

IGS NEWS

NEWSLETTER OF THE INTERNATIONAL GEOTEXTILE SOCIETY
VOLUME 6 NO 3 NOVEMBER 1990

New Benefits and New Challenges

by

***Dr. R. Kerry Rowe
President of the IGS***

Promotion of IGS activity and provision of benefits to IGS members are two important activities for the IGS Officers and Council. In this context the IGS Officers have examined ways in which the IGS can develop relationships with trade magazines which, while providing benefits to the membership, will also maintain the independence that is expected of a professional society. In response to this challenge, discussions have been held with Geosynthetics World and Geotechnical Fabrics Report. As a result of these discussions I am delighted to report that Geosynthetics World has kindly agreed to provide a free copy of each issue of Geosynthetics World to all IGS members. With the objective of promoting IGS activity, the IGS Officers have also agreed to prepare two articles per year, describing IGS activity and plans, for both Geosynthetics World and Geotechnical Fabrics Report. The objective of these arrangements is to provide a means of increasing IGS membership by communication with many potential members through articles published in trade magazines. However, it is important to emphasize that the IGS does not, and will not, have any direct involvement with either of these trade magazines and that the IGS News will continue to be the primary means of communicating with the IGS membership.

The last issue of IGS News announced the formation of a number of "Open Committees". The committee chairmen are listed again in this issue of IGS News (p.14) and all IGS members are invited to become members of these committees. All that you need to do is write to the committee chairman offering your name as a member. Your offer

will be gladly accepted and since most of the work of the committee is conducted by mail all you need is the willingness to work and some postage stamps. This is your opportunity to contribute to your Society. Please accept this challenge to take part in the functioning of the IGS.

I am pleased to report that since the first IGS student member joined our Society in May (see article on page 7) the number of student members is steadily growing. If you would like more information on student membership or wish to be of assistance to student groups, please contact either myself or the Education Committee Chairman, Mr. D. Cazzuffi.

This issue of IGS News contains a letter from IGS member Robert Denis suggesting that we change our name from the International Geotextile Society to the International Geosynthetic Society. What do you think? If you would like to have input concerning this issue, if you have an opinion, I would ask you to contact Mr. Peter Stevenson who is Chairman of the By-laws Committee. Since this issue has been raised we need to examine it carefully and to do this we need your input. Mr. Stevenson's address is listed on page 13 of this issue of IGS News.

The first four months as IGS President have been very busy. There has been much to learn and much to do. I sincerely solicit your constructive suggestions; if there is anyway we can improve the IGS and serve you better, please let us know.

A Special Word of Thanks

Under the leadership of Professor Schaerer, the first President (1983–1986), and Dr. Giroud, the second President (1986–1990), our Society has undergone a period of remarkable growth and development over the past six years. This achievement has been the result of a tremendous amount of effort on the part of the past officers and council members of the IGS and, as we move into the nineties, we should express our very sincere gratitude to those IGS officers and council members who have just retired from office.

Professor Schaerer has now completed six years of very dedicated service to the IGS, firstly as President and then as Past President and Chairman of our first IGS Awards Committee. As an Honorary member he will continue to contribute to the IGS in his own very special way.

After a period as Vice-President (1983–1986) and as President (1986–1990) Dr. Giroud now becomes Past President (1990–1994). Dr. Giroud initiated the formation of the IGS at a meeting held in Las Vegas in 1982. Since that time he has devoted an enormous amount of effort to the development of the Society. When he stood for election in 1986 he offered the Society leadership and membership – and he delivered both. It would take a page and a half to list the achievements of the IGS in the four years he has been President (see IGS News Vol. 6, No.1, pp. 2 & 3). Suffice it to say that membership has grown by 150%, the number of chapters has increased from one to five, and the new Council begins its work with a very detailed set of guidelines and a structure that will provide a very sound basis for future expansion as we move into the 90's. Dr. Giroud has been an outstanding President. It has been said that "he will be a hard act to follow"; no truer words were ever spoken.

Professor Koos van Harten steps down as Vice-President. He has made many contributions and for those of us in The Hague, he will probably be most remembered for the role he played chairing the organization of a fantastic conference – the 4th International Conference on Geotextiles, Geomembranes and Related Products.

Dr. Guy Massenaux has provided the organizational backbone to the IGS since its inception. His experience and dedication were summarized by Dr. Giroud in his speech offering the first plaque 'for special service to the IGS' when he quoted an unknown IGS member as saying that without Dr. Massenaux "there would be no IGS today". He has indeed made an exceptional contribution to the IGS.

Many council members also completed their terms of office – Messrs Barker, Leflaive, Sembenelli, Schneider, Tonus and Warner. Space does not permit a listing of their many contributions to the IGS – but those of us who have served on the Council know how important these contributions have been. We will miss you on Council – thank you indeed.

Many council members continue or begin new terms of office and Mr. Peter Stevenson will continue as Treasurer. We also owe these individuals a vote of thanks for their past dedication and we look forward to a continuation of this dedication in the years to come.

R. Kerry Rowe
President of the IGS

(Editors Note: This article is reprinted from the last issue of IGS News since it was mistakenly omitted from a number of copies due to a printing error)

Letters to the Editor

International Geomonomer Society

Sitting at the third IGS General Assembly at The Hague, I felt just like a pinch-hitter who looks forward to his imminent at-bat but never does get in the game on account of curfew. What I'm actually referring to is the "new business" item on the original agenda which was evidently (although understandably) waived out in order to adjourn the election-prolonged session, and for which I was anxious to step up to the mike and stir up the audience with my proposition which would have been presented as follows: "In order to adequately project the Society's true activities and to further avoid anachronisms, I propose that the Society's name be changed to the International Geosynthetics Society".

I believe that there might be some diverging opinions, but quite frankly it seems to me that there is an overwhelming amount of convincing arguments in its favour. For starters, consider the following list of conferences and seminars: "Geosynthetics '87, '89 and '91", "Use of Geosynthetics for Waste Containment", "Seaming of Geosyn-

thetics Seminar", "Symposium on Geosynthetic Testing for Waste Containment Applications", "Chinese Conference on Geosynthetics", "Seminar on Geosynthetic Lining System", "Italian Conference on Geosynthetics in Earth Structure", "Designing with Geosynthetics", "Grouting, Soil Improvement & Geosynthetics". Then consider the "North American Geosynthetics Society", the "The Engineer's Guide to Geosynthetics", and countless slogans, logos, technical papers, engineering specifications, product guides, and even job offer descriptions. Now, which industry would you say we're involved in?

The word "geosynthetic" is a commonly used neologism. Etymologically it merges the anglicized Hellenic words "ge" and "synthesis" respectively meaning "earth" and "reunion". One could argue that "pedo-" (from the Greek "pedon" i.e. soil) should preferably be used instead of "geo-" since soils are really what we're all toying with. But then again "earth" is also used to designate soil, so "geo" stays in. Now for "synthetic". My source indicates

two modern definitions i.e. "obtained from chemical synthesis" and more generally, "from synthesis". If one decides upon himself to use the first definition then, grant you, lots of industry products would not fit the bill. On the other hand, choosing the second definition which plainly refers to "synthesis", all products would then be encompassed since they all constitute a synergic "reunion" when embedded in soils. So you see, "synthetic" stays in also.

Now getting back to the word "geotextile", not only does it misrepresent and misfocus the industry, its etymology hails from the Latin verb "texere" meaning "to weave"! ...enough said about nomenclature debates...

I believe that "geosynthetics" would be a very proper appellation for our international society, at least a whole lot better than what it currently goes by. Any other suggestions?

*Robert Denis
IGS Member, Canada*

(Editors Note: This letter is reprinted in part from the original published in the September/October 1990 issue of Geotechnical Fabrics Report)

Call to Action

Change the by-laws and speed the election process

by

Mr. P.E. Stevenson

Were you one of the stalwarts who endured the entire General Assembly in the Hague? If you did remain on duty throughout the meeting I congratulate you. Whether you persevered or were forced to attend to other business I challenge you to help me.

President Rowe has charged me with the responsibility to lead a committee to develop changes to the by-laws. I accepted this challenge to address two primary issues:

1. The development of a system that will permit rapid accomplishment of the election process.
2. Consider modification of the society's name to the "International Geosynthetics Society".

Of course other items may arise and they will also be addressed in due course. I will need a great deal of assistance and guidance from you, the membership, to succeed in this task. Will you help?

Participation will be easy. Ideas and plans can be developed through correspondence. The drafts and recommendations produced in this process will be presented to the Council. With the concurrence of the Council the plans, ideas and changes will be announced to the membership through the newsletter. Finally, the changes will be adopted by ballot of the membership.

To start the process I have gathered some thoughts on the election process. The election was the event that consumed the precious hours at the Hague. My goal is to streamline the election process. You must respond with comment, critique and concepts for inclusion in the next draft.

Election

Idea 1. Change the requirement for a quorum from 40% to 20%.

Idea 2. Conduct some portion of the ballot by mail prior to the General Assembly.

Idea 3. Merge the conference and the IGS registration procedures if the General Assembly and the election are being held coincident with an IGS Conference or other IGS event. One desk will ensure that IGS members receive instruction concerning the General Assembly and the election.

Idea 4. Distribute the first ballot at registration. This ballot to include all candidates for Council and Officers positions. Collect the first ballot by noon of the day of the General Assembly. Announce the results of the first ballot at the opening of the General Assembly. Conduct the rest of the election according to the process used in the Hague.

Idea 5. Conduct the entire ballot by mail prior to the General Assembly. Announce the results at the General Assembly. Resolve conflicts and open issues using the process in effect at the Hague.

Idea 6. Adopt a new voting procedure.

For example: Preferential Voting. Given three candidates for President, you vote for all three in order of preference. Blogs (1), Smith (3), Body (2). If there are n candidates a ballot is valid if you vote for $n-1$ candidates. Voters are encouraged to vote for all candidates. If 401 votes were cast as follows; Blogs 131, Smith 110 and Body 160 then Smith is eliminated and his second preferences are redistributed to the remaining candidates. The process is repeated until one candidate is preferred by 50% or more. This process will eliminate multiple ballots for the President or Vice President.

An alternative similar technique would conduct the Officers election at the same time as the Council and on a

preferential basis. Assume 8 vacancies on the Council and 4 candidates for President/Vice President. Voters must cast 8 votes for a valid ballot. Two of the 8 would be elected President and Vice President. The alternate votes for the

President and Vice President would be re-allocated to Council candidates. Those candidates with the least votes would be eliminated and their alternate votes redistributed until all 8 elected candidates achieve 50% of the vote.

| Name | Office | 1st Choice | 1st Alternate | 2nd Alternate |
|---------|--------------|------------|---------------|---------------|
| Blogs | President | * | | |
| Smith | President/VP | * | | |
| Body | President/VP | * | | |
| Cats | VP | * | | |
| Stage | | | * | |
| Aki | | | | |
| Desai | | * | | |
| Pill | | | | |
| Box | | * | | |
| Another | | | | * |
| Odd | | * | | |
| Ball | | * | | |

Name Change

Mr. Robert Denis makes an eloquent plea to change the Society's name in *Letters to the Editor* printed on page 2.

Officers Terms

Modify the by-laws to permit the Secretary and Treasurer indefinite terms. Proposals adopted in the Hague clearly intended this result but several contradictions have resulted from the amendments adopted. One by-law says the terms are not limited while another says the Treasurer and the Secretary must be elected from the Council. Still a third by-law limits the Council to two terms. This inconsistency needs correction.

Term of the Individual Membership

The by-law reads as follows: Bylaw 5.02.02 "Subscription fees paid by members joining during the second half of any year shall be levied at half the annual rate".

The practice is that any membership fee received in time for the member to be included in the current year directory is considered a membership for that year. Membership payments that miss the Directory are automatically shifted to a full membership for the following year. The administrative activity required by the by-law is impractical and expensive at the current membership level. The change permits the practice in effect for the majority of the past two years to conform to the by-law. To be more clear, the practice is in effect now and the by-law is ignored. Conformance to the by-law will cause an increase in administrative expenditure. Changing the by-law to conform to the practice will reduce confusion in the membership.

I shall be greatly disappointed if none of you accept the challenge of the By-laws Committee. These issues are too important for you to fail to voice your views. I look forward to hearing from you.

Activities of the Japanese Chapter of IGS

The Japanese Chapter of IGS has been active in the months prior to and after the Hague Conference. The number of individual members has increased from 112 to 126 in the last year and the number of Corporate Members has grown from 9 to 10. Three student members have joined the chapter since The Hague. The Annual Meeting of the Japanese Society of Soil Mechanics and Foundation Engineering held in June 1990 included a session on geosynthetics organized by the Japanese IGS Chapter. On 12 July 1990 Professor J.M. Rigó gave two lectures in Tokyo on "Testing Geotextiles and Designing with Geotextiles in Europe" and "Repair of Reflective Cracking using Geosynthetics".

The Chapter organized a "Seminar on Geotextiles and Geomembranes" held on 25 July 1990. The seminar included: Report on the Hague Conference and a review of

papers presented; IGS Activities; Japanese government support of geosynthetics; and, a report on travel in Europe.

The Japanese government and private companies have provided (U.S.)\$100,000 to investigate the application of geosynthetics to civil engineering works and design methods currently in use in Western countries. The funds will be used to disseminate this information to Japan and to assist in the establishment of guidelines for construction with geosynthetics. This project is being chaired by Prof. M. Fukuoka and a committee of 17 university faculty, government and private sector members.

Finally, the Japanese Chapter is pleased to announce that the 5th Symposium on Geotextiles and Geomembranes will be held on the 4th of December 1990 in Tokyo.

(Reported by Prof. M. Fukuoka and Prof. T. Akagi)

The Fourth International Conference in Review

The 4th International Conference on Geotextiles, Geomembranes and Related Products held in The Hague from 28 May to 1 June 1990 is now behind us and it is appropriate that a general summary of the event appear in IGS News. Some details of conference activities have appeared in the last issue. This article covers technical and social events not reported previously.

By all accounts the conference was a great success. The conference was organized by the Netherlands Geotextile Organization under the auspices of the International Geotextiles Society and attracted 684 conference registrants and 110 accompanying persons. A total of 61 companies took part in the Exhibition portion of the program and this event attracted an additional 400 registrants.

The conference participants were welcomed by the Secretary General of the conference G. den Hoedt and by the Chairman Prof. Ir. K. van Harten. The conference was officially opened by J.R. Hoogland the Director of Water-Management, Ministry of Transport and Public Works who reminded the audience of the important role that geosynthetics have played in the age-old struggle by the Dutch against the sea. Opening addresses were also given by Dr. J-P. Giroud past-President of the IGS and Prof. A. Verruijt from Delft University of Technology. Dr. Giroud in his opening address reminded the delegates of the history of geosynthetics in modern times. He likened the period from the 1960s to the mid-1970s as a time of pioneers whose approach was to try and construct using a range of new geosynthetic products. The second period from the mid-seventies to the present was a period in which rational design methods were introduced. The third period, which is now beginning, will see the use of geosynthetics guided by the multi-disciplinary talents of geotechnical engineers, polymer scientists and other earth science specialists.

A total 92 papers and three keynote addresses were given at the conference. Many more papers are contained in the proceedings. Each presentation was chosen to reflect one of the three themes of the conference: Soil reinforcement, Water control and Environmental control. In addition there were 42 contributions to the Poster Session. The contents of the proceedings demonstrate that the understanding of the interaction between soil, water and geosynthetics has advanced considerably since the 3rd International Conference held in Vienna in 1986.

The Conference Proceedings are contained in two volumes organized in the following sections: Steep slopes and walls (32 papers); Embankments on soft ground (13 papers); Roads and railways (24 papers); Filtration and drainage (33 papers) and; Erosion control (13 papers). In addition the volumes contain 180 one-page communications. Volume 3 of the proceedings to follow at a later date will include the keynote addresses and discussions held during the sessions.

The first keynote address "Strength and Deformation in Reinforced Soil Design" was given by Dr. Richard Jewell of the University of Oxford. Dr. Jewell presented an excellent summary of the state-of-the-art in the understanding of soil-reinforcement interaction and the analysis of a vari-

ety of soil reinforcement problems, including; slopes, soil retaining walls, embankments over soft ground and unpaved roads. The paper is particularly useful since the approaches proposed by Dr. Jewell are presented in a consistent framework that uses limit-equilibrium methods of analysis.

The keynote address related to the theme of "Water Control" was delivered by Dr. J.P. Gourc of Grenoble University, France, and was titled "The Soil Particle, the Water and the Fibre; a fruitful interaction now controlled". The address was co-written with Y-H. Faure. Dr. Gourc presented an excellent review of the application of geotextiles in hydraulic applications and he provided a useful synthesis of theories on fibre, fluid and granular media interaction and a review of test methods used to determine parameters for characterization of geotextile filters.

The last keynote address was delivered by Dr. R.M. Koerner of Drexel University, U.S.A. and was titled "Preservation of the Environment via Geosynthetic Containment Systems". Dr. Koerner delivered an entertaining and informative lecture on the very important role that geosynthetics have and will continue to play in providing for safe and secure containment of waste materials. Dr. Koerner's preprint paper provides an excellent review of geosynthetics terminology for waste containment systems and a description of test methods and typical design models.

It is the opinion of the writer that the three preprint papers accompanying the keynote addresses provide the researcher, engineer and manufacturer with an important review of the state-of-practice for a wide range of geosynthetic applications. In addition, the three papers contain excellent reference lists for those interested in pursuing any of the topics further.

The closing session of the conference was held on 31 May and included General Reports by three distinguished members of the IGS: Mr. W. Voskamp on "Soil Reinforcement"; Dr. T.S. Ingold on "Water Control" and; Dr. J-P. Giroud on "Environmental Control". A brief review of their reports can be found in the next article.

Following the General Reports the delegates heard from Dr. R. Kerry Rowe in his capacity as the newly elected President of the IGS. Dr. Rowe thanked the organizing Committee for a job well done and reviewed the accomplishments of Dr. Schaerer and Dr. Giroud and the other IGS Council Members. Dr. Rowe then went on to explain his vision of the IGS over the next four years and asked the delegates for their support in achieving these goals. Many of the points made by Dr. Rowe in this address can be found in his article "Growth and Outreach" published in the last issue of IGS News (p.1, Vol. 6, No. 2).

Finally, the prospects for the 5th International Conference on Geotextiles, Geomembranes and Related Products to be held in Singapore in May 1994 were enthusiastically outlined by Dr. S.D. Ramaswamy, President of the Southeast Asian Chapter of the IGS, during the closing session at The Hague.

The professional conference was accompanied by a technical exhibition where producers of geotextiles, geo-

grids, geomembranes and related products could demonstrate their range of materials. It was interesting to note the introduction of warp knitted geotextiles by more than five companies. At the 3rd International Conference held in Vienna in 1986 no such products were available. This is only one example of the rapid rate of product development in the field of geosynthetics.

A number of parallel events took place during the 4th International Conference. For example several awards were presented to IGS members. These included the "IGS Award" which was presented to Joseph Fluet, E. Ray Steinle and their team at GeoSyntec Consultants, Boynton Beach, Florida U.S.A. for their work "Geosynthetic Quality Assurance, A Practical New Technology".

The IGS Society also presented its first "Young IGS Member Achievement Award" to Dr. Richard Jewell of the University of Oxford, U.K. for his work "Reinforced Soil Wall Analysis and Behaviour".

In order to recognize outstanding entries for the IGS Award two "Special Finalist Recognition" awards were also presented: The first award was presented to Dr. R. Kerry Rowe representing the team of Dr. Rowe, Dr. K.L. Soderman and B.L.J. Mylleville of the University of Western Ontario, London, Canada for their work "Development of a Fundamental Understanding of the Behaviour of Geosynthetic Reinforced Embankments". The second award was presented in absentia to Dr. Rudolph Bonaparte of GeoSyntec Consultants, Norcross, Georgia, U.S.A. for

his paper "Geonet Drainage Layers for Waste Containment Facility Lining Systems".

Details of all the awards described here have appeared in the previous two issues of IGS News (Vol.6, Nos.1 and 2).

An excellent social program was offered by the conference organizers and the excursion program on the closing day provided the participants with a choice of cultural and technical visits. The writer chose the Delta Works technical excursion which included a visit to the Eastern Scheldt Storm Surge Barrier. This was a memorable trip that also emphasized the important contribution of geosynthetics to civil engineering works built on the massive scale of the Eastern Scheldt Storm Surge Barrier. The Barrier works are founded on and surrounded by millions of square meters of geotextiles.

The IGS General Assembly also met during the conference to elect new IGS Council members for the next four year term. As announced in the last issue of IGS News our new president of IGS is Dr. R. Kerry Rowe and the new vice-president is Prof. Dr.-Ing. Rudolf Floss. The IGS Officers are listed on p.13 and the other Council Members are identified on p.14 of this issue. Following the conference the IGS Council met for the first time under the Chairmanship of Dr. Rowe and the important items from this meeting are summarized on p.8. Chairmen of Open Committees were also appointed and the reader is directed to p.14 for a list of these committees.

(Reported by R.J.Bathurst)

General Reports at the 4th International Conference

An important part of the 4th International Conference was the General Report Session that occurred on the last day of the conference. These reports provided the participants with an important synthesis of the sometimes overwhelming amount of technical information presented by the speakers. Equally important, the well-qualified reporters offered a review of the challenges and prospects ahead in the application of geosynthetics to a wide variety of civil engineering problems.

Mr. W. Voskamp reported on "Soil Reinforcement" and reviewed the presented papers in three categories: Slope Reinforcement; Base Reinforcement and Bearing Capacity Improvement. In the area of slope reinforcement, Mr. Voskamp presented the audience with the following summary observations: Limit equilibrium methods of analysis reflect "a sound engineering method" but the incorporation of maximum strain criteria should be considered. He also remarked on the growing use of finite element methods in slope reinforcement applications and the need for further research to improve our understanding of geosynthetic-soil pull-out mechanisms. In the category of base reinforcement, Mr. Voskamp pointed out that the use of geosynthetics for base reinforcement has become an accepted construction method and that the combination of vertical drainage function and reinforcement function is often a cost-effective solution. Papers in the category of bearing capacity improvement showed that new design methods for unpaved roads allowed for consideration of the reinforcement benefit of a geosynthetic for small rut

depths without assuming a membrane model. The use of geosynthetics for separation functions in roads and railways and reinforced surface dressing for upgrading of unpaved roads was also mentioned by the reporter. However, Mr. Voskamp concluded that the papers in this section pointed to a need to evaluate proposed design methods against the results of monitored actual projects. In addition, more work remains to be done on the problem of pumping under dynamic loading in road, railway and hydraulic applications. Mr. Voskamp also identified a need to standardize design methods in the three categories of soil reinforcement reviewed and remarked on the need to implement FE methods of analysis in user-friendly PC software. Mr. Voskamp concluded his presentation by noting that the first geosynthetic base reinforcement project that he is aware of was reported in 1974; the first slope reinforcement project in 1979 and today he estimates that about 15 million square meters of geosynthetics will be used for soil reinforcement worldwide in 1990.

Dr. T.S. Ingold presented the General Report on "Water Control" spanning the four main sessions dealing with Filtration; Drainage; Canals, dams and reservoirs and; Erosion Control. In his review of the papers Dr. Ingold identified 11 of 34 papers as dealing with filtration aspects. Dr. Ingold concluded that there is a general movement towards filter criteria based on observation of specific soil-geotextile systems rather than a simple consideration of soil particle size and geotextile pore size. A total of seven papers were identified in the category of drainage and all dealt with drainage composites or their application. The

papers included: The application of vertical strip drains to mitigate excess pore water pressures in loose sands under seismic vibration; fin drains to stabilize landslides and; vertical composite side drains to minimize instability in frozen road formations. Ten papers fell into the category of canals, dams and reservoirs. Two papers reviewed the use of bentonite mat/asphaltic liner systems for use in the rehabilitation of canals. Five papers dealt with the topic of geomembrane liners. In the category of erosion control there were 6 papers. The topics of the papers included: stability of revetted banks; slope erosion control using three-dimensional polymer mats for the reinforcing of vegetative root covers and; a comprehensive system for erosion control systems based on product specific yield factors. Dr. Ingold concluded by noting that the 4th International Conference "has seen a significant milestone marking the general and continuing trend away from generalizations and ill fitting theories towards a new realism soundly based on well-documented case histories and test methods which more precisely probe the true mechanisms of soil-geotextile interaction".

The general report on "Environmental Control" was delivered by Dr. J-P. Giroud. He acknowledged the excellent

presentation on the general topic in the Keynote address by Dr. Koerner. Dr. Giroud commented on the observation that polyethylene geomembranes are used in North America while a greater variety of polymers are used in Europe. According to Dr. Giroud there are important questions to be answered and great debate between researchers with respect to mechanisms of water permeability and diffusion through liners. In practice, the effectiveness of liner systems is often difficult to assess and there are still difficulties in monitoring leakage. Other important issues are biological clogging in drainage layers and the stability of liners on slopes. For example, how does the designer interpret shear resistance at a liner-soil interface? Dr. Giroud concluded his review by remarking that geosynthetics for environmental control are regulatory driven; engineering principles are sound but co-operation between environmental specialists, polymer specialists and geotechnical engineers is required. Indeed, co-operation between specialists in different countries is an important requirement if the use of geosynthetics for environmental control is to advance.

(Reported by R.J.Bathurst)

How to get your copy of the Proceedings

If you were not a registrant at the 4th International Conference on Geotextiles, Geomembranes and Related Products held in May 1990 and are interested in purchasing a copy of the Proceedings, they are available as follows:

Publisher in Europe: A.A. Balkema
P.O. Box 1676
3000 BR Rotterdam
The Netherlands

| | | |
|---------------------------|------|--------|
| Price in The Netherlands: | Dfl | 307.40 |
| Price in Europe: | Dfl | 290.00 |
| Price in U.S.A. | US\$ | 160.00 |

Publisher in U.S.A.: A.A. Balkema
Old Post Road
Brookfield, VT 06036
U.S.A.

First Student Member of the IGS

Karel Smolders became the first student member of the IGS on Thursday 31st May 1990, the last day of the 4th International Conference and Exhibition held in The Hague. The vote to extend membership of the Society to students, at a special student membership fee, was taken during the General Assembly held the previous afternoon.

Karel is in his final year in the Department of Civil Engineering at the Geotextiles and Geomembranes Research Centre of the University of Liege, Belgium, and hopes to receive his Master's Degree shortly. He will already be known to Society members through his work, under Professor Rigo, on the Society's publication titled 'Inventory of Current Geotextile Test Methods and Standards'.

For more information on the benefits of student membership in IGS and how to join refer to the last issue of IGS News (Vol. 6, No.2, p.4). Alternatively, write, call or fax the Chairman of the Education Committee, Mr. D. Cazzuffi, ENEL - Centro di Ricerca Idraulica e Strutturale, Via Ornato 90/14, 20162 MILANO, ITALY Tel: 39 (2) 88478445, Fax: 39 (2) 88478450.



Karel is seen here receiving his membership card at the International Geotextile Society's stand in The Hague.

IGS Council Meeting

31 May 1990 – The Hague – The Netherlands

The IGS Council met on 31 May 1990 in The Hague. All newly-elected and re-elected Council members were present. The meeting was the first convened under the new President of the IGS, Dr. R.Kerry Rowe.

- The Council unanimously elected Mr. P. Stevenson as Treasurer and Mr. W. Voskamp as Secretary of the IGS.
- Dr. R.J. Bathurst was appointed IGS News Editor. Mr. D. Cazzuffi was appointed Associate Editor for Europe and Professor T. Akagi, Associate Editor for Asia.
- Nominations for the IGS Awards Committee were discussed. The Council also decided to change the rules regarding the representation of the Council so that at least one member of the IGS Award Committee be a IGS Council member.

- The past practice of co-opting members to Council was discussed. It was decided that no members would be co-opted at this time and that nominations would be considered at the next council meeting.
- Dr. J-P. Giroud was nominated as the liaison Council member to assist the Organizing Committee and South East Asian IGS Chapter with the organization of the 5th International Conference on Geotextiles, Geomembranes and Related Products to be held in Singapore in 1994.
- Chairmen of IGS Society Open Committees were appointed. These appointments are summarized on p. 14.
- The members decided that the next meeting of the IGS Council will be held during Geosynthetics'91 in Atlanta, Georgia, U.S.A., February 1991.

(Reported by W. Voskamp)

IGS Awards – Call for Submissions

IGS Awards were established by the Council of the IGS in order to honour producers, users, engineers, and scientists who make outstanding contributions in the field of manufacturing, application, and knowledge of geotextiles, geomembranes, and related products. The first IGS Awards were presented at the 4th International Conference on Geotextiles, Geomembranes and Related Products in The Hague in May 1990 (see Vol 6. Nos. 1 and 2 of IGS News).

Purpose of the IGS Awards

The IGS Awards will be granted to individuals or groups of individuals in recognition of outstanding contributions either completed, or the validity of which has been demonstrated, during 1989–1990.

Awards will be made every two years. Consequently, there will be an awards competition again for 1991–1992, 1993–1994.

The Awards

There will be two categories of Awards:

- Young IGS Member Achievement Award for IGS members who are less than 36 years of age on 31 December 1990 (student members are eligible); and
- IGS Award, regardless of age.

A maximum of 5 awards will be granted per period.

The Award will consist of a specially commissioned medal and a diploma. It will be presented at, or in connection with, the IGS General Assembly. The winning entries will also be given large publicity by other means.

Entries

All IGS members can compete. Entries must be mailed no later than 31 March 1991 to the Secretary of the IGS, Mr. Wim Voskamp at the following address:

IGS Secretariat
P.O. Box 2233
3440 DE WOERDEN
The Netherlands

Entries describing special achievements in any field related to IGS objectives must be submitted by the candidates themselves under the following headings: products; testing and testing equipment; instrumentation; monitoring and performance evaluation; design and design methods; fundamental aspects; construction and construction methods; any combination of the above; others.

The Awards Rules specify the various other requirements for submission. The text of these rules and further details can be obtained by contacting the Secretariat of IGS. The Awards Committee will review all entries and will determine the award recipients using a point system. The recipients will be chosen by 2 January 1992. Obviously, all members of the Awards Committee have a duty to keep secret all discussions of the Awards Committee.

The Officers and Council Members of IGS hope that these Awards will foster a keen interest from the IGS members. IGS members may send either entries for themselves or nominations for potential candidates, to the Secretary of IGS, Mr. Wim Voskamp. Any candidate who is nominated, will be contacted by the Secretary and asked to prepare an entry.

GeoSport at The Hague

The 3rd International Conference held in Vienna (1986) saw the arrangement of the first IGS soccer match. Following the success of this event, a second match was held between the "Latins" and the "Rest of the World" at the 4th International Conference in the Hague on 28 May, 1990. A total of 39 IGS members participated in the game and were watched by a dedicated and enthusiastic group of supporters. The plentiful supply of substitutes ensured a fast and furious game but despite a valiant effort, the rest of the world could not overturn their earlier defeat in Vienna. The score - Rest of the World: 3; Latins: 4.

If you were a member of the vanquished team, please drop a line to the Editor of IGS News so that he can send you a team photo on which you can identify yourself. Hopefully, we can publish both team photographs in the next issue of IGS News without any embarrassing omissions of the participant names. To date, all members of the winning team have gleefully come forward to identify themselves on their team photograph.

(Reported by R. Kerry Rowe and R. J. Bathurst)

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 selection of corpo-

rate 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 membership.

Maeda Corporation, Technical Research Institute

by

Akira Itoh

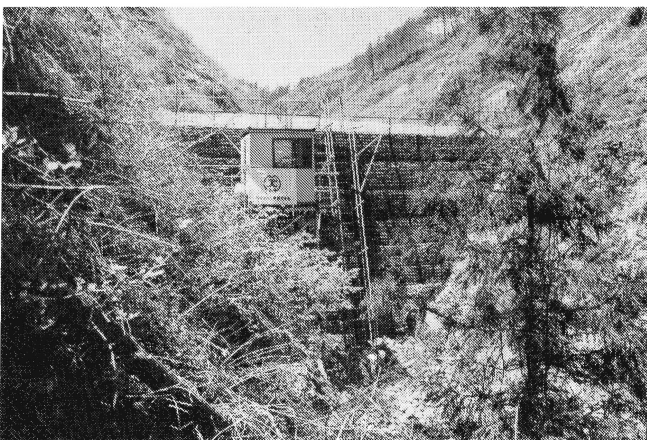
1-39-16, Asahi-cho, Nerima-ku, Tokyo, Japan

The Maeda Corporation was established in 1919 as a general contracting company. Since its inception the company has grown to be one of Japan's largest contractors with 4400 employees and annual revenues of 423 billion yen. The Maeda Corporation offers turnkey services for large construction projects including design, construction management and maintenance.

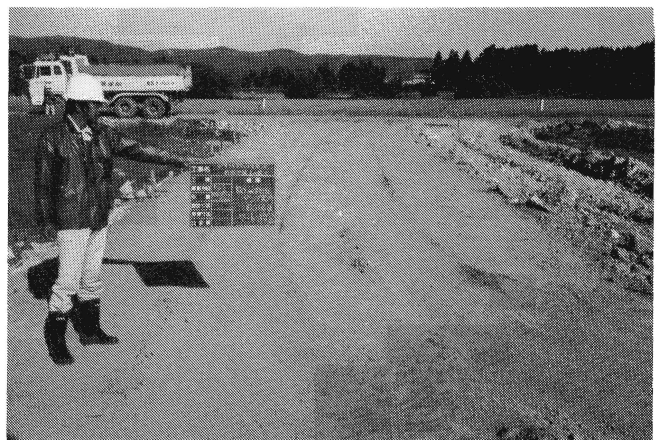
The Technical Research Institute is part of the Maeda Corporation and has conducted research related to improvement of soil structures by the use of geosynthetics for reinforcement and drainage and for liner systems.

Examples of projects in which the Research Institute has been involved are illustrated in the accompanying photographs. The second photograph was taken from a project described in a paper presented at the 4th International Conference on Geotextiles, Geomembranes and Related Products held at The Hague in May 1990 (see *Hirano et al. Vol.1 p. 227*).

The Maeda corporation has been a Corporate Member of the IGS since 1988.



Example of a steep embankment constructed to a height of 7.5m. The structure used geogrid reinforcement and nonwoven fabrics for drainage.



Construction of a 0.5m high test embankment over soft ground reinforced with geogrids and woven geotextiles.

Naue-Fasertechnik GmbH & Co. KG.

**by
Beate Schmidt**

**Wartturmstraße 1, 4990 Lübbecke 1
Germany**

Naue-Fasertechnik GmbH & Co. KG are located in West Germany and are manufacturers of geotextiles and related products. The company was established some twenty years ago with the objective of supplying the civil engineering community with a diverse range of geosynthetic products for filtration, drainage, protection, separation, reinforcement and sealing applications. The extensive range of products offered by the company has been used in hydraulic engineering applications, large dams, earth fill and road construction and waste containment. Naue-Fasertechnik produces nonwoven needle-punched filter fabrics with high filter efficiency and a wide range of extruded drainage structures. The company has introduced a new fibre-reinforced mineral sealing product composed of needle-punched geotextiles and bentonite mat (Bentofix).

An example of a recent application of the geotextile/bentonite sealing product is the rehabilitation of an old sanitary waste at Grabow by construction of a surface sealing treatment. The bentonite mat (with a k -value of 1×10^{-10} m/s) was underlain by a chemically resistant HDPE nonwoven geotextile acting as the filter layer overlying in turn a polypropylene nonwoven fabric. The fibre-reinforced mineral liner system was installed at a rate of 7,000 m^2 per day and the entire project was completed in two weeks during January 1990. A similar liner system has been installed at the Odenwald waste tip. In this installation the mat was used to protect a synthetic liner against 16/32 mm gravel. In addition to the excellent protection, the geotextile/bentonite mat prevents direct contact between seepage water and the synthetic liner and thus minimizes the ageing process of the synthetic material.

The geocomposite geotextile/bentonite mat manufactured by Naue-Fasertechnik has also been used in a novel subsurface purification/drainage (ASG) system at the Munich II Airport. The mat was used to seal underground granular drainage channels from the underlying subsoils. The network channels have a total length of 28 km and an average width of 22 m. De-icing mixtures of hotwater and glycol that accumulate in winter are directed to the granular drainage channels which are charged with bacteria. The permeant appears as purified water by the time it exits the drainage network.

Naue-Fasertechnik is also a distributor for Netlon products. This association has led to the use of Tensar geogrid products in a geocell foundation mattress at the site of a domestic landfill expansion in the district of Miesbach southeast of Munich. A 1m high geocell mattress was constructed over an area of approximately 40,000 m^2 once occupied by a coal mine tailings lagoon. The geocell approach

offered the only economical solution to prevent instability as a result of placement of landfill materials over a foundation comprising soft minewaste soils.

As an internationally active company, Naue-Fasertechnik is a member of a number of organizations and has been a Corporate Member of the IGS since 1987.



Protection of the synthetic lining in the Odenwald waste tip using geotextile/bentonite mat.



Lining of the ASG system with geotextile/bentonite mat liner at the Munich II Airport

News of Members

GeoServices Inc. becomes GeoSyntec Consultants

Geoservices Inc. Consulting Engineers (GeoServices) headquartered in Boynton Beach, Florida, U.S.A., has changed its name to GeoSyntec Consultants. The company which was founded by Mr. J.E. Fluet, Jr. and Dr. J-P. Giroud is a full service geotechnical and environmental consulting organization with offices in Boynton Beach, Florida, Norcross, Georgia, and Huntington Beach, California (GSI Environmental). The name change was prompted by

continuing growth and diversification of the company, difficulties with obtaining a national trademark for the name GeoServices, and a desire to unify the company under one name.

GeoSyntec Consultants, under its previous name GeoServices, has been a benefactor of the IGS since the formation of the Society.

Geotextiles & Geomembranes: An Official Journal of the IGS

In 1991 the Journal continues with 6 issues per year in order to provide a more frequent service to subscribers and more timely publication for the authors. The subscription price for 1991 has been set at Pounds 160 (U.K.). The reduced subscription offer to individual IGS members represents a 40% discount off the full price, i.e. Pounds 96 (U.K.).

Reduced subscriptions are available directly from the publisher:

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

The Editor, T.S. Ingold, the Editorial Chairman, J-P. Giroud, the IGS Editorial Board Representative, K. van

Harten, and the IGS President, R. Kerry Rowe, all hope that IGS members will 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.

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All members of the IGS are highly encouraged to submit original technical papers to *Geotextiles & Geomembranes*. This is a high quality journal with a wide circulation in more than 40 countries. Publication of a paper in *Geotextile and Geomembranes* is an excellent way of ensuring that those interested in geotextiles, geomembranes and related products around the world are aware of your work.

Papers which have not been published in full elsewhere may be submitted to the Editor, Dr. T.S. Ingold at the following address: Dr. T.S. Ingold, Mulberry Lodge, St. Peters Close, St. Albans, Hertfordshire AL1 3ES United Kingdom.

IGS News goes WYSIWYG

by R.J. Bathurst (Editor IGS News)

This issue of IGS News marks two changes in the history of the newsletter. The first is myself as the new Editor taking over from Dr. Kerry Rowe who, as we all know, has taken on other duties in our Society. Fortunately, I am competently assisted in my new capacity as Editor by two new Associate Editors; Mr. D. Cazzuffi (Europe) and Prof. T. Akagi (Asia). The enthusiasm of my co-editors was amply demonstrated by the overwhelming number of potential contributions they sent to me on very short notice in response to my plea for help. Similarly, Mr. W. Voskamp contributed many ideas for IGS News and I am grateful for his support as well. Unfortunately, there was not enough room in the current issue for the many interesting articles on conferences and technical innovations that were submitted. Hopefully, some of this material will appear in the next issue. Dr. Rowe has also been extremely helpful in expediting the transfer of Editor responsibilities and pointing out to this poor novice the subtle technical nuances of the Newspaper business. Finally, Dr. P.M. Jarrett at the Royal Military College of Canada (who was the first Editor of IGS News) has been a source of timely advice.

The second major change for IGS News is that it is being produced for the first time using full desktop publishing with a *What-You-See-Is-What-You-Get* (WYSIWYG) format. IGS computer boffins will be interested to know that this entire newsletter was submitted to the printer in its final format. The software used is sold by Interleaf Inc. and was executed on a DN4500 Apollo/HP Workstation computer with a 1280 x 1040 pixel resolution monitor and using a QMS 300dpi laserprinter for final output. WYSIWYG desktop publishing will hopefully eliminate the annoying generation of typographical errors that can occur as articles pass from secretary to editor to printer and back again.

Finally, I hope that all IGS members will assist IGS News by forwarding interesting articles to myself or the Associate Editors. The addresses of the Editors are given on p.14 of this issue.

Officers of the IGS

President

Prof. R. Kerry Rowe, P.Eng.
The University of Western Ontario
Faculty of Engineering Science
Geotechnical Research Centre
LONDON, ONTARIO, CANADA N6A 5B9
Tel: 1 (519) 661 2126 Fax: 1 (519) 661 3942

Treasurer

Mr. P. Stevenson
ACME STW Inc.
226 Sitton Road
EASLEY, SC 29642, USA
Tel: 1 (803) 855 0504 Fax: 1 (803) 859 1698

Immediate Past-President

Dr. J-P. Giroud
GeoSyntec Consultants
1200 S. Federal Highway, Suite 202
BOYNTON BEACH, FLORIDA, USA 33435
Tel: 1 (407) 736 4600 Fax: 1 (407) 736 4988

Vice-President

Prof. Dr.-Ing. Rudolf Floss
Technische Universitat Munchen
Lehrstuhl und Profamt fur Grundbau
Bodenmechanik und Felsmechanik
Baumbachstrasse 7
D - 8000 MUNCHEN 60, GERMANY
Tel: 49 (89) 8895200 Fax: 49 (89) 8349291

Secretary

Mr. W. Voskamp
Akzo Industrial Systems B.V.
Velperweg 76, P.O. Box 306
NL - 6800 AH ARNHEM, THE NETHERLANDS
Tel: 31 (85) 662615 Fax: 31 (85) 662070

or: IGS Secretariat

P.O. Box 2233
3440 DE WOERDEN
The Netherlands
Tel: 31 (3480) 30961 Fax: 31 (3480) 30961

The IGS Council

Elected in 1988: M. Fukuoka, (Japan); B. Myles (U.K.); P. Rankilor (U.K.); K. van Harten (The Netherlands).
Elected in 1990: A. Arman (U.S.A.); D. Cazzuffi (Italy); J. Perfetti (France); S.D. Ramaswamy (Singapore);
J-M. Rigo (Belgium). The IGS Council also includes the five IGS Officers elected for the period 1990-94.

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Technische Universitat Munchen
Lehrstuhl und Prufamt fur Grundbau
Bodenmechanik und Felsmechanik
Baumbachstrasse 7
D - 800 MUNCHEN 60, GERMANY (F.R.)
Tel: 49 (89) 8895200
Fax: 49 (89) 8349291

Education Committee

Chairman: Mr. D. Cazzuffi
ENEL - Centro di Ricerca Idraulica e Strutturale
Via Ornato 90/14, 20162 MILANO, ITALY
Tel: 39 (2) 88478445
Fax: 39 (2) 88478450

Standards Committee

Chairman: Prof. J-M. Rigo
Universite of Liege
Civil Engineering Institute
Geotextiles & Geomembranes Research Centre
Quai Banning 6
B-400 LIEGE, BELGIUM
Tel: 32 (41) 520180
Fax: 32 (41) 522169

Benefits Committee

Chairman: Mr. J. Perfetti
Rhone Poulenc Fibres
Departement Nontisse BIDIM
44 rue Salvador Allende - B.P. 80
F - 95871 BEZONS - Cedex
FRANCE
Tel: 33 (1) 39473340
Fax: 33 (1) 39478735

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Robin Hills, Catbrook
UK - CHEPSTOW, GWENT NP6 6NA
UNITED KINGDOM
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Fax: 44 (600) 860903

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Chairman: Dr. P. Rankilor
Manstock Geotechnical Consultancy Services Ltd.
1 North Parades, Parsonage
UK - MANCHESTER, UNITED KINGDOM M3 2FB
Tel: 44 (61) 8326447
Fax: 44 (61) 8324048

Voting Procedure/By-Laws Committee

Chairman: Mr. P. Stevenson
ACME STW Inc.
226 Sitton Road
EASLEY, SC 29642
U.S.A.
Tel: 1 (803) 855 0504
Fax: 1 (803) 859 1698

Publications Committee

Chairman: Prof. K. van Harten
Delft Technological University
Mechanical Engineering Department
2 Mekelweg
P.O. Box 5036
NL-2600 GA DELFT, THE NETHERLANDS
Tel: 31 (15) 786739
Fax: 31 (15) 785602

Any IGS member wishing to participate in an Open Committee should contact the appropriate Chairman.

IGS News Editors

Editor

Dr. R.J. Bathurst
Civil Engineering Department
Royal Military College of Canada
KINGSTON, ONTARIO, CANADA K7K 5L0
Tel: 1 (613) 541 6479 or 541 6391 Fax: 1 (613) 545 3481

Associate Editor (Asia)

Dr. T. Akagi
Toyo University
Department of Civil Engineering
2100 Kujirai Nakanodai
KAWAGOE-SHI, SAITAMA
350 JAPAN Tel: 81 (492) 311211 Fax: 81 (492) 311722

Associate Editor (Europe)

Mr. D. Cazzuffi
ENEL - Centro di Ricerca Idraulica e Strutturale
Via Ornato
90/14, 20162 MILANO, ITALY
Tel: 39 (2) 88478445 Fax: 39 (2) 88478450

The IGS News is published 3 times per year. Material for publication should be submitted to the Editor or one of the Associate Editors by 16 February, 16 June, 16 October for the March, July and November issues respectively. Short articles and/or good quality photos (with a caption) are always **very welcome**.

Calendar of Events

Two Day Seminar on "Landfill Closures: Geosynthetics, Interface Friction and New Developments"
15-16 December 1990 - 4th GRI Seminar

Contact: Marilyn Ashley or Paula Koerner
Geosynthetic Research Institute
Drexel University
West Wing - Rush Building # 10
Philadelphia, PA 19104, U.S.A.

**ASCE Specialty Conference
Grouting, Soil Improvement & Geosynthetics**
New Orleans, U.S.A. 25-28 February 1992

Contact: Dr. I. Juran
Dept. of Civil & Environmental Engineering
Polytechnic University
333 Jay Street
Brooklyn, New York 11201, U.S.A.
Tel: 1 (718) 260 3220, 3739

**International Conference on Fibre & Textile Science
-1991**
Ottawa, Canada. 10-12 April 1991

Contact: Martin W. King
Universite Laval
Laboratoire de Chirurgie Experimentale
Pavillon de Services, Saint-Foy Quebec
Canada G1K 7P4
Tel: 1 (418) 656 2621 Fax: 1 (418) 656 7512

5th International Conference on Geotextiles, Geomembranes and Related Products
Singapore

5-9 September 1994

Contact: Prof. S.D. Ramaswamy
National University of Singapore
Dept. of Civil Engineering
Kent Ridge Crescent
Singapore 0511

Geosynthetics 91

Atlanta, U.S.A.

25 February - 1 March 1991

Contact: Secretary General NAGS
345 Cedar St., Suite 800
St. Paul, MN 55101
U.S.A.

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

List of Corporate Members of the IGS

Acme Stw Inc. - U.S.A. (1989)
Akzo Industrial Systems B.V.
- The Netherlands (1986)
Amoco Fabrics and Fibres Co. - U.S.A. (1987)
Asahi Chemical Industry Co. Ltd. - Japan (1984)
Associate Suisse Des Professionnels De
Géotextiles - Suisse (Aspg/Svg)
- Switzerland (1984)
Belton Industries Inc. - U.S.A. (1989)
Bidim Geosynthetics - France (1990)
Don & Low Ltd. - U.K. (1984)
Du Pont De Nemours Int. S.A.
- Switzerland (1984)
Exxon Chemical Geopolymers Ltd. - U.K. (1988)
Fibertex Aps - Denmark (1984)
Fritz Landolt Ag - Switzerland (1985)
Gundle Lining Systems, Inc. - U.S.A. (1988)
Hoechst Celanese Corporation - U.S.A. (1984)
Huesker Synthetic GmbH And Co.
- Germany (1987)
Industrial Fabrics Association International (IFAI)
- U.S.A. (1985)
Japan Spunbond - Japan (1984)

Kajima Corporation - Japan (1985)
Karl Mayer Textilmaschinenfabrik GmbH
- Germany (1985)
Kumagai Gumi Co. Ltd. - Japan (1987)
Kuraray Co. Ltd. - Japan (1989)
Maeda Corporation - Japan (1988)
Naue Fasertechnik GmbH and Co. KG
- Germany (1987)
Netlon - U.K. (1989)
Nicolon B.V. - The Netherlands (1984)
Ohbayashi Corporation - Japan (1988)
Okasan Kogyo Co. Ltd. - Japan (1984)
Polyfelt GmbH - Austria (1984)
Texsol - France (1989)
The Tensar Corporation - U.S.A. (1989)
The Reinforced Earth Co. - U.S.A. (1989)
Tokyu Construction Co. - Japan (1984)
Uco N.V. - Belgium (1985)
Shimizu Co. - Japan (1990)

Dates indicate year of first 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) \$40 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.

Send this completed form to:

Mr. P.E. Stevenson, Treasurer
 226 Sitton Road
 Easley, SC 29642
 U.S.A.

Telephone: 1 (803) 855-0504
Fax: 1 (803) 859-1698

In this area, write a short description of your activities as you wish it to appear under your address in the next IGS Directory (e.g. "Consulting Engineer", or "Salesperson for XYZ Geotextile Company"). If the name of your company already appears in the above address, you need not repeat it in this area.

In this area, write your address as you wish it to appear in the next IGS Directory (your professional address is recommended but your personal address is acceptable provided the telephone, telex and fax numbers are also your personal numbers). *If the address below is your personal address please check this box:*

Title (circle one): Mr. Ms. Dr. Prof. Other _____

First Name _____ LAST NAME _____

Company, Division, Function (if applicable) _____

Address (Street or Postal Box) _____

City _____ Province/State _____

Postal Code _____ Country _____

Telephone _____ Telex _____ Fax _____

Eligibility (i.e. connection with geotextiles, geomembranes, or related products):

* Membership fee Individual (US) \$40.00

Corporate (US) \$1000.00

* Benefactor's contribution (at least (US) \$200.00): _____

- A check is enclosed A Money Order is enclosed

SIGNATURE _____ DATE _____

* A copy of the By-laws is available upon request.

IGS NEWS Published by the International Geotextile Society

Editorial Enquiries to: Dr. Richard J. Bathurst, Department of Civil Engineering,
 Royal Military College of Canada, Kingston, Ontario, CANADA K7K 5L0
 Phone: 1 (613) 541-6479 or 541-6391, Fax: 1 (613) 545-3481