

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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General Information for IGS Members

Something to Think About: IGS Initiatives for Your Chapter in 2018! Requests being received now for 2018

The IGS, in support of our chapters, offers many resources. Two of those resources are: the **IGS Ambassadors' Program & Educate the Educator (EtE)**. Detailed information on these programs can be found on the IGS Web site under "Initiatives". In both cases, the IGS partners with a chapter to create an event. Depending on the type of event the IGS provides support in terms of manpower and funding.

Chapters interested in participating in either program should work through the appropriate Regional Activities Committee (RAC) to make a program request for 2018. RACs will meet at GeoAfrica 2017, during this meeting they will create their action item list and develop budgets for 2018. Budget requests for 2018 will be presented during the IGS Council Meetings on 8 October at which time the IGS Council will vote on, and formalize, the 2018 budget.

If your chapter would like to host an EtE or Ambassadors' program in 2018 now is the time to communicate with your RAC Chair!



African Regional Activities: [Edoardo Zannoni <Edoardo.zannoni@maccaferri.co.za>](mailto:Edoardo.zannoni@maccaferri.co.za)

Asian Regional Activities: [Rajagopal K <gopalkr@iitm.ac.in>](mailto:gopalkr@iitm.ac.in)

European Regional Activities: [Martin Ziegler <ziegler@geotechnik.rwth-aachen.de>](mailto:ziegler@geotechnik.rwth-aachen.de)

Pan-American Regional Activities: [Flavio Montez <flavio@huesker.com.br>](mailto:flavio@huesker.com.br)

IGS Secretary General: [Elizabeth Peggs <EPeggs@Minervatri.com>](mailto:EPeggs@Minervatri.com)

Reported by

Elizabeth Peggs, IGS Secretary General

IGS Events @ GeoAfrica 2017 - Mark your Diary!

GeoAfrica 2017 is fast approaching and as with all IGS Conferences the opportunities to participate for IGS Members are plentiful!

ALL IGS Members are invited to participate in the listed **Committee Meetings**. In addition, on Monday evening each of the 4 Regional Activities Committees will be hosting its own **Regional Members' Ice Breaker**. IGS Members are invited to attend, learn a bit about the activities (past and future) happening in your region and network with associates from your region. Additional information will be forthcoming; in the meantime, if you have questions please call or write to Terry-Ann Paulo, IGS Secretariat Manager (IGSSec@GeosyntheticsSociety.org) +1.561.768.9489.

Saturday 7 October 2017: 9:30 -12:45

- Communications Committee
- Education Committee
- Corporate Committee

Saturday 7 October 2017: 13:45 – 17:00

- African Activities Committee
- Asian Activities Committee
- European Activities Committee
- Pan-American Activities Committee

Sunday 8 October 2017: 19:00 – 21:00

- IGS Corporate Member Reception – by invitation

Monday 9 October 2017

- **7:30 – 8:30 am | Chapter Presidents' Meeting**

limited to IGS Chapter Presidents or their specified representative.

- Lunch recess | IGS Technical Committee on Barriers

- **18:00 – 19:00 IGS Members' Ice Breaker** – IGS Members are invited to attend and learn about the activities in their region while networking with peers from their region. A new event for the IGS there will be a room dedicated to each of the four IGS regions: Africa, Asia, Europe and Pan-American. *To be held at the Adam Park Hotel.*

Tuesday 10 October 2017

- **7:30 – 8:30 am | Chapter Secretaries' Meeting**

limited to IGS Chapter Secretaries or their specified representative.

- **Lunch recess | IGS Technical Committee on Soil Reinforcement**

Wednesday 11 October 2017

- Lunch recess | IGS Technical Committee on Hydraulics & IGS Technical Committee on Drainage

Reported by

Elizabeth Peggs, IGS Secretary General (elizabeth@geosyntheticca.net)

IGS Awards: Call for Nominations 2014 – 2017

Nominations due by 31 January 2018



Neil
Dixon

IGS Awards will be granted in 2018 to individuals or groups of individuals who have made an outstanding contribution to the development and use of geotextiles, geomembranes, related products, or associated technologies through their scientific and technological achievements. For example, an award can be given for design and construction of a structure; publication of a technical document (e.g. paper, book, article, manual); completion of a research program; and development of new products and techniques.

The Awards recognize the achievements completed and/or the validity of which have been demonstrated during the four-year period preceding the year of the Award (i.e. 1st January 2014 to 31st December 2017). The winning entries will be publicised in IGS

News, in a special press release on the IGS web site and in other IGS publications.

Timeline and Deadlines

Nominations must be received by the IGS Secretary (via the Secretariat at IGSsec@geosyntheticssociety.org) no later than **31 January 2018**. The deadline for receipt of candidate award submission packages is **31 March 2018**. Submission packages will be forwarded by the Secretariat to the Award Committee to review and to finalize their decisions, draft citations and report.

Awards will be presented during 11ICG in Seoul, Korea (16th to 21st September 2018), at the IGS Awards Ceremony tentatively scheduled at 16:30 on 19 September 2018.

There are two types of IGS Awards:

- **The Young IGS Member Achievement Award**
(This Award is for IGS Members who are less than 36 years of age on 31 December 2017)
- **The IGS Award**

Detailed information on these awards may be found on the IGS Web site under the **About IGS >> Awards section**.
<http://www.geosyntheticssociety.org/awards/>

The awards will consist of a specially commissioned medal and a diploma.

If a group submission is made for the **Young IGS Member Achievement Award**, all members of the group should satisfy the age requirement. If this requirement is not satisfied, the entire group will be disqualified for the Young IGS Member Achievement Award. If a candidate, individual or group, satisfies the age requirement for the Young IGS Member Achievement Award, the entry submitted by this candidate will also be considered for The IGS Award (unless requested otherwise by the candidate). However, a candidate may only receive either the IGS Award or the Young IGS Member Achievement Award.

Candidates

All members of IGS are eligible for IGS Awards except the President of IGS and the members of the Awards Committee. Candidates must be members of the IGS. If a group submission is made, all members of the group must be

members of the IGS; if this requirement is not satisfied, the entire group will be disqualified. If a company is a candidate, this company must be a corporate member of the IGS. A company cannot be a candidate for the Young IGS Member Achievement Award.

The deadline for candidates to be members and companies to be corporate members of the IGS is 30 June 2017.

IGS members are encouraged to become candidates by providing a written nomination submission to the IGS Secretariat in accordance with the IGS Awards Rules found in the [IGS Handbook beginning on page 78](#). Any IGS member except the members of the Awards Committee may also make nominations. The Communication, Education and Corporate committees of the IGS and the IGS Chapters are invited to make nominations. All candidates will be treated equally (i.e. irrespective of whether they make a personal submission or are nominated). There is no restriction in the number of awards an individual can receive. There is no time restriction between two periods of eligibility, which can correspond to two consecutive four years periods. However, awards can only be given to the same individual provided that they are attributed for two different bodies of work.

The Awards Committee will not be advised as to the name(s) of the individual/group making the submission/nomination (i.e. the method of candidature is confidential).

Nominations

Nominations of candidates should be provided in English on a plain document (not letterhead) and submitted electronically to the IGS Secretariat IGSec@geosyntheticSociety.org.

The nomination should include:

- a clear statement of the contribution of the candidate that is to be considered (e.g. if a product, provide a clear definition of the product; if a paper(s) or book, give the full reference of the paper(s)/book; if a report, a full reference to the report; if a construction method, a clear description of the method and any references, etc.); and
- a clear statement indicating the originality, and significance of the candidate's contribution to the discipline (i.e. in the field of geosynthetics, related products and/or associated technologies).

Candidates who have been nominated will be contacted by the IGS Secretary to obtain their agreement to be a candidate (and proof of age if the nomination is for the Young IGS Members Achievement Award). Each confirmed nominee will receive an email with submission details and time line.

All correspondence and activities related to nominations and award entries will be carried out in the strictest confidence by the IGS Secretary and the Awards Committee.

IGS Awards Committee

The Awards Committee appointed by the officers of the IGS comprises: Chairman Neil Dixon (UK), Secretary Erol Güler (Turkey), Jiro Kuwano (Japan), Bernardo Caicedo Hormaza (Colombia) and Richard Brachman (Canada). The members of the committee have been selected so as to represent a broad cross-section of the discipline and for their technical expertise. The IGS Secretary Elizabeth Peggs will attend all meetings of the Awards Committee as an observer and coordinator.

Additional Information

The full text of the IGS Awards rules can be obtained from the IGS Secretariat Manager, Terry-Ann Paulo, or accessed on the IGS Web site under About IGS>>Society Documents>>[IGS Handbook](#)

Reported by

Neil Dixon, Chair of IGS Awards Committee

Technical Committees IGS-TC

Geohydraulics in New Orleans, LA

Two Events to Support the Development & Implementation of Geohydraulic Technology

November 7 – 9, 2017

This November, the IGS Technical Committee on Hydraulics will host two inter-related events that are certain to deliver compelling technical progress and serve as an educational service to the engineering and construction communities at large. Join us for this landmark gathering in New Orleans!

EVENT 1: Geohydraulic Experts Think-Tank & TC-H Committee Meeting

WHERE: Renaissance Pere Marquette New Orleans

WHEN: November 7, 2017

WHO: Geosynthetic Industry's Top Minds on Hydraulic & Filtration Engineering

WHAT: Focused presentations and discussion designed to move the industry forward. These discussions will bring together some of the top contributors in the geohydraulics community to strategize about the path forward on each subject, including considerations of technical consensus vs continuing technical needs, educational efforts, and potential publications. Selected individuals will be requested to serve as facilitators, to foster discussion and interaction.

Topics included:

- Geosynthetic Filtration – Terminology and Practice (decoding different filtration application types and considering a publication/tech note to guide users)
- The use of air as a permeant to measure geosynthetic hydraulic performance (methods, theory and applications)
- Estimates of long-term hydraulic flow (methods and measurements, meeting related design needs, project-specific vs general measurements, etc.)

EVENT 2: Geohydraulics I – Geosynthetics for Coastal & River Protection

WHERE: Renaissance Pere Marquette New Orleans

WHEN: November 8-9, 2017

WHO: Engineers, Designers, Contractors & Regulators interested in understanding the state-of-practice design and construction for coastal and river protection in North America.

WHAT: Attendees at this course will be exposed to the range of technologies available to address hydraulic management. Instructors will address design: criteria, methods & codes – and provide guidance for the evaluation of product performance and selection. Up to 16 PDH credits available to attendees.

Topics included:

- State of Coastal & River Protection in North America
- Protection Design for Coastal and River Protection – an Overview
- Geosynthetics for Erosion & Scour Control
- Design Methods & Codes for Erosion Control
- Design Methods & Codes for Drainage
- Design Methods & Codes for Filtration
- Measuring Geosynthetic Performance: Filtration
- Measuring Geosynthetic Performance: Drainage
- Measuring Geosynthetic Performance: Erosion Control



Event Chairmen:

Sam Allen (SAllen@tri-env.com), Eric Blond (eblond@gcttg.com)

IGS TC-H Committee:

Chair: Pietro Rimoldi (pietro.rimoldi@gmail.com)

Co-Chair: Dr. Chiwan Hsieh (cwh@mail.npust.edu.tw)

Co-Chair: Sam Allen (SAllen@tri-env.com)

Secretary: Ian Fraser (ianfraser@tcs-geotechnics.co.uk)

IGS members wishing to participate in TC-H activities are invited to write to the Secretary Ian Fraser: ianfraser@tcs-geotechnics.co.uk.

For additional information about the IGS Technical Committees, contact the IGS Secretariat: IGSsec@GeosyntheticSociety.org.

More Information

For further and updated information and registration visit the following page: <http://www.geosyntheticssociety.org/igs-tch-geohydraulics-week/>

IGS Young Members

Get to know Young Members

In the first of a regular feature, the young members committee will interview leading figures in the industry as well as young members. For this edition they interviewed fellow committee member Yewei Zheng, the chair for the North American region.



Yewei
Zheng

Name / Institution: Yewei Zheng, University of California, San Diego (UCSD)

Specialist Field: geosynthetic reinforced soil, geotechnical earthquake engineering, soil-structure interaction, earth retaining structures, and unsaturated soil mechanics

Can you summarise your research?

I have been working on the topic of Geosynthetics Reinforced Soil (GRS) bridge abutments. This research involves a comprehensive evaluation of the performance of GRS bridge abutments for the service limit state, the strength limit state, and an extreme event limit state (i.e., seismic loading conditions) using both numerical simulations and physical modelling experiments. I developed and validated a numerical model for GRS bridge abutments under service loading conditions. I also enhanced the numerical

model by incorporating the strain softening behaviour for backfill soil and the rate-dependent behaviour for geosynthetic reinforcement to simulate the load-deformation behaviour of GRS bridge abutments up to failure condition, and investigate the failure mechanisms. I also conducted a series of shaking table tests for GRS bridge abutments for shaking in the longitudinal and transverse directions to investigate the seismic response.

What do you intend to do after completing your PhD?

I received my PhD in June 2017 and will be a postdoctoral research scholar at UCSD. I'm trying to find a job in academia.

What inspired you to enter civil engineering and in particular to work with geosynthetics?

I chose civil engineering because I see infrastructure construction almost everywhere in China and also see many great opportunities in this area. When I was an undergraduate research assistant, I participated in a project to monitor the performance of geosynthetic reinforced pile supported embankments.

What would you say to encourage more young engineers to become IGS members?

IGS Young Members group provides a great platform to develop network for employment opportunities and research collaborations.

Update from the Young IGS Committee

The next formal IGS Young Members Committee meeting will take place at GeoAfrica 2017 in Marrakech, Morocco on the 8th-11th October 2017. All young members attending this conference are welcome to join this meetings to provide feedback and add their suggestions. Meanwhile should you wish to get in touch with the committee please contact: Irene Nyirenda Inan (President and Chair for Africa and Middle East Region) at iinan@gseworld.com.

If you want to stay in touch with news and events from the IGS Young Members committee then please check out their webpage www.geosyntheticssociety.org/committees/young-members-committee/ and their new LinkedIn account at www.Linkedin.com/company/IGS-YMC.

Reported by

Ian Scotland, Communications officer of the Young Members Committee.

Transportation Geotechnics and Geoecology – TGG 2017 St. Petersburg, Russia, 17 – 19 May 2017

The scientific conference TGG-2017 "Transportation Geotechnics and Geoecology" was held in Emperor Alexander I St. Petersburg State Transport University, St. Petersburg, Russia on 15-19 May 2017 to give an up-to-date picture of the field of design, construction and exploitation of transport facilities and to share the latest experience.

The Conference was organized by the Emperor Alexander I Petersburg State Transport University under auspices of the International Society for Soil Mechanics and Geotechnical Engineering – ISSMGE and the International Geosynthetics Society -IGS. The conference was supported by TC202 "Transportation Geotechnics" (chair - Erol Tutumluer) and TC 215 "Environmental Geotechnics" (chair – Malek Bouazza).

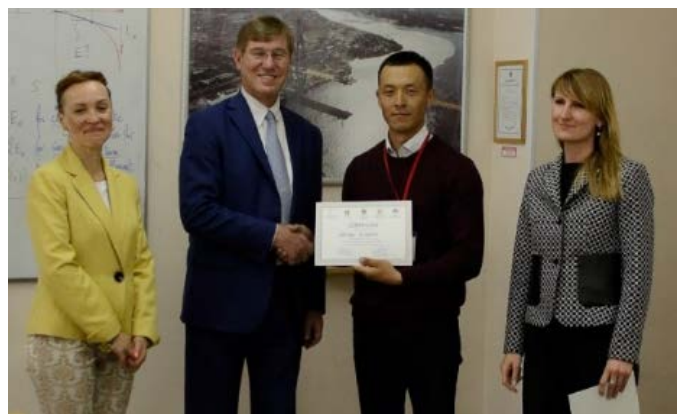
The Conference, which was devoted to 150th anniversary of Professor Alexander Liverovsky, included a short course "The pressuremeter and foundation design", 9 keynote presentations, 21 concurrent sessions with 144 presentations, a technical exhibition, IGS meeting and 141 papers.

The conference had a total amount of 282 registrations deriving from 17 countries.

Before the conference opening, a two days' short course "The pressuremeter and foundation design" took place, held by Prof. Jean-Louis Briaud, Prof. Anna Shidlovskaya and Dr. Anna Timchenko on 15-16 May, 2017. A total of 23 participants including engineers, contractors, academics and manufacture specialists attended the short course about the state-of-the-art of the use of pressuremeter, theory and research, as well as key issues in practice and perspective. This short course included a pressuremeter field test.



Prof. Jean-Louis Briaud delivering his short course



Organizers of short course Prof. Anna Shidlovskaya, Prof. Jean-Louis Briaud, and Dr. Anna Timchenko

The opening ceremony took place in the Assembly Hall of the university. Doctor Andrei Petriaev, the Organizing Chairman, delivered the opening address, highlighted the importance of geotechnics and geoecology for transportation infrastructure and wished the participants a fruitful and successful work.

Vice-Rector Prof. Lyudmila Blazhko delivered her speech to the participants. She pointed out, that the significance of the issues of the Conference was proved by a broad geography of its participants.

Conference program included presentations from nine keynote speakers who are industry experts and recognized authorities in the field of Geotechnical Engineering and Geoecology.

Keynote lectures had the following topics:

- Prof. Valentin G. Kondratiev, Zabaikal State University, Chita, Russia "Main geotechnical problems of railways and roads in kriolitozone and their solutions"
- Prof. Satoshi Akagawa, Cryosphere Engineering Laboratory, Hachioji, Tokyo, Japan "Frost heaving in ballast railway track"
- Prof. Jiankun Liu, Beijing Jiaotong University, Beijing, China "Thermal-mechanical properties of fiber-reinforced soil under multiple freeze-thaw cycles"
- Prof. Erol Tutumluer, Chair of TC202, ISSMGE, University of Illinois at Urbana-Champaign, USA "Granular layer stiffness enhancement provided by geogrid-aggregate interlock"
- Prof. Jorge G. Zornberg, Immediate Past-President of International Geosynthetics Society (IGS), University of Texas at Austin, USA "Functions and applications of geosynthetics in roadways"
- Prof. Antonio Gomes Correia, Immediate past Chair of the TC202, University of Minho, Portugal "Analysis of nonlinear soil modelling in the subgrade and rail track responses under HST"

- Prof. Ivan Vaniček, Vice-president ISSMGE for Europe 2009–2013, Czech Technical University, Prague, Czech Republic
“Application of large volume waste for earth structures of transport engineering”
- Prof. Jean-Louis Briaud, President of FedIGS, President of the ISSMGE 2009–2013, Texas A&M University, USA
“High speed trains geotechnics”
- Prof. Askar Zhussupbekov, President of the Kazakhstan Geotechnical Society, Eurasian National University, Astana, Kazakhstan
“Pile foundations of megaprojects: new railway station and LRT in problematical soil ground of Astana”



Conference opening ceremony



Awarding ceremony of Keynote Lecturer Prof. Jorge G. Zornberg by Chairman of Plenary session Prof. Jean-Louis Briaud



Discussion during the session



Discussion at break



Discussion at technical exhibition
Conference Secretary Dr Anastasia Konon



Technical sessions concerning using of geosynthetics had the following themes:

- Use of geosynthetics for stabilization of transportation infrastructure I. Chair – Jorge G. Zornberg
- Use of geosynthetics for stabilization of transportation infrastructure II. Chair – Zikmund Rakowski
- Geocoprotective materials, structures and constructs for transportation III. Chair – Antonina S. Sakharova
- Stability of slopes. Chair – Alexey F. Kolos
- Advances on the use of geosynthetics in transportation infrastructure. Chair – Erol Güler

The IGS meeting was attended by 31 participants including 11 members of the RCIGS (6 members of the RCIGS attended the meeting in person and 5 attended by proxy) and 9 members of the IGS outside of Russia. There were three Council members attending the meeting: Erol Guler (Turkey), Jacek Kawalec (Poland) and Jorge Zornberg (USA).

Jorge Zornberg provided background information on the structure of the IGS, on IGS activities and initiatives as well as on the structure of the RCIGS according to the current bylaws, as approved by the IGS at the time of formation of the chapter (in 2008). He also presented the information on the upcoming activities of the IGS.

For further information, Jorge Zornberg announced that the meeting of the IGS Council will be held in October 2017 in Morocco and that it would be important for the new Executive Committee of the RCIGS to be formed before the IGS Council meeting.

Participants at the meeting and the members of the RCIGS supported the Jorge Zornberg idea about completing the current RCIGS Board and electing members at large to complete the current Executive Committee and act on a temporary mandate until the new RCIGS Executive Committee will be elected.

A motion was proposed and seconded to elect Andrey Petriaev as Vice-president of the RCIGS, Konstantin Vachnadze as Treasurer of the RCIGS and Anna Timchenko, Anna Shidlovskaya, Aleksey Iakovlev, and Igor Ostrovskiy as Executive Committee members at large. After some discussion, the motion passed unanimously.

The elected Board members noted that a subsequent election would be necessary because it had been more than four years since the last election. A date of 1 September 2017 was chosen for the new Executive Committee to take pose, so elections of the new RCIGS Board should be held before that date.

The discussion subsequently focused on two additional issues: new RCIGS members and future plans. Many participants in the meeting expressed their interest in joining the RCIGS. Finally, everyone was excited about what could be accomplished in the future under the auspices of the RCIGS.



Prof. Jorge Zornberg delivering his message



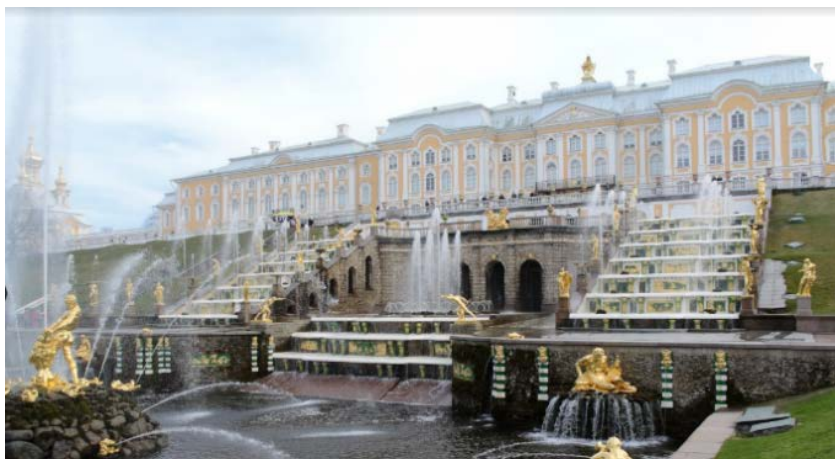
Audience at the IGS meeting

The conference proceedings contain 141 peer-reviewed papers resulting from 196 accepted abstracts from 17 countries and more than 300 authors. The indexed SCOPUS papers are in open access and free for downloading on Procedia Engineering’s website: <http://www.sciencedirect.com/science/journal/18777058/189/supp/C>.

Following the first day of the TGG-2017 program, the bus trip to Peterhof, the residence of Russian emperors, and Welcome Reception at the Usupov Palace was held for all conference participants and their accompanying persons. The conference's Gala Dinner took place the next day in the Oak hall.

At the end of the Conference Chairman, Prof. Andrei Petriaev thanked all the participants and announced that the upcoming TGG-2021 "Transportation Geotechnics and Geoecology" would be held in Saint-Petersburg in May, 2021.

After closing ceremony the river cruise «Rivers and canals of St.Petersburg» allowed participants to relax and enjoy the views of St. Petersburg and saxophone music.



Bus trip to Peterhof



Surprise from Organizers



Prof. Antonio Gomes Correia, Prof. Erol Tutumluer and Sinem Tutumluer at the boat trip



Saxophone relax

The conference was intended to reveal the most significant geotechnical engineering aspects from a local to a global level. Worldwide cooperation of geotechnical and geocological engineers will open new horizons in geotechnics and give sustainable support for future research.

*Reported by
Andrei Petriaev, Chair TGG2017*

EAGS 2017 - EurAsian Geotextiles Symposium

Beijing, China, 7 - 8 June 2017

Organised under the auspices of IGS, the first EurAsian Geotextiles Symposium (EAGS) was held in Beijing, 7 - 8 June, attracting over 200 participants from 14 countries. Co-organised by the China Industrial Textiles Industry Association (CNITA) and EDANA, the Symposium was supported also by several other key international organizations including the International Textile Manufacturers Association (ITMF) and the International Society for Geosynthetic Materials China Committee (CCIGS).

Participants had the opportunity to learn of the latest trends and developments in technologies, markets and applications for geotextiles during 22 presentations by industry leaders and experts. The significant potential for global development of the geotextiles market was highlighted throughout the conference and confirmed by the level of interest in the companies participating in the tabletop exhibition.

Key highlights included strategic challenges specific to China such as the Belt and Road Initiative and South-to-North Water Diversion Project, both tremendous infrastructure developments with significant potential for the use of geosynthetics.

Presentations also addressed a wide range of topics related to woven and nonwoven geotextiles and their contribution to geosynthetics, including market trends, raw materials, developments in nonwoven bonding technologies and the application of geosynthetics in construction, road infrastructure, waterways, environmental protection, retaining walls and landfills.

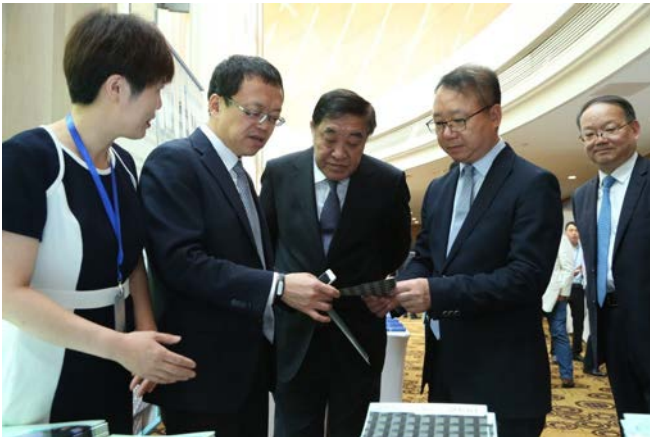
As summarised by IGS Past President Dr. Daniele Cazzuffi in his concluding address, the EurAsian Geotextiles Symposium illustrated the depth and breadth of developments in the geosynthetics sector, with a global view on trends and numerous examples in China and beyond. Specifically, the EAGS touched upon the constant diversification of the sector, supported for example by new applications for nonwovens and geogrids. Innovation is another key factor, with new combinations of materials including woven materials, nonwovens, grids, scrims, geomembranes and more. The geosynthetics industry was able to adapt to the specific needs of a growing range of applications, which accelerated the move away from a commodity market to an industry geared towards specialty products. New application areas include potential for environmental protection, notably through erosion control solutions and biodegradable geosynthetics. In support of the global growth and intensified trade of geotextiles, the standardisation of specifications and test methods is a vital effort. Progress and growth throughout the value chain and across continents can only be achieved by creating a common language for tenders, in turn opening the way for a level playing field in which companies can compete on performance and quality, not only on price. The winning formula for the geotextiles and geosynthetics industries is a combination of flexibility, innovation and communication. This can be achieved by building bridges not only literally but also figuratively and the EurAsian Geotextiles Symposium is a great step in this direction.



EAGS Organisers



Daniele Cazzuffi giving his Keynote Lecture



Chinese Delegation



EAGS Participants

Reported by
 Pierre Conrath, EDANA's External Relations and Sustainability Director, Brussels

Announcement of the International Conference of IGS

11th ICG International Conference on Geosynthetics Geosynthetics: Innovative Solutions for Sustainable Development Seoul, Korea, 16 – 21 September 2018



On behalf of the Organizing Committee, it is my great honor and pleasure to invite you to the 11th International Conference on Geosynthetics (11ICG), which will be held in Seoul, Korea from September 16 to 21, 2018. The Korean Geosynthetics Society (KGSS) will have the privilege of hosting 11ICG in Korea, and plans to go to great

lengths to ensure the conference surpasses all expectations. The 11ICG will provide all participants a firm platform for a meaningful academic, professional, social and cultural experience. The theme of the 11ICG is “Geosynthetics: Innovative Solutions for Sustainable Development,” and will cover diverse disciplines of geosynthetics from fundamentals to applications.

With the vision of making a multidisciplinary conference for the geosynthetics industry and engineers, we plan to offer special events as well as a very dynamic and stimulating array of scientific and practical engineering programs. At 11ICG, academia and industry will gather in force to not only show their best, but to share valuable ideas and develop new friendships.

11ICG will provide a comprehensive overview of the most recent developments in the field of geosynthetics, the latest technologies and applications, and a unique and extensive technical exhibition. With fascinating ancient traditions and ultramodern lifestyle, the city of Seoul will surely be the center of many unforgettable moments.

We look forward to welcoming you in Seoul, Korea!

Sincerely yours,



Prof. Chungsik Yoo
 Chair, Organizing Committee of 11ICG
 Vice President, International Geosynthetics Society
 President, Korean Geosynthetics Society

Preliminary Program

	Sep.16 (Sun)	Sep.17 (Mon)	Sep.18(Tue)	Sep.19 (Wed)	Sep.20 (Thu)	Sep.21(Fri)
08:00						
09:00		Opening Ceremony				
10:00		Plenary Lecture	Plenary Lecture	Plenary Lecture	Plenary Lecture	Technical Visit
11:00		Break	Break	Break	Break	
12:00		Plenary Lecture	Parallel Sessions	Parallel Sessions	Parallel Sessions	
13:00		Lunch	Lunch	Lunch	Lunch	
14:00		Parallel Sessions	Parallel Sessions	Parallel Sessions	Parallel Sessions	
15:00		Registration & Exhibition	Registration & Exhibition	Registration & Exhibition	Registration & Exhibition	
16:00		Break	Break	Break	Break	
17:00		Parallel Sessions	Parallel Sessions	General Assembly	Closing Ceremony	
18:00	Welcome Reception	Happy Hour	Special Event	Conference Dinner	IGS Council Dinner	
19:00						
20:00						

Theme and Topics

- Geosynthetics: Innovative Solutions for Sustainable Development
- Geosynthetic Barriers
- Geosynthetics in Filtration, Drainage and Erosion Control
- Reinforced Walls and Slopes
- Ground Improvement using Geosynthetics
- Roads, Railways and other Transportation Applications
- Soil-Geosynthetic Interaction

- Hydraulic Applications
- Innovative Uses and New Developments
- Case Histories
- Durability and Long Term Performance
- Physical and Numerical Analysis
- Geosynthetic Properties and Testing
- Quality Control and Quality Assurance
- Design Approaches and other Applications

Important dates:

- 29 September 2017 Paper Submission Deadline
- 29 December 2017 Paper Acceptance Notice
- 30 March 2018 Final Paper Submission Deadline
- 30 March 2018 Early Registration Deadline

For more information visit <http://www.11icg-seoul.org/>

Announcements of Regional Conferences of IGS

GeoAfrica 2017 – 3rd African Regional Conference on Geosynthetics Marrakech, Morocco, 08 – 11 October 2017



GeoAfrica 2017 will be held between 08 - 11 October 2017 in Marrakech, Morocco. This major event marks the third African Regional Conference on Geosynthetics. To be held under the auspices of the International Geosynthetics Society (IGS) and hosted and organized by the IGS Moroccan Chapter, the event offers an exceptional opportunity for geosynthetics-related engineering and construction professionals to interact with the African continent's growing infrastructure.

Keynote & Lectures

- Geosynthetics for sustainable development, Mohamed Choura from Sfax / Pr. Ejjaouani
- Lining in hydraulic applications, Manuel Blanco
- Reinforcement of transport infrastructures, Ph. Delmas, Alain Nancey

Speciality Sessions

- Geosynthetics and functions
- Selection of a geotextile for filtration
- Methodology for reinforcement design
- Choice of Geosynthetics for hydraulic applications

Exhibition

An exhibition will be connected to the conference

Important Dates

- August 30th, 2017 Submission of final paper and closure of early bird registration
- October 08th, 2017 GeoAfrica Registration
- October 09th, 2017 GeoAfrica conference opening

Further information

contact@geoafrica2017.com
<http://geoafrica2017.com/>

Announcements of Conferences under the Auspices of IGS

5th International Conference on Geofoam Blocks in Construction Applications (EPS'18) Kyrenia, Northern Cyprus, 09 – 11 May 2018

Geofoam researchers, consultants, molders, contractors and practitioners from all around the world will be meeting in Kyrenia to discuss the recent developments and future trends of the expanded polystyrene (EPS)-block geofoam technology and its construction applications. EPS'18 will continue to contribute to the development of the geofoam applications after successful Oslo (1985), Tokyo (1996), Salt Lake City (2001) and Oslo (2011) conferences.

The conference program will be a combination of technical papers and group discussions regarding the use, new development and implementation of geofoam technology. The conference theme will cover but not limited to the present use of geofoam, design specifications, applications, new concepts, material properties, modeling and special topics of geofoam blocks in construction applications.

For more information please visit

<http://geofoam2018.org>

News from the IGS Chapters and the Membership

11th International Seminar on Geosynthetics of Slovak IGS Chapter Zilina, Slovakia, 16 - 17 February 2017

University of Zilina, Faculty of Civil Engineering, Slovak IGS Chapter, Slovak Geosynthetics Society, Slovak Chamber of Civil Engineers, Slovak railways and Slovak Road Association organized the 11th International Seminar on Geosynthetics, on 16 – 17 February 2017 at University of Zilina. The conference was one of the main activities of the Slovak IGS Chapter in 2017.

Over 90 participants from five countries have participated on the conference. Participants included academicians, researchers, designers, manufacturers, administrators, suppliers and some end users.

Organizers led by Assoc. prof. Marian Drusa (University of Zilina, Head of the Department of Geotechnics) and Prof. Libor Izvolt (University of Zilina, Head of the Department of Railway Engineering and Track Management) with other members of Scientific Committee set up a standard form of conference. The proceedings included a keynote lecture and 16 papers covering a wide range of fundamental and applied problems on the topics of geosynthetics.

During the opening session, a speech was given by Assoc. Prof. Marian Drusa, Prof. Josef Vičan (Dean of the Faculty of Civil Engineering, University of Zilina.), Prof. Libor Izvolt, Dr. Boris Vrabel (Head of regional office of Slovak Chamber of Civil Engineers) and Dr. Radovan Baslik (President, the Slovak IGS Chapter).

A keynote lecture was given by Prof. Heinz Brandl (TU Wien, the President of the Austrian IGS Chapter) and it was focused on "Geotechnics for roads and railways, flood defense structures, special cases". Afterwards, Dr. Jacek Kawalec (a member of the IGS Council) informed about latest IGS activities.

The conference consisted of five main sessions:

- New products, their properties, functions and application
- Design of structures by using geosynthetics
- Technical regulations and standards
- Research and development in the field of geosynthetics
- Case studies of structures with geosynthetics

At the end of each session, there was an interesting discussion on different topics. Some of the discussed topics were:

- The selection of geotextiles on separation or filtration function according to their geotextile-robustness-classes
- Creep influence on design lifetime of geocells
- Durability of geotextiles produced from waste
- Assessment of geotechnical structures from the perspective of environment protection
- Ballast bed stabilization by using the geocomposite on the test railway section
- Geosynthetics on modernized railway tracks and the new sections of highway in Slovakia

At the end of conference, the Slovak chapter of IGS took the opportunity, and organized a General Assembly of IGS-Slovakia.



Marian Drusa introducing the Geosynthetics 2017 International Conference. From the left, Boris Vrabel, Radovan Baslik, Josef Vican, Libor Izvolt



Radovan Baslik welcoming the participants



Prof. Heinz Brandl presenting his keynote lecture



Jacek Kawalec delivers information on IGS activities



A view of participants



Organizers, Officers of the IGS-Slovakia and invited foreign IGS members (left to right: Radovan Baslik, Peter Turcek, Jacek Kawalec, Heinz Brandl, Libor Izvolt, Marian Drusa, Branislav Prelovsky)

The next, 12th International Seminar on Geosynthetics named “Geosynthetics 2018” will be organized in Bratislava on February 2018.

*Reported by
Radovan Baslik, Slovak IGS Chapter President*

INDEX™ 17 and Geotextiles Workshop Geneva, Switzerland, 4 - 7 April 2017)

The second edition of the INDEX™ Geotextiles Workshop was a success, confirming the interest of the nonwovens community in geotextiles and their contribution to the development of Geosynthetics engineering.

INDEX™ 17, the world’s leading nonwovens exhibition, held in Geneva, Switzerland, from 4 – 7 April 2017, closed

its doors on the largest ever global nonwovens exhibition, and certainly one of the most successful ever. With representation from across the nonwovens and related industries, displaying a diverse range of products and services, INDEX™ has again delivered on its commitment to be the 'global meeting point' for our industry.

12,758 visitors made their way through the doors of the Geneva Palexpo exhibition centre (a rise of over 2% on the 2014 edition), eager to see the 666 exhibitors (an increase of over 13% INDEX™ 2014) from 41 countries in nearly 24,000 m² of stand space.

Visitors attending the 2017 exhibition could engage with a larger portion of the industry than ever before, as well as take advantage of specialised events organised during the exhibition, including a Geotextiles Workshop, which ran alongside workshops dedicated to applications for nonwovens in the transport and medical sectors.

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

The second edition of the Geotextiles Workshop featured an impressive speaker line-up. IGS President, and Director at Golder Associates, Russell Jones kicked off the session with an inspiring keynote on the contribution of geotextiles to the global sustainability agenda. Further presentations included technical contributions on durability of water and soil-related works with geotextiles and the proper design and application of geocomposite drainage systems, covered respectively by Jean Pierre Gourc of UJF Grenoble and Philippe Delmas of CNAM Paris, Francesco Fontana of AssINGeo and Piergiorgio Recalcati of Tenax. Strategic developments and key market trends in the geotextiles and related industries were illustrated by Pete Stevens of Berry Global and George Papagiannis of Thrace Nonwovens.



Dr. Russel Jones presenting his Keynote Lecture



Dr. Daniele Cazzuffi presenting his Speech



Group Photo of the Speakers, from left to right: Philippe Delmas, JP Gourc, Russell Jones, Daniele Cazzuffi, Pierre Conrath, George Papagiannis, front row: Piergiorgio Recalcati, Francesco Fontana, Pete Stevens

Videos of the presentations can be found on the website:
https://portal.klewel.com/watch/nice_url/index17-seminar-geotextile/

The success of the Geotextiles Workshop, reinforced by the annual meetings of CEN TC 189 on Geosynthetics and also of WG 3 of ISO TC 221 on Mechanical Testing on Geosynthetics, prompted the organisers, EDANA and PALEXPO, to announce the development of a further series of events focused on Geotextiles and Geosynthetics during INDEX, with the ongoing support of Daniele Cazzuffi, during the next edition of INDEX™ in 2020.

Reported by
Pierre Conrath, EDANA's External Relations and Sustainability Director, Brussels

Workshop Dutch Chapter: Playing with Geosynthetics VI: Earthquake Resistant Building with Geosynthetics

The Dutch Chapter organized her sixth workshop on a sunny day in April, to share the knowledge about the use of geosynthetics in earthquake resistant building. Nearly forty creative souls from principles, contractors, engineering offices and knowledge institutes searched for earthquake resistant solutions using geosynthetics. After two speakers had provided some theoretical background, the creative souls carried out experiments and brainstormed about new solutions using geosynthetics.

Relaxation or reinforcement, those are the main two applications of geosynthetics in earthquake resistant building. In other words: reduce excess pore pressures with drainage or reinforce the soil to cope with the horizontal accelerations. In earthquake countries as Japan this is daily practice, but it is quite new in the Netherlands.

Earthquakes in the North of the Netherlands: a new reality

In December 1986, the Dutch town Assen was frightened by the first earthquake due to gas exploration. Since that day, the Northern part of the Netherlands shakes. On 16 August 2012, a human induced earthquake with a magnitude of 3.6 on the Richter scale occurred in Loppersum. This earthquake took longer and was stronger than all earlier earthquakes. Therefore, the government decided to investigate the earthquakes and if necessary, to intervene. Questions considered were: Are our civil constructions safe? The levees, the transport infrastructure, the buildings? Will pipes and tubes remain in place during earthquakes? Which solutions could offer us a safe environment?

Many countries have a lot of experience in earthquake resistant building. But for the Netherlands, this subject is new. What is the difference between the Dutch earthquakes and other earthquakes? What are the consequences of our earthquakes? What can we do to reduce the risks and improve the safety of the Northern part of the Netherlands?

Earthquakes: some background

Siefko Slob, engineering geologist, provided some theoretical background. A few months after the earthquake in Pakistan in October 2005, Slob was there and he was impressed. There were around 72.000 victims, among them many children who died in schools that collapsed. Slob showed pictures of damage, one of them showing a bridge that had moved 1.5 m on its columns. The bridge was still intact. Slob also showed damage to constructions of poor quality: not enough reinforcement in concrete, for example.

Slob explained how plate tectonics, volcanic activity or human activities can cause earthquakes. In the Northern part of the Netherlands, Groningen, human induced earthquakes occur: caused by compaction in the deep sandstone due to gas extraction. Slob showed P-, S-, Love and Rayleigh waves and how to recognize them from accelerogram, and the distance to an epic centre can be determined using these waves. Different methods exist to determine the magnitude of earthquakes. Slob mentioned Richter's scale, which gives a measure for the energy that is released, and the European Macroseismic Scale (EMS-98). The more damage, the higher the value on this intensity scale. Slob finally explained how ground motion is predicted.

Consequences of an earthquake

An earthquake gives ground motion that can result in the liquefaction of sand or silt. If liquefaction occurs, the pore pressures increase, while the soil shear strength reduces. This can affect the stability of a soil structure. A levee can fail or a sheet pile wall can be overloaded.

Earthquake resistant building

How can we prevent earthquake-induced damage? By reducing the risk of liquefaction and by reinforcing constructions or making them more stable. The probability of liquefaction can be reduced by ground improvement, for example



Figure 1. Earthquake resistant building: testing models on a shaking table

compacting loosely packed sand layers or applying mixed-in-place technics. Drainage can release excess pore pressures that increase during the earthquake. Examples are geosynthetic encased stone columns, drainage pipes or vertical drainage.

Chair of the day Wim Voskamp shows how the international community applies geosynthetics to build earthquake resistant structures. Relaxation and reinforcement are the main two applications of geosynthetics: eliminating excess pore pressure or coping with the horizontal accelerations with reinforcement.

Voskamp showed the development in thinking about earthquake resistance in Japan, referring to work of Fumio Tatsuoka and his co-workers. Reinforced concrete retaining walls were replaced by MSE walls with a cast in situ concrete facing attached to the reinforced soil. Reinforced soil is mandatory in Japan for the construction of steep slopes, bridges or viaducts for railways. Hundreds of kilometres of MSE walls have been constructed in Japan so far. Today, experiments are conducted with integral bridges in Japan, connecting the bridge to the abutments. In these structures, the thermic forces should be considered carefully, but the result is better earthquake- and tsunami resistant.

Several types of drainage may dissipate excess pores pressures, like normal vertical drainage, stone- and sand columns encased with or without geosynthetics.

Creative earthquake resistant building

Writing down solutions for piping is one thing, the practical application quite another. The 6 teams were challenged to build an earthquake resistant structure themselves. For this purpose, Piet van Duijnen and Ron Voets had put together a shaking table and six test boxes. Two teams had to construct a piled embankment; two teams had to build an MSE wall and two teams a soil structure with 45 degree slopes. All structures had to remain at least 30 cm high under earthquake loading. The models were going to be loaded on a shaking table, put together by van Duijnen and Voets with an old door, a vibration engine and four old car tyres.

The teams had to buy their building materials, such as sheet pile walls and geosynthetics with special IGS-euros: The more CO2 emission, the more expensive the building materials. For each construction-type, the cheapest model that would be approved by the jury would be the winner.



Figure 2. The piled embankment models after loading with shaking and a surcharge load

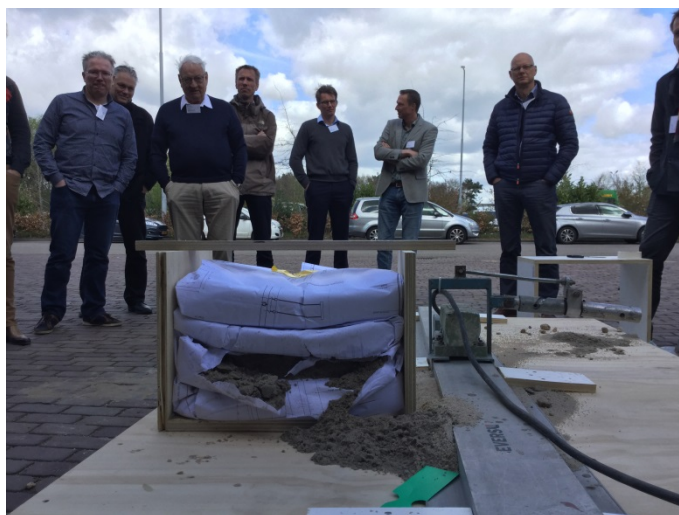


Figure 3. An MSE wall with paper reinforcement, after the seismic loading. Moist paper reinforcement proves to be bad reinforcement.

Figure 2 shows the two piled embankments, reinforced with plastic bags and paper and tape. The model in the front sags between the piles, but both models remained intact, despite the double loading with shaking and surcharge.

The MSE wall of Figure 3 had insufficient height and was not earthquake resistant and was therefore rejected. Obviously, moist paper is not a good reinforcement...

The retaining wall that was reinforced with an old bed sheet, found in the van of Voets, did also not survive. Insufficient anchorage length and too thick soil layers were found to be the causes of the failure. From this, we should not conclude that MSE walls are not earthquake resistant, as these structures give very good results in for example Japan. There are spectacular examples of really high MSE walls that remained intact while their surroundings were flattened.

The embankments with steep, 45 degrees slopes remained fully intact during the shaking. Their reinforcement did a good job. As all models needed to be destroyed, the supporting box walls were removed and the models were shaken again. That helped: they failed (Figure 4).

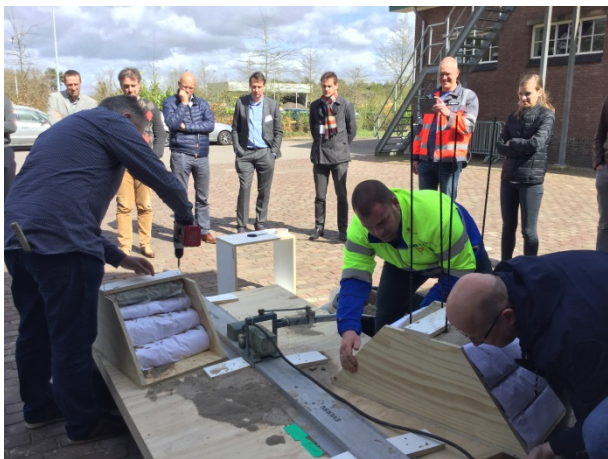


Figure 4. Both embankments with 45 degrees slopes were earthquake resistant. Removing their supporting box walls helped: the models were destroyed on the shaking table.

Disclaimer

This paper reports about a workshop where the participants had a creative brainstorm. The solutions mentioned are not necessarily feasible or practical.

Acknowledgements

The members of the board of the Dutch Chapter of the IGS thank Piet van Duijnen of Geotec Solutions and Ron Voets of Voets Gewapende Grond for the construction and transport of a shaking table, timbre malls and other equipment to construct the models.

Reported by

Suzanne van Eekelen, Piet van Duijnen, Dr. Siefko Slob, Wim Voskamp, Erik W. Vastenburg, Joris van den Berg, Dutch Chapter IGS Commission

Remark from the Editor: This is only a short version of the Dutch report. The full version can be found at the IGS webpage: <http://www.geosyntheticssociety.org/workshop-dutch-chapter-playing-with-geosynthetics-vi-earthquake-resistant-building-with-geosynthetics/> or by the short link: <https://goo.gl/fskzkj>

Daily Seminar on Geosynthetics

Xanthi, Greece, 19 May 2017

The Hellenic Geosynthetics Society HGS (Greek Chapter of the IGS) organized together with the Democritus University of Thrace a daily seminar dedicated on the use of geosynthetics in Civil Engineering, co-sponsored by the manufacturing Group of Companies THRACE PLASTICS. This successful seminar was attended by more than 220 persons (academics, practitioners, designers, administration members and students of civil and geotechnical engineering disciplines).

The following topics were presented during the seminar:

- Introductory Presentation : Types and Applications of Geosynthetics (A. Kollios)
- Soils Reinforced by Geotextiles – Mechanical behavior and materials interaction (I. Markou)
- Analysis and Design of Reinforced Embankments : methodology, application and critical parameters (N. Klimis)
- Probabilistic Analysis of Reinforced Soil Retaining Walls (I. Zevgolis)
- The Use of Geosynthetics in Geo-environmental Applications - The case of Landfills (N.Tsatsos)
- Sealing of Earth Dams by Geosynthetics (N. Moutafis)
- The Use of Geosynthetics in Landfills (A. Droudakis)
- Pavement Design by Geosynthetics (S. Karavasili)
- Geosynthetics Applications on Asphalt Concrete Pavements (C. Stratakos)
- Closing Presentation: Innovative Applications of Geosynthetics (I. Fikiris)

After the end of the two presentation sessions, a guided 2-hours visit to the production facilities of the Manufacturer THRACE PLASTICS was realized (visit of non-woven and geogrids production lines), attended by more than 100 persons divided into 2 groups.



Lecture given by Prof. I. Markou.



Panel of Lecturers (From left): A. Kollios, Prof L. Vasiliadis, I. Fikiris, N. Tsatsos, S. Karavasili, Prof. I. Markou, Prof. I. Zevgolis.

All presentations during the daily seminar were posted on the site of the Hellenic Geosynthetics Society (www.igs-greece.gr) and a "contest" among young members of the HGS and students was announced concerning the translation into Greek of the existing IGS sustainability video.

Reported by

A. Kollios, Chairman of HGS

2nd International Conference "Geosynthetics in Road Construction" Moscow, Russia, 19 May 2017)

The 2nd International Conference "Geosynthetics in Road Construction" took place in Moscow on May 19, 2017 and was organized by MAX Conference, as the previous one held in 2016 (see also IGS News 02/2016). In particular, the session on "Ways to Evaluate Geosynthetics Quality in Road Construction. Russian and International experience" was supported by Machina-TST. The participants included companies that specialize in the technical solutions development and implementation for the design, construction, repair and maintenance of motor roads as well as manufacturers of geosynthetics from Russia, Greece, Italy and Germany.

Government agencies were represented by Rosavtodor. Vasiliy Kurguzov, deputy head of Rosavtodor's Engineering and Highway Operations Research and Development, gave a presentation on the continuous development of the legal framework for the use of geosynthetics in road construction.

Sergey Iliyn, deputy head of Avtodor Engineering Department, then spoke about the Avtodor state company's technical policy of using geosynthetic materials in road construction. In his presentation, Mr Iliyn highlighted developing of a draft GOST standard for the design and engineering of road pavements with the use of various geosynthetics in 2018-2019.



Russian experts commended the report of Francesco Fontana, council member of the IGS (International Geosynthetics Society). Mr Fontana shared the European practices of using geosynthetics in road construction. Availability of standards for the advanced European road construction technologies was another important item on his agenda. Use of geosynthetics in road reinforcement provoked a lively discussion.

Panos Mokos, regional export manager for Eastern Europe & CIS, of Thrace Group, made a presentation about the

European practice of using biaxial extruded geogrid composites to reduce the cost of road construction. According to him, this material allows longer periods between repairs and a better reliability of roads.

Dmitriy Moskalenko, commercial director of Yugan Marketing pointed out, however, that Russian geosynthetics non-conformity with international standards make it impossible to replicate the European experience. Mr. Moskalenko delivered a presentation on monitoring volume geogrids in road construction and illustrated the deformation and aperture of geocells.

Kent von Maubeuge from Naue in Germany spoke about ASTM Standards and followed up on the international experience of geosynthetics use. His presentation focussed on research about geosynthetics durability when exposed to chemical and biological agents.

Yuri Schlee, export director in the CIS countries, gave a presentation about in-lace tests for measurement of loading and working capacity of road construction.

Alexey Volodikov, thermoplastic elastomers and geosynthetics expert, SIBUR, talked about the quality control of geosynthetics.

The Conference concluding resolution that addresses the industry's concerns and issues is being drafted to be submitted to the Federal Road Agency.

MAXConference offers its special thanks to the speakers, moderators and many information partners.

Reported by

Irina Zabalueva and Maria Zabalova, MAX Conference, Moscow

1st Workshop “Geosynthetics for Slope Stabilization” @ World Landslide Forum (WLF) 2017 Ljubljana, Slovenia, 01 June 2017

The **4th World Landslide Forum (WLF4)** was held in Ljubljana, on 31th May – 2nd June 2017. As for the previous Editions, in Beijing (China) in 2014, in Roma (Italy) in 2011 and in Kyoto (Japan) in 2008, the event aimed to gather scholars and professionals of the various fields of Geotechnical Engineering, Geology and Engineering Geology. The WLF4 was jointly organized by the International Consortium on Landslides (Kyoto, Japan), the International Programme on Landslides (IPL), the University of Ljubljana and the Geological Survey of Slovenia. As a whole, the initiative gathered more than 400 oral and poster presentations, and more than 500 participants from 51 Countries.

The **Italian Chapter AGI-IGS** of IGS organized, for the first time within a WLF, a workshop for all the experts interested in geosynthetics applied to slope stability problems and landslides on 1st June 2017 at the venue of WLF4 in Ljubljana, in cooperation with the Slovenian Geotechnical Society of ISSMGE. The Chairmen were Daniele Cazzuffi (IGS Past President, CESI SpA, Milano, Italy) and Sabatino Cuomo (LARAM School, University of Salerno, Italy).

The interest of the **1st Workshop “Geosynthetics for Slope Stabilization”** was related to the possibility that slope stability can be increased by geometry modifications, superficial or deep drainage, soil improvement, retaining structures or using geosynthetics. The increasing use of geosynthetics as reinforcing elements in soil structures – eventually associated with vegetation – has greatly encouraged sophisticated experimental work, including laboratory models and centrifuge tests, and advanced numerical analyses, in order to gain a better insight into the reinforcement mechanisms as well as to validate or improve the existing design methods. The reinforcement type, the soil mechanical properties and the anchorage system, as well as the extensibility, disposition and shape of the reinforcements lead to different behaviour in terms of deformation and strength. Geotechnical characteristics of the soil influence the stress distribution at the soil-reinforcement interface. The workshop was aimed to provide an opportunity to researchers and practitioners for sharing experience, ideas and best practices in the field of slope stabilization through geosynthetics and related products.

The program of the workshop was the following:

Mojca Ravnikar Turk, President of Slovenian Geotechnical Association: Welcome greetings and Introduction

Daniele Cazzuffi, Italy: The role of vegetation in geosynthetics-reinforced structures for slope stabilisation

Oliver Detert, Germany: High geogrid-reinforced slopes as flexible solution for problematic steep terrain: trieben-sunk project, Austria

Sabatino Cuomo, Italy: Recent experiences of geosynthetics reinforcement for unsaturated natural slopes in Italy

Zeljko Arbanas, Croatia: Geosynthetics in landslide remediation

Piergiorgio Recalcati, Italy: Geogrid reinforced slope 60.0 m high for the stabilization of the Valpola landslide

Vojkan Jovičić, Slovenia: The use of geotextile for the construction of tunnel portals



Figure 1. The Workshop speakers. From left to right: Vojkan Jovičič (Slovenia), Mojca Ravnikar Turk (President of Slovenian Geotechnical Association), Daniele Cazzuffi (IGS Past President, Italy), Piergiorgio Recalcati (Italy), Sabatino Cuomo (Italy), Oliver Detert (Germany), Pierpaolo Fantini (Italy).



Figure 2. The Workshop organizers. From left to right: Daniele Cazzuffi (IGS Past President, Italy), Sabatino Cuomo (Italy).

All presentations will be available on the following website of the Slovenian Geotechnical Society: <http://sloged.si/>

Reported by
Sabatino Cuomo, AGI-IGS Board member and IGS member

Italian Chapter AGI-IGS: New Officers Board elected

In spring 2017 elections took place in Italy in order to nominate the new Officers Board of the Italian Chapter AGI-IGS. The new elected Board is as following:

President	Daniele Cazzuffi
Vice President	Pierpaolo Fantini
Board members	Giuseppe Cardile (Secretary) Paolo Carrubba Sabatino Cuomo Francesco Fontana Piergiorgio Recalcati Pietro Rimoldi
Young member	Laura Carbone
Treasurer	Claudio Soccodato
Secretariat	Susanna Antonielli c/o Associazione Geotecnica Italiana Viale dell'Università, 11 00185 Roma; Italy
Tel	+39 06 4465569 or +39 06 44704349
Fax	+39 06 44361035
E-mail	agi@associazionegeotecnica.it
Web site	www.associazionegeotecnica.it



New Board of the Italian Chapter AGI-IGS.
Standing (L to R) : Pietro Rimoldi, Laura Carbone, Daniele Cazzuffi, Sabatino Cuomo, Giuseppe Cardile,
first row (L to R) : Pierpaolo Fantini, Francesco Fontana, Piergiorgio Recalcati

Nicola Moraci (after various consecutive terms) left the Board, also due to his election as President of the Italian Geotechnical Society (AGI): a particular word of thanks was addressed to him, who greatly contributed to the success of the Chapter's activities.

On 30 May 2017 at CESI SpA in Milano there was the first meeting of the new Board : the main decision was taken unanimously to run for hosting the 12th International Geosynthetics Conference in Italy and in particular in Roma in 2022.

Reported by
Daniele Cazzuffi, AGI-IGS President

7th IAGIG (Italian Young Geotechnical Engineers) Meeting Catania (Italy), 19 - 20 May 2017

The 7th edition of IAGIG (yearly Conference of Italian Young Geotechnical Engineers) was held in Catania, on 19 - 20 May 2017. The event aimed to gather young professionals of the various fields of Geotechnical Engineering. The participants currently work as practitioners, employees of public Institutions or Enterprises, contractors, PhD students and research fellows.

IAGIG 2017 was organised by Giuseppe Maria Gaspari on behalf of the Italian Geotechnical Association (AGI), and in collaboration with the boards of Italian Professional Engineers and the University of “Kore” in Enna and the University of Catania. In particular, the Organizing Committee decided to have the IAGIG in Catania to honour the memory of **Prof. Michele Maugeri**, Full Professor of Geotechnical Engineering and IGS Council member from 2002 to 2010.



Figure 1. The IAGIG 2017 attendees in the Catania University conference hall.



Figure 2. The attendees at the Catania Underground construction site during the technical visit.

The conference, started with a technical visit to the new Underground line of Catania (Nesima station) where the young attendees had the opportunity to see the construction site at different construction stages and even to visit a TBA where the excavation works were more advanced.

The conference followed with high quality technical sessions focusing on geotechnical modelling, slope stability recent advancements and reinforcement methods, seismic engineering and design criteria, construction procedures and technologies for special projects.

More than 200 participants attended the conference with 20 oral presentations to the audience and 29 posters discussed during two special dedicated sessions. At the end of the first day the attendees could round up in an informal-social dinner.

IGIG was a place for discussions on issues related to both practice and the latest research findings on geotechnical engineering and it encouraged exchanges of experiences and knowledge among the young geotechnical engineers. Some contributions were delivered also by young Italian engineers who are working out of Italy and eager to share their recent gained professional experiences abroad. Members of the **Italian Chapter of IGS** also contributed to the thematic sessions talking about the geosynthetic interface behaviour on slopes, geo-encased stone columns and slope stabilization with geosynthetics. The short written report of each presentation or poster is shared in the IAGIG web-page (www.iagig.unisa.it).

Next edition of IAGIG will take place in May 2018.

Reported by

Laura Carbone and Sabatino Cuomo, IGS members

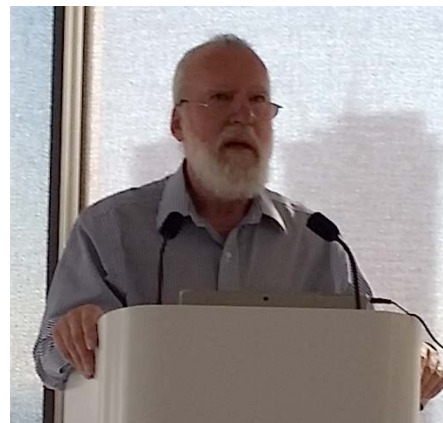
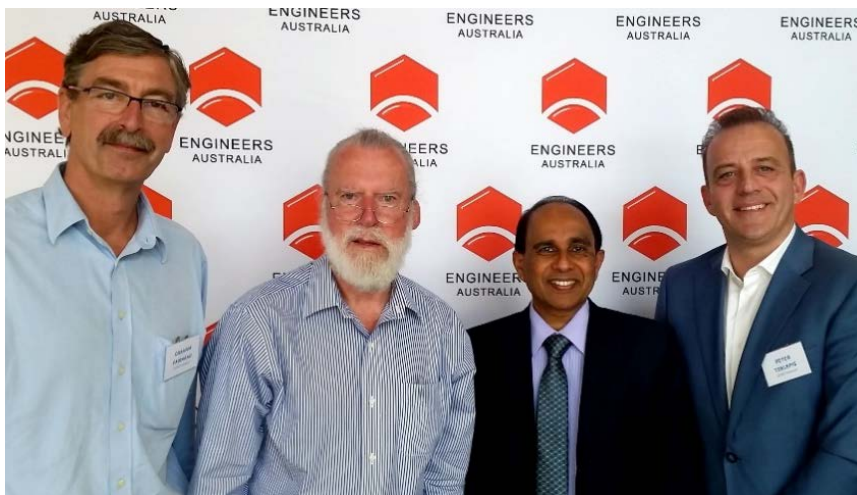
Australasian Chapter Seminars

Mike Sadler, chair of the ACIGS Events Committee, and the committee members have been very active in providing three seminars so far in 2017. The Australasian IGS chapter has undertaken three seminars in 2017 in Australia and New Zealand.

Contemporary Liner Design, Installation & Testing Brisbane & Melbourne, April 2017

Held in Brisbane and Melbourne, Dr Peggs presented to a cross section of designers, contractors, auditors, geosynthetic suppliers and asset owners in the waste and containment segment.

Dr Peggs discussed contemporary geomembrane liner design, installation and testing. He also discussed whether liner stress is acceptable in contemporary landfill, current leak detection methodologies and changing industry standards. He also talked about non destructive weld testing methods.



The Australasian Chapter was pleased to welcome Dr Ian Peggs as their keynote speaker for the first seminar of 2017.

At our Melbourne seminar Dr Peggs was followed by Kapila Bogoda from the Victorian Environmental Protection Agency. Kapila discussed the current BEPM guidelines and the Victorian experience in implementing best practice guidelines and the benefits that are resulting for landfill quality.

In Brisbane Dr Peggs was followed by Warren Hornsey from TRI Environmental who discussed construction quality assurance on waste and containment projects. His presentation covered to need for construction quality assurance, leak statistics, types of quality assurance and types of construction quality assurance.

Geosynthetic Reinforcement in Highways Seminar Auckland and Christchurch, May 2017

The increased investment by the New Zealand Government into improving the road infrastructure links has seen a greater demand to develop engineering solutions with the majority of these infrastructure corridors sitting over challenging ground conditions which are subject to high seismic loads. These challenges have resulted in the need to look to wider range of engineering materials that have the technical and commercial attributes to satisfy the engineering requirements for these sites. As a result Geosynthetics are now one of the key products being considered by engineers for these infrastructure projects. This increased interest in Geosynthetics has driven the need for a greater understanding of their performance and associated design methods. The increased use of has also prompted the New Zealand Transport Authority (NZTA) to introduce an approval process for Geosynthetic materials used in reinforced soil walls, slopes and embankments.



The objective of this seminar series held in Auckland and Christchurch was to improve designer's confidence in the use of Geosynthetics in reinforced soil structures for highway applications using published research projects to support design principles including static and seismic testing and instrumentation of structures. Providing clarity around the policy on the Geosynthetic approval process and product conformance were essential elements of this Geosynthetic seminar.

The seminar series brought together the leading experts in their fields to improve the knowledge, understanding and use of Geosynthetics in reinforced soil structures of designers involved in the design of reinforced soil embankments, slopes and walls using Geosynthetics in New Zealand.

Dr Richard Bathurst (Royal Military College of Canada and Queens University) provided the keynote address on recent developments in Mechanically Stabilised Earth (MSE) technologies looking at the historical use of Geosynthetics and how design methods have evolved as our knowledge in Geosynthetic performance, gained from instrumenting structures, has improved our prediction of reinforcement loads under a range of load conditions including seismic which is very important for New Zealand engineers.

The second part of Dr Richard Bathurst address looked at the lessons learned from full scale model testing of MSE walls. Key measurements of performance under seismic excitations included wall displacements, earth pressures and Geosynthetics strains were highlighted.

Dr Misko Cubrinovski (University of Canterbury in Christchurch) provided additional research results into modelling of Geosynthetic MSE walls under seismic with the work done on their shaking table using high speed video to record failure traces through the soil. This provided additional support to the work presented by Dr Richard Bathurst on seismic performance.



Chris Lawson brought his 35 years of Geosynthetic experience to present on key design aspects of basal reinforced embankments over soft soils including embankment design over foundation soils subject to liquefaction. Stuart Finlan of NZTA covered the policy and the requirements around the approval process with Warren Hornsey (TRI Australia) rounding of the seminar with his presentation on Geosynthetic quality assurance highlighting some of the challenges faced by designers when specifying Geosynthetics.

The seminar series, which had over 80 attendees at the two locations, was well received with heathy discussion during and after the presentations. By presenting the historical and current design methods, field and laboratory research into reinforced soil performance and the product selection and validation process the seminar achieved all

its objectives to equip New Zealand engineers with a high degree of knowledge and confidence in the design and use of Geosynthetics in reinforced soil structures.

Seminar Series on Geosynthetic Technology in Water, Waste & Tunnelling Auckland, Melbourne and Brisbane, June 2017

As a part of 2017 activities, Australasian Chapter of the International Geosynthetics Society (ACIGS) organised one-day seminar series in New Zealand (Auckland), Melbourne and Brisbane with the support from the International Geosynthetic Society (IGS). Auckland hosted the first of a three seminars series down under on Geosynthetic Technology in Water, Waste & Tunnelling. The seminar included presentations by IGS officers followed by a presentation by a local expert after each IGS officer's talk.

These seminars brought together the current IGS Officers to share their knowledge and expertise in the field of environmental engineering which has a high level of relevance in New Zealand and Australia, where the demand on water resources for agriculture has to be balanced against the protection of our waterways and groundwater, and environmental application of geosynthetics material is growing dramatically.

The seminar was opened with a brief review of ACIGS, by Graham Fairhead (ACIGS president) in Melbourne, Amir Shahkolahi (ACIGS Secretary) in Brisbane, and Gordon Stevens (ACIGS representative) in Auckland. It was then continued with a short review of IGS by Dr. Russell Jones (IGS President).

As the first speaker of the day, Dr. Russell Jones (IGS President) provided the audience with an interesting case study looking at the challenges of building a large leachate lagoon over poor ground where the water table was close to the surface. The need to stay within the client's budget and still satisfy the environmental requirements resulted in the original design being overhauled and a wide range of geosynthetics being incorporated into the new design. This included basal reinforcement as well as soil reinforcement support to the earth bunds which were steepened and reinforced ensuring that the storage volume and designated footprint stayed within the client's brief. All of this had to be constructed through the winter which posed its own challenges around fill placement and compaction for the contractor. "This project could not be possible without using geosynthetics" Russell said.



The presentation from Peter Legg (IGS Treasurer) looked at closure and rehabilitation of waste disposal facilities in Africa and highlighted the use of geosynthetics to achieve successful outcomes through the three case studies presented. The correct choice of geosynthetic solution was critical across all areas of design with the importance of veneer stability and drainage being highlighted by Peter for the landfill capping and rehabilitation projects.

Dr. Jorge Zornberg (IGS Immediate Past President) had the challenge of presenting after the lunch break. His presentation of geomembrane covers was thought provoking and ensuring a very attentive audience. The challenges faces by engineers around wind uplift and the methods on how to address this design criteria was covered by Jorge along with some interesting examples of how the use exposed covers can offer the owner of the opportunity to continue generating income even after closure of the waste disposal site.

The final presentation of the day was with Dr. Chungsik Yoo (IGS Vice President) who gave an interesting insight into tunnelling practice in Korea and the different methods of underground construction. The benefit of good drainage using geocomposite materials in tunnelling can lead to reductions in excavation and lining thickness through the lowering of the pore pressures which can offer huge cost savings to the client. Chungsik also took the opportunity to invite all participant to the upcoming International Conference on Geosynthetics (11IGS) in 2018 in his home country South Korea.



As a local expert in Auckland, Daniel Tan from Tonkin & Taylor shared his knowledge gained during his previous technical role with a geomembrane manufacture to provide the audience with an interesting insight into geomembrane technology and how it has advanced over the years especially around the areas of environmental stress cracking and durability.

Mike Sadlier was one of the local speakers in Australia having two interesting presentations in each venue in Melbourne and Brisbane. His first presentation in the morning was about the Recent Developments in PE Geomembranes, prepared by Mike Sadlier and Daniel Tan, where Mike talked about the history of PE membranes and developments in testing, specifications and

material during the time. Mike's second presentation in the afternoon was on Commodity Containment using Geosynthetics prepared by John Cowland and Mike Sadlier.

The morning session in Melbourne and Brisbane was closed by a presentation by Warren Hornsey from TRI Australia regarding a major failure involving an exposed geotextile. The presentation reviewed issues with design and construction of a coastal protection project in QLD using an exposed nonwoven geotextile including: using same design for two different projects, using a wrong specification, and using the geotextile in a wrong application, which had led to the failure of the geotextile and the whole project.



Attendees to Brisbane venue got benefit from hearing an extra presentation by a local expert from Golder Associates (Brisbane office), Nigel Ruxton, the Design Group Leader for QLD and Northern Territory, talking about Landfill guidelines in Australia focusing on QLD guidelines. He then presented a recent piggy-back landfill in North Queensland designed by Nigel and his team at Golder Associates.

The need for considering effective drainage in the design, constant cooperation between designer, contractor and client in each project, using geosynthetics as the cost effective solution where design and construction is not possible with traditional techniques, getting benefit from new technologies and geosynthetic products, and designing each project separately were some of common theme across all the presentations.

The high number of questions asked in each venue was a good indicator of the interest shown in the subject matter presented.

Reported by

Graham Fairhead, President of ACIGS, Mike Sadlier, Vice-President of ACIGS, and Gordon Stevens, IGS Member

Educate the Educators (EtE) Program concludes in the Philippines

University of the Philippines, 27 – 28 April 2017

Through the efforts of Dr. Dennes Bergado, IGS Philippines President Engr. Mark Morales and Dr. Rajagopal Karpurapu, chairman, IGS-Asian Activities Committee (IGS-AAC), the first ever EtE program in Southeast Asia was conducted at the National Engineering Center, University of the Philippines, 27 – 28 April 2017.



There were 42 participants (22 from academia and 20 from industry). Apart from the necessary knowledge and tools to help educators integrate geosynthetic topics into their courses, the program also provided the opportunity to establish contacts with IGS institutional members from industry for future collaborations such as student on the job training (OJT) programs and faculty industry immersion. A total of twelve (12) academic institutions were represented while five (5) other universities expressed their desire to participate but were not able to attend.

Reported by

Lilia Austriaco, Roy Soriano, Mark Morales, IGS Philippine Chapter

Remark from the Editor:

This is only a short version of the report. The full version is available at the IGS Secretariat (IGSSec@geosyntheticssociety.org)

1st Portuguese Technical Session on Geosynthetics Railway Works and the Different Applications of Geosynthetics: New Railway Line, Modernization and Maintenance Lisbon, Portugal, 6 June 2017,

The Portuguese Chapter of IGS has organized the 1st Technical Session on Geosynthetics, which was held on 6th June in the National Laboratory for Civil Engineering (LNEC), Lisbon. The topic of the session was "Railway works and the different applications of geosynthetics: new railway line, modernization and maintenance". The session was sponsored by Geosin/Tencate and has included six keynote lectures given by specialists from Portugal, Spain and France. A total of 104 participants, including designers, installers, producers, users, researchers and students, have attended this session. The event has promoted the dissemination of applications and the discussion on the behaviour of geosynthetics in railway works, as well the announcement of the investments planned for the upcoming years on the railway network in Portugal. The Portuguese Chapter of IGS intends to organize the second technical session until the end of 2017.



Opening ceremony



Audience

Reported by
José Neves, IGS News correspondent for IGS Portugal

1st Portuguese Seminar on Transportation Geotechnics “Improvement, Reinforcement and Rehabilitation of Transport Infrastructures”

Lisbon, Portugal, 12 - 13 October 2017,

The Portuguese Chapter of IGS co-organizes with the Portuguese Technical Committee on Transportation Geotechnics and the Portuguese Geotechnical Society the 1st Portuguese Seminary on Transportation Geotechnics, to be held on 12 - 13 October, in Lisbon, Portugal. The themes of the seminary are the improvement, reinforcement and rehabilitation of transport infrastructures. The program includes special sessions on the application of geosynthetics in transportation infrastructures. Specialists from Deltares, Tencate, and Huesker are invited to present special keynote lectures.

Further information

<https://cpgtspg.wixsite.com/01sqt2017>

International Geosynthetics Society-North American Chapter (IGS-NA): Educate the Educators (EtE)

Kingston, Ontario, Canada, 4 – 5 December 2017



The International Geosynthetics Society-North American Chapter (IGS-NA) will be hosting an Educate the Educators (EtE) event, 4-5 December 2017 at Queen's University, Kingston, Ontario, Canada. EtE is a 2-day funded program for University professors to be able to obtain specialized, hands-on training to confidently and effectively teach geosynthetics at both the undergraduate and graduates levels. Applications have been accepted and IGS NA is beginning to vet applicants for the program.

Read more about the program at www.igs-na.org/educate-educators-participation-application/

This, like other EtE programs, is co-sponsored by the chapter and the IGS and supported by corporate sponsorship. The IGS-NA is offering sponsorship programs in order to fund this event. There are multiple different opportunities to sponsor the event please download the [EtE Sponsorship PDF](http://www.geosyntheticssociety.org/wp-content/uploads/2017/07/EtE-Sponsorship-Request-Flyer-2017.pdf) www.geosyntheticssociety.org/wp-content/uploads/2017/07/EtE-Sponsorship-Request-Flyer-2017.pdf

We consider sponsoring this important initiative and support the growth of geosynthetics use through education.

If you have any questions or would like more information please don't hesitate to contact **Becky Slaybaugh - Executive Admin IGS-NA** (Info@IGS-NA.org).

Too many young engineers enter the field without state-of-the-art geotechnical knowledge because their formal schooling overlooks a key discipline in current geotechnical practice: GEOSYNTHETICS.

Let the geosynthetics community provide you the resources to teach your students about geosynthetics!

We know that many undergraduate engineering programs lack geosynthetic instruction, often instructors may not have the resources, confidence or materials to effectively teach geosynthetics. In order to address this the [IGS-NA](http://www.igs-na.org)

offers Educate the Educators (EtE), a 2-day, funded program for university professors.

EtE provides specialized, hands-on training and lecture materials to equip attending professors with the tools they need to offer effective geosynthetics course work in their engineering programs. Attending professors receive instruction, course materials (including power point presentations, hand outs and sample binders) and have continued access to the instructors as they develop their own programs at both the UNDERGRADUATE and GRADUATE levels.

Building on the success of EtE Austin, held in 2015, IGS-NA is now offering a second EtE event, to be held in Kingston, Ontario in December of 2017.

We are very excited to have four exceptional educators and pioneering researchers as the EtE lead instructors: R. Kerry Rowe (Queen's University), Richard J. Bathurst (Royal Military College of Canada), Richard Brachman (Queens University) and Jorge Zornberg (University of Texas Austin).

Each successful applicant will need only to organize transportation to/from the course. The **IGS** and **IGS-NA** and their sponsors will provide food, lodging and course registration to all successful candidates.

Applicants will be asked to upload their C.V., provide information about the courses they teach and write a short description identifying how they would hope to incorporate the information from EtE in their curriculum.

Interested participants can **APPLY ONLINE** at: www.IGS-NA.org

Please send all questions to info@IGS-NA.org or call **+1 561 768 9489**.

Sponsors to date are Agru, Cetco, and TenCate. If you are interested in sponsoring please contact info@IGS-NA.org.

*Reported by
International Geosynthetics Society-North American Chapter*

IGS UK Symposium - Use of Geosynthetics in Rail: Towards 2025 York, UK, 18 April 2018

The UK Chapter of the International Geosynthetic Society (IGS) will be running a one day symposium at the National Railway Museum in York on the 18th April 2018.

With high-speed railways planned across the world, budget limitations pressing for ever more efficient structures and the Paris Agreement demanding more sustainable solutions, there are many challenges to overcome in the rail sector.

The UK chapter of the IGS want to educate the Industry about the use of geosynthetics in Rail. The symposium will showcase the established use of geosynthetics in rail applications from around the world for over 30 years. It will also discuss how they could be utilised in high speed networks to create steeper embankments, construct abutments, facilitate drainage and assist in many other applications.

The one-day event will bring together consultants, contractors, academics and suppliers with experience of the opportunities and challenges of utilising geosynthetics in rail infrastructure. Speakers include representation from HS2, specialist rail contractors and consultants, professionals from network operators in France, Spain, Italy and Germany and world leading academics from Japan, amongst others.

IGS Corporate Sponsors who want to exhibit should contact Patricia@geosyn.co.uk for pre-registration. Registration for other exhibitors and attendees will open at a later date to be advised.

More information

Further details will be released later this summer.

To stay updated please visit the IGS UK website <http://www.igs-uk.org> or follow us on LinkedIn www.linkedin.com/IGSUK.



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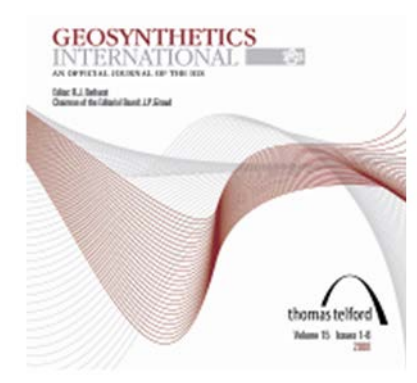
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Corporate Membership

Case Studies – Use the Chance!

All corporate members are invited to announce a case study at any time. For each issue 3 to 4 case studies are planned to be placed in (up to 1 page with pictures). Usually if there are more announcements we will place them on a list and will use them on a “first come, first serve” basis. For this issue we have no “Profiles” therefore we expand the case studies section. A corporate member may have a second case study published if the list is finished with corporate members not been considered yet. As we know that some of our corporate members are very hard-working on such a type of publication, please be aware that the only possibility to prevent a publication series by one company is to send in your own case study!

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

Reported by

Gerhard Bräu, IGS News Editor

Dredge and Land Reclamation, Anping Harbor, Tainan, Taiwan, ROC



Application

Anping harbor has been used for 36 years; the original design is now inadequate, so was required to build new facilities. In addition, dredging the harbor was also an urgent issue. The port authority required dredging the silt and using it effectively; otherwise removal of the silt would entail additional cost. To further land reclamation, the relevant dike engineering is anticipated to use the silt as construction material.

The Conventional Solution

The common structures of dikes are riprap or caisson. Riprap is expensive and less durable. Cast-in-place reinforced

concrete caissons are durable but the cost is also high. While dredged silt can be used as filling material for caissons, it cannot be used for riprap structures. Therefore, finding a relatively simple and fast construction method at low cost, and which could take advantage of silt, is the biggest challenge of the case.

ACE Solution

ACETube® geotextile tube is made of ACETex®, a product of polypropylene woven geotextile; when it is properly filled, it can be applied to build a dike. The required dike for land reclamation was 168m long and 10m wide at the bottom and 2.5m at the top. Considering in situ varying topographic contours, different sizes of ACETube® were designed. For this project, the tube circumference was 8.6m to 12.8m and the length was 37m to 47m. The total length of ACETube® used was 1,008m. It was then stacked up for three layers, to 5m high. The silt could fill the ACETube®, and backfilling the area behind ACETube® dike would provide the reclamation material.

In April, 2015, this dike was completed within one month. Besides the reclamation land, the dike constructed by ACETube® also used more than 5,200 cubic meters of silt dredged from the deposit area of the Harbor, effectively reducing the cost of silt removal. Comparing ACETube® and caisson, the ACETube® solution provides a relatively easy and faster installation and at a lower cost than using caisson. We can understand that the geotextile tube solution can be a good substitute to some traditional dike methods.



For more information about ACE Geosynthetics, visit www.geoace.com or contact sales@geoace.com.

Geocells Solve Mining Deadline Dilemma



If not for Kaytech's tried and tested **Multi-Cell** system, a Limpopo mine would not have attained one of its many deadlines. Ivanplats, lying just outside Mokopane, is a platinum-focused subsidiary of Ivanhoe Mines which is currently in the development stage of potentially becoming one of the largest Platinum-Group Elements (PGE) mines in the world.

When storm water channels at Ivanplats Mine required not only urgent lining but also a high MPa rating as requested by engineers, the time-consuming conventional method of concrete construction was pushed beyond consideration. Forced to seek an alternative option, Grinaker Mining, the main contractor, approached Kaytech for a solution. The immediate proposal was the fast and effective **Multi-Cell**, a honeycomb structure of three-dimensional diamond-shaped cells providing in-situ shuttering for casting continuous, interlocking concrete paving.

Multi-Cell is manufactured from UV stabilised, laminated polypropylene woven slit film tape strips providing a high tensile strength and seam strength. Lightweight and flexible, **Multi-Cell** is quick and easy to install, conforms to existing surfaces, may be installed on clays or in high water table areas and provides hydrostatic pressure relief through built-in joints in the concrete infill.

Having no previous experience with **Multi-Cell**, the contractor was initially sceptical of the product's efficacy but after a brief training session supplied by Danie Herbst, a Kaytech representative, both contractor and workforce realised the many benefits of this outstanding product. In a short space of time, 900m² of **Multi-Cell 75 mm** was installed, pegged down and ready for concrete infill.



excavating the channel



using the the tension frame to peg the Multi-Cell in position

With its proven track record of approximately twenty-five years, economical **Multi-Cell** has been used as an effective erosion protection treatment for hydraulic structures, for slope protection where cells may be soil filled and vegetated, for load support and for cast in-situ concrete roads.

Thanks to a 19 metre, ultra thick, relatively shallow and predominantly flat underground mineralised belt known as the Flatreef Deposit, the Platreef Project seems destined to become the future of platinum mining in South Africa, with the Ivanplats Mine breaking new ground.

Numerous deadlines imposed on the development of Ivanplats could have rendered this project relatively impossible, but with the specification of **Multi-Cell**, severe time constraints were totally eliminated.

Further information

For more information visit www.kaytech.co.za

Subgrade Stabilization for Northwest Crane in Hectorville, OK



THE CHALLENGE

In August of 2015, Cherokee Builders began construction of a trucking and crane storage yard expansion for Northwest Crane in Hectorville, OK. The geotechnical report was from the original lot that had previously been constructed but needed to be expanded. That report determined that the subgrade, at most locations, would consist of low strength silt underlain by moderate strength and lean to fat clays with varying amounts of gravel. The report determined that the silty soils were not suitable for supporting surfacing materials and the clay soils were subject to volume change and strength loss with variations in moisture content. Because of the variation in composition of the subgrade soils, and the potential for strength loss with variation in moisture content, the geotechnical engineer recommended the subgrade be modified with 9 inches of fly ash, prior to placement of 6 inches of aggregate base surfacing.

The contractor treated the first 2 acres of the project site with fly ash and was able to stabilize the soils. As they continued, the soil conditions got worse and the fly ash was not able to stabilize the existing subgrade. The contractor had previously utilized TenCate Mirafi® RS580i woven geosynthetic on another project with great success and decided to recommend it on this project in lieu of fly ash.

THE DESIGN

TenCate's Miraspec design software was utilized by TenCate engineers to develop a stabilization section for the existing soils. Because the on-site soils were much worse than anticipated, the contractor and owner, together, decided to build a test section to verify TenCate's design and see if they could thin up the aggregate requirement or utilize a lightweight geotextile than calculated. The resulting design was 8 inches of aggregate base course to be placed over one layer of Mirafi® RS580i geosynthetic. The owner chose to go with Mirafi® RS580i, versus the lightweight Mirafi® RS380i, in order to provide additional reinforcement for the anticipated heavy loads and to provide an additional factor of safety.

THE CONSTRUCTION

Due to final grade requirements, prior to the placement of Mirafi® RS580i, the contractor had to remove 1 inch of the weak onsite soils across the site. Had there not been a grade requirement, the recommendation would have been to

place the Mirafi® RS580i directly onto the subgrade.

The contractor installed Mirafi® RS580i with ease, maintaining 2 feet of overlap across the site. By utilizing a geosynthetic-reinforced section, versus chemical stabilization, the contractor was able to achieve a consistent stabilization section and a reduced construction schedule by not having to wait on cure time.



Working the subgrade before placement of Mirafi®RS580i geosynthetic



Bridging soft soils and building the platform

THE PERFORMANCE

Because chemical stabilization did not work, the contractor had no choice but to employ another means of stabilizing the site. The owner performed a cost comparison and determined that the cost of the Mirafi® RS580i section was comparable to the cost of the chemically stabilized section, thereby fitting within their budget constraints.

Three weeks after construction started, the owner wanted to truly see how well the section was going to hold up. So, they set up a crane in a few spots across the site and observed minimal, if any, deflection from the outriggers. All parties involved were very happy with the overall performance of the composite Mirafi® RS580i and aggregate section.

Further Information

For more information visit www.mirafi.com

Using geogrid to mechanically stabilise founding aggregate layers on the A556 improvement scheme, UK

Tensar

The A556 Knutsford to Bowden Improvement Scheme involved building a new offline 7.5km dual carriageway between the M6 and M56 in Cheshire, north west England, to relieve congestion and improve safety.

Designed for a capacity of over 80M Equivalent Standard Axle Loads (ESALs), the road pavement comprised a 250mm thick unbound granular capping layer with two, 150mm thick layers of cement bound granular material (CBGM) above and, finally, 160-180mm of asphalt.

The highly variable ground conditions were challenging, from very dense granular material to thick layers of very soft clay with a CBR of between 1.5% and 2%. As the road design required a minimum CBR of 2.5%, Principal Contractor Costain needed a way of dealing with the soft clay on two sections. After rejecting lime stabilisation and 'dig and replace' on grounds of cost and timescale, it chose a solution from Tensar to stiffen the unbound capping layer using TriAx geogrid.

The TriAx interlocked with the aggregate under trafficking load, confining lateral movement of the particles to create a mechanically stabilised layer. This reduced rutting and cracking of the asphalt and helped prevent moisture and contaminants entering and weakening the structure, increasing pavement life.

TriAx delivered a bearing capacity at the top of the granular layer of between 60 and 70MPa, higher than the 50MPa required. Further trafficking tests at the top of the first CBGM layer showed bearing capacity far exceeded the required 100MPa, reaching 700MPa. An estimated £2m was saved on material and construction costs, compared with the alternative solutions.

Costain Senior Engineer Anthony Mackenzie commented: "We found the TriAx solution to be a faster, more simple and cost-effective alternative to lime stabilisation or dig and replace. The TriAx was easy to lay, with little effect on the construction programme, plus the method was far safer than other options."

Client benefits:

- £2m in construction costs saved

- 10,000 lorry movements avoided
- Significant time savings, compared with alternative solutions.



Tensor's TriAx geogrid was used to stiffen the unbound capping layer, as an alternative to lime stabilisation and 'dig and replace' solutions.



TriAx delivered a bearing capacity at the top of the granular layer of between 60 and 70MPa, higher than the 50MPa required.

Further Information

For more information visit www.tensor.co.uk

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The International Geosynthetics Society

OBJECTIVES OF THE IGS



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

Please check whether there is a local IGS Chapter in your country (list at page 31)!

Join online at <http://www.geosyntheticssociety.org>

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Calendar of Events

Event	Location	Date	E-Mail, Website
2 nd International Symposium on Coupled Phenomena in Environmental Geotechnics (CPEG2)	Leeds, W. Yorks, United Kingdom	06 - 08 Sep 2017	CPEG2@leeds.ac.uk http://tinyurl.com/cpeg2017
Interdisciplinary Geotechnical Forum (incorporating FS-KGEO 2017)	Würzburg, Germany	06 - 08 Sep 2017	http://fachsektionstage-geotechnik.com/
ICSMGE 2017 - 19 th International Conference on Soil Mechanics and Geotechnical Engineering	Seoul, Korea	17 - 21 Sep 2017	secretariat@icsmge2017.org http://www.icsmge2017.org
International Conference on Advancement of Pile Technologies and Case Histories	Bali, Indonesia	25 - 27 Sep 2017	secretariat@pile2017.com https://www.pile2017.com/
6 th Upper Austrian Geotechnical Day - Geosynthetics	Steyregg, Austria	27 Sep 2017	zaussinger@ibbg.at
GeoAfrica 2017 – 3rd African Regional Conference on Geosynthetics	Marrakech, Morocco	08 – 11 Oct 2017	contact@geoafrica2017.com http://geoafrica2017.com/
23 rd ICID Congress & 68 th IEC meeting	Mexico City, Mexico	08 – 14 Oct 2017	http://www.icid2017.org icid@icid.org
1 st Portuguese Seminary on Transportation Geotechnics Improvement, Reinforcement and Rehabilitation of Transport Infrastructures	Lisbon, Portugal	12 – 13 Oct 2017	https://cptgtpg.wixsite.com/01sgt2017
3 rd International Soil-Structure Interaction Symposium	Izmir, Turkey	18 - 20 Oct 2017	yeliz.yukselen@deu.edu.tr http://www.zye2017.org
2 nd Pan-American Conference on Unsaturated Soils	Dallas, TX, United States	12 - 15 Nov 2017	mccartney@eng.ucsd.edu ; registrations@asce.org http://www.geoinstitute.org/event/2017-pan-am-unsat/
2 nd International Conference “Challenges in Geotechnical Engineering” 2017	Kyiv, Ukraine	20 - 23 Nov 2017	info@cgeconf.com http://www.cgeconf.com/en
2 nd International Symposium on Asia Urban GeoEngineering	Changsha, China	24 - 27 Nov 2017	urban_geoeng@163.com http://www.isaug2017.org/
IGS UK Symposium - Use of Geosynthetics in Rail: Towards 2025	York, UK	18 Apr 2018	http://www.igs-uk.org www.linkedin.com/IGSUK
5th International Conference on Geofoam Blocks in Construction Applications (EPS'18)	Kyrenia, Northern Cyprus	09 – 11 May 2018	secretariat@geofoam2018.org http://www.geofoam2018.org/en/
XVI Danube-European Conference on Geotechnical Engineering: Geotechnical Hazards and Risks: Experiences and Practices	Skopje, Macedonia	7 - 9 Jun 2018	mag@gf.ukim.edu.mk http://www.decge2018.mk
4 th International Symposium on Cone Penetration Testing (CPT'18)	Delft, The Netherlands	21 – 22 Jun 2018	info@cpt18.org http://www.cpt18.org/
9 th European Conference on Numerical Methods in Geotechnical Engineering	Porto, Portugal	25 - 27 Jun 2018	numge2018@fe.up.pt http://www.numge2018.pt/
5 th GeoChina International Conference-Civil Infrastructures Confronting Severe Weathers and Climate Changes: From Failure to Sustainability	Hangzhou - China	23 - 25 Jul 2018	GEOCHINA.ADM@GMAIL.COM http://geochina2018.geoconf.org/
The 7 th International Conference on Unsaturated Soils (UNSAT2018)	Hong Kong, China	03 - 05 Aug 2018	unsat2018@ust.hk http://www.unsat2018.org
69 th IEC Meeting & International Conference	Saskatoon, Canada	12 -17 Aug 2018	http://www.icid2018.org icid@icid.org
11th International Conference on Geosynthetics (11ICG)	Seoul South Korea	16 - 20 Sep 2018	csyoo@skku.edu
International Symposium on Energy Geotechnics	Lausanne, Switzerland	26 - 28 Sep 2018	seg2018@epfl.ch http://seg2018.epfl.ch/
7 ICEGE 2019 - International Conference on Earthquake Geotechnical Engineering	Rome, Italy	17 - 20 Jun 2019	agi@associazionegeotecnica.it
ISDCG 2019 – 7 th International Symposium on Deformation Characteristics of Geomaterials	Glasgow, UK	26 – 28 Jun 2019	
ECSMGE 2019 – XVII European Conference on Soil Mechanics and Geotechnical Engineering	Reykjavik, Iceland	01 - 06 Sep 2019	has@road.is http://www.ecsmge-2019.com

Event	Location	Date	E-Mail, Website
XVII African Regional Conference on Soil Mechanics and Geotechnical Engineering	Cape Town South Africa	07 - 10 Oct 2019	denis.kalumba@uct.ac.za
XVI Asian Regional Conference on Soil Mechanics and Geotechnical Engineering	Taipei, China	21 - 25 Oct 2019	secretariat@16arc.org http://www.16arc.org
XVI Panamerican Conference on Soil Mechanics and Geotechnical Engineering	Cancun, Quintana Roo, Mexico	18 - 22 Nov 2019	support@panamerican2019mexico.com http://panamerican2019mexico.com
Nordic Geotechnical Meeting	Helsinki, Finland	27 - 29 May 2020	leena.korkiala-tanttu@aalto.fi

Note:

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

IGS Conference

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