

IGS NEWS

NEWSLETTER OF THE INTERNATIONAL GEOTEXTILE SOCIETY

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

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10th ANNIVERSARY OF THE INTERNATIONAL GEOTEXTILE SOCIETY



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IGS CHAPTERS AND GEOSYNTHETICS THROUGHOUT
THE WORLD**

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PRESIDENT'S REPORT

by
Professor R. Kerry Rowe

Introduction

Milan was rather busier than usual this last October with meetings of the IGS Officers, IGS Council, the Paper Selection Committee, and the Organizing Committee for the 5th International Conference on Geotextiles, Geomembranes and Related Products, the Corporate Members Committee, and a meeting of the Italian Chapter of the IGS, all over a five day period. These meetings were sandwiched between the 4th International Landfill Symposium (where the IGS was actively involved – see article to appear in the next issue of IGS News) and the Italian Conference on Geosynthetics held in Bologna (see separate article on page 15). The Italian Conference represented the first technical conference organized since the formation of the Italian Chapter. It involved presentations relating to soil reinforcement and landfill design by experts from Italy and other countries.

The meetings in Milan were the culmination of what can only be described as an excellent year for the IGS. Our membership has grown from 1146 individual members in 1992 to 1476 individual members in 1993. We have also seen a 50% increase in the number of chapters (from eight to twelve) with the formation of the Italian, German, French and Korean chapters. On behalf of the IGS, I wish to congratulate the executives of these four new chapters for their hard work and dedication in the formation of the chapters. Also, the formation of the Latin American Chapter is imminent. An interim executive has been formed and by-laws have been drafted. It only remains for the membership to meet and formally vote for the formation of the Latin American Chapter, approve its by-laws and elect the executive. It is expected that this will occur early in 1994.

In the following paragraphs I would like to summarize a number of important matters of which the membership should be aware.

10th Anniversary

This issue of IGS News commemorates the 10th Anniversary of the IGS. A lot has happened over this period. The Society has grown from an idea which was first discussed at a public meeting of potential members, chaired by Dr. J-P. Giroud, in Las Vegas in August 1982. In an associated article (page 5) Dr. Giroud provides a brief history of the Society's formation. When Professor Ch. Schaerer was elected the first President of IGS there were only a handful of founding members and an enormous task of establishing a new Society. By the end of his term as President in 1986 we had grown to 420 individual members, 22 corporate members and one chapter; the 3rd International Conference was being held under the auspices of the IGS in Vienna and; The Hague had been selected as the venue for the 4th International Conference. By the end of Dr. Giroud's term as the second President (1986–1990) the Society had grown to 901 individual members, 33 corporate members and 5 chapters; the 4th International Conference was being held in The Hague

and Singapore had been selected as the venue of the 5th International Conference. In 1990 it was my privilege to become the third President of what was by then an established, well organized, and vibrant Society. On our tenth anniversary we have grown to 1476 individual members, 50 Corporate members and 12 chapters. The chapters have become a very significant part of the IGS and are doing an excellent service to the membership by providing local conferences/seminars etc. It can truly be said that the IGS has come of age with its 10th Anniversary and I would like to express the gratitude of all of us to those pioneers – the first officers and councillors of the IGS – who set us on this path some ten years ago.

Conferences

The planning for the 5th International Conference on Geotextiles, Geomembranes and Related Products to be held in Singapore 5–9 September 1994 is going extremely well. There were more than 530 abstracts submitted to the conference and the Paper Selection Committee spent several days of hard work reducing this to a manageable number (see photograph below). Preparations for the conference are well under way and a large proportion of the exhibition space has already been sold. As I indicated in an earlier issue of IGS News, I have personally visited the venue for the conference and can report that the facilities are indeed excellent. The organizing committee is making arrangements for a number of post conference tours so that conference attendees will have the opportunity of



5th International Conference Paper Selection Committee in Milano October 1993: (left to right) Professor J-M. Gourc, Professor G.P. Karunaratne, Dr. R.A. Jewell, Professor T. Akagi, Professor R.M. Koerner

combining their attendance at the conference with a visit to some of the many fascinating areas in Southeast Asia. Members are reminded that there is a substantial discount for IGS members attending the conference (and for IGS corporate members who wish to exhibit), however, in order to realize these savings it is important to book early. The next bulletin dealing with the conference will be published in the New Year. All IGS members are encouraged to reserve 5-9 September 1994 for attendance at this conference.

In addition to the Italian Conference on Geosynthetics (which I mentioned earlier), there were a number of other conferences/seminars on geosynthetics held around the world by the various IGS chapters. It is perhaps worth noting that the conference organized by the North American Geosynthetics Society (Geosynthetics '93) was the largest geosynthetics conference ever held with 1418 attendees.

Awards

This issue of IGS News contains a call for submissions and nominations for IGS Awards. An IGS Award is the highest form of professional recognition by our Society and all IGS members who either personally believe that they have made a technical contribution that warrants recognition or who believe that there are others who have made significant technical contributions are encouraged to present a submission or make a nomination. Details regarding the award guidelines are given on page 4 of this issue of IGS News. Please note that the absolute deadline for submission is 1 March 1994. You might also note that the award rules have been changed to make it more convenient for individuals to nominate potential recipients and for individuals or groups to prepare submissions. We are currently in the process of forming the Awards Committee which will begin its work after 1 March 1994 and will have completed its work in time for the awards to be presented at the 5th International Conference in Singapore.

Election for President, Vice-President and 8 Council Positions

The IGS by-laws limit the term of office of the President and Vice-President to one four year term. Thus both the positions of President and Vice-President will become vacant after the Ordinary General Assembly in Singapore. An election for the new President and Vice-President will be held at the Ordinary General Assembly in Singapore. The following article contains a more detailed call for candidates for these positions as well as for the 8 vacant positions on the IGS Council. Individuals wishing to be candidates for the IGS Council should be prepared to attend at

least one IGS Council meeting per year and to work on behalf of the society. In the past, there have been typically two IGS Council meetings in Europe, one in North America and one in Southeast Asia or Asia over a four year period. The IGS does not provide any financial assistance and therefore Council members should have some source of providing funds for travel to attend the council meetings. Council meetings are organized in conjunction with some conference at which a significant proportion of the membership would be present. It is important that the membership of the IGS Council reflect the geographic distribution of our members as well as the different aspects of our discipline (e.g. design and construction, manufacturing, and academia). The election for the IGS Council positions will be held by postal ballot prior to the Singapore Conference. The results of this election will be announced after the election of the President and Vice-President at the Ordinary General Assembly in Singapore. We need IGS members who are prepared to represent the membership and work hard on the IGS Council. If you have the time and energy to make a significant contribution to the IGS, please consider being a candidate for the IGS Council.

Committees

A number of changes in Committee Chairmanship were approved at the IGS Council Meeting in Milano. This was partly in response to the fact that Dr. Jean Marie Rigo, Mr. Francois Goussé and Dr. Ara Arman have resigned from Council because of changes in their conditions of employment. We very much regret the loss of these hard working members of the Council. As a consequence of these changes, Mr. Daniele Cazzuffi has agreed to take on the Chairmanship of the Standards Committee (which is developing an inventory of geomembrane standards), Professor Jean-Pierre Gourc has been co-opted to the IGS Council to chair the Education Committee, and Professor Colin Jones has agreed to chair the European Activities Committee. One of the major activities of the European Activities Committee will be the establishing of a date and venue for the first European Regional Conference on Geosynthetics.

Conclusion

I would like to thank the IGS Officers, the IGS Council Members and the executives of all of the IGS Chapters for their hard work on behalf of the membership during the past year. In 1994 we look forward to a continued growth in activities (especially on a local/regional level) and in the membership of the IGS. The 5th International Conference in Singapore will be the highlight of the activities for 1994 and I look forward to seeing you there.

Call for Candidates IGS President, Vice-President and the IGS Council (deadline 14 February 1994)

The next IGS President and Vice-President will be elected at the Ordinary General Assembly to be held during the 5th International Conference in Singapore, September 1994. In addition, the results of a ballot to fill eight

vacant positions on the the IGS Council will be announced.

IGS members who wish to run for these positions are

invited to write to the IGS Secretary. Signed letters of application together with a biographical note (not exceeding 12 lines) should reach the Secretariat of the IGS not later than 14 February 1994. In their letter to the IGS Secretary, candidates should clearly identify their country of residence and the position that they are running for (President, Vice-President or Council Member). IGS members may run for more than one position in which case a separate statement for each position is required. The names of candidates and biographical notes which do not exceed 12 lines will be published in the March 1994 issue of IGS News. Under the by-laws of the IGS, only IGS members are eligible for these positions.

The election of IGS President and Vice-President will be held during the Ordinary General Assembly. The election of IGS Council Members will be held by postal ballot during the summer of 1994 and the results of this ballot will be announced at the Ordinary General Assembly after the election of the new IGS President and Vice-President.

According to the by-laws of the IGS, Professor R. Kerry Rowe will become an officer of the IGS in his capacity as Immediate Past-President of the IGS following the Ordinary General Assembly. The Secretary and Treasurer, who are the other two officers of the IGS, will be elected by the new IGS Council from amongst its members at a meeting of the IGS Council held in Singapore after the Ordinary General Assembly. The election of the IGS President, Vice-President, Secretary, Treasurer and the

eight new Council Members and the appointment of the Immediate Past-President will be for a period of four years.

Dr. A. Arman (USA), Dr. J.-M. Rigo (Belgium) and Mr. F. Goussé (France) have recently resigned from the IGS Council. The two remaining members of the IGS Council whose term of office expires in September 1994 are Mr. D. Cazzuffi (Italy) and Dr. S.D. Ramaswamy (Singapore).

If elected, candidates are expected to be able to travel and attend the IGS Council meetings which are held once a year. Meetings of the IGS Council are generally held in conjunction with international conferences which many officers and Council members may be attending. The next two Council meetings following the Singapore meeting will likely be held in Europe and in North America.

The by-laws of the IGS prescribe that half of the Council be elected every two years. Hence the next postal ballot to elect Council members after Singapore will be held in the summer of 1996.

Should you need further information, please contact the Secretary of the IGS, Mr. W. Voskamp, or the President of the IGS, Dr. R.K. Rowe. Both their addresses can be found in the 1993 IGS Directory and on page 19 of this issue of IGS News.

reported by R.J. Bathurst

IGS Awards: Call for Submissions (deadline 1 March 1994)

Purpose

IGS Awards will be presented at the 5th International Conference in Singapore on Geotextiles, Geomembranes, and Related Products to be held in Singapore, 5–9 September 1994. These awards will be presented 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. Awards will be made for the recognition of achievements completed and/or the validity of which has been demonstrated during a four-year period preceding the year of the award (i.e. 1990 through 1993 inclusive).

Types of awards

There are two awards:

- The **Young IGS Member Achievement Award** for IGS members who are less than 36 years of age on 31 December 1993.
- the **IGS Award** regardless of age.

A maximum of five IGS Awards will be granted for each four year period. Each award will consist of a special-commissioned medal and a diploma.

The winning entries will also be featured at the IGS booth at the exposition held in conjunction with the 5th International Conference and will be publicized in IGS News, in special press releases and in other publications.

Candidates

All candidates must be members of the IGS. All members of the IGS are eligible with the exception of the President of the IGS and the members of the Awards Committee.

In the case of a group submission to the Young IGS Member Achievement Award all members of the group must satisfy the age requirement. Any individual or group that is a candidate for the Young IGS Member Achievement Award is automatically considered for both award categories (unless requested otherwise by the candidate). However, a candidate may only receive one award in a given year.

Nominations

Typewritten nominations of candidates should be typed in English on plain paper (not letterhead) and submitted to the IGS Secretariat (address on page 19). 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 a 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.),
- a statement indicating the originality, and significance of the candidate's contribution to the discipline (i.e. in the field of geotextiles, geomembranes, related products and/or associated technologies).

Nominations may be made by any IGS member except for members of the Awards Committee. Under the IGS Awards rules any IGS member can nominate himself/herself for any award. The Publications Committee, Education Committee, Corporate Members Committee and IGS Chapters will be invited to make nominations.

Candidates who have been nominated will be contacted by the IGS Secretary. Candidates will be asked to agree to stand for an award and will be required to submit materials as directed by the Awards Committee. All 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 will comprise five regular members including its chairman (all members will be appointed by the officers of the IGS). The members will be selected so as to represent a broad cross-section of geosynthetic-related technologies. The Secretary of the IGS will attend all meetings of the Awards Committee as an observer and coordinator.

The IGS Awards rules contain more details than can be described in the space available in this newsletter. The full text of the IGS Awards rules can be obtained by contacting the Secretary of the IGS, Mr. Wim Voskamp at the address given on page 19 of this newsletter.

reported by R.J. Bathurst

Personal Memories on the Formation of the IGS

by J-P. Giroud, Past-President of the IGS

A few weeks ago, I was attending the 7th Italian Conference on Geosynthetics in Bologna. The IGS logo was on the wall, the IGS President, Professor Kerry Rowe, was at the podium, several members of the IGS Council from Europe, Asia, and North America were on the program as speakers, and many members of the newly formed Italian Chapter of the IGS were attending. Professor Jean-Pierre Gourc was seated next to me (still adding twenty slides to the presentation he was going to make ten minutes later) and he said, "You started this 10 years ago, but today, even if you wanted to stop it, you could not." In a nutshell, it was the best measure of the success of the IGS: we cannot stop it.

How could we stop the two thousand readers of IGS News? How could we stop the thousands who attend conferences or meetings sponsored by the IGS or its chapters? How could we stop the many thousands who use geosynthetics and benefit – directly or indirectly – from the IGS? Certainly, hard work by a few is necessary to keep the organization running, but, clearly, the IGS has reached the point of no return, the critical mass: there are volunteers to accomplish the essential tasks required by the management of the society, there are volunteers to organize local activities under the auspices of the IGS, there are volunteers to organize international conferences, etc.

The organization of the second international conference on geotextiles, to be held in 1982, prompted discussions on the formation of an international society. On 23 June 1980, in Chicago, I was chairing a meeting of the organizing committee and an important item on the agenda was the selection of the name of the conference. We considered the name "Second International Conference on Geotextiles", thereby recognizing the precedent set by the International Conference on the Use of Fabrics in Geotechnics held in Paris in 1977 and setting a trend for the organization of our emerging discipline. However, one member of the committee objected that since the conference held in Paris was not called the "first" conference, it was not appropriate to call our conference the "second". To which I replied that a good husband would not call his

wife "my first wife" while he is married to her. The name of the conference was adopted and the minutes of the meeting read:

"The official name will be Second International Conference on Geotextiles. This name implies that the conference held in Paris in 1977 is recognized as the first one and that a third conference could be organized in 1986 or 1987. Also implied is that an International Society on Geotextiles should be created."

Clearly, in parallel to organizing the Second International Conference, it was important to promote the formation of an International Society on Geotextiles. An essential first step in any international activity is to generate interest in as many countries as possible. The opportunity to meet representatives from European countries arose with the Swiss Symposium on Geotextiles to be held on 4 March 1982 in Zurich, a very central location. On 30 January 1982, I called Professor Charles Schaerer, the organizer of this one-day symposium, and suggested that a meeting be held to discuss the "creation of an international society on geotextiles", as phrased in the letter of confirmation sent the next day. Professor Schaerer, always enthusiastic, agreed to organize the meeting, and both of us invited key geotextile specialists from European countries. The meeting held on 4 March 1982 was attended by 25 participants from 7 countries. I started the meeting by presenting what could be the goals and the organization of an international society and, after discussion, all agreed that an international society should be formed. Professor Schaerer prepared the minutes of this historic meeting.

Having secured the support of key European professionals, I presented the concept to North American professionals at a meeting held in conjunction with a meeting of the American Society for Testing and Materials (ASTM) in Toronto, Canada, on 25 June 1982. The participants of both the Zurich and Toronto meetings were invited to attend a meeting to be held on 4 August 1982, in

Las Vegas, in conjunction with the Second International Conference on Geotextiles.

The meeting in Las Vegas was an impressive success: 150 participants from 34 countries, according to the minutes prepared by Professor Ara Arman. After I presented the concept of an international society on geotextiles, a couple of participants asked if there was really a need for such a society, which turned out to be extremely useful, because it gave me an opportunity to reiterate some key points in favour of a society and call for a vote at an early stage of the meeting. This crucial moment in the infancy of the IGS is recorded as follows in the minutes prepared by Professor Arman:

“Dr. Giroud asked that the assembly vote on the desirability of such a society, and he asked for a show of hands. The majority of approximately 150 participants voted for the formation of such an organization. There were a few abstaining votes and no opposition.”

At that moment, everybody in this international assembly knew that an international society would be formed. The rest of the meeting consisted of long discussions on the formation of an interim committee and the tasks of the committee. In particular a quasi-unanimous vote (one against, no abstention) indicated that, in addition to preparing the by-laws of the society, the interim committee would select the venue of the Third International Conference (no discussion about the numbering!) and a vote was taken for the date of the Third Conference: 14 votes in favour of three years after the Second Conference, 19 votes in favour of five years, and the rest of the approximately 150 participants in favour of four years.

The interim committee worked diligently under the chairmanship of Professor Schaerer. In particular, Guy Massenaux should be acknowledged for the preparation of the by-laws for the society.

On 10 November 1983, 14 of the members of the interim committee met in Paris for the official founding of the society, which occurred at 16:08 according to the minutes of the meeting. The list of those present at the inaugural meeting may be found in IGS News, Vol.5, No.2, July 1989, page 2. A group of members had prepared nominations for officers. Professor Schaerer, who had played an active role in the original meeting in Zurich and who had chaired the interim committee was a logical choice for president, to ensure continuity until the first General Assembly to be held in 1986, on the occasion of the Third International Conference. Guy Massenaux was the obvious choice as the secretary, and every IGS member knows how much work he did for our society. To my great surprise, my name was on the slate as past-president! The group explained that their intent was to recognize what I had done for the formation of the society. However touching the intention was, I did not agree. I thought my role in IGS should be more in the future than in the past and was very honoured in 1986 to be the first president elected by a General Assembly held at an international conference.

Another essential step was the broadening of the scope of the IGS to include geomembranes. The occasion was provided by the International Conference on Geomembranes, held in Denver, Colorado in 1984. As I was chairing the organizing committee of that conference, it had been easy to schedule a meeting where “a proposal from

the existing International Geotextile Society will be made” regarding “the possible addition of geomembrane professional interests within the existing society or forming a new geomembrane society”, according to the official program of the conference.

The meeting, which took place on 23 June 1984, was attended by 57. I indicated that the IGS Council had agreed to broaden the scope of the IGS to include geomembranes. It was decided to form a committee composed exclusively of geomembrane specialists from seven countries, co-chaired by Piero Sembenelli and Robert Wallace. The committee met the next day and accepted the offer from the IGS. The by-laws of the IGS were then amended to include not only geomembranes, but also all related products.

Most of those who were involved in the early meetings mentioned above are still active in the field of geosynthetics. However, it is important to note that, in the present IGS Council, there are only two of these “founding fathers”, Professor Masami Fukuoka and myself. This attests to the vitality of the IGS. In particular, I am delighted to have been succeeded by such an outstanding president as Professor Rowe, and, even Guy Massenaux who was considered irreplaceable, has been replaced by an excellent secretary, Wim Voskamp. At the same time, continuity among the officers has been ensured by Pete Stevenson who has served with great dedication as treasurer with all three presidents.

As mentioned above, during the discussion preceding the formation of the IGS, questions often asked were: Do we really need to create “another” international society? Shouldn't we all join an existing society? History shows that the right decision was made. No existing society would have treated, as equal, polymer scientists and geotechnical engineers, textile manufacturers and earthwork contractors. No existing society would have provided an open forum for civil engineering and the synthetics industry as the IGS does. No existing society could command the authority that is given to the IGS. The IGS enjoys this authority because every member – individual and corporate – knows that the IGS emanates from all of us, in a very open manner. Without the authority of the IGS, some dispute on the venue of an international conference or other matter would have already split our profession into geographic and/or interest groups, as has occurred in other disciplines.

Today, we take the IGS for granted. May the personal memories evoked above help our young members understand where we come from and realize that, without the IGS, their profession would be different today. Geosynthetics engineering is now a respected discipline that attracts outstanding professionals, in great part because the IGS has given this discipline a foundation and a prestige that many other disciplines envy.

Many dedicated people have worked hard for the success of the IGS and deserve our gratitude. I have been very fortunate to be so closely associated with them while being involved with the formation of IGS. It is a great privilege to have an opportunity to do something valuable for our profession and to work with outstanding professionals.

I wish the IGS and our profession many more decades of success and look forward to helping young generations to pursue and expand the achievements of the IGS.

North American Geosynthetics Society: A Brief History

by
Bob Holtz and Bob Koerner

Our heartiest congratulations to the IGS on its 10th anniversary! While NAGS isn't quite that old, the connection between NAGS and the IGS goes a long way back to the time of the predecessor society, the American Society on Geosynthetics (ASG). An informal meeting was held in January 1986 at the ASTM meeting in Cocoa Beach, Florida, to discuss the organization of a regional professional society and chapter of IGS. This was the birth of the American Society on Geosynthetics (ASG). A committee, chaired by Joe Fluet, was formed to set up the ASG organizational structure. Other members of that organizing committee were Rudy Bonaparte, Barry Christopher, Neil Williams, Joe Luna, and Steve Warner. Their first job was to apply for chapter designation under the IGS by-laws. Dues were set at \$40 per annum, and they asked the Industrial Fabrics Association International (IFAI) to be their management organization.

The next meeting of the ASG was held in Vienna at the 3rd International Conference on Geotextiles. In addition to ourselves, Rudy Bonaparte, Jay Beech, John Paulson, Barry Christopher, Joe Fluet, and Steve Warner were present. As the ASG was only an ad hoc group, this meeting was unofficial and primarily informational. Still, the group voted to join with IFAI in supporting the upcoming Geosynthetics '87 conference in New Orleans. As it was imperative that the ASG have formal officers, a nominating committee was formed and an election was scheduled for the June 1986 meeting of ASTM in Louisville. Also discussed were the development of the by-laws, liaison with other organizations, and having IFAI act as the society's management organization.

In June 1986, an official meeting of the ASG was held in Louisville, Kentucky. This in effect was our first General Assembly. About 30 people attended, and several additional U.S. members of the IGS were represented by proxy votes. The main order of business was an approval of the draft by-laws, and the election of officers. Joe Fluet was elected ASG president, Bob Koerner president-elect, Bob Holtz and Bob Carroll vice-presidents, and John Paulson treasurer. The officers were authorized to negotiate a management agreement with IFAI, and the next General Assembly was to be held at Geosynthetics '87 in New Orleans in February.

New Orleans was a big milestone for NAGS. We were approached by a group of Canadians who wished to join ASG under two conditions: 1) that one of the vice-presidents be Canadian and 2) that the name of ASG be changed to the North American Geosynthetics Society (NAGS). After some discussion, the Canadian proposal was enthusiastically accepted by the NAGS Executive Committee and unanimously approved at the General Assembly later that day. Kerry Rowe was elected as the Vice-President representing Canadian interests in NAGS. Ad-

ministrative committees formed at that General Assembly were membership, conferences, intersociety liaison, and finance. The members present were enthusiastic about the future of NAGS, and close cooperation with, for example, ASCE and ICOLD were proposed. A student membership category was approved, and the next General Assembly was to be held at the Geosynthetics '89 conference in San Diego.

We had some problems with the NAGS student membership. All NAGS members had also to be members of the IGS, but there was no student membership of the IGS at that time. Fortunately, a few years later the IGS voted to also have a student membership, thus following our leadership in this important category.

Since those early days, NAGS has continued to grow and develop. Both our last two biennial conferences, Geosynthetics '91 in Atlanta (1375 registered attendees) and Geosynthetics '93 in Vancouver (1418 registered attendees) were the largest geosynthetics conferences ever held anywhere. NAGS is in good shape financially. Its membership, although not large, is steadily growing, and NAGS has been very active in co-sponsoring or being associated with several short courses, seminars, and conferences. We are producing a book on North American Geosynthetics Case Histories, and we have several active student chapters and an outstanding Awards of Excellence program (more about that below). Finally, we have been asked by the IGS to host the 6th International Conference on Geosynthetics in 1998. We are very excited about the 1998 conference, the first in North America since 1982 (Second at Las Vegas). This will be a wonderful opportunity for the rest of the geosynthetics world to learn about developments in North America over the past 16 years. We are sure you will be hearing more about the 1998 conference soon.

The NAGS Awards of Excellence Program was begun three years ago with major donations by the Tensar Corp. and Gundle Lining Systems, Inc. Several other manufacturers and even individuals have also contributed to the program. Its concept is unique; the cash prize for the best paper in a given category does not go to the authors of the paper but to the research institute or organization designated by the authors. In this way, prize money is used to develop and grow the entire geosynthetics industry.

In summary, NAGS is one of the largest and strongest of the many IGS chapters. Like the IGS, it has developed from a rather modest and inauspicious beginning to a truly dynamic, exciting professional and technical organization.

Our heartiest congratulations to the IGS on its 10th Anniversary! We look forward to celebrating many more anniversaries with you.

The Earliest History of Geotextiles in the Netherlands

by J.G. Vos

Editors Note: The following submission is edited from an article that appeared in a recent issue of the newsletter of the NGO (Dutch Geotextile Organization) which is also the Netherlands Chapter of the IGS. Mr. P. Brummelkamp, Secretary of the NGO, writes by way of introduction that: "Mr. Vos was in the textile business at the time that geotextiles were born – some forty years ago in the Netherlands. He was involved in the development of the first geotextiles in hydraulic engineering applications."

In 1952, the AKU started the production of nylon fibres in a pilot plant, situated at the Research Group plant in Arnhem, the Netherlands. This Research Group experimented with non-fibre nylon synthetics, made on a rather primitive laboratory extruder. The directing chief engineer of Waterstaat in the province of Zeeland (south-western part of the Netherlands), Mr. ir J.G. Snip, was at that time already interested in non-fibre nylon synthetics for underwater applications. However, he did not have confidence in the use of nylon fibres in civil engineering applications at this time.

This situation changed after 1 February 1953, when large parts of Zeeland province became inundated by a catastrophic flood. Almost 2,000 people lost their lives and over 70,000 had to be evacuated. Disasters and wars tend to bring technical innovations – so did this one. The damage had to be repaired and it had to be repaired in a manner that would prevent another devastating inundation. Of course, the Zeeland Waterstaat was involved in this process. Mr. Snip got the idea that a nylon mat, woven from Akulon tapes, 8cm in width, could be used as a sink mat. The mat would have to be ballasted with small jute sandbags.

This new idea, however, was considered too expensive and moreover, it was not yet possible to weave large mats from 100 x 10m wide nylon tape (for instance). But the idea sparked interest in the use of thick nylon woven materials. At this stage, around 1954, I became involved in the process. One of the subjects I was involved in at that time was new applications for nylon fibre. Trials had been run with tightly woven bags for the flour business. The positive results of impact tests with these bags made Mr. Snip change his mind about nylon woven geotextiles. He discussed the possibilities with the contractor Mr. Cees Verstoep, who was willing to do some hydraulic engineering tests on strength and sand tightness. The nylon "flour bags", filled with 80kg of sand, were dropped from a height of 10m onto a wharf. To my relief and to Mr. Verstoep's surprise, they didn't break. "It appears to be quite strong after all", was his only comment. And then they really went for it: the crane operator hit the bag, dropped it on the wharf, pulled it through the water and dropped the wet (and therefore very heavy) bag from 10 metres onto the wharf again. This time, the seams broke.

In the meantime, at the Research Group weaving plant, they had discovered how to make seamless sandbags on a standard weaving loom. The personnel at the plant played an important role in the development of 1-1/2 ton nylon sandbags and their applications.

The practical experience that was gained in several places, as described before, was very useful when, in 1957, the "Pluimpot" at the isle of Tholen had to be closed. The

newly created Deltadienst decided to build an experimental temporary dam, behind which a permanent one would be constructed. This experimental temporary dam was the kindergarten for nylon woven geotextiles and gave this material the opportunity to prove itself.

Mr. Snip and Mr. Verstoep used this opportunity to the fullest. Mr. Cees Verstoep and the new head of the Deltadienst, Professor ir P.Ph. Jansen, had come to know each other during the repair of dykes that were broken during the Second World War. Mr. Verstoep reported to Mr. Jansen the possibilities of large nylon bags for dyke repairs under stormy conditions, which resulted in the first trial order for synthetic woven civil engineering products in the Netherlands and to the best of my knowledge in the world. This was on 18 February 1957. After having passed the tests successfully, one of the customers of AKU, NV Nicoter Kuile in Enschede, placed the first geotextile order for the delivery of 4600 sandbags according to AKU's specifications. With this order for their artificial silk (rayon) weaving plant, the foundations for Nicolon were laid. Today, Nicolon is a well-known and large producer of geosynthetics.

The building of the temporary dam in the "Pluimpot" was carried out by the contractor Verstoep. The dam was built very efficiently, but could not be closed for a long time. This was not because of technical problems, but because the Deltadienst and the Hydrodynamic Laboratory were required to carry out a number of tests before opening the dam. In October 1957, the dam was finally closed. A few weeks later, however, the first November storm proved that the dam was in fact built for August and was too low for the stormy season (as Mr. Verstoep had already predicted). The Deltadienst, however, was not deterred and simply ordered a higher dam to be built. They placed a new order of 7,000 sandbags. The sandbags that had been carried away by the strong water currents were recovered. About 80% proved to be undamaged. Thus, this small catastrophe turned out to be a success for the new nylon woven geotextile product. Despite the bad season, the building of the higher dam proceeded without difficulty and the permanent dam was built without interference from the tide.

In these early years (1953 to 1957), a few people laid the foundations for the development of geotextiles. As most pioneers, they had to work hard to get their ideas accepted by their colleagues in the textiles industry and the hydraulic engineering profession.

Editors note: Technical details and photographs of the historic Pluimpot project may be found in: Vos, J.G., "Geotextile Mat and Sandbags as Temporary Breakwater Dam, Pluimpot, The Netherlands", Geosynthetics Case Histories, G.P. Raymond and J-P. Giroud Eds., Bi-Tech Publishers, 1993 pp. 76–77.

Geosynthetics in Australia – A Brief Note

by

Manfred R. Hausmann, *University of Technology, Sydney*

Mike A. Sadlier, *Geosynthetics Consultants Australia, Melbourne*

Market growth

Australia has a land mass of similar size to that of the USA but only 10% of its population. Thus the market potential for geosynthetics and related products is limited.

In North America, about 70% of the geotextiles are reported to be nonwoven materials. In Australia, the market is also dominated by the needlepunched nonwoven geotextiles, probably to the extent of 75 to 80%. The most common material is a nonwoven polyester geotextile. No official market figures are available but it is believed that the use of geotextiles is still growing in the order of 5–10% per annum, despite difficult economic times.

Geomembranes have found extensive use in Australia for water and liquid waste storage, heap leaching pads for mining, floating covers for reservoirs and waste ponds, as well as landfill liners. Talevski (1990) estimated that prior to 1984 only some 0.2 million m² of geomembrane were used, predominantly made of Hypalon and PVC. By 1992, the estimated annual consumption had risen to 1.4 million m² and more than 70% of this was HDPE (high density polyethylene). In Australia, environmental legislation regarding waste disposal systems using geomembranes is still in an early stage of development and therefore the market for geomembranes has not yet reached growth rates equivalent to the United States. Australia is unlikely to adopt the regulated approach of the U.S. and is more likely to follow a more pragmatic functional design approach, with evaluation of needs and material options for each project. In spite of this, the growth potential for geomembranes is very good, be it in large volume or, smaller more highly engineered applications.

Geogrids are products that are showing a healthy growth, particularly in reinforced soil wall applications.

Early Australian efforts with geosynthetics

In the 1930's, Australian road engineers tried wool for subgrade separation and reinforcement (geowool?) but otherwise little is known about the use of fibres or textiles prior to the advent of geosynthetics as we know them today. Geotextiles were first imported to Australia in the late 1970's with heatbonded nonwovens being prominent, but competition between specialist suppliers with technical support did not make a mark until the early 1980's. O. G. Ingles, then with the Australian Government research group (CSIRO) (see Ingles and Metcalf 1972) was the first researcher to recognize the potential of these materials in geotechnical engineering in Australia. His research initially concentrated on Membrane Encapsulated Soil Layers (MESL), a technique used to control volume change in clayey road subgrades (Ingles and Lawson 1977). Geogrids, then called resinous meshes or nets, were the subject of a paper by Yamanouchi at the CSIRO Symposium on Foundations on Interbedded Sands held in Perth in 1970.

At the pioneering 1977 Paris conference, Australian contributions came from Ingles (Ingles 1977) and Hausmann (Hausmann and Vagneron 1977). Since then Australian engineers and academics have regularly presented research results and case studies to international conferences. A workshop on geotextiles was held at the Fourth Australia-New Zealand Conference on Geomechanics in Perth, in 1984. Some years before, a mini-symposium was organized by the Sydney Group of the Australian Geomechanics Society. Neither of these events produced proceedings. The use of geotextiles in Australia was reviewed at the Vienna conference by Finn and Sadlier (1986). At the 1990 conference in The Hague, Australian authors covered topics such as soil-geotextile interaction testing and the use of geotextiles in railway track application, sprayed seal roads and reinforced clay walls. Geomembrane applications in Australia were the subject of a paper by Parker and Sadlier at Geosynthetics '91 Conference in the United States.

In 1988, the Australian Geosynthetics Society was founded. This society has not been very active in recent times. The core of its supporters are also members of the International Geotextile Society.

Testing standards

Draft standards for the testing of geotextiles were first issued in Australia in 1985. This represented a very prompt response by Standards Australia to the needs of manufacturers and users of geotextiles. By 1990 a reasonably complete set of index tests became standards. A first revision of a testing standard, the drop cone method of evaluation of puncture resistance, was adopted in 1993.

The original S.A.A Committee CE/20 on Geotextiles has now been reconstituted and renamed Committee CE/20 on Geosynthetics. It will consider expanding the range of index tests (which measure the performance of geotextiles in isolation) and introduce soil/geotextile interaction tests, including soil/geosynthetic shear and filtration tests. It is likely that a subcommittee will be formed to assess the need for special tests for geomembranes. Developing new test standards, codes of practice or design guidelines in Australia relies largely on the voluntary efforts of individuals, government organizations and private industry. It costs time and money but helps to maintain high standards and fair competition in engineering, both leading to a more efficient use of resources. Funding for development work in geosynthetics seems to be drying up and Committee CE/20 will be forced to wait for the appearance of European, American or international standards and follow a policy of "adopt and adapt", rather than respond directly to the problems at hand.

Design developments

The functional selection of geosynthetics and the "design by function" concept as promoted by Koerner (1990) are clearly gaining acceptance in Australia, as elsewhere in the world. Pioneering efforts related to the use of geotextiles in roadworks are worth mentioning, such as the concept of the robustness index and geotextile reinforced seals. Other interesting developments relate to floating covers.

A signification step towards the rational use of geotextiles in road engineering, the major area of geotextile use in Australia, was the publication of the Guide for Geotextiles by Austroads (1990). Resistance against damage due to construction procedures is measured in terms of the robustness index G , which is based on the results of the CBR plunger test and the drop cone test. This concept was developed by the Main Roads Department of Queensland. The Roads and Traffic Authority (RTA) of New South Wales has experimented with geotextile reinforced bituminous seals since 1985. They are intended to provide low-cost all-weather pavements for remote rural communities. The RTA (1992) has now issued guidelines which provide design and construction details and give advice with respect to maintenance and construction.

The construction of geotextile reinforced seals begins with preparing the clay subgrade by compaction. The surface is then sprayed lightly with water and a bituminous tack coat is applied. The geotextile, usually a lightweight nonwoven is then placed on the tack coat. This is usually followed by a cover of small aggregate (5 to 7 mm size) and rolling by a rubber tired roller until the bitumen becomes visible through the fabric. This is followed by a coarse aggregate seal (10 mm or 14 mm size). Considerable cost savings can be achieved using this technique compared with more conventional pavements with similar performance requirements.

The arid nature of much of Australia makes evaporation control an important task for rural water authorities. There is increasing confidence in the design and installation of floating geomembrane roofs for water reservoirs, a technology which has developed significantly since the late 1970's. Floating covers have also been used for anaerobic waste water ponds. The sewage pond cover at Werribee near Melbourne measures some 35,000m². It is interesting to note that the popularity of HPDE liners in Australia is attributed largely to good performance when exposed to UV radiation, rather than other factors which may dominate geomembrane selection elsewhere in the world.

Innovations are welcome

The geosynthetics industry is still growing at a rate in excess of the general economy. This is at least partly due to the fact that geosynthetics play a vital role in environmental protection such as waste containment and erosion control. It is due in part to the spirit of creativity and innovation shown by product developers but is also due to the willingness of Australian engineers to give new materials and technology a fair trial.

The appearance of a variety of segmental wall systems is currently enhancing the use of geogrids. The "Design Manual for Segmental Retaining Walls" produced by the National Masonry Concrete Association (1993) in North

America was quickly adopted by the Concrete Masonry Association of Australia.

Australia has produced significant pioneering work in the area of geocomposite drains, e.g. in the design of high flow capacity drainage cells and the technology of extruding core material for composite drains. Another new product line which has seen application in Australia are geosynthetic clay liners. High costs of these products may, however, inhibit their widespread use.

Concluding remarks

Australia's geosynthetic market as well as its product range continue to expand, albeit somewhat slower than in the 1980's. As environmental concerns grow, increasing demand for geosynthetic lining systems and erosion control products will arise. Also, more geogrids are likely to be used in combination with low height segmental wall systems. The practice of designing with geosynthetics has significantly matured over recent years but further progress is needed. As geotextiles and other geosynthetics become more common construction materials there is a danger that engineers may treat them as commodity items disregarding the wide variety of products involved and the correspondingly wide range of possible performance levels.

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History of the Japanese Chapter of the IGS (JCIGS) by Professor Masami Fukuoka

The Japanese Chapter of the IGS was officially approved by the IGS at a Council Meeting held in San Francisco in 1985. As a matter of fact, activity of the Japanese geotextiles group started in September 1982, after the 2nd International Conference on Geotextiles in Las Vegas in 1982. The writer was a member of the interim committee at the time of the Las Vegas conference that ultimately led to the formation of the IGS (see article by Dr. J-P. Giroud on page 5).

It was a general rule of the Japanese Society of Soil Mechanics and Foundation Engineering (JSSMFE) to organize a supporting group, when someone was appointed to be a member of the International Society for Soil Mechanics and Foundation Engineering (ISSMFE). The writer asked the JSSMFE to organize a similar supporting group for him which was to become the JCIGS. Komei Iwasaki (Secretary of the JCIGS), Yoshiharu Watari, Ryuji Fukuzuni, Katsuyuki Kutara, and others became members of the supporting group.

At the Paris meeting in 1983, where the establishment of the IGS was declared, the author was elected as a Council Member. At this time there were no rules for the formation of chapters but there was a tacit understanding among the council members that the JCIGS was a chapter of the IGS. The number of individual members was about 30 and there was one corporate member.

The by-laws of the Japanese Chapter were translated into English and brought to an IGS Council Meeting in San Francisco in 1985. Mr. G. Massenaux, Secretary of the IGS, was of the opinion that our society should include manufacturers who were not necessarily geotechnical engineers. Some of the manufacturers did not want to be members of the ISSMFE. The JCIGS changed its by-laws following the advice of the IGS Council and became independent of the JSSMFE.

The JCIGS now has 170 individual members including one honorary member, 20 corporate members, 45 student members for a total of 235 members. The number of members is quite large when one notes that the JSSMFE has about 1,100 members! Many committees have been

working actively. Conferences, seminars, symposia and lecture meetings are held on a regular basis. For example:

Each December:	Annual Symposium on Geosynthetics, Kyoto
Once or twice a year:	Lecture meetings
1987:	International Symposium on Geosynthetics, Kyoto.
1989:	International Geotextile Seminar, Osaka.
1988 and 1992:	IS-Kyushu, Fukuoka
1988 and 1992:	Seminar by IGS Council Members
1992:	Mercer Lecture and lecture in Tokyo by Professor R. Koerner

Every year the JSSMFE and the Japanese Society of Civil Engineering have annual meetings that include sessions on geosynthetics. In addition, these meetings result in Technical Reports in Japanese published 3 times a year and an annual Japanese membership list.

The JCIGS sent a large number of participants to the 3rd and 4th International Conference on Geotextiles in cooperation with the JTB. There is large scale cooperation between the government and the private sector. Members of the JCIGS participated in a recent project that has resulted in a published document describing a design method for reinforced soil walls and embankments that use geosynthetics. Another project using geomembranes for the prevention of landslides is in progress. A group of members from the Kyushu area have recently produced a design manual for geogrids and another group is preparing test methods for the Japanese Industrial Standards on Geosynthetics. Recently, the JCIGS established a committee on geomembranes. This committee is also preparing standards for testing and design.

The results of a market study completed recently showed that about 55 million square meters of geosynthetics are used annually in Japan and this volume is increasing by approximately 10% per year. This is about 10% of the world market!

Finally, the JCIGS has and will continue to work actively, not only inside the chapter but also outside the chapter in cooperation with other organizations.

News of Members

GeoSyntec Consultants celebrates its 10th Anniversary. Founded on 2 December 1983, GeoSyntec Consultants now has offices in five locations in the United States and in Brussels, Belgium, in addition to three laboratories in the

United States. Also, GeoSyntec Consultants recently signed a cooperation agreement with **Piero Sembenelli Consultant** of Milano, Italy. GeoSyntec Consultants has been a Benefactor of the IGS since 1984.

Is your entry in the 1993 IGS Directory correct?

Mr. Peter Stevenson, Treasurer of the IGS is responsible for maintaining a current directory of the IGS membership. An accurate mailing list is an important activity of the IGS so that we can keep in touch with the membership. Many of our members have changed employers or otherwise have changed their address or titles since the 1993

IGS Directory was printed. This article is a special request for IGS members to take a moment to check that their entry in the 1993 IGS Directory is current. Please inform Peter Stevenson of any corrections by fax, telephone or by writing to the address given on page 19.



5th International Conference on Geotextiles, Geomembranes and Related Products Singapore, 5–9 September 1994

Following the publication of the article in the July 1993 issue of IGS News on the 5th International Conference on Geotextiles, Geomembranes and Related Products, the organizers in Singapore received a substantial increase in abstracts. By the second deadline on 31 August 1993, the number of abstracts stood at 537. The worldwide distribution of bulletin 1, and the extensive publicity given in Geotechnical Fabrics Report and Geosynthetics World have helped generate awareness of the Conference among a large number of the scientists and geosynthetics engineers.

The Paper Selection Committee of the 5ICG gathered in Milano, equipped with the reviews conducted by the international Paper Review Committee. The Paper Selection Committee consisted of 5 members (see photo page 2) and the Paper Review Committee consisted of 45 members from around the world. Each abstract was reviewed by three members of the Paper Review Committee and the results were compiled into various database classification systems.

The Paper Selection Committee sat for 3 days, 16, 17 and 18 October in Milano, from morning until late evening, in order to complete their task. At the final count, 60% of the abstracts have been considered suitable for inclusion in the proceedings of the conference. In arriving at its conclusions, the committee considered the scientific value, originality and contribution to knowledge of each

submission. Consideration was also given to increased participation by more authors during the technical sessions by accepting more papers and reducing the presentation time. A conference programme was also prepared by the committee.

The Organizing Committee communicated with the authors at the end of November 1993 to inform them of the Paper Selection Committee's decision. The 2nd bulletin, which will carry more information about the scientific part of the conference, poster and computer display, exhibition details, hotel reservations, registration fees, pre and post conference holidays will be out in the first week of 1994. Look out for the early bird registration date and the deadline for paper manuscripts in this bulletin.

IGS Corporate members have enthusiastically booked exhibition space. However, some space remains and is available to all companies. For further details contact:

Conference Secretariat Attn: R.S. Douglas
5th International Conference on Geotextiles,
Geomembranes and Related Products (5th IGC)
Thompson Road, P.O. Box 0177, Singapore 9157

Tel: (65) 353 5511

Fax: (65) 3532 424 Attn: R.S. Douglas

reported by G.P. Karunaratne

The JPGG, a new group devoted to geosynthetics, led by JPG1 and JPG2

On 1 October 1993, the day after the French Conference on geosynthetics "Rencontres 93", the first meeting of the JPGG (Juteuse Pépinière Grenobloise en Géosynthétiques) was held. The name of the group was concocted by Jean-Pierre Gourc and can be loosely translated into English as the "Joyous Party from Grenoble on Geosynthetics". The goal of the JPGG is to promote exchange between alumni of the Geosynthetics Research Group of IRIGM, the geomechanics research centre of the University of Grenoble, France.

The "founding father" of the JPGG is JPG2, alias Jean-Pierre Gourc, Professor of Geotechnical Engineering at the University of Grenoble, and director of the Geosynthetics Research Group. The "founding grandfather" is JPG1, alias Jean-Pierre Giroud, who founded the Geosynthetics Research Group at the University of Grenoble in 1976 and was succeeded by JPG2 in 1978.

Twenty-five members of the JPGG attended the meeting. The first part consisted of the presentation of a doctoral thesis by Thierry Pelte, the newest member of the JPGG, on the hydraulic and thermal behaviour of geomembranes. The second part of the day also had to do with hydraulic and thermal behaviour: it consisted of a four-hour lunch, sponsored by Bidim Geosynthetics and

The Tensar Corporation, both IGS Corporate Members. Philippe Delmas, Grenoble alumni and vice-chairman of the French Committee of Geotextiles and Geomembranes acted as master of ceremony and made sure that the quality of the meal, the flow characteristics of the wine, and the durability of the participants met all relevant French standards.



Members of the JPGG surrounding JPG1 and JPG2 clad in ceremonial dress made of geotextiles and geomembranes

reported by JPG1 and JPG2

Published under the auspices of the IGS VOLUME 1 of the GEOSYNTHETICS BIBLIOGRAPHY is available

The Geosynthetics Bibliography is a book in two volumes, prepared by J-P. Giroud, with cooperation of J.F. Beech and A. Khatami, of GeoSyntec Consultants, and published under the auspices of the IGS. Volume 1, hard cover, 781 pages, is now available and can be ordered from its publishers, the Industrial Fabrics Association International (IFAI).

Volume 1 of the Geosynthetics Bibliography is devoted to conferences. It contains more than 4500 references of papers on geosynthetics presented at more than 600 conferences worldwide from the early 1960's to 1 January 1993. For each conference, the Geosynthetics Bibliography gives the complete reference of each paper on geosynthetics.

The Geosynthetics Bibliography, Volume 1, is the ideal tool to:

- Identify a conference using the many indexes organized according to the various characteristics of a conference: date, location, subject, and sponsoring organization.
- Obtain a list of all papers on geosynthetics (including discussions) presented at any given conference, far more rapidly and accurately than by using the table of contents of the conference proceedings.
- Retrieve papers thanks to indexes by subject and authors.

- Prepare an accurate list of references in record time by the "photocopy-cut-and-paste" method, as all references are complete.
- Conduct a complete literature search, knowing that virtually all papers on geosynthetics presented at conferences worldwide are listed in the book.

The second and last volume of the Geosynthetics Bibliography is at the final stage of preparation and will be published in 1994. Volume 2 includes references of papers on geosynthetics published in more than 300 technical journals worldwide, as well as references of books, theses presented at universities, research reports, publications from various organizations, etc. Volume 2 will also include lists of publications by the 100 most prolific authors on geosynthetics.

Together, Volumes 1 and 2 of the Geosynthetics Bibliography include more than 10,000 references.

Volume 2 will be announced and sold separately in 1994. Volume 1, which has its own indexes, is completely independent from Volume 2, and can be ordered now. The regular price for Volume 1 is US \$99 and the discounted price for IGS members is US \$79. Shipping charges are in addition. Contact:

IFAI, 345 Cedar Street, Suite 800
St. Paul, Minnesota, 55101, USA
Tel: 1 612-222-2508 Fax: 1 612-222-8215

reported by R.J.Bathurst

THE IGS/ASCE VIDEO PROGRAM GATHERS STEAM by Pete Stevenson, Treasurer of the IGS

The International Geotextile Society in cooperation with ASCE, the American Society of Civil Engineers, has launched a program to develop two educational videos on geosynthetics applications.

The videos are part of a larger ASCE project carried out in cooperation with a number of groups to produce a total of twelve educational videos in a series called "Engineering in Action". Two of these videos are related to geosynthetics and are being produced in cooperation with IGS. All twelve of the videos will be marketed at a nominal fee to universities, engineers, producers and the public. The two geosynthetics-related videos will teach and create awareness of geosynthetics in road, pavement and landfill applications.

The first video of the twelve video series is called "Trenchless Technology" and was completed in 1992 in cooperation with the North American Society of Trenchless Technology and teaches non-disruptive installation of pipes and cables. Currently under production is "Soil Erosion and Sediment Control" which is being produced in cooperation with the International Erosion Control Association.

The two subjects selected for geosynthetics applications are "Geosynthetics in Landfills" and "Geosynthetics for Road and Pavement Construction". It is hoped to complete these productions in 1994.

Objectives

The first objective is to present two balanced educational videos of about 30 minutes length each. Additional objectives include:

- 1) The presentation of major problems associated with either landfills or road construction and the identification and discussion of the several types of products, processes and materials that are available as technical solutions.
- 2) A focus on principles, methods and applications in a balanced and impartial presentation to teach the broadest range of solutions.
- 3) The development of a basic educational resource of visual material to introduce the scope of landfill or road construction problems and methodologies to solve the problems.

Content

To ensure accuracy, quality and professionalism, the geosynthetics-related videos will be prepared under the technical direction of experts recognized in the field, acting on behalf of the IGS. For "Geosynthetics in Landfills", technical direction will be provided by the Dr. J-P. Giroud and J.E. Fluet, P.E. Technical direction for "Geosynthetics in Road and Pavement Construction" will be by Dr. R.M. Koerner.

Each of the two videos will present products, problems, solutions and the state-of-the-practice. More specifically, the landfill video will present the use of all types of geosynthetics such as geomembranes, drainage layers, filters, separators, cushions, reinforcement, etc. in lining systems and cover systems.

The road construction video will include pavement separation, reinforcement of unpaved roads, filtration and drainage in pavements, retarding reflective cracking and special applications.

How to get involved

In order to contribute to the two geosynthetics-related videos described above, companies should be leading producers of products, materials, technologies and services that solve the problems that characterize the industry. Cost of production will be shared equally by the co-sponsors of each video. Each co-sponsor will be asked to contribute a modest sum of US\$1675 to offset costs of production and supply their own visual material in the form of videos, slides, graphics and literature. Costs are controlled by utilization of the sponsors materials and visual aids which are edited into an educational film. Co-sponsors will receive full credit and identification in promotional literature, the video jacket and the film credits. Sponsoring firms will receive a complimentary copy of any video using their materials.

The following list identifies the several firms that have already committed to co-sponsoring the two geosynthetics-related films:

GEOSYNTHETICS IN ROAD AND PAVEMENT CONSTRUCTION

Belton Industries	Hoechst Celanese
Polyfelt USA	Synthetic Industries
The Tensar Corporation	Monsanto
DuPont De Nemours International, S.A.	

GEOSYNTHETICS IN LANDFILLS

Gundle Lining Systems	Polyflex
Hoechst Celanese	Polyfelt USA
Synthetic Industries	The Tensar Corporation
National Seal Company	

The benefits

The two geosynthetics-related videos will be marketed by both the IGS and the ASCE. ASCE has 100,000 members and organizes numerous conferences and meetings annually. The ASCE mailing list includes an additional 60,000 prospects. The addition of the IGS brings the international dimension with members in more than 40 countries, chapters in 12 countries and sponsorship of many conferences.

The target market is a huge network of specifiers, consultants, engineers, design professionals, advisory groups, government agencies, educational institutions, and libraries. The sponsors will be seen as a part of a prestigious and influential partnership with the ASCE and the IGS.

While the primary focus of the two geosynthetics-related videos is to address the needs and practice of geosynthetics in the North American market, the IGS expects that geosynthetics communities in other areas of the world will find the information to be of value.

Contact

Companies that wish to be co-sponsors and have materials that could be used in the two geosynthetics-related videos described above are invited to contact the writer by letter, fax or telephone at the following address :

Peter E. Stevenson
Chairman IGS Promotion Committee
226 Sitton Road, EASLEY, SC 29642, USA
Tel: 1 (803) 855 0504 Fax: 1 (803) 859 1698

Geotextiles & Geomembranes: An Official Journal of the IGS

In 1993 the Journal will be published in 8 issues in order to provide a more frequent service to subscribers and more timely publication for the authors. The subscription price for 1993 has been set at Pounds 270 (UK). The reduced subscription offer to individual IGS members represents a 40% discount off the full price, i.e. Pounds 162 (UK). Reduced subscriptions are available directly from the publisher:

Subscription Department
Elsevier Applied Science Publishers
Crown House, Linton Road,
Barking, Essex IG11 8JU
United Kingdom

Members are reminded that to take advantage of this discount they must inform Elsevier Publishers that they are a member of IGS.

IGS members are encouraged to use Geotextiles & Geomembranes as an outlet for their technical papers and thus contribute toward the continuing success of this high quality publication which now has subscribers in over 40 countries worldwide. Papers should contain work not published in full elsewhere and should be sent to:

Dr. T.S. Ingold
Mulberry Lodge
St. Peters Close, St. Albans
Hertfordshire AL1 3ES
United Kingdom

Instructions to authors are also available from Dr. T.S. Ingold.

Inaugural Meeting of the Korea Chapter of the IGS(KC-IGS)

On 20 September 1993 the inaugural meeting of the Korea Chapter of the IGS was held in Seoul. A total of 18 people attended the meeting. The opening address was given by Professor B.H. Kang, chairman of the committee tasked to establish the chapter, who reviewed the history of geosynthetics in Korea starting with the use of a woven geotextile at the Asan breakwater project in 1972. He noted that the use of geosynthetics has increased dramatically since this first installation and it is estimated that more than 15 million square metres of geosynthetics were used in South Korea in 1992. Dr. S.W. Hong described the efforts to establish the KC-IGS that have been underway since October 1991 and Dr. S.D. Cho explained the by-laws of the KC-IGS. Motions to form the chapter and accept the by-laws of the KC-IGS were carried unanimously by the members present.

The elected officers of the KC-IGS are:

President Hyung-Sik Chung
Professor, Civil Engineering Dept.
Hanyang University

Vice-Presidents Byung-Hee Kang
Professor, Civil Engineering Dept.
Inha University

Sung-Wan Hong
Head, Geot. Engineering Division
Korea Inst. of Construction Technology

Jae-Bum Shim
Member, Policy Research Board
National Assembly

Secretary Sam-Deok Cho
Senior Researcher
Korea Inst. of Construction Technology

Treasurer Jung-Bum Choi
President, Sae-Gil Engineering Co.

Auditors Song Lee
Professor, Civil Engineering Dept.
Seoul City University (one year term)

Eun-Soo Lee
President, E&S Engineering
(two year term)

Following the election of the KC-IGS officers, the new president of the chapter encouraged the membership to promote the aims of the International Geotextile Society.

reported M. Fukuoka

The 7th Italian Conference on Geosynthetics in Earth Structures by Daniele Cazzuffi, Associate Editor of IGS News (Europe)

More than 200 professionals attended the 7th Italian Conference on Geosynthetics held in Bologna on 21 October 1993. Organized by Associazione Ingegneri e Architetti della Provincia di Bologna, the new constituted Italian Chapter of IGS (AGI-IGS Section) and the Bologna Fiere, the Conference was divided in two sessions, dedicated respectively to soil retaining structures and to landfills.

After the opening addresses by Ing. G. Tasselli, President of the Italian Society of Engineers and Architects, Prof. A. Di Tommaso, Chairman of the Italian Group of RILEM (Réunion Internationale des Laboratoires d'Essais sur les Matériaux et les Constructions) and Prof. E. Lorenzini, Dean of the Faculty of Engineering in Bologna University, the Conference was introduced by Ing. S. Martinetti, Chairman of the Italian Society on Geotechnics (AGI) and also of the AGI-IGS Section.

The first session on soil retaining structures was chaired by Prof. P.V. Righi (University of Bologna) and was introduced with an opening lecture by Prof. R.K. Rowe, President of IGS. The following speakers were: Prof. R.J. Bathurst (Canada), Prof. J-P. Gourc (France), Prof. C. Jones (United Kingdom), Prof. T. Akagi (Japan), Ing. D. Cazzuffi (Italy), Ing. P. Rimoldi (Italy) and Ing. P. Sembenelli (Italy).

As in previous Italian Conferences, the "lunch break" included a tour of the exhibit dealing with geotextiles, geo-

membranes and related products at the International Exhibition of Building Industrialization (SAIE).

Before the beginning of the afternoon session, Prof. S.D. Ramaswamy and Prof. G.P. Karunaratne (Singapore) had the chance to present progress on the 5th International Conference on Geotextiles, Geomembranes and Related Products (5-9 September 1994, Singapore).

The second session on landfills was chaired by Prof. E. Lorenzini (University of Bologna) and was introduced with an opening lecture by Dr. J-P. Giroud, Past-President of the IGS. The following speakers were: Ing. W. Voskamp (the Netherlands), Dr. Y. Matichard (France) and Prof. A. Cancelli (Italy).

The proceedings of the 6th Italian Conference on geosynthetics (see IGS News, Vol. 9 No.2 March 1993) were distributed during the 7th Conference. They are published in a 102 page issue of the Italian technical journal "L'Ingegnere" (No. 1/12 - 1992) and each contribution contains an English abstract. The publication is dedicated to the use of geosynthetics for erosion control. The proceedings of the 6th Italian Conference on Geosynthetics in Earth Structures, edited by D. Cazzuffi, are now available at cost of \$ (US) 30.00 + postage \$(US) 10.00 from:

Associazione Ingegnerie Architetti
della Provincia di Bologna
Strada Maggiore, 13-40125 Bologna, Italy

Fax: 39 51 230001

Corporate Profiles

The IGS Council has decided that in each issue of the IGS News up to three Corporate Members will be allocated space to allow them to introduce their company or association and present their achievements. The criteria for selec-

tion of corporate profiles were described in IGS News, Vol. 4, No.2, p. 7. Alternatively, you can get details by writing to the Editor. There is no charge for having a corporate profile published; it is a benefit of corporate membership.

TAISEI CORPORATION

by

Hiroshi Kitamura and Masahiko Sakaguchi

**25-1, Nishi-shinjuku 1-chome, Shinjuku-ku, Tokyo 163
Japan**

Founded in 1873, Taisei Corporation has played a major role in the infrastructure construction and economic development of modern Japan. Many of our projects demonstrate state-of-the-art skills in architecture and civil engineering applications. Since 1959, we have undertaken significant civil engineering projects in more than 50 countries.

As one of Japan's premier general contractors, we are concerned with not only the problems and projects of today, but also the questions and opportunities of tomorrow and the next century. To this end, we are constantly researching and developing new methods and technologies. Our motto "For a Lively World," reflects our vision of a comfortable, prosperous environment. Our company logo represents the world horizontally, the products of human endeavor vertically, and the human spirit as the sun.

As one of the leading construction companies in Japan, Taisei Corporation has made large contributions to Japan over the last century. Our construction technology know-how is based on accumulated experience, technological development and knowledge. Taisei Corporation has completed several large projects around the world (e.g. Seikan Under-sea Tunnel, Honshu-Sikoku Bridge, Kansai New Airport) and many magnificent and large buildings (Royal Palace, Yokohama-Land-Mark-Tower -which is the tallest in the east, Hotel New-Ohotani amongst others).

Taisei Corporation has used a large quantity of geosynthetics in earthworks and foundation engineering works, pavement, tunnelling, underwater applications and irrigation projects to give just a few examples.

Taisei Corporation has carried out research on geosynthetic-reinforced embankments and geosynthetics for use with light-weight modular blocks in soil retaining walls. Of particular interest has been the resistance of these structures to earthquake load (see photograph). The results of this research have been recently reported at IS-Kyushu 92 and Rencontres 93.

Geosynthetics in the form of vertical drain pipes have been used by the Taisei Corporation on projects to prevent liquefaction of sandy soil. This system has been used to

accelerate drainage of excess pore water pressure during earthquakes.

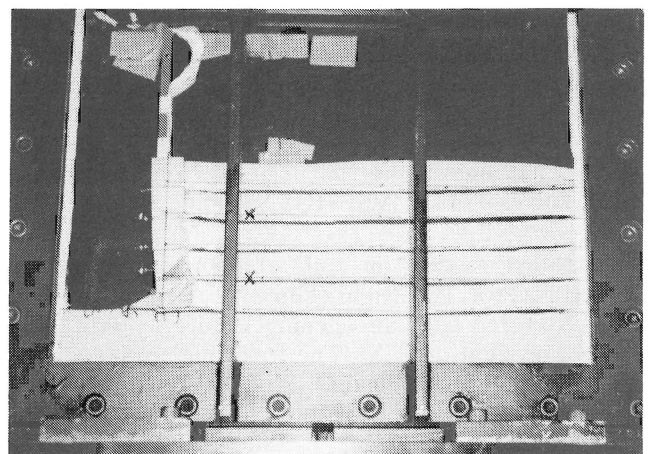
Geosynthetics have been used to preserve the environment through incorporation of leak detection systems in landfill disposal sites constructed with geomembrane liners.

Geosynthetics have also been used to:

- 1) reinforce cement-soil mixtures that use low quality materials (e.g. sand, soil and garbage). Such materials have been dredged from the bottom of Lake Yunoko and used to construct a ski hill;
- 2) reduce lateral pressures due to backfill soils. Geogrids have been used to reinforce light-weight backfill soils together with expanded polystyrene (EPS method);
- 3) promote consolidation of soils at a man-made island located at the Haneda New Airport construction site.

Taisei Corporation intends to continue improving and researching new techniques for more effective applications of geosynthetics in civil engineering works.

The Taisei Corporation has been a corporate member of the IGS since 1992.



Centrifuge model test of geosynthetic reinforced soil retaining wall that uses light-weight modular block facing units

ZEON KASEI CO. LTD.

by

Keijiro Ohkubo

10-7, Hatchobori 1-chome, Chuo-ku, Tokyo, Japan

Zeon Kasei Co. has its head office in Tokyo, Japan, and is an industrial material supplier having various business divisions with unique specialties. Since the establishment of the company in 1981, the Civil Engineering Material Division has been developing and marketing a number of plastic and rubber materials based on their own processing technologies.

In recent years, destruction of the global environment has become a serious concern and has raised the environmental awareness of the general public. For example, the issue of waste disposal has become an important concern. Zeon Kasei Co. has been pioneer in the field of waste plastic recycling technologies, and has provided specific solutions to environmental issues related to resources management. The company has a reputation for its advanced utilization of waste plastics on a large scale in Japan and its efforts have been recognized by a number of organizations. For example, the company manufactures GIVOKU® a plastic wood and other plastics for slope protection using advanced production technologies. ZEON SHEET® geomembrane was the first geosynthetic product made by the company. It has been used as a liner for landfill sites all over Japan. To increase penetration into businesses related to environmental engineering, Zeon Kasei Co. has entered into an agreement with AKZO Industrial Systems B.V. (one of the largest manufacturers of geosynthetic materials) to distribute their line of products including: ENKAMAT® geomats, ENKADRAIN® geocomposites, COLBONDRAIN® geocomposite, STABILLENKA® woven geotextiles, ENKALINER® geomembranes.

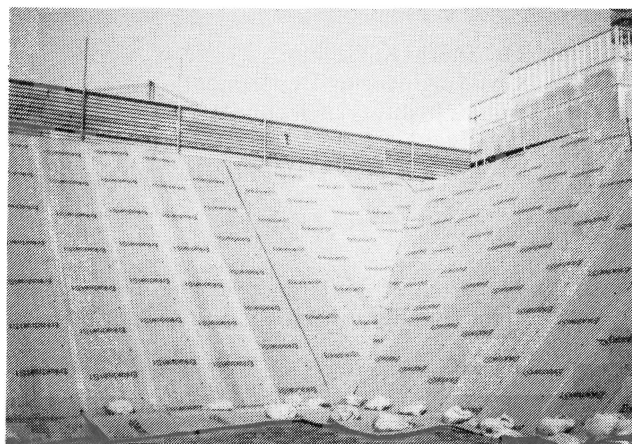
One of the successful projects using these products is the waste landfill site used by the municipality of Sayama City, Saitama Prefecture, Japan, where high flow capacity and protection characteristics of ENKADRAIN® have been effectively utilized. For this construction project, a double liner system was adopted. ENKADRAIN® geocomposites were sandwiched between two liners and thus enabling contaminated water to pass through the geocomposites in the event of damage to the upper geomembrane liner. The drainage layer is divided into several compartments so that the damaged section can be detected readily. Furthermore, the geocomposite layer provides protection to the base geomembrane liner. This basic system has become a standard design for leakage detection in Japan.

Zeon Kasei Co. has begun importing products from Huesker Synthetics HmbH & Co. of Germany in order to expand its product line. These products include: HATELIT® geogrids, NaBento® geosynthetic clay liners, INCOMAT® mattresses for concrete work, Hate® woven and nonwoven geotextiles. FORTRAC® geogrids, a jointly developed product with AKZO, has become widely used in Japan of late, particularly in soft ground applications.

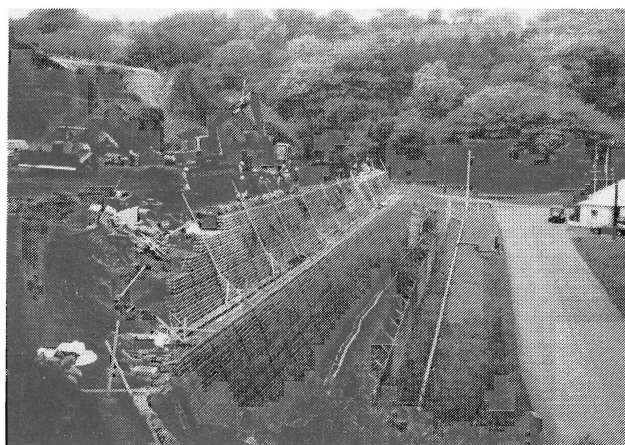
A project in Yohohama, the largest seaport for import/export in Japan, is a good example of reinforcement of a steep embankment over soft ground using a combination of high tensile strength FORTRAC® geogrids and STABILLENKA® woven geotextiles. In this project, an 11m high embankment was constructed over a 15m depth of compressible soil. The flexibility of the reinforced embankment was an important reason for the choice of this type of construction as was the ability to vegetate the finished slopes to match the natural environment.

Zeon Kasei Co. is committed to provide services for the protection of the environment so that the natural beauty of the country can be passed on to future generations.

Zeon Kasei Co. has been a corporate member of the IGS since 1992.



Geocomposite liner system for leak detection at a landfill site



Geosynthetic reinforced steep embankment over soft ground

English–Chinese Dictionary for Geosynthetics

IGS members may find it useful to know that an English-Chinese dictionary is available that contains technical translations of words for geosynthetics and related terminologies. The publication is:

An English-Chinese Dictionary of Hydraulic and Hydroelectric Technology
2nd Edition 1990 ISBN 7-120-01202-9/TV.399
by Zhang Zhe Zhen
Hydraulic and Hydroelectric Publishing Co. Beijing

Examples of the ideograms and phonetic translation for some common geosynthetics-related terms are:

GEOTEXTILE 土工織物
(TUO GONG ZHI WU)

GEOMEMBRANE 土工薄膜
(TUO GONG BO MO)
GEOGRID 土工格杉
(TUO GONG GE SHAN)
POLYESTER 聚酯
(JU ZHI)
POLYETHYLENE 聚乙烯
(JU YI XI)
PVC 聚氯乙烯
(JU LU YI XI)

It is interesting to note that the ideograms used to write “geogrid” can be translated as: SOIL–MILL–LATTICE–BARRIER.

reported by P. Sembenelli

Calendar of Events

13th International Conference on Soil Mechanics and Foundation Engineering

New Delhi, India, 4–11 January 1994

Contact: Dr. Shashi K. Gulhati
Civil Engineering Department
Indian Institute of Technology
Post Bag No. 28
Hauz Khas, New Delhi 110016, India

Tel: 91 11 6852540 Fax: 91 11 6852541

Eighth International Conference of the International Association for Computer Methods and Advances in Geomechanics

Morgantown, West Virginia, USA, 22–24 May 1994

Contact: Professor H.J. Siriwardane
Chairman for IACMAG 94
College of Engineering
637 Engineering Building
West Virginia University
Morgantown, West Virginia 26506–6101

Tel: (304) 293–3192 ext. 620 Fax: (304) 293–5042

5th International Conference on Geotextiles, Geomembranes and Related Products

Singapore, 5–9 September 1994

Contact: Conference Secretariat, 5th IGC
Thompson Road, P.O. Box 0177
Singapore 9157

Tel: (65) 353–5511 Fax: (65) 353–2424

Geosynthetics'95

Nashville, Tennessee, USA

21–23 February 1995

Contact: Secretary General NAGS
345 Cedar St., Suite 800
St. Paul, MN 55101 USA

Tel: (612) 222–2508 Fax: (612) 222–8215

Note: Highlighted items are organized under the auspices of the IGS or with the support of the IGS.

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The IGS Council

Elected in 1990: D. Cazzuffi (Italy); S.D. Ramaswamy (Singapore). Elected in 1992: T. Akagi (Japan); R.J. Bathurst (Canada); B.R. Christopher (USA); R.A. Jewell (Belgium); C.J.F.P. Jones (UK); C. Lawson (UK). Co-opted in 1991: D. Price (Austria); D. Fayoux (Belgium). Co-opted in 1992: M. Fukuoka (Japan). Co-opted in 1993: J-P. Gourc (France). The IGS Council also includes the five IGS Officers elected for the period 1990-94.

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| Asahi Chemical Industry Co. Ltd. – Japan (1984) | Mitsui Petrochemical Industrial Products Ltd.
– Japan (1992) |
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Géotextiles-Suisse (Aspg/Svg) – Switzerland (1984) | Naue Fasertechnik GmbH & Co. KG
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| Fritz Landolt Ag – Switzerland (1985) | Taisei Corporation – Japan (1992) |
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| Gundle Lining Systems, Inc. – USA (1988) | Tenax S.P.A. – Italy (1991) |
| Hoechst Celanese Corporation – USA (1984) | The Tensar Corporation – USA (1989) |
| Huesker Synthetic GmbH & Co. – Germany (1987) | The Reinforced Earth Co. – USA (1989) |
| Industrial Fabrics Association International (IFAI)
– USA (1985) | The Zenitaka Corporation – Japan (1992) |
| James Clem Corporation – USA (1992) | Tokyu Construction Co. – Japan (1984) |
| Japan Spunbond – Japan (1984) | Uco N.V. – Belgium (1985) |
| Kajima Corporation – Japan (1985) | Zeon Kasei Co., Ltd. – Japan (1992) |
| Kumagai Gumi Co. Ltd. – Japan (1987) | |
| Kuraray Co. Ltd. – Japan (1989) | |
| Maeda Corporation – Japan (1988) | |

Dates indicate earliest year of continuous membership.

OBJECTIVES OF IGS (*)



The International Geotextile Society was formed with the following objectives:

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

WHY BECOME A MEMBER OF THE IGS?

First, to contribute to the development of our profession.

Becoming a member of the International Geotextile Society:

- Helps support the aims of the IGS, especially the development of geotextiles, geomembranes, and related products.
- Contributes to the advancement of the art and science of geotextiles, geomembranes, and related products, as well as their applications.
- Provides 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 available now to all IGS members:

- A directory of members, the IGS DIRECTORY, published every year, with addresses, telephone, telex and fax numbers.
- Newsletter, IGS NEWS, published three times a year.
- Reduced purchase price on all documents published by the IGS.
- Reduced registration fee and preferential treatment at all conferences organized under the auspices of the IGS.
- Reduced subscription fee for the journal "Geotextiles and Geomembranes".
- A central system for ordering selected publications.
- Possibility of being granted an IGS award.

MEMBERSHIP APPLICATION

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

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