

IGS NEWS



NEWSLETTER OF THE INTERNATIONAL GEOTEXTILE SOCIETY

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How the IGS Council Works

by

J-P Giroud – President of the IGS

Twice a year, fifteen to twenty people travel from different continents to spend two long days attending an IGS Council meeting. It is impressive to realize that these extremely busy people are willing to spend so much time and money to attend these meetings. They received a mandate from all members of the IGS when they were elected to the Council and they have been faithful to their commitment. From this viewpoint, the IGS Council members are to be commended, because regardless of the location of the meeting - Europe, North America, or Japan - the attendance is always very high. Professor Fukuoka deserves a special mention: he has never missed a Council meeting, and, to achieve this, he has travelled more than the distance between the Earth and the Moon. Two reasons may explain the exceptional motivation of the Council members: they understand that the Council of the IGS is the supreme professional body that impacts the activities of all those involved with geotextiles, geomembranes and related products, and they clearly see the importance of what is achieved during Council meetings. Since its formation in 1983, the Council has dealt with a number of questions essential to our discipline, as illustrated by the following examples.

The IGS Council has discussed and approved the formation of chapters in Japan, North America, the United Kingdom, Southeast Asia, and India, and is reviewing the possibility of forming chapters in other countries. This is part of a concerted effort to expand membership, which is important because a growing membership increases the influence and the means of the IGS. The Council strives to reach the goals stated in the IGS bylaws, one of which is to disseminate information and encourage communication between members. Accordingly, the IGS Council has discussed and approved the agreement by which "Geotextiles and Geomembranes" became the official journal of the IGS, and provides means and guidance for IGS NEWS, our newsletter, whose quality has been praised by other professional societies. The Council also monitors the preparation of the Inventory of Geotextile Test Methods, first published in 1986, which is being entirely revised, updated, and expanded for publication in 1990. The IGS has, de facto, the responsibility of protecting and organizing our discipline. Accordingly, in 1987-1988, the IGS Council acted vigorously to preserve the free use of generic terms such as "geotextile"

and "geomembrane", which was threatened by private interests. It is at the IGS Council that dates of important events, such as conferences, are discussed in order to avoid conflicts and where all steps are taken for the selection of the venue for international conferences. Recently, a major decision of the Council was to launch the IGS Awards to encourage the advancement of the state of the art, which is one of the goals stated in the IGS bylaws. Of course, the Council discusses, amends, and approves the budget of the IGS prepared by the Treasurer, and during the last Council meeting in Brussels, in March 1988, an important decision was made: a portion of the IGS membership dues paid by IGS members who are also members of a chapter will be reverted to the chapter to support local activities. Also in Brussels, the Council continued the discussion started at the meeting held in Tokyo in 1988 on the revision of the bylaws, a project which will be submitted to the General Assembly, during the next international conference to be held in The Hague. At the upcoming meeting in Atlanta, the Council will, among other things, review and evaluate proposals for the venue of the Fifth International Conference on Geotextiles and Geomembranes (to be held in 1994), and will prepare for the next General Assembly. Finally, and perhaps more importantly, the Council devotes a significant amount of time to planning future IGS activities in areas such as promotion of the industry, education of potential users, and research, at the international or local levels.

These are only a few examples of the activities of the IGS and one may wonder how the Council can deal with so many matters, make important decisions, and accomplish so much work by meeting only four days a year. This is possible because of the intensive homework and preparation by all Council members in the period between the two meetings. First, at the end of a Council meeting, the IGS secretary prepares a list of actions that summarizes all commitments made by Council members during the meeting (or all the work assigned to the members who did not attend the meeting!). Then, all Council members have approximately four months to do their work, and they report to the President two months before the next meeting. (They all know they will receive more than one reminder from the President!) Those Council members who chair committees either meet with their committee members or, at least, correspond

with them. The officers meet once or twice between Council meetings to make urgent decisions and to prepare texts to be discussed, amended, and approved by the Council; for instance, the officers prepared the detailed rules to be used for chapter formation, conferences supported by the IGS, benefits to members, and, recently, for the IGS Awards. Finally, six weeks before the next Council meeting, the President, with the assistance of the IGS Secretary, prepares a detailed agenda, with time strictly allocated for discussion of each topic. Attached to the agenda are copies of all documents to be reviewed or discussed; for instance, each Council member received a 175-page volume one month before the last Council meeting.

Of course, the work of the Council has not been that well organized from the beginning. We have learned by trial and error, and have improved through hard work and constructive criticism by Council members eager to work efficiently. As a result, the Council has accomplished a lot and its leadership is at the origin of the impressive achievements of the IGS, which were described in *IGS NEWS*, Volume 4, No. 2, and in *Geotextiles and Geomembranes*, Volume 7, No. 3.

Council meetings are also an opportunity for Council members to meet with local IGS members. For example, in The Hague, in September 1987, the Council members had a meeting with the organizing committee of the 4th Inter-

national Conference on Geotextiles and Geomembranes, and in Greenville, South Carolina, in April 1988, Council members attended a reception sponsored by local corporate members; some individual members drove three hundred kilometres for the reception - they were "local" members at the scale of the United States. In Tokyo, in October 1988, the Council members met with representatives of all Japanese Corporate members, and a seminar was organized where five Council members each gave a one-hour lecture on subjects such as soil reinforcement, erosion control, and environmental protection using geosynthetics. These encounters help promote the IGS and educate potential users of geotextiles and geomembranes.

For all its dedication, there is nothing magical about the present Council. There will be new candidates to the Council and new candidates for officers at the next General Assembly in 1990; I am sure the IGS members will elect hardworking individuals who will display the same dedication as the present Council members, because of the enthusiasm generated by our growing and well-organized discipline, and because the working model developed for the Council will continue to serve for many years to come. It is important for IGS members to know that the Council members they have elected work hard and in an organized manner. I am proud of the accomplishments of the Council, and the IGS members can be proud of their Council.

A Short History of the IGS Council

Composition of the Council

According to the IGS bylaws, the Council consists of at least 10 and no more than 16 persons elected from the IGS membership, plus up to 5 co-opted members, plus the immediate Past-President.

First Council: November 1983 - April 1986

The members of the first Council were members of the Interim Committee appointed at the Second International Conference on Geotextiles in Las Vegas (August 1982) who attended the meeting in Paris (10 November 1983) where the formation of the IGS was decided: J. Andreu, J.E. Fluet, M. Fukuoka, J-P Giroud, P.E. Jarrett, E. Leflaive, G. Massenaux, B. Myles, P.R. Rankilor, C. Schaerer, H. Schneider, D.B. Sweetland, C. Van den Berg, and K. Van Harten. They immediately co-opted G. Heerten (also member of the Interim Committee) and they elected the following officers: C. Schaerer, President; J-P Giroud, Vice-President; G. Massenaux, Secretary; and J.E. Fluet, Treasurer.

This Council was completed in 1984 by the following co-options: A. Arman, H. Rathmayer, P. Sembenelli, and R.B. Wallace. In 1985: P.E. Stevenson was co-opted Council member and elected Treasurer by the Council, after J.E. Fluet had resigned from this function; and G. Heerten and D.B. Sweetland resigned.

Second Council: April 1986 - April 1988

The Second Council included the immediate Past-President, C. Schaerer, and the following members from the previous Council: M. Fukuoka, J.P. Giroud, E. Leflaive, P.E. Jarrett, B. Myles, and K. Van Harten. It also included members elected at the General Assembly held in Vienna (April 1986): J. Andreu, A. Arman, R. Floss, G. Massenaux, H. Schneider, P. Sembenelli, P.E. Stevenson, S. Tonus, and S.M. Warner. The officers for 1986-1990

are the Past-President, C. Schaerer, plus the following elected at the General Assembly held in Vienna (April 1986): J-P Giroud, President; K. Van Harten, Vice-President; G. Massenaux, Secretary; and P.E. Stevenson, Treasurer.

This Council was completed in 1987 by the following co-options: P.W. Barker, J. Perfetti, and J.M. Rigo; C. Van den Berg resigned in 1987.

Third Council: April 1988 - May 1990

This Council includes: (1) the following members from the previous Council: A. Arman, P.W. Barker, R. Floss, G. Massenaux, J. Perfetti, J.M. Rigo, C. Schaerer, H. Schneider, P. Sembenelli, P.E. Stevenson, S. Tonus, and S.M. Warner; and (2) the following elected in April 1988: M. Fukuoka, J-P Giroud, E. Leflaive, B. Myles, P.R. Rankilor, R.K. Rowe, and K. Van Harten. (J. Andreu resigned in 1988.) The officers for the Third Council are the same as for the Second Council.

Meetings of the Council

Under C. Schaerer's chairmanship, the IGS Council met in Paris, France (November 1983), Denver, U.S.A. (June 1984), Brussels, Belgium (February 1985), San Francisco, U.S.A. (August 1985), and Vienna, Austria (April 1986).

Under J-P Giroud's chairmanship, the IGS Council met in Vienna, Austria (April 1986), Tampa, U.S.A. (January 1987), The Hague, The Netherlands (September 1987), Greenville, U.S.A. (April 1988), Tokyo, Japan (October 1988), and Brussels, Belgium (March 1989), and will meet in Atlanta, U.S.A. (November 1989) and The Hague, The Netherlands (May 1990)

*(by J-P Giroud, President
and G. Massenaux, Secretary)*

④ THE FOURTH INTERNATIONAL CONFERENCE

Geosynthetics: Reliable, Durable, Effective

The period for "Call for Papers" for the 4th International Conference on Geotextiles, Geomembranes and Related Products, The Hague 1990, is now over. A total of 388 abstracts, originating from 37 countries were received. It was an interesting experience to read them all, and to obtain a first indication of the progress that has been made worldwide during the last few years. The abstracts provided insight into the popularity of the eight conference themes. Theme 1 (soil reinforcement) scored the highest (22% of the abstracts), but these were spread amongst such diverse subjects as Embankments on soft soils, Stability calculation for retaining walls, and Reinforcement of sand by continuous fibers.

Theme 5 (irrigation channels; reservoirs) scored the lowest, but even then 6% (24 abstracts) were devoted to this item.

Each abstract is presently being reviewed by two selected members of the Scientific Committee; as the names of the authors have been suppressed, this review is anonymous.

The final paper selection will be undertaken during a meeting of the Paper Selection Committee in September. All authors will be notified of the decision by October 1.

In October a provisional conference programme will be set up, and published in Bulletin 2.

The conference will be held in the Netherlands Congress Centre, The Hague (see photograph).

The Opening Ceremony will take place in the large auditorium (1500 seats) on Monday, May 28, at 4 pm, followed by an informal get-together, probably in the Exhibition Hall.

The Technical Exposition will be open from Monday morning through Thursday. There is still exhibition space available and the organizers are interested in obtaining more participation of specialized consultants for the Consultants Section.

The three following conference days will start with a keynote lecture. The keynote speakers will be (in alphabetical order):

Dr. P. Gourc, Grenoble University; Dr. R.A. Jewell, Oxford University; and Dr. R.M. Koerner, Drexel University.

These lectures will be followed by paper presentations organized in three concurrent sessions in halls (250-800 seats) which are close enough together to allow movement from one session to another. The open space in between the session halls will be used for the Poster Session(s).

The IGS General Assembly will be held on Wednesday, May 30, at 4 pm.

The fifth and last day of the conference, Friday, June 1, will be devoted to technical excursions and sightseeing.

Details of the Social Program and the Program for accompanying persons will be provided in the next issue of IGS News.

In the meantime, urgent information can be obtained from:

G. den Hoedt,
Secretary General,
4th International Conference on Geotextiles
and Geomembranes
c/o Holland Organizing Centre
Telephone: +31.70.657850
Telefax: 31.70.614846
Telex: 331111 (HOC NL)



IGS AWARDS

The call for entry to the IGS Award received a favourable response from members of the Society. Over 20 enquiries were sent to the IGS secretariat asking for details about the aim and the conditions of eligibility for these awards. A total of 14 submissions were finally received by the Secretary of the IGS, Dr. Guy Massenaux.

This was the beginning of quite a lot of work, since many

of the entries did not fully comply with the IGS rules. Fortunately the problems were sorted out by Dr. Massenaux.

By the end of May, the secretary had sent a 6 cm thick pile of documents to each of the five members of the Jury for their consideration. We wish them good luck as their decision will not be easy.

(Reported by Dr. G. Massenaux)

Oops - An Apology to our Corporate Members

We would like to apologize to those Corporate Members who were incorrectly listed (or omitted) in the last issue of IGS News (Vol. 5, No. 1). Somehow the printer substituted the list from a previous issue for the list which had been

proof read. We have taken steps to ensure that this does not happen again and hope that the corporate members affected will accept our sincere apology.

CONFERENCE ON REFLECTIVE CRACKING LIEGE, March 8-10, 1989

by
Professor J.M. Rigo

The first Conference on Reflective Cracking in Pavements (Assessment and Control) R.C. 89 was held in Liege (Belgium) on March 8, 9 and 10, 1989.

This was a R.I.L.E.M. Conference organized by Professor J.M. Rigo and Professor R. Degeimbre from the State University of Liege. The IGS gave its support to this event.

The Conference was a great success with 420 people from 26 different countries attending the Conference and 20 companies participating in the Exhibition.

The Conference was divided in four sessions:

- Introduction
- Laboratory and full scale experiments
- Design models for reflective cracking in pavements
- Case histories.

Fifty papers were presented during the sessions. The authors presented both the successes and failures of the various methods of using geosynthetics as retarding measures for crack propagation in road structures.

The need for an engineering approach to explain both the successes and failures was evident.

As pointed out by Dr. Giroud, President of the IGS, in his opening address: "There are successes and failures in the United States where more than 70 million square meters of geotextiles are used every year for the prevention of reflective cracking, and a rational evaluation of the American ex-

perience is necessary before conclusions can be drawn for the rest of the world, where the amount of geotextiles used in this application is still very small."

A second Conference on Reflective Cracking is planned for the spring of 1993 in Liege.

The proceedings of the R.C. 89 is available at Liege University (L.M.C.- C.E.P., quai Banning, 6, 4000 Liege, Belgium).

One of the highlights of the Conference was the soccer match (see photo) which has become a tradition at Geosynthetics Conferences.



R.C. '89 Soccer match - medal and cup presentation
Left-Right: Messrs. van Wijk, Fock, Giroud, Rigo, Cazzuffi, Lampaert

10TH ANNIVERSARY CELEBRATION OF THE FRENCH COMMITTEE ON GEOTEXTILES AND GEOMEMBRANES

The French Committee on Geotextiles and Geomembranes (CFGG) celebrated its 10th anniversary during a special meeting in Paris in November 1988. J. Lassalle, J. Marce and E. Leflaive, Past-Presidents, and A. Leclerc, President of the French Committee, presented the impressive accomplishments of the committee. The IGS was represented by Professor K. van Harten, Vice-President of the IGS, who provided details regarding the next International Conference on Geotextiles and Geomembranes to be held in The Hague, The Netherlands, and Dr. J-P Giroud, President of the IGS, who was the keynote speaker at this meeting. Dr. Giroud, who in 1978 was one of the founders of the French Committee, reminded the audience of some of the major French contributions to our discipline such as the first geotextile between embankment and soft soil, the first nonwoven filter, the first vertical geotextile-reinforced soil structure, and the first geotextile-geomembrane association, as well as the First International Conference on Geotextiles (Paris, 1977). In his concluding remarks, Dr. Giroud indicated that pioneering work is now done in many countries in the various branches of our growing discipline and that international cooperation is essential.

The French Committee can be distinguished from similar organizations by the diversity of its members. It is formed from almost 100 societies or organizations involved in the Civil Engineering and Polymer Industry. There are scientists, textile specialists and geotechnicians, industrialists and contractors, specifiers and suppliers. Its many national and international initiatives have resulted in the development of new technologies and construction methods involving the use of polymeric materials in the field of geotextiles and geomembranes.

The CFGG issues documents that are distributed and used by the French Public Works Administration. They are also used as reference items for the work on International Standardization.

The IGS wishes to congratulate the CFGG on their ten years of excellent work and wishes them all the best for the next ten years.

(Reported by Mr. S. Tonus)

Garden Variety Geotextiles

by
Robert and Elizabeth Douglas

Most of us are using geotextiles in research, development, manufacturing, marketing, design and construction for very heavy civil engineering projects. However, there may be untold wealth in markets much closer to hoe, even at home.

Faced with a mounting pile of spent geotextile specimens from university research, we've looked for ways to put them to use. You can't just **throw** them away, after all... They've ended up in the garden.

We've used them for French drains beside the driveway, and under the garden pathway to separate the fancy crushed stone from that horrible silt. Nothing earth shattering there. We do have, on the other hand, four novel uses to describe.

The first was the placement of geotextile under gravel and bark mulch in the flowerbeds, much better than the plastic sheeting currently in vogue, because it allows the water through while keeping the weeds down. The second was to cart volumes of soil around. Not being able to afford a wheelbarrow (we all know what assistant professors make...)

we dragged the soil around on a sheet of geotextile. Not very subtle, but much easier on the lawn.

We've also designed a self draining sand box for the children. Dig a hole 150 mm deep, backfill with 75 mm of open graded gravel, drop in a timer frame with nonwoven geotextile nailed to the bottom, fill with sand, and voila, your children are the first in the neighbourhood back in the sand box (and out of your hair) after a rainstorm.

Finally, we've just come in from patching the homemade skating rink in the back yard. Holes have made it impossible to flood it any further. The solution? Nonwoven patches soaked in hot water, slapped over the holes. Wait until they've frozen, and flooding can continue, without huge quantities of water ending up in your (irate) **neighbour's** back yard.

We haven't patented any of these ideas, feel free to use them. Put it down to a little garden variety technology transfer.

Robert has been generating the garden geotextile supply at the Department of Forest Engineering, University of New Brunswick, Fredericton, N.B., Canada. Elizabeth tends the garden.

News of Members

Geoservices Expands

GeoServices, a U.S. consulting firm, has announced the opening of GSI Environmental, a new regional office in Huntington Beach, California. GSI Environmental provides consulting services in a broad spectrum of environmental management areas including air and water quality control and hazardous substance management. GSI Environmental is also active in GeoServices' traditional areas of geotechnical and geosynthetic engineering. Key professionals at GSI Environmental include Thierry Sanglerat, Keith Martins, Bert Palmer and Allen Blodgett.

The founders and senior principals of the firm are J.E. Fluet, Jr. and J-P Giroud. Other leading professionals involved with geosynthetics are R. Bonaparte, N.D. Williams and J.F. Beech, at GeoServices, and I.D. Peggs, director of GeoSyntec. All are active in the IGS, its North American Chapter (NAGS) and other committees devoted to geosynthetics. GeoServices has been a benefactor of the IGS since 1984.

Plastalene Becomes P.C. Geomembranes

Plastalene Construction Inc. has announced a name change to P.C. Geomembranes Inc. According to the company, the new name better reflects the firm's activity over the last six years as a supplier of HDPE geomembranes to independent installers across North America.

Nilex to Supply Tensar Products

The Tensar Corporation of Atlanta, Georgia, U.S.A., has announced that its products are now available from Nilex Geotechnical Products Inc. in Western Canada, including The Yukon and Northwest Territories.

Nilex is a geosynthetic supplier and contractor with offices in Edmonton, Alberta, Vancouver, British Columbia, and in the United States.

Lifeline Technology, Inc.

Mr. Thomas N. Dobras, P.E., President of LifeLiner Technology, Inc., of West Chicago, Illinois (an engineering and liner installation company) has announced the appointment of David G. Yacko, P.E., to the position of Executive Vice President, to direct company engineering and technical services and Mr. Ralph M. Woodley as their Western Regional Engineering and Marketing Manager.

Prior to joining LifeLiner Technology, Mr. Yacko was employed for 14 years as a Senior Geotechnical Engineer for an internationally renowned consulting engineering firm and has served as Project Manager during the planning, permitting, design, and construction of a hazardous waste landfill and waste treatment facilities.

Mr. Woodley will be responsible for engineering and marketing for all states West of the Mississippi, with headquarters in the San Francisco Bay area. He brings 14 years of experience in the field of geomembranes to the firm.

Sageos Formed

SAGEOS (Geosynthetic Materials Analytical Services) has been formed as a joint venture between the Geosynthetics Research Group (GEOSEP) of Ecole Polytechnique and the Textile Technology Centre at Saint-Hyacinthe.

The key personnel involved with SAGEOS are: André L. Rollin, Eng. Ph.D.; Jean Lafleur, Eng. Ph.D.; Gérard Lombard, Eng. Ph.D.; Jacek Mlynarek, Eng. Dr.Sc.; Victor Ciubotariu, Eng. Dr.Sc.A.; and Ana Vidovic, Eng. (Executive Director).

CORPORATE PROFILES

As indicated in IGS News, Vol. 4, No. 2, the IGS Council has decided that in each issue of the IGS News 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 corporate profiles is described in IGS News, Vol. 4, No. 2, p. 7. There is no charge for having a Corporate Profile published; it is a benefit of membership.

Polyfelt Ges.m.b.H.

***St.-Peter-Strasse 25
Linz/Austria***

Polyfelt TS, a continuous fiber, u.v. stabilized polypropylene needle-punched geotextile, was first produced by Chemie Linz AG of Austria in 1971.

In the intervening years, the range of grades and types of Geotextiles for different applications has grown considerably. The current Polyfelt TS range includes products for all the usual civil engineering uses in drainage, separation, erosion control and geomembrane protection, as well as PGM 14 a specially designed fabric for use in asphalt pavement overlays. In addition, Polyfelt TS is now available in suitable grades for landscaping work and for plant frost protection.

During 1981, the second generation of Polyfelt was introduced - a product with good isotropy, achieved by a sophisticated in-line stretching process.

The next four years saw rapid sales growth, the start-up of a second Polyfelt TS production line in Linz, Austria, and the opening of a Polyfelt sales and technical support company in Australia. In 1985, Chemie Linz AG founded Polyfelt Inc. in Evergreen, Alabama, U.S.A. This company started full production of Polyfelt TS in mid 1987.

During 1988, the Austrian Polyfelt TS production, sales and administration were formed into an operating company and acquired by a large Austrian polypropylene and polyethylene manufacturer, Petro Chemie Danubia Ges.m.b.H. This company is, in turn, owned by OEMV AG, Austria's only oil company. This vertical integration from well head to finished fabric has permitted excellent quality control. Petro Chemie Danubia also acquired Polyfelt Inc. in 1988.

Polyfelt TS is well known around the world and is regularly used in more than 50 countries. Sales service is

carried out in these various countries by a large and expanding network of subsidiary companies, the latest of these being Polyfelt Ltd., Malaysia, a joint venture with Land M. Prestressing Ltd.; associate companies such as PCD in London, Paris, Zurich, Munich, Copenhagen and Milan, and a very competent network of distributors.

Application technical support is undertaken by a team of civil engineers based in Austria, Australia, Denmark and the United States. This support follows the philosophy of the "Design by Function" manual. Authored and published by Polyfelt, Austria in 1986 and now available in five languages, this manual and the involvement in technical application support and research for nearly two decades, have been seen by many as an important key to the product's success.

Polyfelt has provided very active support to the IGS since its inception. In particular, **Mr. H. Schneider** has been a member of the IGS Council since the first Council was formed in 1983. He was also the General Secretary of the III International Conference on Geotextiles held in Vienna in 1986.



Polyfelt PGM laid mechanically into the previously applied bituminous tack coat

DU PONT INTERNATIONAL S.A. GENEVA - SWITZERLAND

***by
V. Sheridan
2, chemin du Pavillon
Box 50 CH-1218 Le Grand-Saconnex
Geneva - Switzerland***

As its 200th anniversary draws near, the DU PONT Company is rapidly developing into a global corporation. Founded in 1802 by a French emigrant to the United States, DU PONT is today one of the world's largest chemical and energy concerns with 1987 sales of \$30.5 billion. The company markets its products in more than 150 countries around the world and has manufacturing operations in 40 countries on 5 continents.

The company has been active in textile fibers since the 1920s, but the real development came with the discovery of nylon by a DU PONT scientist in the 1930s. The company is by far the largest worldwide manufacturer of textile fibers and fiber products, with 1987 sales of \$5.3 billion. DU PONT fiber brands such as "ANTRON" nylon, "DACRON" polyester, "LYCRA" spandex and "KEVLAR" aramid are known worldwide.

Geotextiles & Geomembranes an official journal of the IGS

Starting in 1990, the Journal will increase to 6 issues per year so as to provide a more frequent service to subscribers and more timely publication for the authors. To cover the cost of the increased quantity of material being published, the subscription price for 1990 has been set at Pounds 115 (U.K.)/Pounds 126 - \$214 (rest of the world). The reduced subscription offer to individual IGS members represents a 40% discount off the full price, i.e. Pounds 69 (U.K.)/Pounds 75.60 - \$128.40 (rest of the world).

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 Board Chairman, J-P Giroud and the IGS Editorial Board Representative, K. van Harten, 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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NGO Activities

by Professor K. van Harten

The Netherlands Geotextile Organization (NGO) was founded in December 1983. Its membership presently includes 52 corporate members and 67 individual members. Its Board has 7 elected members and its Office is staffed with a permanent Office Manager.

Activities of the NGO:

- In its early years, the NGO wrote and published the handbook: "Geotextiles and Geomembranes in Civil Engineering". It has also prepared an audiovisual presentation in the Dutch language, in which the basic concepts of geosynthetics are highlighted in a general way.
- The NGO Newsletter (NGO Nieuwsbrief) is published three times each year, at irregular intervals. Annually, one issue is dedicated to a special topic of current interest. The normal issues are distributed to some 200 subscribers while the annual special issue is distributed to several thousand individuals and corporations.
- Twice each year, the NGO arranges technical seminars, normally attended by between 50 and 100 participants.
- On behalf of the IGS, the NGO is presently organizing the 4th International Conference on Geotextiles and Geomembranes, to be held at The Hague in 1990.
- At the request of the Dutch Ministry of Economic Affairs, the NGO acts as the Central Body for exchange of general information between the Ministry and the Corporate Members of the NGO.

In cooperation with other parties, the NGO participates in a wide range of activities, as noted below.

- Together with the Netherlands Normalization Institute (NNI) and the International Standards Organization (ISO), the NGO is performing tests intended to result in national and international standards for determining various mechanical and hydraulic properties of geosynthetics. Consideration is currently being given to widening the range of these activities to include durability properties as well.
- Together with the Dutch Centre for Research, Codes and Specifications (CUR), the NGO is engaged in:
 - 1) The writing of a textbook on Geosynthetics in cooperation with the Civil Engineering Teachers Association
 - 2) Providing manpower for a Project Advisory Committee to advise the Dutch Government on the priority of Civil Engineering research projects
 - 3) Providing manpower for a Research Group on environmentally positive revetments
 - 4) Providing manpower for a Research Group on Civil Engineering construction materials
 - 5) Providing manpower for a Research Group on Specifications for Civil Engineering construction projects
- Together with the Dutch Centre for Road Construction and Traffic Technology, the NGO is providing advice to the Dutch Government on the priority of Road Construction research projects.
- This year, one of our Technical Seminars is being organized in close cooperation with the Dutch Royal Institute of Engineers.

Officers of the IGS

Dr. Jean-Pierre Giroud (President)
GeoServices Inc.
1200 S. Federal Highway
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Boynton Beach, FL 33435
U.S.A.

Dr. Guy Massenaux (Secretary)
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Belgium

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Technische Universiteit Delft
Postbus 5036
2600 GA Delft
The Netherlands

Mr. Peter E. Stevenson (Treasurer)
Route 4, Box 607
Easley, SC 29640
U.S.A.

Calendar of Events

Twelfth International Conference on Soil Mechanics and Foundation Engineering

Rio de Janeiro, Brazil
13-18 August 1989

Contact: Prof. Costa Nunes
12th ICSMF
Caixa Postal 1559
20000 Rio de Janeiro, RJ, Brazil

International Congress on Progress and Innovation in Tunnelling

Toronto, Canada
9-14 September 1989

Contact: Prof. K.Y. Lo
Dept. of Civil Engineering
The University of Western Ontario
London, N6A 5B9 Canada

Second International Landfill Symposium

Porto Conte, Sardinia, Italy
9-13 October 1989

Contact: Prof. R. Cossu
Istituto di Idraulica
Universita di Cagliari
Piazza d'Armi
09100 Cagliari, Italy

The Second Chinese Conference on Geosynthetics

Shenyang, China
11-15 October 1989

Contact: Secretariat of TSCCG
Shenyang '89
Nonwovens Technology
Development Centre
Nanta St. Dongling District
Shenyang, China

Upgrading and Refurbishing Hydro Powerplants II

Zürich, Switzerland
16-18 October 1989

Contact: Conference Assistant
Water Power and Dam
Construction
Quadrant House
The Quadrant, Sutton
Surrey, SM2 5AS, U.K.

Third Italian Conference on Geosynthetics in Earth Structure: Standards and Applications

Bologna, Italy
27 October 1989

Contact: Elena Pasoli
Bologna Fiere
P.za Costituzione, 6
I-40128 Bologna, Italy

Designing with Geosynthetics Course

Philadelphia, U.S.A. - 9-10 November 1989
San Francisco, U.S.A. - 16-17 November 1989
Chicago, U.S.A. - 30 Nov-1 December 1989

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

International Workshop on Geotextiles

Bangalore, India
22-29 November 1989

Contact: C.V.J. Varma
Central Board of Irrigation
and Power
Malcha Marg, Chanakyapuri
New Delhi-110021, India

Seaming of Geosynthetics Seminar

14-15 December 1989
Philadelphia, PA, U.S.A.

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

Symposium on Geosynthetic Testing for Waste Containment Applications

Las Vegas, Nevada, U.S.A.
24 January 1990

Contact: Dr. R.M. Koerner
Geosynthetic Research Institute
Drexel University
West Wing - Rush Building #10
Philadelphia, PA 19104, U.S.A.

European Construction for the Future

Wembley, U.K.
4-7 April 1990

Contact: The Organizing Committee CII '92
Construction Industry International
4 Brandon Road, London, U.K.

ISO Subcommittee on Geotextiles and Related Products Meetings

The Hague, The Netherlands
23-25 May 1990

Contact: Dr. A. Rollin
École Polytechnique de Montréal
C.P. 6079, Succursale A
Montréal, H3C 3A7, Canada

Fourth International Conference on Geotextiles, Geomembranes, and Related Products

The Hague, The Netherlands
27 May-1 June 1990

Contact: G. den Hoedt
c/o Holland Organizing Centre
16 Lange Voorhout
2514 EE The Hague
The Netherlands

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

International Reinforced Soil Conference

Glasgow, United Kingdom

10-12 September 1990

Contact: Prof. Alan McGown
Dept. of Civil Engineering
University of Strathclyde
Rottenrow
Glasgow G4 ONG
United Kingdom

List of Corporate Members of the IGS

AKZO INDUSTRIAL SYSTEMS B.V. - THE NETHERLANDS
AMOCO FABRICS AND FIBRES CO. - U.S.A.
ASAHI CHEMICAL INDUSTRY CO. LTD. - JAPAN
ASSOCIATION SUISSE DES PROFESSIONNELS DE GEOTEXTILES -
SUISSE (ASPG/SVG) - SWITZERLAND
DON & LOW LTD. - UNITED KINGDOM
DU PONT DE NEMOURS INT. S.A. - SWITZERLAND
FIBERTEX APS - DENMARK
FRITZ LANDOLT AG - SWITZERLAND
GUNDLE LINING SYSTEMS, INC. - U.S.A.
HOECHST CELANESE CORPORATION - U.S.A.
HUESKER SYNTHETIC GMBH AND CO. - GERMANY
ICI FIBRES LTD., TERRAM GROUP - UNITED KINGDOM
INDUSTRIAL FABRICS ASSOCIATION INTERNATIONAL (IFAI) - U.S.A.
JAMES RIVER CORPORATION - U.S.A.
JAPAN SPUNBOND - JAPAN

KAJIMA CORPORATION - JAPAN
KARL MAYER TEXTILMASCHINENFABRIK GMBH - GERMANY
KUMAGAI GUMI CO. LTD. - JAPAN
MAEDA CORPORATION - JAPAN
NAUE FASERTECHNIK GMBH - GERMANY
NETLON - UNITED KINGDOM
NICOLON B.V. - THE NETHERLANDS
OHBAYASHI CORPORATION - JAPAN
OKASAN KOGYO CO. LTD. - JAPAN
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TEXSOL - FRANCE
THE TENSAR CORPORATION - U.S.A.
TISZAI VEGYI KOMBINAT - HUNGARY
TOKYU CONSTRUCTION CO. LTD. - JAPAN
UCO N.V. - BELGIUM

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 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 telecopy 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.

If you are in North, Central, or South America, send this completed form to:

Mr. P.E. Stevenson, Treasurer
Route 4, Box 607
Easley, SC 29640
U.S.A.

Telephone: (1.803) 855-0504
Telefax: (1.803) 859-1698

If you are in the rest of the world send this completed form to:

Mr. Guy Massenaux, Secretary
c/o EDANA
51, Ave des Cerisiers
1040 Brussels
BELGIUM
Telephone: (32.2) 734.9310
Telefax: 26634 Telefax: (32.2) 733.3518

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 telefax 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 _____

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.

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): _____

Mode of payment – A check is enclosed The applicant hereby agrees to pay the above total amount upon receipt of an invoice

SIGNATURE DATE

* A copy of the byelaws is available upon request.

IGS NEWS Published by the International Geotextile Society.

Editorial Enquiries to Dr. R. Kerry Rowe, Geotechnical Research Centre, The University of Western Ontario, London, Ontario N6A 5B9, Canada. Telex 064-7134. Phone: (1.519) 661-2126, Fax (1.519) 661-3808

DU PONT has been involved in the production of non-woven geotextiles since the 1960s. "TYPAR" spunbonded polypropylene, which is widely used as a geotextile as well as in many other applications, was introduced in the United States as far back as 1966. "TYPAR" has been manufactured in Europe in the Grand Duchy of Luxembourg since 1972. This plant today serves a growing worldwide market extending from Europe through the Middle East, Africa, India, Malaysia, Japan and Australia.

Marketing of DU PONT's spunbonded polypropylene is also off to a good start on the American continent.

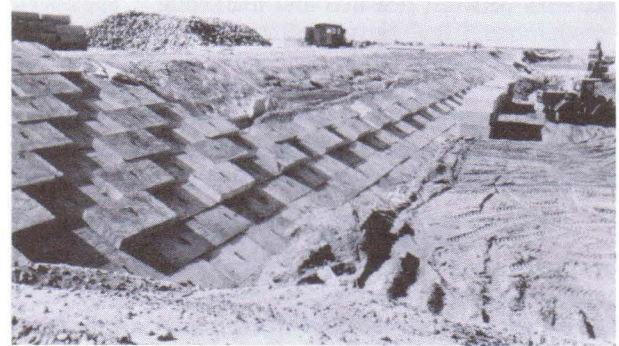
In addition, DU PONT manufactures "HYPALON" synthetic rubber which is used to manufacture geomembranes used in lining systems for ponds, reservoirs and waste containment.

DU PONT's Geotextile Marketing Group, headquartered in Geneva, coordinates sales, marketing and technical support activities in more than 40 countries through its regional offices and exclusive distributors. Heading the group is marketing manager **Al Breuninger** assisted by technical consultant **Silvio Tonus**. Silvio Tonus is a member of the IGS Council and European correspondent for IGS News.

The group's special strength lies in its capability to respond rapidly to market needs worldwide. This is achieved by maintaining very short lines of communication with the Luxembourg plant. Several civil engineers are employed at different marketing locations and at the plant. This ensures that customer problems can be rapidly resolved and that developments required to satisfy special customer needs can be achieved quickly.

The short communication lines also ensure that all group members, including management, are actively involved with geotextile and civil engineering developments worldwide. Participation between group individuals and the international engineering and construction industries is particularly close and this is regarded as a major element in the successful positioning of DU PONT's "TYPAR" business among the world leaders in the geotextile field. Furthermore, partnerships established in this way, according to group management, are the key to acquiring firsthand knowledge of expansion opportunities for geotextiles, and identifying accurately and rapidly the specific developments which may be needed to make these possible.

The success of this philosophy is borne out by the solid growth being achieved by DU PONT's geotextile business, and the significant expansions which have taken place at the Luxembourg plant site.



"Typar" filter fabric replaces granular filters below heavy concrete blocks for the new erosion control system along the North Sea between Ringkøping and Thyboren Haven in Denmark

NICOLON BV

by
Mr. Herman Wichern
Postbox 236
7600 AE Almelo, Holland

It was in the 1950's that Nicolon, based in the traditional textile-producing area of the eastern Netherlands, made the decision to begin the manufacture of industrial textiles. These new fabrics were to be made of synthetic materials which gave them new properties: increased strength, resistance to rotting and durability.

As the Netherlands was recovering from the major floods of 1953 in the south-west delta region, Nicolon became involved in civil engineering experiments using its new nylon sandbags for use in damming off a sea-arm. This marked the beginning of a major development programme. It was not long before polymers such as polyester, polyethylene, and polypropylene were also being used. New coating and processing techniques were developed and this led to an expansion of the product range.

Nicolon is part of the Royal Ten Cate Group. In response to a changing economic climate, the Royal Ten Cate Group focused its attention on new raw materials, products and markets. With a drive for innovation the companies within the Group today often have little in common with their origins. The Group currently consists of more than twenty companies with subsidiaries and joint ventures all over the world and employs more than 4000 people. The processing

of synthetic materials is becoming increasingly important as an activity, especially within the technical division.

Nicolon is part of this technical division and has brought its offices, production and research together under the same roof in Almelo. Its production lines include some of the most modern machinery available today, which in many cases has been specially built to its own specifications. This allows technical and industrial fabrics to be produced for a wide range of end-uses. Production currently stands at millions of square metres per annum. Fabrics can also be made into finished products in its own fabricating department, equipped with a range of sewing and welding facilities.

Nicolon sells its products throughout Europe and further afield through a network of agents. The sister company, Nicolon Corporation (Norcross, Atlanta) markets a similar range of products in the United States of America.

The large-scale hydraulic engineering activities associated with the "Deltaworks" project provided the perfect test for Nicolon's geotextiles. Today, civil engineering work without geotextiles would be almost unthinkable. Nicolon has developed a series of products in this area for filtration, separation and reinforcement, while applications in hydraulic

engineering include fascine mats, retaining walls, slopes, facings and dams, soil protection, reservoirs and drainage. Well-known brand names apart from Nicolon include Armorflex, a concrete mat system for bank protection which is now also used in offshore application, Nicospan to prevent erosion in drainage ditches, and Nicotarp as an impermeable lining to canals, lakes, reservoirs, etc. Products such as Geolon and Stabilenka are used in road building for foundations, soil reinforcement and drainage. Recently, there are modern and highly innovative techniques such as Geosystems and Geocontainers for the filling, core construction and protection of banks, dikes, dams and underwater construction. Important projects have been completed in many countries.

In addition to its responsibilities for testing the quality of raw materials and finished products, the company's advanced laboratory is also heavily involved in research. This is based on the feedback from the market - and reflects the direct links between research and marketing.

Nicolon is testing fabrics in compliance with the best known industrial standards: ASTM (U.S.A.), British Standards (U.K.) and DIN (F.R.G.). Available International (ISO) standards are also used. Products are made in accordance with the guidelines which operate in particular market areas:

NORTH AMERICAN GEOSYNTHETICS SOCIETY

Following the success of Geosynthetics '89, the North American Geosynthetics Society (NAGS) has now grown to over 115 members. The chapter is actively looking at new ways in which it can increase awareness and appropriate use of geotextiles, geomembranes and related products. As part of this process, two new initiatives have been launched.

Firstly, a series of six one-day technical seminars is being organized for 1990. These seminars will all deal with the topic of "Geosynthetics in Waste Containment Systems" and will be held as follows:

Boston (U.S.A.) -	Friday, April 6, 1990
Milwaukee (U.S.A.) -	Friday, April 13, 1990
Seattle (U.S.A.) -	Friday, April 20, 1990

GRI's BIOLOGICAL STUDY

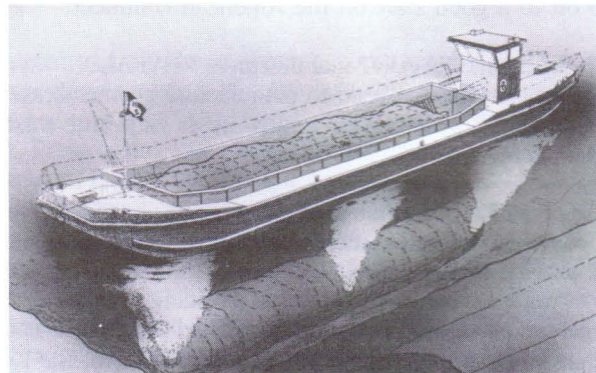
After numerous questions and comments as to the possibility of biological clogging of geosynthetics, it was felt that a concerted effort should be made in this direction. Work focuses on potential clogging of geotextiles and geonets exposed to landfill leachates and is completely field oriented. George Koerner is the project leader.

Each landfill site (currently there are six), has both anaerobic and aerobic components. For the anaerobic study, geotextiles are incubated in 55-gal drums containing leachate from the site. Specimens of each fabric are removed on a monthly basis and returned to GRI, where they are tested for permittivity, transmissivity, puncture, burst and strip tensile strength. The information is plotted and compared to the fabric's original properties. Very little change, if any, has occurred to date in either hydraulic or mechanical properties.

The aerobic study uses four 300x300x600 mm high

BAW - Karlsruhe (F.R.G.), Delft Hydraulics (Holland), BBA - British Board of Agreement (U.K.), etc. As a consequence, Nicolon is often able to offer the customer products which are not available elsewhere.

As an internationally active company, Nicolon is a member of a number of organizations including the International Geotextile Society (IGS) and the Netherlands Geotextile Organisation (NGO).



A Geocontainer: an artist's impression

Edmonton (Canada) -	Friday, April 27, 1990
Toronto (Canada) -	Friday, May 4, 1990
Montreal (Canada) -	Friday, May 11, 1990

The second is the development of Student Chapters. The objective of these chapters is to encourage education of future engineers in the use of geosynthetics. Chapters have already been formed at several universities and more are in the process of being developed. For a nominal fee, the student members of these chapters become affiliates of NAGS, obtain the voluntary services of NAGS (and hence IGS) members in presenting seminars and organizing field trips, and receive the NAGS official publication "Geotechnical Fabrics Report".

Other initiatives are currently being developed and will be reported on in future issues of IGS News.

(Reported by R. Kerry Rowe)

Drexel University, U.S.A.

boxes with a geonet, geotextile and 150 mm of Ottawa sand in each. The geotextiles are different in each box. The boxes are filled with leachate which flows vertically through the sand and geotextile and then exits horizontally from the front of the geonet. The setup is designed to simulate the primary leachate collection system of a landfill. Flow times for a given volume of leachate are measured on a monthly basis and compared to the original value. Between readings no leachate is in the boxes, i.e. the system aerobic. Preliminary results indicate that flow times increase for some of the setups.

It is envisaged that each of the six sites will be evaluated in the above manner for 12 months. Depending upon findings, the entire effort will be duplicated over a subsequent 12-month period with a biocide included in the system. A final 12-month effort will then "fine tune" the remediation method.

(Reported by Dr. R.M. Koerner)

Research Survey

IGS needs your help in identifying ongoing research in geosynthetics. The IGS Committee on Research will compile and correlate this information and will publish it in a special issue of the IGS newsletter in an effort to keep the IGS community informed. The committee will also use this compilation to stimulate discussions concerning future needs for research.

Please take a few minutes now to provide the information requested below and mail to Professor Ara Arman, Chairman of the IGS Committee on Research. If you know of others who may not be receiving IGS News but are performing research in geosynthetics, please either send their name and

address to Ara Arman or send a copy of this article to them so that they can forward information to:

Professor Ara Arman,
c/o Louisiana Transportation Research Center
4101 Gourrier Avenue
Baton Rouge, Louisiana 70808 U.S.A.

Please provide the following: title of research; principal and co-principal investigators; affiliation; address of contact person; expected date of completion of the research; and a brief abstract (not to exceed 30 words). For examples, see Vol 4, No. 3, p. 11, 1988.

Publications Recommended by IGS

Conferences Proceedings:

First International Conference

"Proceedings of the International Conference on the Use of Fabrics in Geotechnics" (Three Volumes)
to be ordered from:

ENPC, Service Formation Continue, 28 rue des Saints Pères, 75006 Paris, France

Second International Conference

"Proceedings of the Second International Conference on Geotextiles." (Four Volumes)

Price: \$72 plus postage to be ordered from:

IFAI, 345 Cedar Building, Suite 450, Saint Paul, MN 55101, U.S.A.

Third International Conference

"Proceedings of the Third International Conference on Geotextiles" (Four Volumes)

Price: US \$128 for America, 300 hfl for the rest of the world to be ordered from: IFAI (see address above), for America, or, for the rest of the world, from: BALKEMA, Postbus 1675, NL-3000 BR Rotterdam, The Netherlands

Proceedings of Geosynthetics '87

New Orleans, U.S.A. 1987

Price: US \$50 plus postage, from:

IFAI, 345 Cedar Building, Suite 450, St. Paul, MN 55101, U.S.A.

Proceedings of 1 Kongress Kunststoffe in der Geotechnik K-GEO 88

Hamburg, Germany, 1988

Price: DM105 for individuals; DM80 for members of DGE

Deutsche Gesellschaft für Erd-und Grundbau, e.V. Hohenzollernstrasse 52 D, 4300 Essen. 1, Germany

Proceedings of the Post Vienna Conference on Geotextiles

Singapore, 1988

Price: US \$50 plus postage, from:

Conference Logistics & Services, Orchard Point Post Office Box 576, Singapore 9123

Proceedings of the International Geotechnical Symposium: Theory and Practice of Earth Reinforcement

Fukuoka, Japan, 1988

Price: US \$59, 120 hfl, from:

BALKEMA, Postbus 1675, NL-3000 BR Rotterdam, The Netherlands.

Proceedings of Geosynthetics '89

San Diego, U.S.A. 1989

Price: US \$55 plus postage, from:

IFAI, 345 Cedar Building, Suite 450, St. Paul, MN 55101, U.S.A.

Publications of the IGS

The publications listed below can be ordered from:

IGS Secretariat, 51 Avenue des Cerisiers, 1040 Brussels, Belgium

Directory of Members 1988

Name, address, telephone, telex and telecopy number of all IGS members as of 30 June 1988. All IGS members should have received a free copy \$10 per additional copy for members - Price for nonmembers: \$15

Geotextile Testing Inventory 1986

A 217-page compilation of geotextile test methods used in 13 countries. Price for IGS members \$60, Price for nonmembers \$90

Symbols for Geotechnical Engineering, Geotextiles and Geomembranes

A list of symbols adopted by the IGS for the Third International Conference on Geotextiles

Free for IGS members, Not available to nonmembers

Editorial Request

Please send photos!

The value of a newsletter lies not only in the basic articles but in the presentation of useful and up-to-date information. We ask all members to provide information that they feel will be of interest to other members.

The editorial deadline for the next edition of the newsletter is 16 October 1989 - but you do not have to wait until then, avoid the rush, act now and send your information to:

Prof. R. Kerry Rowe

Editor, IGS News

Geotechnical Research Centre

The University of Western Ontario

London, Ontario N6A 5B9

Canada, Telex 064-7134, Fax (519) 661-3808

or

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