Spanish.

For more information

More information will be available in the congress web site may be found in www.igsperu.org

5th European Geosynthetics Conference

Valencia, Spain, 16 - 19 September 2012



The next European Geosynthetics Conference "EuroGeo 5" will be held on 16 – 19 September, 2012 at the Convention & Exhibition Center (Centro de Eventos) in Valencia, Spain under the auspices of the IGS.

The event will be organized by the Spanish IGS Chapter in cooperation with European and national associations of producers and with scientific and engineering organizations.

The main objective is that the experts, manufactures, applicators and end users can exchange their experiences related to Geosynthetics.

A group of experts will be present in the event and will describe the most recent developments in these fields. The aim of the discussions is to establish an open dialogue which will enable to enhance the participants' knowledge.

The EuroGeo5 will appeal to all participants in the field of Geosynthetics whether in a practical or scientific sense: project authorities, designers, technicians, manufacturers, applicators, inspectors, researchers, regulators, experts, users, consultants, laboratories and other persons who, due to their professional activities, are inter-

ested in this field of technology.

Main Subjects of the Conference

The conference will provide an overall look at the multiple applications of

- Transport (roads, railways, tunnels, airports)
- Hydraulic structures (dams, reservoirs, canals)
- Erosion control and coastal works
- Waste landfills
- Soil improvement and reinforcement
- Mining
- Environmental applications
- Agriculture and aquaculture
- Building construction
- Remediation technologies

All aspects of the use of Geosynthetics will be dealt with, drawing on experience gained from case histories as well as research and development into new products and uses:

- Testing and properties
- Specifications and certifications
- Long term experiences and durability
- Design concepts and calculation methods
- Installation and pathology.

Technical Exhibition

Exhibitors will present the latest technological innovations and associated services to the conference delegates and visitors.

The technical exhibition is open to all interested companies and or-

ganizations. Information and a registration file will be available on the conference website.

Languages

The official languages will be English and Spanish. Simultaneous translation will be provided. All written communications will be presented in English and/or Spanish.

Call for Abstracts

Authors interested in presenting a paper at the Conference must provide an abstract before 30 September 2011, addressed to the Conference Secretariat, through the Conference website. Abstracts received by fax or mail will not be considered.

The abstracts must be written in English or Spanish.

Important Dates

- Opening date for abstracts: submission: 30 June 2011
- Deadline for submission of abstracts: 30 September 2011
- Deadline for submission of final papers: 31 March 2012

Further instructions to submit abstracts are available in the Conference website www.eurogeo5.org

For more information please contact the Conference Secretariat:

E-mail info@eurogeo5.org

Geosynthetics Asia 2012

5th Asian Regional Conference on Geosynthetics

Bangkok, Thailand, 10 - 14 December 2012



The International Geosynthetics Society-Thailand Chapter (IGS-Thailand), under the auspices of International Geosynthetics Society (IGS), organizes the Fifth Asian

Regional Conference on Geosynthetics or Geosynthetics Asia 2012, which is scheduled from 10 to 14 December 2012 at Grand Centara Convention Hotel, Bangkok, Thailand. GA2012 will be hosted by the Asian Center for Soil Improvement and Geosynthetics (ACSIG) in the Geotechnical and Geoenvironmental Engineering Program (GGE)

under the School of Engineering and Technology (SET) at the Asian Institute of Technology (AIT). The theme of this Conference is "Geosynthetics for Sustainable Adaptation to Climate Change".

The effect of climate change including global warming is not only limited in causing landslide disasters but also in increasing the frequency

of occurrence of a variety of natural disasters. The intergovernmental panel on climate change (IPCC) reported that residences of many more millions of people are projected to be flooded every year through the 2080s because of rising sea level. Among at risk are low-lying and densely populated areas. Moreover, recent news items have identified that insurance companies are blaming bad weather slashing down their profit forecasts by millions of dollars. Consequently, the insurance companies have been forced to raise the insurance premium to recoup their losses.

The objective of GA2012 is to bring together geosynthetic researchers, consultants, owners, manufacturers, distributors, project regulators, contractors, and academics in order to share their knowledge, update information, create advance technologies, and discuss recent developments.

Keynote and theme lectures will be presented by world famous authorities in geosynthetics. Invited lectures will be delivered by IGS Chapters and IGS Council Members. Technical visits to major geotechnical/geosynthetics projects will be organized.

Call for Abstracts

Abstracts on the following themes are particularly welcome:

- Geosynthetics for Climate Change Due to Global Warming
- Sustainable Infrastructure Including Limited Life Geosynthetics (LLGS)
- Geosynthetics for Human Security
- Geosynthetics for Food and Agriculture
- Geosynthetics for Water Conservation
- Geosynthetics for Leisure Activities
- Geosynthetics for Futuristic Innovations

- Geosynthetics for Waste Disposal
- Geosynthetics for Coastal and Riverbank Erosions
- Case Histories from IGS Chapters
- Other Themes Related to Geosynthetics Engineering

Language

The official language of this conference will be English

Important Dates

- Deadline for Abstract Submission: 31 May 2011
- Deadline for Paper Submission: 30 September 2011
- Deadline for Author Registration: 30 June 2012
- Deadline for Early Bird Registration: 30 June 2012

For more information

More information may be found in www.set.ait.ac.th/acsig/conference

Contact E-mail: bergado@ait.ac.th or acsig@ait.ac.th

Announcements of Conferences under the Auspices of IGS

International Symposium on Geotechnical and Geosynthetics Engineering: Challenges and Opportunities on Climate Change Bangkok, Thailand, 7 - 8 December 2010

The effect of climate change including global warming is not only limited in causing landslide disasters with increasing frequency but also increasing frequency of occurrence of variety of geo-disasters. Reports have been circulated regarding the flooding of residences of millions of people in densely populated and low-lying areas where adaptive capacity is insufficient owing to tropical storms, land subsidence, as well as the threat of sea level rise. Moreover, riverbank and coastal erosions are now common occurrence due to increasing intensity and frequency of strong typhoons and associated heavy rainfall.

This Symposium aims to gather academics, practitioners, partners, and stakeholders to discuss emergency and urgent issues related to climate change as well as the innovative mitigation measures in the context of geotechnical and geosynthetics engineering.

The Symposium will be organized by the IGS Thailand, the Asian Center for Soil Improvement and Geosynthetics, the Southeast Asian Geotechnical Society and the Thailand Geotechnical Society. It will be held under the auspices of IGS.

Technical Themes

The Symposium will cover a wide range of topics including but not limited to:

- Geotechnical/Geosynthetics Engineering for Riverbank and Coastal Erosions
- Sustainable Methods including Limited Life Geosynthetics (LLGs)
- Geosynthetics for Mitigations of Geo-Disasters
- Case Histories on Slope Failures and Mitigations
- Other Topics on Geosynthetics Applications

Keynotes and invited Lectures

Several well-known academics and

practitioners have agreed to present Keynote and Invited Lectures such as Prof. Chungsik Yoo and Prof. Rajagopal. Potential Lecturers are Prof. E.C. Shin, Prof. Jun Otani, Prof. Jiro Kuwano, Prof. Malek Bouazza, John Cowland, Mike Sadler, and many others.

Short Course, Symposium, and Exhibition

In conjunction with the International Symposium, a whole-day short course and two days exhibition are also organized. The one-day short course is scheduled on 06 December 2010 while the exhibition will be held together with the symposium on 07 and 08 December 2010.

For more information

For more information please contact E-mail: climatechange@ait.ac.th www.set.ait.ac.th/acsig/climatechange

GEO-FRONTIERS 2011

Dallas, Texas, USA, 13 - 16 March 2011



The objective of Geo-Frontiers 2011 is to share new developments in geotechnical engineering technologies. Attendees will be exposed to the state of the art practices as applied to geotechnical engineering.

As an engineer, environmental specialist, water or transportation regulator, you will have an extensive menu of technical programs, workshops and short courses from which to select. You'll walk away with up to 32 Professional Development Hours and hundreds of new ideas - from design and engineering strategies to cost-saving geotechnical solutions and new industry contacts.

The conference venue will be the Sheraton Dallas Hotel.

The conference will be organized by GI, IFAI, GMA and Nags under the auspices of IGS. It also hosts the annual GSI-Conference GRI 24 which is somewhat different in that it encompasses all types of geosynthetics and all types of applications, each of which is viewed from the context of sustainability. Many of the papers contrast traditional solutions to geosynthetic solutions from both cost and carbon footprint perspectives.

Topics of the GRI-24

Session 1 – Transportation and

Geotechnical Applications

- Gravity Walls vs. MSE Walls
- Aggregate vs. Geosynthetic Pavement Sections
- Asphalt vs. Geosynthetic Pavement Overlays
- Traditional vs. Plastic Pipe Comparisons

Session 2 – Environmental and Hydraulic

- Reducing Landfill Footprints
- Landfill Berms for Increased Airspace
- Waterproofing Dams and Other Hydraulic Structures
- Geofoam Gravel Drainage vs. Natural Aggregates
- Solar Panels on Exposed Landfill Covers
- The “Perpetual” Landfill

Session 3 – Private Development and Miscellaneous

- Geosynthetic-Related Green Roofs
- Contrasting Various Sedimentation/Retention Systems
- Geosynthetic vs. Natural Soil Installation Contrasts
- Pacific Region Perspectives on Sustainability
- Basic Principles in the Calculation of CO2 Emissions
- ISO Standards vis-à-vis Sustainability

Short Courses at Geo-Frontiers 2011

Full-day short courses are being offered on Sunday, March 13, 2011 with the following themes:

- Advanced Principles of Slope Stability Analysis
- Design and Construction of Bottom Liner and Cover Systems
- Geosynthetic Reinforced Soil
- Instrumentation, Monitoring, and Condition Assessment of Foundations & Geo-Structures
- Application of Geophysics to Geotechnical Problems

Trade Show

Geo-Frontiers 2011 offers an excellent opportunity for geotechnical manufacturers and service providers to present new technologies and innovations to regulators, contractors, engineers, specifiers and other geotechnical users from both hemispheres.

For more information please contact: searman@ifai.com

Important Date

- Presentation files due: 15 February, 2011

For more information

More information may be found in www.geofrontiers11.com

E-mail: bjconnett@ifai.com or tmwalsh@ifai.com

News from the IGS Chapters and the Membership

8th Rencontres Géosynthétiques

22 - 24 March 2011, Tours, France

The French Chapter of IGS, CFG, is currently organizing the 8th Rencontres Géosynthétiques that will be held in Tours, France from 22 till 24 March 2011. This event occurring every two years will include oral and poster presentations on the topics mentioned below. 50 abstracts were received. The revision process of papers is ongoing. The Scientific Committee is formed by Nathalie

Touze- Foltz (Cemagref), Jean-Pierre Gourc (LTHE) and Philippe Delmas (CNAM). An international review committee was formed around the scientific committee.

As usual, the location of the gala dinner will be kept secret until the last minute!

Conference Themes

The Rencontres Géosynthétiques

will deal with the following topics:

- Application / case studies
- Landfills
- Canals
- Reservoirs / Dams
- Transportation
- Infrastructure
- Durability / Lifetime
- Laboratory testing
- Performance

- Regulations / Approvals
- Resource conservation.

A half day short courses will take place on the 22nd of March prior to oral and poster presentations.

Language

French is the official language of the conference

For more information

www.rencontresgeosynthetiques.org/

NAGS Update – July 2010

During the week of July 26, 2010 Dr. Barry Christopher, a past president of NAGS, and private geotechnical consultant, and David Suits, NAGS Executive Director presented 2, one and half day short courses on Geosynthetics in Reinforcement Applications. These were presented through the Cornell University Local Roads Technical Assistance Program. The first session was presented in Mount Morris, NY, about 30 minutes south of Rochester, NY, and the second in Oneonta,

NY, about one hour south of Albany, NY. Participants received instruction in geosynthetic reinforced embankment, slopes and walls. The sessions included a brief historical background followed by basic design principles and methods, material properties, project acceptance of materials, and construction protocols. Attendees represented local town and city highway departments, the NY State Department of Transportation, and private consultants. The pictures

below are from each of the two sessions, by permission of the attendees.

For information on this and other short courses available through the North American Geosynthetics Society, contact Dave Suits, Executive Director at nagsdirector@aol.com.

*Reported by
L. David Suits, NAGS Executive Director*



Barry Christopher Discussing Manufacturing



Dave Suits Discussing Reinforced Soil Slopes



Participants in the Mount Morris, NY Session



Participants in the Oneonta, NY Session

Special Section at 6th National Conference on Geotechnical and Geoenvironmental Engineering, Greece

During the 6th National Conference in Greece on geotechnical and geoenvironmental engineering (Volos 29 September – 1 October 2010) which attracted more than 400 par-

ticipants, a special session was attributed to "geosynthetics involved in embankments construction".

Two special lectures were pre-

sented in this session on the following topics:

- Presentation of design guidelines for reinforced embankments of

EAOE (by G. Constantinides).

- Use of EPS geofoam in road construction (by Prof. D. Atmatzides).

Following the special lectures, twelve presentations related to the design and performance of geosynthetics incorporated in various types

of embankments attracted the interest of more than 100 participants in the specific audience. Because of the very large interest and lots of questions that could not be discussed due to time constraints, the Hellenic Geosynthetics Society (HGS) together with the Hellenic Scientific Society of Soil Mechanics

and Geotechnical Engineering decided to organize a daily seminar devoted on the specific subject, to be carried out in February 2011 in Athens.

*Reported by
A. Kollios, Vice-Chairman of HGS*

Status of Third Class of Geosynthetic Institute (GSI) Fellowships



We are pleased to announce the third class of GSI Fellows for the academic year 2010 - 2011. The basic criteria are as follows:

1. Student must have completed his/her doctoral candidacy examinations.

2. Student must be researching an innovative topic involving geosynthetics.
3. Student must express an interest and desire to teach and/or research in the geosynthetic field.

stipend checks accordingly. The status this year, i.e., the third class is show in the following tables.

*Reported by
Robert M. Koerner and Jamie R. Koerner, IGS Members*

Four of the new proposals contained excellent projects which have been awarded. These four plus two first class students and one second class student (continuing their research projects) have been sent

Class 3(a) - New Funding

Number	Student	Advisor	University	Topic
1-10	Tanay Karademir	David Frost	Georgia Tech	Experimental and numerical studies of elevated temperature effects on GS interface shear behavior
2-10	Jing Ni	Buddhima Indra-ratna	U. of Wollongong	Application of GS-PVO vertical drains under cyclic loads in stabilizing rail tracks
3-10	Bret Lingwall	Steven Bartlett	U. of Utah	Application of GSs to protect buried pipes at fault crossings
4-10	Carmen Franks	Ahmet Aydilek	U. of Maryland	GS filters for water quality improvement of urban stormwater runoff

Class 2(b) - Continuation

Number	Student	Advisor	University	Topic
4-09	Majid Khabbazian	Victor Kaliakin	U. of Delaware	Geosynthetic Reinforced stone columns and embankment stabilization

Class 1(c) - Continuation

Number	Student	Advisor	University	Topic
3-08	Axel Ruiken	Martin Ziegler	RWTH Aachen	Geogrid behavior used in walls and slopes
4-08	Eleni Kaspogianni	Michael Sakellairou	U. of Athens	Geosynthetic reinforcement of soil slopes under seismic conditions

News from the BGS (Belgian Geosynthetics Society)

The Belgian Geosynthetics Society is alive again, after a few years of low activity. It took some time to update the bylaws to the new Belgian legal rules for non-profit organizations. Meetings were organized with the members from the old BGS in order to check their commitment for the re-boot of the organization and to discuss future activities.

The founders of the new BGS are:

- Frans De Meerleer (President, Texion Geosynthetics),
- Frank Croonenberghs (Vice-president, Bonar Technical Fab-

rics) and

- Marc Demanet (Seco).

Together with the BGGG (Belgische Groepering voor Grondmechanica en Geotechniek, <http://www.bggg-gbms.be>) two evenings in the Dutch language (18 and 24 November 2010) and two evenings in the French language (2 and 9 December 2010) are planned:

"Applications of Geosynthetics for Geotechnical Applications".

These evenings are patronized from BGS side by two active members; Frank Theys and Bernard Dethy

(both from BRRC, Belgian Road Research Centre).

For 2011 new activities will be planned, one of those maybe together with our colleagues from NGO (the Netherlands), but details have to be discussed with the members.

Reported by

Frans De Meerleer, IGS Member and Belgian IGS News Correspondent

Former IGS Council Member Georg Heerten elected as Chairman of the German Geotechnical Society



Georg Heerten

Prof. Dr.-Ing. Georg Heerten, Managing Director of NAUE GmbH & Co. KG, Espelkamp-Fiestel, is the new Chairman of the Board of the German Geotechnical Society (DGGT). He was elected successor of Prof. Dr.-Ing. E.h. Manfred Nußbaumer, Munich, who worked

for many years as chairman, during the meeting of members in Munich on November 4th 2010.

New Vice Chairman is Univ.-Prof. Dr.-Ing. Karl Josef Witt, Bauhaus-Universität, Weimar. Prof. Witt takes over the function of Prof. Heerten, who was vice chairman of the DGGT from 2002 until 2010.

DGGT is a technical and scientific association also well known on international level. The association is internationally integrated through the International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE), the International Society for Rock Mechanics (ISRM), the International Association for Engineering Geology and the Envi-

ronment (IAEG) and has a "German Chapter" of the International Geosynthetics Society (IGS). The society is dedicated to science and practice in all questions relating to soil and rock as a foundation and construction material.

It is a great pleasure to have a geosynthetics expert and former IGS Council Member and still chairman of the IGS Investment Advisory Committee as head of the DGGT.

Reported by

Martin Ziegler, IGS Council Member and Chairman of the German IGS Chapter

FS-KGEO 2011 03 March 2011, Munich, Germany

The 12th Conference on Geosynthetics (FS-KGEO 2011) of the German Special Geosynthetics Section and German IGS Chapter within the German Geotechnical Society (DGGT) will be held on March 3rd 2011 in Munich.

The call for papers was open until middle of November. The final program will be distributed by mail at the end of 2010 and will be available at the webpages:

<http://www.gb.bv.tum.de/fskgeo>.

Exhibition

The conference will be held in connection with a geotechnical conference ("Geotechnik - Tag") of Technische Universität München on March 4th 2011 and the exhibition will span both days. The number of booths is limited and most of them are already booked.

Language

German is the official language of the conference.

For more Information

Gerhard Bräu, g.braeu@bv.tum.de, tel. +49/89/289-27139, fax -27189
www.gb.bv.tum.de/fskgeo

Seminars on Geosynthetics Application

31 August (Taipei) & 22 October (Taichung) 2010, Taiwan

The Seminars on geosynthetics applications were convened by the West Pacific Chapter of IGS, the Chinese Geosynthetics Association (CGA) of Taiwan and held on 31 August and 22 October 2010 for local and central authorities. The main purpose of the seminars is to popularize the authorities for the benefit of geosynthetics on infrastructure applications.

The attendees included Public Construction Commission of Central Government, freeway bureau and highway bureau and City & County Governments. The major design companies, engineering consultants and construction companies were invited to attend as well. In addition, 5 local group members of CGA took part in the technical exhibition with

a total of 99 participants attended the seminars. The lecturers were organized by the professors of universities and experts of well-known companies in geosynthetics application. The topics of the seminars were the slope and roadway protection, pavement, design of reinforced structures and case study. In order to respond to the extreme weather led by the global warming, especially on Taiwan Island, the theme of hazard mitigation and rescue using reinforced structure via geosynthetics, including temporary road and bridge, was introduced and discussed in the seminars.

Many took advantage of the opportunity to gain valuable Professional Engineer (P.E.) Credit to maintain of their professional credentials by

enrolling in the seminars. Designed and organized around individual needs, the case study of geosynthetics in infrastructure applications feature skilled attendees that bring the value of their real-world experiences to the seminar. The West Pacific Chapter of CGA would like to thank the National Taiwan University of Science and Technology and Directorate General of Highways for their help in making the event successful.

*Reported by
Daniel Hung-Chia Hou, IGS News
Correspondent from West Pacific
Chapter*

4th Portuguese Seminar on Geosynthetics

22 - 23 November 2011, University of Aveiro, Portugal

The 4th Portuguese Seminar on Geosynthetics will be held in the University of Aveiro, Portugal, on 22 - 23 November 2011. This event is organised by the Portuguese Chapter of IGS (IGS-Portugal), the Portuguese Geotechnical Society (SPG) and the University of Aveiro (UA).

The conference is aimed to be of great interest for geotechnical, environmental and civil engineers, project designers, contractors, consultants, manufacturers and installers, facility owners, researchers, professors and students.

Technical and Educational Program

The Seminar will start with a half-day course on "Filtration and drainage with geosynthetics" by Maria de Lurdes Lopes (FEUP) and Isabel Pinto (FCTUC).

The following periods include 4 Keynote lecturers and several oral presentations, on the following topics: coastal and hydraulic engineering, environmental engineering, soil reinforced structures and transportation engineering.

Keynote lectures

There will be four keynote lectures on the four main topics of the seminar. The invited speakers are:

- Coastal and hydraulic engineering - Adam Bezuijen
- Environmental engineering - Madalena Barroso
- Soil reinforced structures - Neil Dixon
- Transportation engineering - Jörg Klompmaker

Exhibition

A Technical Exhibition is going to take place. The two-day exhibition will be held November 22 - 23, 2011 at University of Aveiro. The seminar offers an excellent opportunity for geosynthetics' manufacturers and service providers to present new technologies and innovations to regulators, contractors, engineers, specifiers and other geosynthetics users.

Call for papers

The technical and scientific community is invited to submit papers on the seminar themes until January

31, 2011.

Important dates

Submission of abstracts: January 31, 2011

Acceptance of abstracts: February 28, 2011

Submission of full papers: June 30, 2011

Acceptance of papers: July 31, 2011

Language

Portuguese is the official language of the Seminar.

Registration

Detailed information will be soon available in <http://4spgeo.web.ua.pt>

For more information

For more information, please contact: 4spgeo@ua.pt

*Reported by
Madalena Barroso, IGS News
Correspondent from Portugal*

List of IGS Chapters

Argentina

Argentinean Chapter (2009)
President: Prof. Sergio Reyes,
sreyes@reyesasoc.com.ar

Australia and New Zealand

Australasian Chapter (2002)
President: Mr. Mike Sadlier
sadlier@attglobal.net

Belgium

Belgian Chapter (2001),
Chairman: Frans De Meerleer,
frans.texion@skynet.be
www.belgian-geosynthetics.be

Brazil

Brazilian Chapter (1997)
President: Prof. Mauricio Ehrlich
igsbrasil@igsbrasil.org.br
www.igsbrasil.org.br

Chile

Chilean Chapter (2006),
President: Mr. Mauricio Ossa,
mossa@igs-chile.org
<http://igs-chile.org/index.html>

China

Chinese Chapter (1990)
Chairman: Li, Guangxin
postmaster@ccigs.com.cn
www.ccigs.com.cn

Czech Republic

Czech Chapter (2003)
Chairman: Mr. Petr Hubik
igs@igs.cz
www.igs.cz

France

French Chapter (1993)
President: Mr. Jean-Pierre Magnan
francois.caque@developpement-durable-gouv.fr

Germany

German Chapter (1993)
Chairman: Prof. Dr.-Ing. Martin Ziegler
service@dggt.de
www.gb.bv.tum.de/fachsektion/index.htm

Greece

HGS, Greek Chapter (2005)
President: Mr. Dimitrios K. Atmatzidis
dac@upatras.gr

India

Indian Chapter (1988)
President: Prof. K. Rajagopal
cbip@cbip.org
www.cbip.org

Indonesia

INA-IGS, the Indonesian Chapter (1992)
President: Mr. Gouw Tjie Liong
ina_igs@binus.ac.id

Italy

AGI-IGS, the Italian Chapter (1992)
President: Dr. Ing. Daniele Cazzuffi
agiroma@iol.it
www.associazionegeotecnica.it/~agi/

Japan

Japanese Chapter (1985)
Chairman: Dr. Hiroshi Miki
secret@jicigs.or.jp
www.soc.nii.ac.jp/jcigs/

Korea

KC-IGS, The Korean Chapter (1993)
President: Prof. Eun-Chul Shin
kgss-adm@kgss.or.kr
www.kgss.or.kr

Mexico

Mexican Chapter (2006)
President: Giovanni Bellei
Giovanni.bellei@maccaferri.com.mx

The Netherlands

Netherlands Chapter (1992)
President: Dr. Ir. A. H. de Bondt
mail@ngo.nl
www.ngo.nl

North America

North American Geosynthetics Society (NAGS) (Canada, USA) (1986)
President: Dr. David Elton
NagsDirector@aol.com
www.nags-igs.org

Norway

Norwegian Chapter of IGS (2008)
Chairman: Arnstein Watn
Arnstein.watn@sintef.no

Peru

Peruvian Chapter (2001)
President: Miguel De La Torre
gerencia@geoserviceing.com
www.igsperu.org

Philippines

Philippine Chapter (2007)
President: Engr. Emil Morales
emmorales@gmail.com or
igs_philippines@yahoo.com
www.igsphilippines.com

Poland

Polish Chapter (2008)
Chairman: Prof. Adam Bolt
abolt@pg.gda.pl

Portugal

Portuguese Chapter (2003)
President: Maria de Lurdes Lopes
Lcosta@fe.up.pt
www.spgeotecnia.pt

Romania

Romanian Chapter (1996)
President: Dr. Valentin Feodorov
adiol@utcb.romailto:

Russia

Russian chapter of IGS (RCIGS, 2008)
President: Prof. Andrey Ponomaryov
ofrikhter@mail.ru

South Africa

South African Chapter (1995)
President: Garth James
garth@kaytech.co.za or
joannes@englining.co.za
www.giqsa.org

Spain

Spanish Chapter (1999)
President: Mr. Angel Leiro
pabad@cetco.es
www.igs-espana.com

Thailand

Thai Chapter (2002)
President: Prof. Dennes T. Bergado
bergado@ait.ac.th
www.set.ait.ac.th/acsig/igs-thailand

Turkey

Turkish Chapter (2001)
President: Dr. Orkun Akkol
orkunakkol@orientresearch.com

United Kingdom

U.K. Chapter (1987)
Chairman: Neil Dixon
n.dixon@lboro.ac.uk
www.igs-uk.org

West Pacific Regional Chapter

West Pacific Regional Chapter (1997)
President: Dr. Dave Ta-The Chang
tateh@cycu.edu.tw

Note:

- 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

Conferences

Symposia

Workshops

Calendar of Events



International Symposium on Geotechnical and Geosynthetics Engineering: Challenges and Opportunities on Climate Change
Bangkok, Thailand
7 - 8 December 2010
E-mail: climatechange@ait.ac.th
www.set.ait.ac.th/acsig/climatechange

International Symposium on Forensic Geotechnics of Vibratory and Natural Hazards
Mumbai, Maharashtra, India
14 - 15 December 2010
E-mail: gls@civil.iisc.ernet.in
www.civil.iisc.ernet.in

Integrated Ecological Technology and Carbon Footprint Reduction for Geosynthetics Applications in Sustainable Infrastructure Symposium
Taichung, Taiwan
17 Dec 2010
E-mail: hou.danie@gmail.com
www.gold-joint.com

5th International Conference on Geotechnical Earthquake Engineering (5-ICEGE)
Santiago de Chile, Chile
10 - 13 January 2011
E-mail: secretariat@5icege.cl
www.5icege.cl

FS-KGEO 2011
Kunststoffe in der Geotechnik
Munich, Germany
3 March 2011
E-mail: fskgeo@bv.tum.de
<http://www.gb.bv.tum.de/fskgeo>

Geo-Frontiers 2011
Dallas, Texas, USA
13 – 16 March 2011
E-mail: biconnett@ifai.com

8th Rencontres géosynthétiques
Tours, France
22 - 24 March 2011
www.rencontresgeosynthetiques.org

Index 11
Geneva, Switzerland
12 - 15 April 2011
E-mail: index11@geneva-palexpo.ch
www.index11.org

7th International Symposium on Geotechnical Aspects of Underground Construction in Soft Ground
Roma, Italy
16 - 18 May 2011
E-mail: info@tc28-roma.org
www.tc28-roma.org

The 3rd International Conference on Geotechnical Engineering for Disaster Mitigation and Rehabilitation 2011 (GEDMAR2011) combined with The 5th International Conference on Geotechnical and Highway Engineering Semarang, Central Java, Indonesia
18 - 20 May 2011
E-mail: hpi_jateng@yahoo.com,
geocofina@yahoo.com
www.reliability.geoengineer.org/GEDMAR2011/

XIV Asian Regional Conference Soil Mechanics and Geotechnical Engineering
Hong Kong, China
23 - 27 May 2011
E-mail: 14arc.2011@polyu.edu.hk
www.cse.polyu.edu.hk/14arc

3rd International Symposium on Geotechnical Safety and Risk (ISGSR2011)
Munich, Germany
2 - 3 June 2011
E-mail: g.braeu@bv.tum.de

www.isgsr2011.de

XV African Regional Conference on Soil Mechanics and Geotechnical Engineering
Maputo, Mozambique
18 - 21 July 2011
E-mail: info@15arcsmg-maputo2011.com
www.15arcsmg-maputo2011.com

Fifth International Symposium on Deformation Characteristics of Geomaterials (IS-Seoul 2011)
Seoul, Korea
31 August - 3 September 2011
E-mail: is-seoul@kaist.ac.kr
www.isseoul2011.org

XV European Conference on Soil Mechanics and Geotechnical Engineering
Athens, Greece
12 - 15 September 2011
E-mail: athens2011ecsmge@hssmge.gr
www.athens2011ecsmge.org

XIV Panamerican Conference on Soil Mechanics and Geotechnical Engineering (October) & V PanAmerican Conference on Learning and Teaching of Geotechnical Engineering, & 64th Canadian Geotechnical Conference
Toronto, Ontario, Canada
2 - 6 October 2011

2nd World Landslide Forum
"Putting Science into Practice"
Roma, Italy
3 - 9 October 2011
E-mail: secretariat@wlf2.org
www.wlf2.org

VII Brazilian Conference on Environmental Geotechnics (REGEO' 2011)
VI Brazilian Conference on Geosynthetics (Geossintéticos' 2011)
21 to 24 November 2011
Belo Horizonte, Minas Gerais State, Brazil
www.regeo2011.ufmg.br

GeoAmericas 2012
II. Pan-American Congress on Geosynthetics
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11th Australia - New Zealand Conference on Geomechanics
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E-mail: paula@leishman-associates.com.au
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International Conference on Ground Improvement and Ground Control: Transport Infrastructure Development and Natural Hazards Mitigation
30 October - 2 November 2012
Wollongong, New SouthWales, Australia
E-mail: vinod@uow.edu.au

32. Baugrundtagung with exhibition „Geotechnik“
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GEOSYNTHETICS ASIA 2012 (GA2012)
5th Asian Regional Conference on Geosynthetics
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www.set.ait.ac.th/acsig/igs-thailand

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An analytical method to predict the pullout response of geotextiles, pp. 193–206, Authors: L. Weerasekara; D. Wijewickreme

Dynamic behavior of reinforced slopes: horizontal acceleration response, pp. 207–219, Authors: C.-C. Huang; J.-C. Horng; W.-J. Chang; S.-Y. Chueh; J.-S. Chiou; C.-H. Chen

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Effect of NaCl on hydraulic properties of bentonite and bentonite–palygorskite mixture, pp. 250–259, Authors: J. Frankovská; S. Andrejkovičová; I. Janotka

A new type of integral bridge comprising geosynthetic-reinforced soil walls. Tatsuoka, F., Hirakawa, D., Nojiri, M., Aizawa, H., Nishikiori, H., Soma, R., Tateyama, M. and Watanabe, K. (2009). *Geosynthetics International*, IS Kyushu 2007 Special Issue, 16, No. 4, 301–326., pp. 260–271, Authors: M. Xu; C.R.I. Clayton; A. Bloodworth

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<http://www.icevirtuallibrary.com/content/issue/gein/17/4>

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Application of geosynthetic material in capillary barriers for slope stabilisation, pp. 323–331, Authors: H. Krisdani; H. Rahardjo; E.-C. Leong

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Geotextiles and Geomembranes: Best papers in 2009

The high flow of excellent papers being submitted to *Geotextiles and Geomembranes* continues and G&G was again the highest impact journal in the Geological Engineering category with an impact factor of 4.039 (Journal Citation Reports, published by Thomson Reuters, 2009). Following the Editorial Board meeting held in Yokohama in September 2006 it was decided that it would be desirable to recognise some of the best papers published

in *Geotextiles and Geomembranes*. We started with Volume 23 and have selected the Best paper in each subsequent year. This year the Editorial Board were charged with selecting what they considered to be the "Best Paper" published in *Geotextiles and Geomembranes* in Volume 27, 2009. Papers were considered for their contribution to the discipline in terms of providing significant new insights and/or of being of high potential impact on

the discipline. All Technical Articles, except those co-authored by the Editor, were eligible. The selection of winning papers was decided based on a vote of the Editorial Board members.

Following a rigorous review of the papers I am pleased to announce that the clear winner for the Best Paper for 2009 was:

Soil–geosynthetic interaction: Modelling and analysis
by Ennio M. Palmeira, *Geotextiles*

and Geomembranes, 27(5): 368 - 390.

Two papers were selected for Honourable Mention

Equivalent seismic coefficient in geocell retention systems
by Dov Leshchinsky, Hoe I. Ling, Jui-Pin Wang, Arik Rosen, Yoshiyuki Mohri, *Geotextiles and Geomembranes, 27(1): 9 - 18.*

Performance-based indicators for controlling geosynthetic clay liners in landfill applications
by D. Guyonnet, N. Touze-Foltz, V. Norotte, C. Pothier, G. Didier, H. Gailhanou, P. Blanc, F. Warmont, *Geotextiles and Geomembranes, 27(5): 321 - 331.*

as runners-up and hence being judged to be amongst the three best

papers published in *Geotextiles and Geomembranes* in 2009. Congratulations to all of the authors for their very significant contribution to the geosynthetics discipline.

Reported by
R. Kerry Rowe, Editor of *Geotextiles and Geomembranes*

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Evaluation of creep behavior of high density polyethylene and polyethylene-terephthalate, Pages 409 - 421, S.-S. Yeo, Y.G. Hsuan

Construction of an offshore dike using slurry filled geotextile, Pages 422 - 433, S.W. Yan, J. Chu

Behaviour of footings on reinforced sand subjected to repeated loading – Comparing use of 3D and planar geotextile, Pages 434 - 447, S.N. Moghaddas Tafreshi, A.R. Dawson

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thetic-reinforced walls on deformable foundations, Pages 448 - 459, Ching-Chuan Huang, Woei-Ming Luo

Numerical parametric investigation of infiltration in one-dimensional sand-geotextile columns, Pages 460 - 474, Greg Siemens, Richard J. Bathurst

Bearing capacity of geocell reinforcement in embankment engineering, Pages 475 - 482, Ling Zhang, Minghua Zhao, Caijun Shi, Heng Zhao

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New procedure for measuring adherence between a geosynthetic material and a bituminous mixture, Pages 483 - 489, David Zamora-Barraza, Miguel Calzada-Peréz, Daniel Castro-Fresno, Angel Vega-Zamanillo

Please find the download of the articles at:
<http://www.sciencedirect.com/science/journal/02661144>

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Seismic displacements of landfills and deformation of geosynthetics due to base sliding, Pages 491 - 502, Varvara Zania, Yiannis Tsompanakis, Prodromos N. Psarropoulos

Ten year creep puncture study of HDPE geomembranes protected by needle-punched nonwoven geotextiles, Pages 503 - 513, Robert M. Koerner, Y.G. Hsuan, George R. Koerner, David Gryger

Behavior of EPS geofoam in stress-controlled cyclic uniaxial, Pages 514 - 524, Aurelian C. Trandafir, Steven F. Bartlett, Bret N. Lingwall

Vacuum-drain consolidation induced pressure distribution and ground deformation, Pages 525 - 535, Jinchun Chai, Zhenshun Hong, Shuilong Shen

Properties of geosynthetics exhumed from a final cover at a solid waste landfill, Pages 536 - 546, Craig H. Benson, I. Emre Kucukkirca, Joseph Scalia

Large scale tests on geosynthetic reinforced unpaved roads subjected to surface maintenance, Pages 547 - 558, Ennio M. Palmeira, Luiz G.S. Antunes

Development and interpretation of a multi-axial tension test for geotextiles, Pages 559 - 569, T.L. Andrejack, J. Wartman

Investigation of factors influencing behavior of single geocell-reinforced bases under static loading, Pages 570 - 578, Sanat K. Pokharel, Jie Han, Dov Leshchinsky, Robert L. Parsons, Izhar Halahmi

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Evaluation of permeability characteristics of a geosynthetic-reinforced soil through laboratory tests, Pages 579 - 588, D.V. Raisinghani, B.V.S. Viswanadham

Two dimensional experimental study for the behaviour of surface footings on unreinforced and reinforced sand beds overlying soft pockets, Pages 589 - 596, M.H.A. Mohamed

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Reinforcement load and deformation mode of geosynthetic-reinforced soil walls subject to seismic loading during service life, Pages 1 - 16, Huabei Liu, Xiangyu Wang, Erxiang Song

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Geosynthetic-encased stone columns: Analytical calculation model, Pages 29 - 39, Boštjan Pulko, Bojan Majes, Janko Logar

Dynamic characterization of EPS geofoam, Pages 40 - 50, A. Ossa, M.P. Romo

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P. Voottipruex, L.G. Lam, K. Nakakuma

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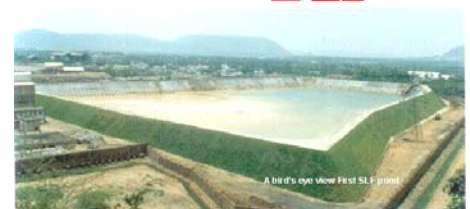
Secured Land Fill Facility for the Jarosite Slurry for Hindustan Zinc Limited (HZL), Visakhapatnam, AP, India



Garware-Wall Ropes Ltd. executed the geosynthetic components of secured landfill facility (SLF) in the year 2002 for the disposal of the Jarosite slurry. The SLF pond was constructed with Enclosure embankment of height 7m, having Geogrid Reinforced slopes (1H:1V) on either side with wrap around facia and with Garmat® turfing on the outer side. The pond is spread over a land area of about 55,000 Sq.m. with the slurry holding capacity of about 500 million liters. The waste being hazardous, double liner system was adopted with HDPE Geomembrane of 1.5 mm thick as liquid barrier as per Central Pollution Control Board (CPCB), India norms. Since 2002 the SLF is functioning exceptionally well which has been proved through leak detection system as well as through ground water monitoring in the adjoining areas.

In 2009 the pond attained its capacity and HZL entrusted the work of designing and constructing second SLF pond very next to the first pond. The second pond was also constructed with Geogrid Reinforced Embankments as enclosure. The second pond was constructed with one of the sides as common embank-

ment for both the ponds. The height of the embankment for second pond is 9 m and the lining is with double liner system with each liner system having a Clay liner, HDPE Geomembrane, Non-woven Geotextile and gravel drainage layer. The leachate collection system were formed with network of HDPE pipes embedded in the drainage layer. The outer sloping surfaces of the embankments were turfed with a help of special erosion control layer Garmat® to promote vegetation as seen in photos. Since Dec 2009 it has started holding the Jarosite slurry and performing well in terms of leachate collection also. The second pond has the slurry holding capacity of about 200 million liters covering a land area of about 22500 Sq.m. Now Garware Wall Ropes Ltd has received the letter of intent for the design and construction of capping and cover soil over the first pond to prevent further leachate generation. The repeated works awarded to Garware Wall Ropes Ltd stands as testimony to the quality of the materials as well as construction.



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- Detailed assessments for all types of geology or ground condition; particularly in areas with complex geology or with construction difficulties due to unforeseen ground conditions.
- Assessments of construction problems for claim documentation.
- Design of Ground investigations with documentation and or supervision including advanced insitu testing and sampling techniques or geophysics, to ensure correct ground information is recovered prior to interpretation of data and geological modelling for geotechnical design purposes.
- Full documentation reporting produced for: Ground Investigations, Geological and Geotechnical Assessments, Ground Interpretations, Geotechnical Design, Geotechnical Basis of Design, Ground Instrumentation and Ground Monitoring, Groundwater Monitoring, Geotechnical Baseline and Natural Terrain Hazard Study Reports.

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Corporate Profile – Firestone, USA

IGS Corporate Members are encouraged to publish a Corporate Profile in IGS News. A maximum of three profiles can be published in each issue of IGS News. The criteria for the preparation and submission of Corporate Profiles are available from the Editor. There is no charge for having a Corporate Profile published; it is a benefit of corporate membership.

Firestone **SPECIALTY PRODUCTS**

Firestone Specialty Products manufactures high-quality, durable geomembrane systems used in a wide variety of decorative and critical containment applications. Our product offerings include Firestone EPDM, EPDM-R and EcoWhite EPDM Geomembranes, Firestone fPP and fPP-R Geomembranes and Firestone TPO Geomembranes, as well as a full line of accessories. In addition to proven products, Firestone Specialty Products is committed to providing unsurpassed product availability through our network of distributors and job site delivery for large project.

Agriculture Applications



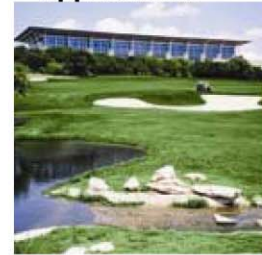
Whether you're working on waste management or water supply initiatives, we offer the geomembrane products and expertise to ensure the success of even the most demanding projects. Agriculture applications include animal waste containment, anaerobic digesters and covers, irrigation reservoirs, irrigation canals and constructed wetlands.

Aquaculture Applications



Used in aquaculture application all over the world, our geomembranes prevent water leakage, minimize contamination from the subgrade, increase the stability of oxygen content, provide better control at feeding time and increase the precision of medication. In addition, the excellent lay flat and conformance characteristics of our membranes minimize fingerling loss.

Golf Course/Decorative Applications



Combining extreme conformability and ease of installation with lasting durability, our geomembranes are ideal for creating aesthetic, sustainable environments that add enjoyment and value to property. Perfect for ponds, streams, waterfalls, rain gardens and other landscaped water features, our membranes are an affordable solution for nearly any decorative water feature design.

Irrigation Applications (Canals & Reservoirs)



Irrigation canals and reservoirs are designed for the conservation and transfer of water resources. Recent water shortages and the rising cost of building and maintenance has made it even more important that we protect this valuable resource at a reasonable cost. Whether trying to minimize seepage from an earthen structure or a cracked concrete structure, our geomembranes provide the ideal solution.

Landfill Caps



Our geomembrane serves a critical role in a landfill cap application. It protects solid waste from exposure, prevents stormwater infiltration and provides a stable surface for mounting the flexible solar panels (when applicable). In addition, our UV stable geomembranes are easy to install, require less maintenance and offer leachate and erosion control solutions, while improving methane drawdown.

Stormwater Applications



Natural water resources are contaminated and lost every day as it runs off impermeable surfaces such as roads, parking lots, driveways, sidewalks and roofs. This polluted water often migrates to city storm drains that are overloaded, forcing the impure water into our streams and waterways. To combat this epidemic, stormwater regulations are becoming more and more stringent. Our liners are ideal for directing and/or capturing stormwater runoff so that it may be filtered, collected, stored or reused.

IGS News Publisher, Editor and Chapter Correspondents

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Hints for Easy Usage of This Document

To allow easy and most effective use of this IGS News we tried to incorporate as many links to further information on the internet as possible. This means that moving around with the mouse pointer in the PDF-file allows direct linkage to webpages of the conferences,

documents of IGS, journals, email addresses and many other things.

Further on you can click on the page numbers at the "Content" on the front page to jump directly to the article.

Another useful tool is the "bookmark" function within your PDF--

Reader. This functionality shows you on the left part of your screen the content with the headlines of the articles and on the right part the article itself.

If you have any further ideas to improve the usage of IGS News – please let us know!

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PLEASE ENSURE WE HAVE YOUR CURRENT E-MAIL ADDRESS!**



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.

WHY BECOME A MEMBER OF THE IGS?

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 IGS Membership Directory, published yearly;
- the newsletter, IGS News, published three times per year;
- free electronic issues of Geosynthetics International and Geotextiles & Geomembranes;
- a CD containing the 19 IGS Mini Lecture Series;
- a DVD containing the three IGS Videos;
- 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 27)!
 otherwise please use the online form at <http://www.geosyntheticssociety.org>
 or the following

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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Membership fee: Individual (US) \$ 45, Corporate (US) \$1000, Benefactor (minimum (US) \$ 200

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