

# IGS NEWS



**NEWSLETTER OF THE INTERNATIONAL GEOSYNTHETICS SOCIETY**

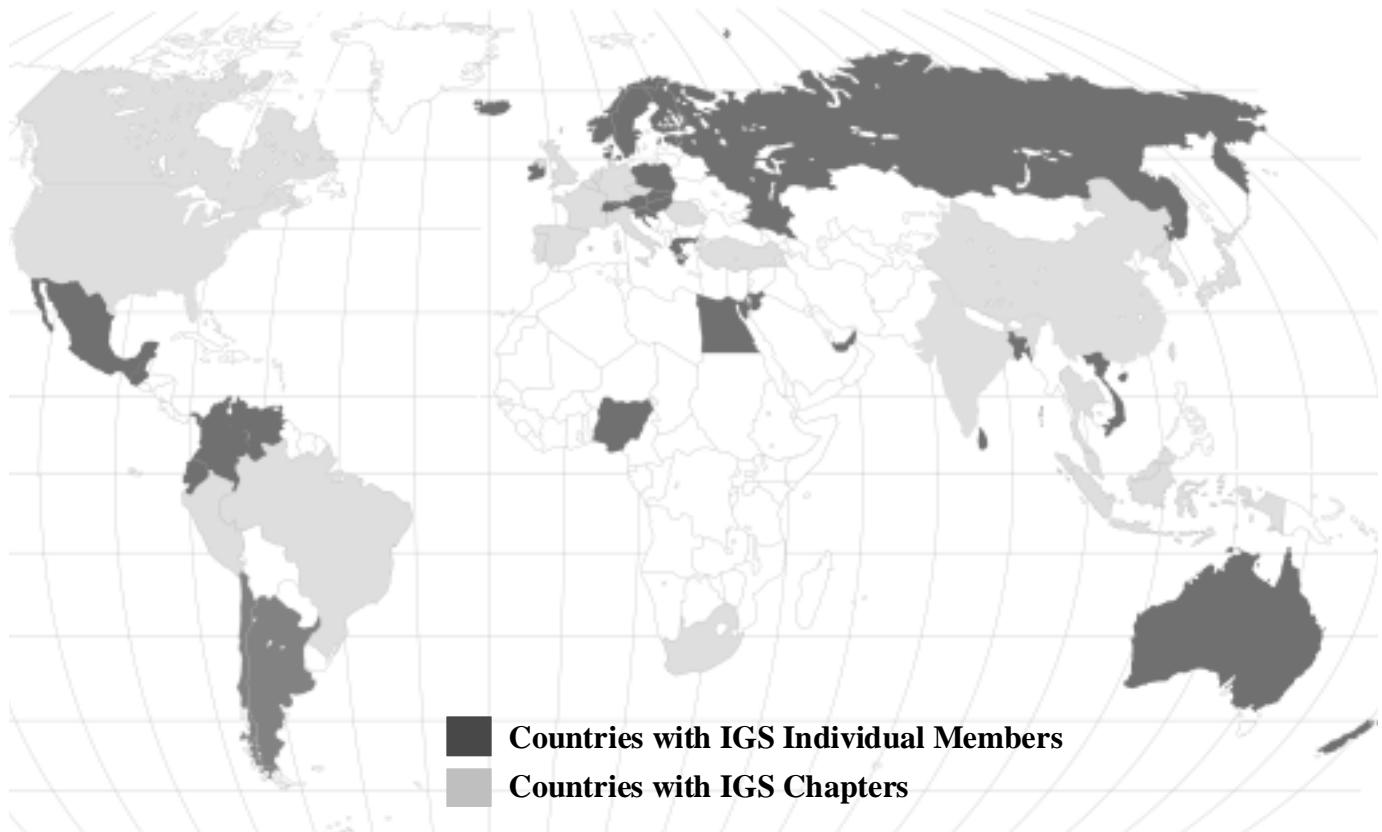
*Dedicated to the scientific and engineering development of geotextiles, geomembranes, related products, and associated technologies*

**VOLUME 19, NO. 3**

**NOVEMBER 2003**

## IGS 20th ANNIVERSARY

**CELEBRATING 20 YEARS OF OUTREACH AND INTERNATIONAL GROWTH**



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NEW IGS MEMBERSHIP BENEFITS REQUIRE ELECTRONIC COMMUNICATION. (See page 16 for details.)

Visit the IGS WWW site: <http://www.geosyntheticssociety.org>

# The 20<sup>th</sup> Anniversary of the IGS

## Memories, Future Scenarios, International Synergy, and Geographical Structure

by Daniele Cazzuffi, IGS President



**F**or this special issue of *IGS News*, which is dedicated to the 20<sup>th</sup> anniversary of the IGS, let me start with a personal memory.

*Setting: August 1982, Las Vegas, Nevada, USA, the Second International Conference on Geotextiles.*

At the very last minute, I was able to attend. During the Conference, a meeting for presenting the concept of an international society on geotextiles was organised. As reported by J.P. Giroud in his article for the 10th IGS Anniversary (*IGS News*, November 1993), "... the meeting in Las Vegas was an impressive success: 150 participants from 34 countries." To be sure, I was one of the youngest participants, being 26 years old at the time.

I recall being impressed by the enthusiasm of the individuals contributing to discussions and the capacity to make decisions almost unanimously. For example, the frequency of subsequent international conferences on geotextiles was easily decided upon despite the fact that the society was still not officially constituted. Also, due to the typical "Western" Nevada environment, I felt as though I was transported back in time to the days of "pioneers." It was truly a pioneering time for the IGS because approximately one year later, on November 10, 1983, the IGS was officially formed in Paris, France.

And today, fortunately, after more than 20 years, the enthusiasm of geosynthetics professionals is still the same as the enthusiasm of the "pioneers" that participated in that informal meeting in the Las Vegas MGM room, which I remember resembled the old-style Wild West "saloon."

It has been not easy to maintain this same level of enthusiasm throughout the past two decades. Economic constraints, merging companies, and aggressive markets on the commercial side; and reluctance to adopt novel technologies, concerns regarding dura-

bility, and lack of international standards (at least until recently) on the technical side, are only a few examples of the main difficulties encountered by geosynthetics professionals all around the world. However, the outcomes have always been positive. Evidence of this is the many new product categories that have been successfully developed by geosynthetics manufacturers, or the many new design methods that have been proposed and used in the last twenty years. This enthusiasm, in fact, is the key to the success of the discipline, but, it would be not enough, if not accompanied by technical competence and professional dedication.

We hope that this issue of *IGS News* is not viewed as a self-celebratory report of our Society. On the contrary, the "spirit" and focus of this issue, which is dedicated to the 20<sup>th</sup> anniversary of the IGS, is the potential future of the IGS. For this reason, the IGS Past Presidents were asked to provide their views on the future of geosynthetics and the role that they envision the IGS taking in particular geosynthetics applications. *Richard J. Bathurst* provides commentary on retaining wall applications; *Colin J.F.P. Jones* presents his view on future innovative products and technologies; *R. Kerry Rowe* comments on landfills and environmental engineering; and *Jean-Pierre Giroud* provides commentary on dams and other hydraulic structures.

The one theme that is common to almost all the IGS Past Presidents analyses is the need to cooperate with other learned international societies. I am particularly happy that this theme is present because synergy and links with other international associations is one of the five goals of my four-year programme as IGS President (see *IGS News*, November 2002), together with issues of communication, education, science versus business, and geographical structure.

J.P. Giroud has stated the need to cooperate with the International Commission on Large Dams (ICOLD), the International Commission on Irrigation and Drainage (ICID), and the International Association for Navigation (PIANC) in the field of hydraulic engineering. In addition, both R.J. Bathurst and C.J.F.P. Jones have expressed the need for mutual cooperation with the International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE) in the field of geotechnical applications of geosynthetics, which brings me to introduce another important contribution to this issue written by William van Impe, the ISSMGE President.

W. van Impe presents a possible framework for improved collaboration between international geotechnical societies, which he has proposed to the International Society for Rock Mechanics (ISRM) and the International Association for Engineering Geology (IAEG).

As IGS President, I was invited to a meeting of the ISSMGE, ISRM, and IAEG Presidents that took place in Prague, Czech Republic in August 2003. The purpose of the meeting was to discuss the concept of a "Federation" of the international geotechnical societies that would not only include the ISSMGE, IGS, ISRM, and IAEG, but also other learned international professional societies, such as the International Tunneling Association (ITA). For the proposed Federation, it was emphasized that each international society would retain its own identity and autonomy.

A definitive advantage of such a Federation would be to gain – as a group of learned societies – greater recognition among decision-makers and politicians of the influence and importance of geosynthetics engineering in larger field of geotechnical engineer-

ing. Of course, the possibility of creating this Federation, which would include the IGS, already represents a new planning perspective for the coming years. For the time being, I sincerely thank William van Impe for making himself readily available for discussions and for his very open attitude toward geosynthetics engineering as a very respected discipline in the broader geotechnical field.

Another issue of critical importance for the future of IGS will be the consolidation of the Society's structure, which is another of my goals during the tenure of my presidency. As already proposed by IGS Vice-President Fumio Tatsuoka during the last IGS Officers in June 2003 (Boston, Massachusetts, USA), now is the right time to start thinking of a different geographical structure for the Society such that activities occurring in the different continents are all considered equally important to the success of the IGS.

Considering the current distribution of IGS members around the world, a possible proposal would be to create three main regions: Europe and Africa; Asia and Australia; and North, Central, and South America. Each of the three macro-regions would have an IGS Vice-President, a Regional Conference

every four years (in years alternate to the International Conference), and an IGS Regional Activities Committee that comprises one member per every Chapter within the macro-region and lead by the macro-region Vice-Presidents.

With this practical proposal in mind, the link between each IGS Chapter and the corresponding IGS Regional Activity Committee would be automatic. It would also create a link between each IGS Regional Activity Committee and the IGS Officers. (With this new structure, there would be three IGS Vice-Presidents instead of one, which will increase the number of IGS Officers from five to seven.) If consensus among the entire geosynthetics community is sought and reached, modifications to the IGS by-laws would be required and could potentially be approved at the next IGS General Assembly to be held in Yokohama, Japan, in September 2006.

In summary, I have introduced potential advancements in the different geosynthetics fields, I have emphasized the importance of collaborations with other learned international societies, and, finally, I have discussed a new possible structure for the IGS that considers geographical constraints. Now, I would like to provide the reader with

my concluding thoughts and opinions as IGS President.

As stated in my first message as IGS President, "all of the Society's activities will be focused on promoting the correct and most efficient use of geosynthetics worldwide. This will contribute to sustainable development for us, our children, and future generations."

To achieve global promotion of geosynthetics, improving communication, educational programs, and strengthening the relationship between academics and manufacturers, will be very important.

In celebrating the 20<sup>th</sup> anniversary of our Society, we need also to realise that the first generation of IGS "pioneers" has almost accomplished its fundamental task of putting the IGS "on the map."

Having this in mind, to create a bright future for the IGS, it is mandatory to plan for the future and mentor the new generation, such that they are eager to pursue, develop, and expand the present achievements and reputation of the IGS as a respected professional international society. Therefore, we need to involve more and more young and motivated professionals in the IGS world-wide.

## Challenges when Using Geosynthetics in Retaining Wall Applications and the Role of the IGS

by Richard J. Bathurst, IGS Past President (1998-2002)



**M**odern geosynthetic-reinforced soil wall systems have been shown, at least in the USA, to be typically 50% of the cost of traditional reinforced concrete wall systems. It is interesting to note that almost all the challenges to greater acceptance of geosynthetics in civil engineering works have also arisen in this area of technology since the first documented case of a geosynthetic-reinforced soil wall structure 30 years ago.

I refer to issues related to construction durability, chemical resistance, soil-structure interaction, and the prediction of mechanical properties over

design lifetimes. Nevertheless, most retaining wall structures are excessively over-designed and, in fact, may have become more conservative over time compared to structures that have and continue to perform well after many years. However, there are perhaps only a dozen instrumented field structures that have been properly conceived, instrumented, and monitored to gather the detailed information required to quantify actual performance under operational conditions, identify sources of design conservatism, and provide guidance for development of the next generation of design methods. With

these introductory words I would like to identify other challenges.

1. An unusual and sometimes frustrating fact of retaining wall design is that it is usually the responsibility of the structural engineer. The geotechnical engineer is typically burdened by a limit equilibrium-based global factor of safety approach whereas the structural engineer operates in a Limit States Design (LSD) environment. The need to develop properly calibrated

LSD methods for the design of geosynthetic-reinforced soil systems is paramount.

2. Retaining walls are very complex systems composed of a polymeric component, a soils component, and typically a hard-facing component. We are only beginning to understand the contribution of the structural facing as an important load-carrying component and one that should not be ignored in design methods. Related to the facing of these structures, are problems related to the durability of some facing treatments in harsh environments.
3. The multi-component nature of modern reinforced soil wall structures also introduces challenges for earthquake resistance – particularly modular block systems. Greater acceptance of geosynthetic-reinforced walls with discrete facing systems in earthquake areas will be delayed until better models are developed.
4. Prediction of loads in reinforcement remains at a primitive stage. It is almost routine to find designers (and some researchers) who use index tensile tests to estimate reinforcement stiffness values. These values are then used to compute serviceability loads in the reinforcement despite the body of evidence that shows that the operational stiffness of the material is time and strain dependent. In addition, we routinely focus our designs on an ultimate limit state

(rupture) which bears little resemblance to the loads experienced by geosynthetics under operational conditions. Most walls that fail, do so because of unacceptable deformations rather than collapse.

5. Regarding the use of non-select fills and walls over compressible foundations, most guidelines recommend high-quality granular fills for construction due to their strength, stiffness, good drainage, and ease of construction. Nevertheless, availability of these materials is the exception rather than the rule. The lack of guidelines for use of non-select fills and a lack of understanding of the performance of structures over foundations that do not fall into the category of competent support has been responsible, in part, for the reluctance of many engineers to specify these systems.
6. The influence of construction technique and quality control is problematic in many retaining wall systems. Any reader who has watched a reinforced soil wall being built will appreciate that wall performance is more likely controlled by the skill and standard of care exercised by the contractor than factors related to the method of design.

*How can the IGS help to meet these challenges?* The most important mandate of the IGS is to disseminate knowledge on the many technologies that fall within our discipline. Our two

excellent technical journals provide such a vehicle, but more is needed. IGS members who are stake-holders in retaining wall technologies need to be represented in learned society groups such as the technical committees of the ISSMGE, but also on those national committees that are traditionally focused on bridge design and transportation infrastructure.

Focused conferences dedicated to advancements in retaining wall technologies that bring together individuals from different countries are needed to ensure that information is shared and common objectives identified.

It is incumbent on the IGS to identify where the challenges are to ensure that the energies and talent of researchers are pointed in the right direction and research funding bodies alerted to the need to allocate funding in new areas. This of course applies to all of the technology areas in geosynthetics engineering.

A valuable benefit for IGS members would be the publication of an annual statement of research needs. This would serve to engage young academics in geosynthetics research and give their applications more weight in competitions for research funds.

In conclusion, I have listed just a few of the challenges that could be the basis of such a statement of research needs in the area of geosynthetic-reinforced retaining walls. I challenge our readers to list the challenges and research needs in the many other areas of geosynthetics application.

## Geosynthetics: Future Applications

by Colin J.F.P. Jones, IGS Past President (1994-1998)

**A**lmost twenty years ago, the modern form of extruded geogrids was announced at an international conference held at the Institution of Civil Engineers in London, UK. At the time, the use of these materials was believed to be as reinforcement in concrete, soils, and road pavements. Reinforcement of pavements and soils proved to be spectacular successes, but geogrid reinforcement of concrete is not a major application. It is

now apparent that successful applications offer economic and/or technical benefits; in the case of concrete, this has yet to be demonstrated.

The main applications of geosynthetics are primarily related to the civil and environmental industries and are well established as providing filtration, separation, reinforcement, and drainage, and acting as barriers. Combining their use with other ground-engineering techniques, such as piling and grouting,

can widen the scope and use of geosynthetics. A successful example is the use of polymeric reinforcement supported on piles to provide economic foundation platforms and to reduce settlements. Technical Committee 9 (Earth Reinforcement) of



the International Society of Soil Mechanics and Geotechnical Engineering (ISSMGE) is championing this approach with the active support of the IGS.

In use, it can be argued that most geosynthetics play a “passive” role, e.g. barriers stop the passage of liquids; reinforcement provides tensile resistance, but only after an initial strain has occurred; and drains provide a passage for water but do not “cause” the water to flow. New applications for geosynthetics can be anticipated if the geosynthetic could provide an “active” role, initiating chemical or physical change to the matrix in which it is installed as well as providing the established functions. This can be achieved using electro-osmosis or electrophoresis (electro-osmosis causes water movement through low-permeability materials and electrophoresis relates to the movement of particles in materials with very high water contents). Geosynthetics are ideal candidates to initiate electro-kinetic processes.

What applications are possible

using electro-kinetic geosynthetics? It has already been established that conductive geosynthetics, acting as electrodes, can be used to effect the movement of contaminants through the soil to the electrodes and then adsorb them. Using electrophoresis, it is possible to dewater industrial wastes, which are currently untreatable and can only be disposed of in vast tailings lagoons.

Conductive geosynthetics can be used to reduce the volume of industrial wastes by electro-osmosis, thus, significantly lowering the costs of disposal. The use of conductive reinforcement can permit the use of fine very wet material as fill for reinforced structures. Initial studies have shown that the use of electrically conductive band drains could prevent liquefaction of susceptible soils during earthquakes.

Other applications can be seen in different fields such as sport and horticulture. The use of conductive geosynthetics can resolve some of the problems inherent in many large sports stadia, such as the detrimental effect of shade on growing surfaces. An electrically conductive geosynthetic laid as a

continuous porous membrane at root level provides oxygen directly to the root system as well as offering a method to control drainage, aeration, and ball bounce. A working model of this technology was exhibited in the Science Museum in London during the football World Cup in 2002 and application to a modern “suspended drainage” football pitch is being researched. The application of the same technology to horticulture has clear potential.

The potential applications of “active” geosynthetics are numerous. The questions are: which will be winners such as reinforced soil? which, like geogrid reinforcement of concrete, will fail to meet expectations? The winners will be those applications where clear technical and economic benefit can be demonstrated or where legislation forces a change in current practice. The industrial waste industry has all these characteristics and this is where most interest in the use of conductive geosynthetics is being shown initially.

One prediction can be made, twenty years from now the use of “active” geosynthetics will be commonplace.

## Geosynthetics, Landfills, Environmental Engineering, and the IGS

R. Kerry Rowe, IGS Past President (1990-1994)

Over the 20 years since its formation, the IGS has played a critical role in creating technical confidence in the use of geosynthetics both in modern waste disposal facilities and as a means of protecting the environment from chemical spills. Correctly designed, specified, and installed geosynthetics work well; however, there is still a gap between what is known and what is often done in practice. Thus, there is a continued need for the IGS to be proactive in promoting best practices both in design and construction.

The manufacturers have provided us with a wide range of excellent products. However, too often we see geosynthetics being selected based on price rather than engineering properties. In addition, while many designs are adequate in the short term, too little atten-

tion is being directed at the long-term performance. In the case of landfills, it should not be adequate to assume that some one will come along and dig them up in the future and, hence, there is no need to worry about more than 30 years post closure – especially when we have the knowledge today to provide a reasonable expectation of good long-term performance. Ironically, this may be even more critical for ash fills associated with incinerated waste than it is for conventional municipal solid waste (MSW) landfills.

This short article seeks to illustrate two of the issues that need to be better addressed in the future, based on knowledge from the past.

It is known that geotextiles used in landfill leachate collections systems can either enhance or degrade the per-

formance of that system depending on the choice of material and how it is located within the system. When wrapped around leachate collection pipes, geotextiles can be a source of problems. However, when used as a blanket separator above a coarse gravel drainage layer, a suitable geotextile can improve the service life of the system.

While sand may provide a good protection layer over a composite liner, sand does not provide good long-term performance in landfill leachate collections systems. To obtain long service lives, coarse, relatively uniform gravel is needed; however, there is a need to



provide adequate protection of the underlying composite liner. Common design methods for selecting geotextile protection layers may provide adequate short-term protection against puncture, but their relatively low mass and strength geotextiles may not be adequate for controlling long-term stress cracking in the geomembrane; this is an issue that is the subject of current research.

The service life of a geomembrane liner is influenced by the synergistic effects of chemical and physical stresses over an extended period of time. The service life has been projected to be of the order of 150 and 350 years (or greater) at temperatures of 25 C and 12 C, respectively, provided that there is (a) good design and construction practice; (b) a suitable minimum oxidative induction time (OIT); (c) a suitable minimum stress crack resistance; and, (d) minimal tensile stress concentrations in the geomembrane (e.g. due to indentation by gravel).

The estimates of service life will likely be revised as more information becomes available. However, it is known that an increase in the temperature of a geomembrane liner greater

than those indicated above may substantially reduce the service life of the geomembrane. Thus, the service life of the liner depends, in part, on the service life of the leachate collection systems and actions taken to control the liner temperature to reasonable values (e.g. preventing leachate mounding or providing a thermal buffer to heat generated by hydration of ash). Barrier systems must be designed with this in mind.

Geosynthetic clay liners (GCLs) are now recognised as cost-effective alternatives to compacted clay. In covers, they may play an important role in both limiting infiltration of water and diffusion of gases. Also, a suitable GCL and subgrade (together) can be shown to be equivalent to, or better than, a similar thickness of compacted clay for controlling advective-diffusive contaminant transport through composite base liners. However, not all GCLs are the same and the differences in the type and amount of bentonite and the method of manufacture can have a significant effect on the engineering properties and performance of the GCL.

There is a reason why there are so many different GCLs available (even from the same manufacturer) and

while there are applications where the cheapest product is suitable, for many environmental applications there are good technical reasons for selecting a product that is not the cheapest! The manufacturers have excellent products, but designers need to make sure they select the appropriate product for their application.

Recent research is opening up new environmental applications for geosynthetics and a wider range of conditions under which they can be cost effectively used. While predicting the future is always fraught with danger, based on past experience it seems highly likely that we will continue to see manufacturers come up with novel new products, the development of design methods and, ultimately, better geosynthetic solutions to an even wider range of environmental applications.

And again, based on projections of past behaviour, we can expect the IGS to be there acting as a catalyst in making these advances and educating engineers in the appropriate design, specification, and installation of geosynthetics. The past 20 years have been amazing, but the future may be even more exciting.

## **Geosynthetics in Dams and Other Hydraulic Structures: What the IGS can do for a bright future**

**by Jean-Pierre Giroud, IGS Past-President (1986-1990)**



### **The Challenge**

Spectacular applications of geosynthetics have been made in dams and other hydraulic structures. However, geosynthetics are not used to their full extent in this branch of civil engineering because many engineers have reservations. In this article, instead of trying to guess what could be the future of geosynthetics in hydraulic applications, I deem it more useful to encourage the IGS to play an active role promoting the use of geosynthetics, particularly in this field. I believe that the mission of the IGS is not to guess what could happen, but to shape the future of our discipline.

The actions undertaken should be

consistent with the international nature of the IGS. Therefore, the IGS must act at the international level, in particular by cooperating with other international professional societies and by being more involved in the International Conferences on Geosynthetics.

### **Suggestions for International Activities**

The IGS should actively cooperate with other international professional societies. In the case of dams, the IGS should cooperate with the International Commission on Large Dams (ICOLD). Possible actions include: sponsoring papers on geosynthetics at all international conferences on large dams, asking the

ICOLD to invite prominent IGS members to chair sessions and give keynote lectures at International Conferences on Large Dams, sponsoring short courses on geosynthetics at International Conferences on Large Dams, and sponsoring papers on geosynthetics in journals specialized in dams. Implementing such a program would be more useful for the future of geosynthetics in dams than trying to predict how bright this future could be.

What I propose for dams would

apply to other hydraulic structures with societies such as the International Commission on Irrigation and Drainage (ICID) and the International Navigation Association (PIANC). The current president of the IGS, who has personal experience in cooperating with international professional societies, is perfectly prepared to lead a major IGS effort in this direction.

The IGS should be more involved in the International Conferences on Geosynthetics. The fact that International Conferences on Geosynthetics have been held on a regular basis ever since the IGS was founded is a remarkable success. However, the first goal of the IGS, which is to disseminate knowledge, has not been fully reached at International Conferences on Geosynthetics. The last time transcripts of discussions at these conferences were published was for the conference held in Singapore in 1994. Since then, invaluable information on geosynthetics has been lost. At the last International Conference on Geosynthetics, held in Nice, France, a special session held under the auspices of *Geosynthetics International* resulted in the publication of a detailed transcript of the discussion. I suggest that at least ten similar special sessions be organized at each International Conference on Geosynthetics in the future. To promote the use of geosynthetics in dams and other hydraulic structures, the IGS

should organize some of these special sessions with ICOLD, ICID and PIANC, and with journals specialized in dams and other hydraulic structures.

The international actions suggested above can be accomplished with the current financial means of the IGS. It is financially wise for the IGS to invest in actions likely to generate great benefits for the geosynthetics discipline and industry.

### **A Great Ambition for the IGS**

In 20 years, the IGS has become a full-fledged international society with all the necessary attributes: a large membership, chapters and corporate members in many countries, international and regional conferences, official technical journals, a newsletter, an awards program, and a well-established Secretariat. The IGS can be proud of what it has accomplished and should make an effort to better explain to its individual and corporate members the great value they get for their membership fee.

Now, at 20, the IGS has reached the age where it is normal to have a great ambition. The great ambition should be to ensure a bright future for geosynthetics in branches of civil engineering where they are underused.

To promote the use of geosynthetics, intensive education and lobbying need to be done at the national and regional level, with active involvement

of national or regional groups of corporate members. These actions would gain credibility by being placed under the auspices of the IGS. The role of the IGS would be to coordinate and disseminate the information and models generated in some countries and which could be of interest to other countries.

To be effective, these education and lobbying activities would require significant financial contribution by geosynthetic manufacturers at the national or regional level. This financial contribution would be independent from the IGS corporate membership fee. As indicated above, the IGS membership fees, individual and corporate, are meant (and used very effectively) to support the mission of the IGS, not to directly promote geosynthetics.

### **Closure**

Today, most IGS members take the IGS for granted. On one hand, this is satisfactory because it indicates that the IGS is successful and appreciated. On the other hand, if the IGS were also taken for granted by its leaders, it would become an ossified bureaucracy mostly busy administering its success, whereas a lot remains to be accomplished. The first 20 years were used to establish the IGS, the next 20 years should be used to establish the geosynthetics.

## **A Possible Framework for Improved Collaboration between International Geotechnical Societies**

**by Professor William van Impe, ISSMGE President**

Over several years, there have been attempts to improve the interaction between some of the most learned "Geotechnical Sister Societies," i.e., the International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE), the International Association of Engineering Geology (IAEG), and the International Society for Rock Mechanics (ISRM). In conclusion, the efforts and intentions were sincere, but the outcomes fell short of the expectations.

Many of the Past Presidents of the ISSMGE, IAEG, and ISRM continue their attempt to demonstrate the value of such co-operation among the Sister Societies. Again, to date, however, no major progress can be reported, mainly because of the not well-defined "danger of professional overlap."

In the present ISSMGE Board, the initiative was taken to create a Task Force on Professional Practice focused on sending out appropriate messages to



the public, clients, politicians, and decision makers, on the main basic features of our Geotechnics' profession.

In writing down these messages, it became very clear that not only the ISSMGE, but rather the entire academic and professional geotechnical engineer-

ing communities should be involved.

A joint European working group of the three learned Geotechnical Sister Societies was established by the Presidents approximately one year ago. The working group's efforts were focused on the regional level. Current progress has shown that a clear description of the specific areas and levels of expertise for all geotechnical engineers is an important trigger for better defined interaction and collaboration among the various groups.

During the August 2003 ISSMGE Council meeting in Prague, Czech Republic, the Council approved my initiative for the creation of a Task Force that would discuss the benefits and workability of an umbrella society to be preliminarily called the "International Federation of Geotechnics' Societies." Also, in September 2003, both the ISRM and IAEG approved further exploration of the same initiative by establishing a Joint Task Force that plans to produce, by the end of 2004, a format of how such a Federation should operate.

In this proposed framework, other learned and professional geotechnical societies, such as the IGS, could also be involved.

It is understood, however, that each society would retain its identity and

autonomy, recognising the mutual benefits from joining the "Federation."

The key functions that the proposed international Federation could perform are as follows:

- Optimise the administrative functions of each Federation group member by creating a co-ordinated Federation structure.
- Raise awareness within our own profession of the inevitable and essential interaction among practitioners in soil mechanics, rock mechanics, engineering geology, and geosynthetics engineering.
- Raise public awareness and the profile of the geotechnical profession by augmenting the efforts of the Federation through increased publicity aimed at several groups:
  - geotechnical professionals,
  - professionals in associated areas,
  - clients,
  - general public, and
  - decision-makers and politicians.
- Co-ordinate efforts to improve and strengthen geotechnical education.
- Co-ordinate technical activity in relevant areas. It is understood that this has already been raised among ISSMGE/IAEG/ISRM/IGS by the

respective Presidents in relation to the following issues:

- landslides,
  - earthquake geotechnical engineering,
  - environmental geotechnics,
  - geophysical testing in geotechnical engineering,
  - preservation of historic sites,
  - geotechnics and professional practice,
  - geotechnical engineering education,
  - geotechnics of soil erosion,
  - geotechnics of pavements, and
  - soil reinforcement.
- Develop common sessions for the international conferences of each Sister Society. This may be particularly important in the efforts of the Federation to gain greater visibility among decision-makers.
  - Consider jointly organized conferences on specialized topics of broad interest.
  - Create a joint website comprising, for example, well-established links between the separate Sister Society web sites to improve interaction.
  - Consider granting Federation membership to other associated professional societies that are attracted to the main aims of this Federation.

## Call for Candidates for the IGS Council: Term 2004 to 2008

### IGS Council Member Election

The IGS bylaws prescribe that up to half of the Council be elected every two years. Therefore, *a postal ballot election will be held in Spring 2004* to elect eight Members to the IGS Council for a four-year term, starting in 2004.

The eight IGS Council Members, whose term expires in 2004, are:

- J.W. Cowland (Hong Kong-China)
- D.R. Fettig (USA)
- M. Kamon (Japan)
- J. Lafleur (Canada)
- E.-S. Lee (South Korea)
- M.-L. da Costa Lopes (Portugal)
- B. Myles (United Kingdom)
- J. Paul (United Kingdom)

The IGS bylaws stipulate that a

Council Member may serve two consecutive terms; hence, J.W. Cowland, D.R. Fettig, M. Kamon, E.-S. Lee, M.-L. da Costa Lopes, and B. Myles are eligible for re-election. They will have completed one, four-year term as Council Members by May 2004.

The IGS encourages any IGS Member, who is able to attend all IGS Council meetings, to consider standing for one of the Council positions. It is important that all geographical regions are represented on the Council and that its Members reflect the scope of the geosynthetics discipline.

### Information/Instructions for All Candidates

Under the bylaws of the IGS, only IGS Members are eligible for these posi-

tions. Candidates must be able to travel to and attend the IGS Council meetings, which are held once a year. Meetings of the IGS Council are generally held in conjunction with international and regional conferences.

A signed letter of application together with a biographical note (not exceeding 12 lines) and a photograph should reach the IGS Secretary **no later than 31 January 2004**. Candidates must strictly adhere to the 12 line limit to ensure equal presentation space for all candidates. In their letter to the IGS Secretary, candidates must clearly identify their country of residence.

Biographical notes, which do not exceed 12 lines, will be published in the March 2004 issue of *IGS News* (with photo), on the IGS World Wide



Web home page, and in the postal-balot package sent to each IGS Member.

The newly formed IGS Council will meet several times (typically in Asia, North America, or Europe) and, when possible, in conjunction with a major

geosynthetic and geotechnical engineering event. The typical plan is at least one meeting per year in 2004, 2005, 2006, 2007, and 2008.

Should you need further information, please contact the IGS President,

Ing. Daniele A. Cazzuffi, or the IGS Secretary, Mr. P. Stevenson (see contact information on p. 19).

*reported by Karina McInnis*  
IGS News Editor

## IGS Student Awards: 2003 to 2004

The IGS will continue the successful IGS Student Award program with the third award period of 2003 to 2004. The Awards will be assigned in the year 2004, and all successful candidates will attend IGS regional conferences in 2004, i.e., *EuroGeo3* and *GeoAsia 2004*.

The IGS Student Award was established to disseminate knowledge and to improve communication and understanding of geotextiles, geomembranes, related products, and associated technologies among young geotechnical and geoenvironmental student engineers around the world.

An IGS Student Award will consist of a cheque of US\$1,000 for each winner. This award amount must be used to cover conference participation costs (i.e., registration fee, travel, accommodation).

An IGS Student Award will be assigned to only one student per Chapter; the selected student should be a M.Sc. or Ph.D. student. Students must be no older than 35 in the year the award is granted.

To ensure student representatives from each chapter participate in the program to the fullest extent possible the chapters must accomplish the following:

- Chapters must hold a contest or conduct a nomination process to select the student candidate to represent them.
- Chapters must notify the IGS of the name of the student selected by **31 January 2004**.
- The IGS will transfer US\$750 to the student immediately upon receipt of chapter notification. IGS Student Award recipients will be asked to

submit a written report to the IGS on the regional conference and on the IGS-related conference activities. Upon receipt of the report, which is due within 30 days after the conference, the remaining US\$250 will be transferred to the student.

To insure the maximum benefit to the student, the organisers of the conferences must:

- Provide a copy of the proceedings to the student.
- Provide admission to the sessions for the student.
- Organise a recognition event for the students.

*reported by Karina McInnis*  
IGS News Editor

## Third European Geosynthetic Conference, EuroGeo3 “Geotechnical Engineering with Geosynthetic”

1 to 4 March 2004 in Munich, Germany (Final Program: December 2003)

The *Third European Geosynthetic Conference, EuroGeo3*, will be held on 1 to 4 March 2004 at the Technical University, Munich, Germany under the auspices of the IGS. It will be organised by the German Society for Geotechnics with its national IGS Chapter (Chair: Prof. Rudolf Floss) in co-operation with European and national geosynthetic producers, and scientific and engineering organisations. The Conference General Secretary is IGS Council Member Gerhard Bräu from the Technical University in Munich.

Building on the experience gained from the previous conferences, *EuroGeo1* and *EuroGeo2*, the focus of

*EuroGeo3* is to provide a platform for scientific exchange as well as to attract end users from companies, engineering offices, administrative bodies, and authorities. To achieve this, the nature of the event will be slightly changed from previous conferences.

### Conference Topics

The following are the main topics:

- case studies (preferably with measurement instrumentation),
- design approaches and calculation methods,
- quality management/control during production and on-site,



- economic benefits of using geosynthetic, and
- long-term experience using geosynthetic products and types of construction.

### Scientific Program

#### Lecture Series

The lectures series will comprise scientific papers with discussions. A special

series of lectures featuring applied and practical issues will be offered each day.

### **Workshops**

For some Conference themes, there is not sufficient time for discussion and, thus, workshops are planned. The Workshop Program will be listed on the Conference web site in December 2003.

### **Poster Session**

A major portion of the scientific papers to be published in the Proceedings will be presented in the Poster Session. The Poster Session Program will also be listed on the Conference web site in December 2003.

### **Information for Authors**

The Call for Papers resulted in more than 230 abstracts that were reviewed by the Scientific Committee in May and June 2003. Approximately 160 papers were chosen for presentation at *EuroGeo3*. All authors should have received an e-mail regarding acceptance or rejection of their paper in July 2003.

All papers must be written in English only and were due 31 October 2003. To find a list of accepted abstracts, visit the Conference web site. The papers will be published in the paper proceedings and on CD-ROM.

### **Technical Exhibition**

Attendance to the technical exhibition is free. It will be run directly outside of the lecture theatres providing an excellent opportunity for exchange between scientists, producers, and users. The number and size of booths for companies participating in the exhibition is limited.

In addition to the technical exhibition, exhibitors can book lecture rooms for presenting and promoting their products. The organisation of the presentation is the responsibility of the exhibitor. Attendance is typically free of charge. All promotional events will

be listed in the program/bulletin and on the Conference web page.

### **Official Conference Social Events**

The cost of the social events are covered by the full registration for members, non-members, students and accompanying persons.

- *Soccer Match* - Sunday, 29 February 2004
- *Ice Breaker and Cocktails* - Sunday, 29 February 2004
- *Evening Reception* - Monday, 1 March 2004
- *Festive Evening* - Wednesday, 3 March 2004

### **Accompanying Persons Programme**

For a detailed description of the following site-seeing events, visit the Conference web site.

*Sunday, February 29, 2004:* Guided visit of the "Pinakothek der Moderne"

*Tuesday, 2 March 2004:* Day excursion to castle Linderhof, monastery Ettal and Oberammergau

*Tuesday, 2 March 2004:* Day excursion to the fabulous castle Neuschwanstein and to the famous Wieskirche (church of pilgrimage)

*Wednesday, 3 March 2004:* Visit castle Nymphenburg and the historical china manufacturer

### **How to Register**

You can register through the *EuroGeo3* web site, by fax, or mail. When the registration form with correct payment is received, the Conference Secretariat will send each participant a letter of confirmation and receipt, preferably by e-mail.

### **Conference Fees**

There are different fee categories depending on whether you are an IGS

Member or non-Member, an accompanying person, student, or getting a one-day pass. Visit the Conference web site for the fee schedule and a description of each fee package.

For cancellation by 15 December 2003, you will receive a full refund minus a 10% handling fee. For cancellation after 15 December 2003 to 10 February 2004, you will receive 60% of the registration fee. After 10 February 2004 there will be no refunds.

The Congress Secretariat must be notified in writing of cancellation of registration. The appropriate refunds will be made available after the close of the Conference. The Congress Secretariat reserves the right to charge the administration fee of 5% for any change of name or other alteration to the registration.

### **Hotel Reservations**

You can book online at the Conference web site, or you can contact (indicate that you are attending *EuroGeo3*):

Landeshauptstadt München  
Fremdenverkehrsamt  
Sendlinger Str. 1  
80331 München, Germany  
Tel: 89/233 96 555  
Fax: 89/233 30 319  
E-mail: [hotelservice@muenchen.de](mailto:hotelservice@muenchen.de)  
[www.muenchen-tourist.de](http://www.muenchen-tourist.de)

### **Contact Information**

*EuroGeo3* – Munich 2004  
Technische Universitaet Muenchen  
Lehrstuhl und Pruefamt für Grundbau,  
Bodenmechanik und Felsmechanik  
Baumbachstrasse 7, 81245 Muenchen  
Germany  
Tel: 49/89 289 27139  
Fax: 49/89 289 27189  
E-mail: [eurogeo3@bv.tum.de](mailto:eurogeo3@bv.tum.de)  
<http://www.gb.bv.tum.de/eurogeo3>

## **Asian Regional Conference on Geosynthetics – GeoAsia 2004 “Now and Future of Geosynthetics in Civil Engineering”**

**21 to 23 June 2004, Seoul, Korea**

**T**he International Geosynthetics Society-Korean Chapter (IGS-KC) is organizing the 2004

*Asian Regional Conference on Geosynthetics (GeoAsia 2004)* to be held on 21 to 23 June 2004, in Seoul, Korea.

Korea has one of the most rapidly growing geosynthetics industries due to an increasing demand for infrastructure

development. *GeoAsia 2004* will provide an invaluable opportunity for Asian, as well as other geosynthetics industries around the world, to share their technical experience and views on challenges in the field of geosynthetics in the 21st Century.



A total of 150 to 200 participants are expected from Korea and around the world. Over 150 abstracts

have been accepted. Approximately 60 papers will be orally presented during the Conference. Poster sessions are also planned.

### Conference Sessions

The following eight technical sessions are taking place:

- Reinforced Structures I
- Soft Ground Improvement
- Materials, Testing, and Analysis I
- Roads and Railways
- Landfills and Hydraulic Applications
- Reinforced Structures II
- Materials, Testing, and Analysis II
- Durability and Damage

### Mercer Lecture

The Mercer Lecture titled "Reinforcement Loads in Geosynthetic Walls and the Case for a New Working Stress Design Method," by IGS Past President, Prof. Richard J. Bathurst (Royal Military College of Canada), will be presented.

### Keynote Lectures

The following five keynote lectures will be given:

*F. Tatsuoka (Japan): "On Old by New Issue: Viscous Properties of Polymer Geosynthetic Reinforcement and Geosynthetic-Reinforced Soil Structures"*

*R.K. Rowe (Canada): "Resolving Some of the Outstanding Issues in Landfill Barrier Design"*

*R. Floss (Germany): "Interpretation of European Standards on Execution of Reinforced Fill Applications"*

*C.G. Bao (China): "Study on the Interaction Characteristics of Geosynthetics and Soil"*

*J.P. Gourc (France): "Friction Properties of a Geosynthetic Interface: Application to the Stability of Liner Systems on Landfill and Canal Slopes"*

### Important Deadlines

*Notification to authors for paper acceptance:*

31 December 2003

*Final submittal of paper:*

28 February 2004

Author(s) should submit their paper(s) to:

Publications Committee Chair  
Prof. Han-Yong Jeon  
Faculty of Applied Chemical Eng.  
Chonnam National University  
300 Yongbong-dong, Pukku  
Gwangju, Korea 500-757  
Tel: 82/62 530 1775  
Fax: 82/62 530 1779  
E-mail: hyjeon@chonnam.ac.kr

### Special Session by TC9 of ISSMGE

The tentative session theme is "Numerical Analysis for Earth Reinforcement." A lecture is planned by Prof. Iizuka of Kobe University. A number of prominent researchers on this subject will join the panel. Details of the special session will be announced in the final Bulletin.

### Official Language

The official language is English.

### Registration Fee

The regular registration fee for the conference is tentatively set at \$350, which will cover admission to all Conference sessions and the exhibition, technical tour, lunches, a Conference proceeding, coffee breaks, and the Welcome Reception. Tickets for the Farewell Banquet must be purchased and cost \$50 per person. Students can participate in the event at a reduced fee with the same benefits of regular registration.

### Technical Tour

A half-day technical tour will be held on Tuesday, 22 June 2004 to visit the

Sudokwon Landfill site in Seoul and is open to any registered conference attendee, spouse or guest. Registration is required and will be filled on a first-come, first-serve basis. The Sudokwon Landfill site is one of the largest single landfills in the world and will be divided into four sub-sites that will be filled in phases. It is planned to be in operation for about 30 years. The objective of the landfill is to operate in an environmentally friendly manner and manage the recycling of waste. The daily receivable waste volume is 20,000 tons per day. The capacity of the new leachate treatment plant is 6,700 m<sup>3</sup> per day.

### Technical and Social Programs

The Organizing Committee, in cooperation with the Korean National Tourism Organization, will develop and offer Conference accompanying person's programs that include a Korean folk village, a pottery village, historical palaces, performances of traditional folk dancing, and national park tours. Cultural programs will offer rare opportunities to experience Korea culture.

### Hotel Accommodations

Accommodations can be arranged at Hotel KYMHK, which is a four-star hotel. Fifty rooms are reserved for the Conference at a approximately US\$100 for a single or double room. Participants can also choose any other accommodations nearby the Conference venue as they wish. More detailed information will be included in the Second Bulletin, which is scheduled for release at the end of July 2003.

### For Further Information Contact

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GeoAsia 2004  
Department of Civil & Environmental Engineering  
Sungkyunkwan University  
Tel: 82/31 290 7518  
Fax: 82/31 290 7549  
E-mail: csyoo@yurim.skku.ac.kr  
<http://www.kgss.or.kr/geoasia2004/>

## 2003 Mercer Lecture Series: Dr. Richard J. Bathurst

**D**r. Richard J. Bathurst delivered the first 2003 Mercer Lecture of the three-lecture series during the North American Geosynthetics Society (NAGS) Conference that was held in conjunction with the annual Canadian Geotechnical Society (CGS) Conference in Winnipeg, Manitoba, Canada.

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

The lecture is given once each in Europe, North America, and the Far East with, in each case, the venue and date being agreed by the selection committee comprised of representatives of Tensar International, ISSMGE, IGS, and previous Mercer Lecture award winners.

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

Past lectures have been presented by Professor Bob Koerner (USA) in 1992, Professor Jean-Pierre Gourc (France) in 1994, Professor Fumio Tatsuoka (Japan) in 1996, and by Professor Alan McGown (UK) in 1999/2000.

Dr. Bathurst delivered the following paper in Winnipeg and will present it again at the *EuroGeo3* Conference in Munich (Germany), and again in Seoul (South Korea) at the *GeoAsia 2004* Conference:

“Reinforcement Loads in Geosynthetic Walls and the Case for a New Working Stress Design Method”

*Richard J. Bathurst*  
GeoEngineering Centre at Queen's-RMC, Royal Military College Kingston, Ontario, Canada

*Tony Allen*  
Washington State Department of Transportation  
Olympia, Washington, USA

*Dave Walters*  
GeoEngineering Centre at Queen's-RMC, Queen's University  
Kingston, Ontario, Canada

The paper provides a synthesis of work by the writers that has the objective of developing a new working stress

method for the calculation of reinforcement loads in geosynthetic-reinforced soil walls.

As a precursor to this objective, careful back-analyses of a database of instrumented and monitored full-scale field and laboratory walls are used to demonstrate that the current Simplified Method used in North America results in excessively conservative estimates of the volume of reinforcement required to generate satisfactory long-term wall performance.

The new design method captures the essential contributions of the different wall components and properties to reinforcement loads. The method is calibrated against measured in situ wall reinforcement loads using a careful interpretation of reinforcement strains and the conversion of strain to load using a suitably selected reinforcement stiffness value.

A novel feature of the method is to design the wall reinforcement so that the soil within the wall backfill is prevented from reaching a failure limit state, consistent with the notion of working stress conditions.

## Report on the 56th Annual Canadian Geotechnical Society Conference (CGS)

28 September to 1 October 2003 in Winnipeg, Manitoba, Canada

Co-Sponsored by the North American Geosynthetics Society (NAGS) and the International Association of Hydrogeologists (IAH)

**B**y all measures, the recently held geotechnical conference in Winnipeg, Manitoba, Canada, was an outstanding success. This was the first time that NAGS has co-sponsored a conference outside of the geosynthetics community.

Dr. James Blatz, University of Manitoba and a member of the NAGS Board of Directors, acted as the Geosynthetics Technical Chair and liaison to the Conference Organizing Committee. James did an outstanding job not only in organizing the technical aspect of the geosynthetics program, but by

also ensuring that NAGS was appropriately recognized as one of the Conference's co-sponsors in all of the literature and program materials.

There were seven geosynthetic technical sessions running concurrently with the CGS and IAH technical sessions throughout the Conference. Each of the seven NAGS sessions had 45 to 50 persons in attendance (standing room only) and a total of 42 NAGS papers were presented.

Based on a comment from members of the geosynthetics division of the

CGS, half of those attending the sessions were non-geosynthetic persons, indicating that the goal the Board of Directors set of reaching outside of our community was attained. The total registration for the Conference was approximately 425.

### Award of Excellence

Included in the paper presentations was the Award of Excellence paper by Karin Renken, from the University of Western Ontario (London, Ontario, Canada). The paper was entitled, “Experimental Soil-Based Cover Sys-

tem to Mitigate Acid Rock Drainage in Potentially Acid Generating Tailings, Construction and Results.” As the winner, Karin received a plaque at the Conference and, upon submission of a research proposal and designation of a research organization, \$10,000 will be donated in her name.

Funds for the Award of Excellence were raised through solicitation of industry. The Board of Directors wishes to express its thanks to the following for support of the award through their contributions:

- *Gold Level (\$1,000)*: Geosynthetics Institute; GSE Lining Technology; Huesker, Inc.; Ten Cate Nicolon
- *Silver Level (\$500)*: Bathurst, Clarabut Geotechnical Testing; EmCom/OWT, Inc.; Geotesting Express; SI Geosolutions; Terrafox Geosynthetics; TRI/Environmental
- *Individual*: Mr. Mark Sieracki.

### Student Paper Presentations

The student paper competition was made up of two parts: first, the evaluation and scoring of each of the student papers, and second, the evaluation of the presentations. The combined scores of the two parts determined the winner. The winner will receive travel expenses to the next IGS Conference to present the paper in the students’ session.

The winner was Fadzilah Saidin from the University of Washington, studying under Dr. Robert Holtz. The paper was entitled, “Behaviour of a Geosynthetic-Reinforced Back-to-Back Wall.” All of the student papers and presentations were of high quality, making the selection of a winner a difficult decision.

### Keynote Lectures

In addition to the keynote lecture given by Richard Bathurst, keynote lectures were given by Jonathan Fannin (University of British Columbia) on geosynthetics definitions, properties, and test methods, Jean Lafleur (Ecole Polytechnique, Quebec) on hydraulic properties, separation, and filtration, P. Chiasson (University of Moncton, New Brunswick) on drainage and road applications, and R. Kerry Rowe

(Queen's University) on waste containment applications.

### CGS Legget Medal Awarded to Dr. R. Kerry Rowe

Dr. R. Kerry Rowe received the CGS Legget Medal, which is the highest award from the Canadian Geotechnical Society for contributions to the geotechnical engineering discipline. Dr. Rowe has made outstanding contributions with respect to technical achievements, academia and service to the geotechnical profession. He has published more than 300 technical papers (of which more than 150 are in peer-reviewed journals), 2 books, 13 book chapters, 175 conference papers and the list goes on.

His breadth of expertise spans many disciplines of geotechnical and geoenvironmental engineering. This work led to the Geosynthetics Award of the Canadian Geotechnical Society (CGS) in 2000, the Keefer Medal of the Canadian Society of Civil Engineers in 2001 and the K.Y. Lo Medal of the Engineering Institute of Canada in 2003.



**Student Paper Competition. Front row, left to right: Dr. Shobha Bhatia, Fadzilah Saidin (Student Winner). Second row, left to right: L. David Suits, Randal Osicki, Mun-Sung Mok, Menjia Li, Sethapong Sethabouppha, John McCartney, Dr. David Elton. (Photo courtesy of geosynthetic.net)**

Dr. Rowe has developed modelling techniques for landfill leachate migration that are used world wide. His landfill work has also focused on the clogging of leachate collection systems and has been recognised by an Ontario Ministry of Environment award and the Geoenvironmental Award of the CGS in 1999 and 2000, respectively.

He has also carried out work on geosynthetic reinforcement of embankments over soft ground and for retaining walls. In 2002, he was recognised for this work by winning the prestigious Giroud Lecture of the International Geosynthetics Society. In addition he has made important contributions to tunnelling in rock and soft soil.

Simultaneously, he has demonstrated leadership of learned societies as President of the Canadian Geotechnical Society 2000 to 2002 and President of the IGS from 1990 to 1994. He is an elected fellow of six learned societies including the Canadian Academy of Engineering and the Royal Society of Canada.

Meanwhile, Kerry finds time to be editor of the journal Geotextiles and Geomembranes, Associate Editor of the Canadian Geotechnical Journal and co-editor or associate editor of two journals and is on the editorial board of 13 other journals.



**R. Kerry Rowe receives the Legget Award from the Canadian Geotechnical Society. (Photo courtesy of geosynthetic.net)**

## Social Highlights

Of the several social events during the Conference, the highlight was the closing banquet. Attendees were entertained with musical renditions from the likes of "Tom Jones, Elvis Presley, Pavarotti, and Sonny and Cher." NAGS was highlighted in many of these renditions. Dr. Grace Hsuan, President-Elect of NAGS, was levitated during magic

show that followed the musical portion of the entertainment.

## A Word of Thanks

The Board of Directors expresses its appreciation to the authors, presenters, and attendees for making this first endeavour outside of the geosynthetics arena an outstanding success. A special expression of appreciation goes to the Organizing Committee, chaired

by Donald Kingerski, member of the CGS, for their efforts in the overall Conference, and for being willing to entertain our request for partnership in the Conference.

*reported by L. David Suits, NAGS President, and Richard J. Bathurst, IGS Past President*

## Fourth Brazilian Symposium on Geosynthetics Held in May 2003 in Porto Alegre, Brazil

Under the auspices of the Brazilian IGS Chapter (IGS-Brazil) the Fourth Brazilian Symposium on Geosynthetics (BSG) was held in Porto Alegre, Brazil, on 22 to 25 May 2003. The Symposium was organized in conjunction with the *Fifth Brazilian Congress on Environmental Geotechnics (REGEO)* sponsored by the Brazilian Society of Soil Mechanics and Environmental Engineering (ABMS). The Chair of both conferences was Prof. Eduardo Azambuja (Catholic University (PUC-RS), Porto Alegre, Brazil), who passed on best wishes from IGS President Daniele Cazzuffi.

IGS-Brazil and ABMS were seeking this opportunity to hold BSG in conjunction with REGEO understanding the excellent opportunity to introduce geosynthetics and their applications to engineering professionals dealing with environmental analysis and design.

Approximately 550 participants from various countries including Uru-

guay, Argentina, Chile, Peru, and USA attended the events. The Conference proceedings, written in Portuguese, comprise 17 special lectures, 15 panel reports, and 154 technical papers.

The topics discussed included the following:

- Application of geosynthetics on road pavements
- Filtration and drainage
- Soil reinforcement
- Special geosynthetic applications and erosion control
- Geosynthetic properties, specifications, and testing
- Case histories
- Geosynthetics applied to environmental problems

The Symposium was preceded by short courses on geosynthetics and environmental engineering.

All the participants enjoyed this remarkable event not only because of the excellent organization and interesting discussions, but also because of the

excellent infrastructure offered by PUC-RS and social events organized by Organizing Committee.

## New Brazil IGS Officers

During the event, a new IGS-Brazil directory was elected for the period of 2003 to 2005:

- *President:* Prof. Benedito de S. Bueno (University of Sao Paulo, Campus at Sao Carlos, Brazil);
- *Vice President:* Prof. Eduardo Azambuja (Catholic University, Porto Alegre, Brazil);
- *Vice President:* Prof. Ana Laura Nunes (Federal University of Rio de Janeiro, Brazil)
- *Secretary:* Eng. Lavoisier Machado (Maccaferri)
- *Treasurer:* Eng. André Estevao Silva (Huesker)

*reported by Benedito de S. Bueno  
IGS-Brazil President*

## Second Symposium on Geosynthetic Clay Liners Sponsored by ASTM Committee D35 on Geosynthetics

June 20, 2003, Denver Colorado, USA

The D35.04 Subcommittee on Geosynthetic Clay Liners (GCLs) has a reputation of being open and direct in discussions regarding GCL technology and aggressive re-evaluation of the performance of GCL products and their standards.

Such was the scope and approach of the presenters and attendees at ASTM's *Second Symposium on Geosynthetic Clay Liners*. The topics of the Symposium were broken down into the following categories:

- Assessment of Clay Component,
- Durability of Clay Component,
- Evaluation of Current and Proposed GCL Standards,
- Movement of Compounds through the GCL, and
- GCL Specifications.

The presenters and attendees received a formal welcome by Daniele Cazzuffi (IGS President), David Suits (Chair of D35), and Kent von Mauberge and Bob Mackey (Symposium Co-Chairs).

Twelve papers were presented on the above topics. Highlights of the Symposium included an excellent paper by Charles Landis, "Bentonite Performance Materials," on the use of isotopes for clay identification. As natural sodium bentonite stockpiles decrease and activated sodium bentonite finds more acceptance in the GCL marketplace, this identification technique may become a valuable tool to assess the  $\text{Na}^+/\text{Ca}^{2+}$  content in the montmorillonite and expected performance of various activated sodium bentonites.

Other highlights included Richard Erickson's presentation noting that the ASTM standard practice for GCL manufacturing quality control (ASTM D

5889) and guide for construction quality assurance (ASTM D 6495) have, for the most part, achieved their goal of normalizing specification standards for GCL materials. Dr. Patrick Fox presented an excellent, wide-ranging paper regarding GCL shear strength testing (ASTM D 6243). Dr. Fox listed critical testing criteria and recommended improvements to this extremely important GCL test.

In addition to the paper presentations, other topics were discussed at the symposium. The permeation of gas/vapors through the GCLs and/or composite liners has become a new topic of interest in the USA and at CEN. Bernard Myles gave a short presentation on the test method being developed by CEN to measure gas permeation, which included the proposed test apparatus and procedure. Mr. Toshifumi Mukunoki also gave a short presentation detailing the apparatus used in his

research.

The Symposium concluded with a presentation by Sam Allen, representing the Geosynthetic Institute (GSI), detailing the current status of the GCL specification being developed by GSI. Mr. Allen's presentation noted the current issues to be resolved in finalizing the specification. There was no indication when the GCL specification would be complete and available to the GCL marketplace.

The presenters and attendees had a full day of discussions, with many new and interesting issues to ponder. The pace of the symposium left little time for anyone to relax, with provocative questions consistently raised regarding the state of GCL technology. It was a long day and well spent.

*reported by Robert Mackey  
IGS Member*

## Geosynthetics International Free for IGS Members

**G**eosynthetics International is now published only online, effective this calendar year (2003).

The IGS has entered into an arrangement with Thomas Telford, the new publisher of *Geosynthetics International*, to make this journal available to all IGS members, as part of the IGS membership (without increasing the IGS membership fee). At the same time, the Journal is available to non-IGS members and libraries for a fee.

Change, but also continuity: in agreement with the IGS, the same Editors and the same Editorial Board Chairman will serve, along with the same Editorial Board. However, due to the change in publisher, Karina McInnis is no longer Technical Editor of *Geosynthetics International* (but she is still serving our discipline as Editor of this newsletter). She deserves much of the credit for the reputation of high quality of the Journal. The same commitment to quality can be expected from Thomas Telford's experienced staff, in particular Leon Heward-Mills, Journals Publisher, and Tony Donegan, in charge of production and the

main point of contact for authors.

Authors of papers should understand that the impact factor (a factor used to evaluate technical journals) of the Journal will not be diminished by being a solely electronic journal. In fact, the outstanding reputation of the *Geosynthetics International* can only increase as the number of subscribers grows. Equally important, the Journal will continue to be abstracted and indexed in all the major journal citation services. Authors of papers will also appreciate that, with the electronic format, turn-around times from submission of manuscripts to publication should be greatly reduced.

Thomas Telford is well known worldwide. As publishing arm of the British Institution of Civil Engineers, Thomas Telford has access to 60,000 members around the world. As a result, *Geosynthetics International* will be heavily promoted and a broader readership than in the past can be expected. With more than 2,000 subscribers, *Geosynthetics International* is already one of the most widely distributed journals in civil engineering.

Starting with Volume 10 (year 2003), the papers will soon be available for download in pdf format from the Thomas Telford website:  
<http://www.thomastelford.com/jol>

Each volume, starting with Volume 10, will also be available on CD for a fee. In addition, all papers in the previous issues of the Journal (Volumes 1 through 9) will be available as pdf files from the IGS website in the months to come:  
<http://www.geosyntheticssociety.org>

*Geosynthetics International* and the International Geosynthetics Society are very pleased to bring this significant benefit to IGS members, thereby contributing to the primary goal of the IGS, which is to disseminate technical information on geosynthetics and their applications.

*reported by  
Terry S. Ingold and Richard J. Bathurst, Editors of Geosynthetics International; Jean Pierre Giroud, Chair of the Editorial Board of Geosynthetics International; and Daniele Cazzuffi, IGS President*

# Geosynthetics International

## An Official Journal of the IGS Electronic Journal Free to IGS Members

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

*Geosynthetics International* will only be published electronically starting Volume 10 (2003) and is available free to IGS Members. An annual archive CD and contents alert e-mail service will be available to IGS Members and non-Members (details of this service will be provided in the March 2003 issue of *IGS News*).

Papers should be work not published in full elsewhere and should be sent to any of the following individuals:

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## Geotextiles and Geomembranes

### An Official Journal of the IGS

**G** *eatextiles and Geomembranes* is an official journal of the IGS and provides a forum for the dissemination of information on geosynthetics amongst research workers, designers, users, and manufacturers. The Journal increases general awareness, prompts further research, and assists in the establishment of international codes and regulations.

The following are welcome contributions: refereed technical papers covering research, design, construction, applications, and case studies; technical notes, book reviews, reports of conferences, and meetings; and letters to the Editor. All technical papers are open to written discussion. No limit to length is

set and short notes are acceptable. Review articles may also be published at intervals, but the subject and contents of these should be discussed first with the Editor.

The Editorial Board Members and reviewers have worked very hard over the past year to provide detailed, constructive reviews in a very timely manner. The average review period is less than three months. Papers come from a wide range of countries with approximately one third of the papers coming from the Americas, Europe, and the rest of the world. The rejection rate is 59%. The Journal's Editor and Board Members are extremely appreciative of the authors' hard work in addressing the

reviewers' comments and the quick return of revised papers.

Authors should submit four copies of their paper, which will subsequently be reviewed by at least two individuals. No original figures should initially be included.

All technical contributions and inquiries should be directed to:

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SYMPOSIA  
WORKSHOPS

CALENDAR OF EVENTS



SHORT COURSES  
EXPOSITIONS  
TRADE SHOWS

*13th African Regional Conference  
Marrakech, Morocco  
8-11 December 2003  
Contact: Professor R. Khalid  
Tel: 1/212 2 248 87 50  
Fax: 1/212 2 223 41 88  
E-mail: diremi@emi.ac.ma*

*17th Annual Conference on Geosynthetics  
Las Vegas, Nevada, USA  
15-16 December 2003  
Contact: Ms. Marilyn Ashley  
Tel: 1/610 522 8440  
Fax: 1/610 522 8441  
E-mail: marilyn.ashley@coe.drexel.edu  
<http://www.geosynthetic-institute.org>*

*9th ANZ Regional Conference  
Auckland, New Zealand  
9-11 February 2004  
Contact: Stephen Crawford  
Tel: 64/9 355 6054  
Fax: 64/9 307 0265  
E-mail: scrawford@tonkin.co.nz  
<http://www.cce.auckland.ac.nz/geomech04>*

*5es Rencontres Géosynthétiques  
Fifth French Colloquium on Geotextiles,  
Geomembranes and Related Products  
10-11 February 2004 in Lille, France  
30-31 March 2004 in Avignon, France  
Contact: Colloquium Secretariat  
Tel: 33/01 41 96 90 93  
Fax: 33/01 41 96 91 05  
E-mail: secretariat.cfg@wanadoo.fr  
<http://www.cfg.asso.fr>*

**EuroGeo3**  
**Munich, Germany**  
**1-4 March 2004**  
Contact: Technische Universitaet  
Muenchen  
Tel: 49/89 289 27139  
Fax: 49/89 289 27189  
E-mail: eurogeo3@bv.tum.de  
<http://www.gb.bv.tum.de/eurogeo3>

*19th International Conference on Solid  
Waste Technology and Management  
Philadelphia, Pennsylvania, USA  
21-24 March 2004  
Contact: Ronald Mersky  
Tel: 1/610 499 4042  
Fax: 1/610 499 4059  
E-mail: solid.waste@widener.edu  
<http://muse.widener.edu/~srxw0004/call.html>*

*5th International Conference on Ground  
Improvement Techniques  
Kuala Lumpur, Malaysia  
22-24 March 2004  
Tel: 65/6733 2922  
Fax: 65/6235 3530  
E-mail: cipremie@singnet.com.sg  
<http://www.cipremier.com>*

*Techtextil North America  
Atlanta, Georgia, USA*

*30 March-1 April 2004  
Contact: Daniel McKinnon  
Tel: 1/866 984 8016, ext. 423  
Fax: 1/770 984 8023  
E-mail: ttna@usa.messefrankfurt.com  
<http://www.usa.messefrankfurt.com>*

*Fifth RILEM International Conference  
Cracking in Pavements  
Limoges, France  
5-8 May 2004  
Contact: Chantal Iannarelli  
Tel: 33/1 47 71 90 04  
Fax: 33/1 47 71 90 05  
E-mail: c2s@club-internet.fr  
<http://www.cp2004.unilim.fr/>*

*World Tunnel Congress 2004 and 30th  
ITA General Assembly  
Singapore  
22-27 May 2004  
Contact: Conference & Travel  
Management Associates Pte Ltd  
Tel: 65/6299 8992  
Fax: 65/6299 88983  
E-mail: ita2004@singnet.com.sg  
<http://www.ita2004.com>*

**GeoAsia 2004**  
**Seoul, Korea**  
**21-23 June 2004**  
Contact: Prof. Chungsik Yoo  
Tel: 82/31 290 7518  
Fax: 82/31 290 7549  
E-mail: asyoo@yurim.skku.sc.kr  
<http://www.kgss.or.kr/geoasia2004>

*9th International Symposium on  
Landslides  
Rio de Janeiro, Brazil  
28 June -2 July 2004  
Contact: Secretariat 9 ISL - Rio 2004  
Tel: 55/21 562 7200  
Fax: 55/21 280 9545 or 55/21 290 6626  
E-mail: 9isl@geotec.coppe.ufrj.br  
<http://www.abms.com.br/>*

*International Air Transport Conference  
Washington, DC, USA  
25-28 July 2004  
Contact: Mr. Chris Oswald  
Leigh Fisher Associates  
Tel: 1/703 961 9000  
E-mail: chriso@leighfisher.com  
<http://www.asce.org/conferences/iatc2004>*

*International Conference on  
Geotechnical Engineering  
Sharjah, United Arab Emirates  
3-6 October 2004  
Contact: Dr. Adnan A. Basma  
Tel: 971/6 5050957  
Fax: 971/6 5050401  
E-mail: civeng@sharjah.ac.ae  
<http://www.sharjah.ac.ae/academic/engineering/civil/icge2004/index.htm>*

**Geofilters 2004**  
**Stellenbosch, South Africa**  
**19-21 October 2004**  
Contact: Prof Andy Fourie  
University of the Witwatersrand  
Tel: 27/11 717 7108  
Fax: 27/11 3391762  
E-mail: andyf@civil.wits.ac.za

*57th Canadian Geotechnical Conference  
Quebec City, Canada  
23-27 October 2004  
Contact: Jean-Marie Konrad  
Tel: 1/418 656 2131, ext. 3878  
E-mail: Jean-Marie.Konrad@gci.ulaval.ca  
<http://www.geoquebec2004.org/>*

*15th South-East Asian Geotechnical  
Conference (SEAGC)  
Bangkok, Thailand  
22-26 November 2004  
Contact: Dr. Wanchai Teparaksa  
Tel: 66/2 218 6460-2, 218 6575  
Fax: 66/2 251 7304  
E-mail: seagc15@eng.chula.ac.th  
<http://www.eng.chula.ac.th/seagc15>*

*GeoFrontiers 2005  
Austin, Texas, USA  
24-26 January 2005  
Contact: Chris Kohn  
Tel: 1/651 225 6961  
<http://www.asce.org/conferences/geofrontiers05>*

*16th International Conference on Soil  
Mechanics and Geotechnical Engineering  
Osaka, Japan  
12-16 September 2005  
Contact: Prof. Masashi Kamon  
Tel: 81/3 3251 7661  
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E-mail: 16ICSMGE@jiban.or.jp  
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*XIIIth Danube-European Conference on  
Geotechnical Engineering  
Ljubljana, Slovenia  
7-9 June 2006  
Contact: Dr Janko Logar, Slovenian  
Geotechnical Society  
Tel: 386/1 4768 526  
E-mail: jlogar@fgg.uni-lj.sl*

**8th International Conference on  
Geosynthetics (8ICG)**  
**Yokohama, Japan**  
**18-22 September 2006**  
Contact: 8ICG Conference Secretary  
Tel: 81/3 3837 2503  
Fax: 81/3 3837 5818  
E-mail: info@8icg-yokohama.org  
<http://www.8icg-yokohama.org>

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**Agru Kunststofftechnik GmbH** *Austria (1996)*  
**Alpe Adria Textil** *Italy (2002)*  
**Amoco Fabrics and Fibers Co.** *USA (1987)*  
**Araigumi Co., Ltd.** *Japan (1999)*  
**Asahi Kasei Corporation** *Japan (1984)*  
**Ashimori Industry Co., Ltd.** *Japan (2003)*  
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**Bidim Geosynthetics S.A.** *France (1984)*  
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**Colbond Geosynthetics** *The Netherlands (1986)*  
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**E & S Engineering Co., Ltd.** *Korea (1997)*  
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**Fibertex A/S** *Denmark (1984)*  
**Field Lining Services** *Panama (1998)*  
**Fiti Testing and Research Institute** *Korea (1997)*  
**F.L.I. Environmental** *Ireland (2002)*  
**Fritz Landolt Ag** *Switzerland (1985)*  
**Geofabrics Ltd.** *UK (1995)*  
**Geofelt GmbH** *Austria (1996)*  
**Geosistemas Pavco S.A.** *Colombia (1991)*  
**Geosynthetic Materials Association** *USA (1985)*  
**Geosystem Co., Ltd.** *Japan (2000)*  
**Geotechnics b.v.** *The Netherlands (1991)*  
**GSE Lining Technology, Inc.** *USA (1988)*  
**Hojun Yoko Co., Ltd.** *Japan (2000)*  
**Honeywell Performance Fibers** *USA (2001)*  
**Huesker Synthetic GmbH & Co.** *Germany (1987)*  
**Hui Kwang Chemical Co., Ltd.** *Taiwan, R.O.C. (2000)*  
**Ideal-Lys Fabrics S.A.** *Belgium (1998)*  
**Integrated Geotechnology Institute Limited** *Japan (1998)*  
**Inversiones Comindustria S.A.** *Peru (2002)*  
**Ipetex, S.A.** *Portugal (1999)*  
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**Maeda Kosen Co., Ltd.** *Japan (1992)*  
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**Menard-Terre Armee** *France (2002)*  
**Mirafi Construction Products** *USA (1998)*  
**Mitsubishi Chemical Functional Products, Inc.** *Japan (1992)*  
**Mitsui Chemicals Industrial** *Japan (1992)*  
**Naue Fasertechnik GmbH & Co. KG** *Germany (1987)*  
**Nittoc Construction Co., Ltd.** *Japan (1994)*  
**Obayashi Corporation** *Japan (1988)*  
**Officine Maccaferri S.P.A.** *Italy (1997)*  
**Okasan Livic Co., Ltd.** *Japan (1984)*  
**OJSC "494 UNR"** *Russia (2003)*  
**Permathene Ltd.** *New Zealand (2003)*  
**Polyfelt Ges.m.b.H** *Austria (1984)*  
**Poly-Flex, Inc.** *USA (1996)*  
**Presto Products Company - Geosystems Division** *USA (1996)*  
**PRS Mediterranean Ltd.** *Israel (2003)*  
**Punzonados Sabadell, S.A.** *Spain (2000)*  
**Reinforced Earth Co., The** *USA (1989)*  
**Reliance Industries, Ltd.** *India (1998)*  
**Samyang Corporation** *Korea (2003)*  
**Serrot International, Inc.** *USA (1992)*  
**Sewon Geosyntech Co., Ltd.** *Korea (1997)*  
**Shenzhen Sheng Yi Environmental Co., Ltd.** *China (2002)*  
**Shimizu Corporation** *Japan (1990)*  
**SI Corporation** *USA (1991)*  
**Solmax International, Inc.** *Canada (1997)*  
**Steel Dragon Enterprise Co., Ltd.** *Taiwan, R.O.C. (1996)*  
**SVG (Swiss Association of Geotextile Professionals)** *Switzerland (1984)*  
**Taiyo Kogyo Co., Ltd. (Ocean)** *Japan (1996)*  
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*IGS News is published three times per year. Material for publication should be submitted to the Editor by 31 January, 31 May, and 30 September, for possible publication in the March, July, and November issues, respectively.*

# 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 associated technologies; and
- participate in a forum for designers, manufacturers, and users, where new ideas can be exchanged and contacts improved.

**Second, to enjoy the benefits.**

The following benefits are now available to all IGS Members:

- a directory of Members, the IGS Directory, published every year, with addresses, telephone, e-mail, and fax numbers;
- the newsletter, *IGS News*, published three times a year;
- a reduced purchase price on all documents published by the IGS;
- a reduced registration fee and preferential treatment at all conferences organized under the auspices of the IGS;
- a reduced subscription fee for IGS-endorsed journals; and
- the possibility of being granted an IGS award.

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Membership of the International Geosynthetics Society (IGS) is open to individuals or corporations "... engaged in, or associated with, the research, development, teaching, design, manufacture or use of geotextiles, geomembranes, and related products or systems and their applications, or otherwise interested in such matters.". The annual fee for membership is US\$45 for individuals and US\$1000 for Corporate Members. Individuals of, or not of, corporations who voluntarily contribute a minimum of US\$200 annually to the IGS, in excess of their membership dues, will be mentioned in the IGS Directory in a separate list as benefactors.

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