

IGS NEWS

NEWSLETTER OF THE INTERNATIONAL GEOTEXTILE SOCIETY

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MARCH 1989

The 5th International Conference: Where?

by

J-P Giroud - President of the IGS

In Canada? In Singapore? By the 31 December 1988 deadline, the IGS had received letters of intent from Canada and Singapore: in these two countries, organizing committees have been formed and are willing to prepare proposals for the organization of the Fifth International Conference on Geotextiles and Geomembranes to be held in 1994. The IGS has sent the two organizing committees instructions for preparing proposals, which include numerous requirements regarding financial guarantees, technical paper selection, benefits to IGS members, etc. These instructions, which are similar to those already used for the selection of the venues of the 3rd and 4th International Conferences, proved in the past that they could lead to excellent proposals.

This shows that the IGS is doing long-range planning and that there is consistency and continuity in the procedures used. One of my goals since the formation of the IGS has been to establish a set of rules and procedures to ensure that IGS activities and decisions will always be inspired by objectivity and a spirit of international cooperation. I believe that these rules and procedures will place the IGS on the right track and provide my successors with all appropriate means to steer our society on a safe course.

Singapore and Canada are expected to submit their proposals by June 1989. The Council will review these proposals and present its recommendation to the General Assembly regarding the venue for the Fifth International Conference on Geotextiles and Geomembranes. In 1986 three proposals were

received for the organization of the 4th International Conference and the Council recommended that the General Assembly decide by a vote between two of them.

The next General Assembly will of course take place in 1990, in The Hague, during the 4th International Conference. The IGS officers are already working on the preparation of the General Assembly, a heavy burden for the IGS Secretary. At the same time, the organizers of the 4th International Conference are working diligently, and, knowing them, we can be sure that the conference and the exhibition will be perfectly organized. However, an essential component of the success of the 4th Conference is presently in your hands: IGS members should work hard this month to submit good abstracts to the conference paper selection committee. There will certainly be many abstracts, and many good ones, submitted by those who have been actively participating in the "geoconferences" in the past decade. However, this is not enough. International Conferences on Geotextiles and Geomembranes are every IGS member's business. I am sure that many members who do not usually speak at conferences have interesting applications, tests, or concepts to present. I do encourage them to submit abstracts. The main goal of IGS, which is to exchange information, will be achieved only if IGS members from all sectors actively participate in conferences.

The IGS organizes and plans for the benefit of its members. The members in turn should actively participate. What better opportunity than the 4th International Conference?

GEOSYNTHETICS '89 - The North American Geosynthetics Society's Second Regional Conference

by

Professor R. Kerry Rowe - Editor - IGS News

Recent advances relating to the use of geotextiles, geomembranes and related products was the subject of Geosynthetics '89 held in San Diego 21-23 February 1989. Sponsored by the Industrial Fabrics Association International, under the auspices of the North American Geosynthetics Society and the International Geotextile Society, Geosynthetics '89 was attended by more than 950 individuals and 60 exhibitors. This represented a considerable increase over the 740 attendees at the first conference - Geosynthetics '87.

A total of almost fifty papers were scheduled for presentation in sessions concerned with landfills and lining systems, quality assurance and specifications, drainage and walls, embankments, foundations and railways, steep slopes, pavements, soil-geosynthetic systems, and testing. The majority of papers were presented by individuals from the consulting industry, manufacturers, or government agencies. Eight papers arose directly from university research and another seven papers represented joint efforts between

universities and industry. Ten percent of the papers originated outside North America.

Landfills and lining systems represent a major application for geosynthetics and it is not surprising that five papers dealt with this topic. These papers covered areas such as construction, drainage media, leachate leakage rates through landfill liners and the stability of soil layers on lining systems, with the latter two topics attracting particular attention from the audience. An additional four papers discussed the related issues of quality assurance and specifications.

It was rather surprising to the writer that "drainage and walls" only attracted three papers. These covered the topics of vertical drains, the use of tensile reinforcement to alleviate bridge approach settlement, and finally a parametric study using the "displacement design method" which is being proposed by a group from France.

The topic of embankments usually attracts interest and Geosynthetics '89 was no exception with six papers being presented. These ranged from some fundamental studies of the consideration of strain in the design of reinforced embankments (with comments on implications for soils susceptible to progressive failure/strain softening), and the important effects of the surface crust on the behaviour of reinforced embankments, to the use of high strength reinforcement to allow construction of a levee on a soft clay foundation.

The pavement session also attracted six papers on subjects ranging from cold climate applications such as the use of drainage wicks for the mitigation of frost effects and the use of geosynthetics to control pavement spreading in Alaska, to consideration of the influence of geotextiles on the compaction of fill and cost effective pavement design.

Three papers dealt with the behaviour of soil geosynthetic systems and included consideration of the stress-deformation response of geotextile reinforced granular structures, finite element analysis of soil-geotextile "composites" and the dynamic behaviour of saturated fiber reinforced sand.

The session on foundations and railways contained four papers which ranged from the description of a "functional approach to the design of geotextile applications" to theoretical and experimental studies of foundations reinforced by geotextiles or related products.

Five papers dealing with "steep slopes" were presented. These included two papers directed at design considerations and three papers on field applications.



Dr. J-P Giroud addresses delegates at Geosynthetics '89.



Organizing Committee of Geosynthetics '89: From left to right. R. Kerry Rowe, Bill Neal, Joe Luna, Bob Carrol, Jay Beech, Laurie Honnigford, Ted Gailer (Chairman), Joe Fluet, Steve Warner (not shown: Iraj Noorany; Neil Williams).

As is usual, the topic of "testing" attracted the most papers. Eight of these dealt with testing related to landfill applications. These ranged from a paper on an "expert-system to assess flexible membrane lining material" to the use of "microtome sections examining polyethylene geosynthetic microstructures and carbon black dispersion". Also included were papers on the effect of waste loads on geocomposites, evaluation of field welding techniques, and locating and repairing leaks (including electric leak location methods). Four papers dealt with more general testing issues including the shear resistance between cohesive soils and geogrids, evaluating degradation and durability of geotextiles and the behaviour of geogrid anchorage.

The papers presented were generally of a high quality and indicated the viability of running a balanced non-commercial regional technical conference on geosynthetics. The exhibition associated with the conference was open on Tuesday afternoon (where wine and cheese encouraged discussion and an informal atmosphere), and on Wednesday morning.

The exhibition and formal presentations were supplemented by a panel discussion on "Writing of Geosynthetics Specifications" which was organized and moderated by the President of NAGS, Mr. Joe Fluet. This interesting and well attended session aroused some good discussion from the floor in addition to the discussion by the seven panelists. The panel session was preceded by an address from the President of the IGS, Dr. J-P Giroud, who congratulated the conference organizers on their success and brought greetings on behalf of the International Geotextile Society. Dr. Giroud stressed the international character of the geosynthetics community and invited NAGS to take a leadership role. The North American Chapter held its bi-annual general meeting on Wednesday afternoon (see separate article) following the panel discussion.

The conference was organized by IFAI with a committee consisting of Jay Beech, Bob Carrol, Joe Fluet, Joe Luna, Bill Neal, Iraj Noorany, Kerry Rowe, Steve Warner and Neil Williams under the chairmanship of Ted Gailer. Laurie Honnigford of IFAI acted as General Secretary for the Conference. Apart from the obvious immediate technical benefits, Geosynthetics '89 was successful in increasing the IGS membership by about 300 members.

The conference proceedings are available from IFAI, 345 Cedar Building, Suite 450, St. Paul, MN 55101, U.S.A. for US \$55 plus postage.

1st Congress "Kunststoffe in der Geotechnik" (K-GEO 88) Revisited

**by
Professor R. Floss**

The last issue of IGS News contained a brief report on the 1st Congress "Kunststoffe in der Geotechnik", organized under the chairmanship of Prof. Dr.-Ing. Rudolf Floss of the Institute for Foundation Engineering, Soil and Rock Mechanics of the Technical University Munich, Germany, which was held on 29-30 September 1988 in Hamburg, Germany. The congress was sponsored by Deutsche Gesellschaft für Erd- und Grundbau (DGEG) of Germany, along with Österreichischer Ingenieur- und Architektenverein (ÖIAV) of Austria and Schweizerische Verband der Geotextilfachleute (SVG) of Switzerland. As indicated in the previous report, the congress was intended to provide an opportunity for an exchange of ideas and experience between engineers and the production industry in German-speaking countries. The objective of this present article is to provide additional information concerning the topics discussed in the four sessions of the congress.

The first session of the congress concerned filtration, drainage and separation with geotextiles in highway and hydraulic engineering. This session covered new ways of dimensioning and testing for geotextiles used in these applications. The main aim was to consider the influence of clogging by soil particles as a result of hydraulic and dynamic processes, as well as the effect of deformation on the mechanical and hydraulic functions of geotextiles.

The second session examined the effect of aging of geotextiles and stability problems concerning projects in which geotextile reinforcing is used. The papers covered the subject of estimating and predicting the long-term mechanical behaviour on the basis of physico-chemical changes. In addition, the results of model and large size investigations on samples reinforced with geotextiles were presented and examples of usage in highways, dams, fills, retaining walls and foundations were given. The results presented indicated the need for future research which would allow differences

between the calculated and measured load carrying capacity of a project to be eliminated.

The third session was on the usage of geotextiles for special purposes and covered a wide range of applications. The numerous developments included a new type of waterproof and drainage element in the form of a composite-geotextile as well as new methods of construction for coastal areas. The developments also extended to the use of geotextiles in the form of asphalt reinforcement and composite fabrics for earth anchors.

The last session concerned the environmental problem of waste disposal and water reservoirs. The experience gained from actual cases of waterproofing with geomembranes was reported. The primary questions raised concerned the mechanical behaviour under loading and the expected factor of safety. The related requirements for the development of testing methods were pointed out. Finally, the use of geosynthetics as drainage systems and as mechanical protection for geomembranes in the case of surface and base sealing systems was presented.

The presence of more than 300 participants underlines the need for congresses such as this. The Schweizerische Verband der Geotextilfachleute will host the 2nd Congress "Kunststoffe in der Geotechnik" (K-GEO 92) in Switzerland.

The proceedings of K-GEO 88 are available from:

Deutsche Gesellschaft für Erd- und Grundbau e.V.
Hohenzollernstrasse 52
D 4300 Essen, Telefax (0201) 78 27 43

The price of the Proceedings is DM 105 for individuals and DM 80 for members of Deutsche Gesellschaft für Erd- und Grundbau, e.V.

Symposium on the Microstructure and of Geosynthetics

**by
Dr. Ian Peggs**

Ninety-four people from as far afield as China, Poland and South Africa attended the Symposium on the Microstructure and Performance of Geosynthetics which was held in Orlando, Florida, U.S.A. on 27 January 1989. The Symposium was organized in conjunction with the meetings of ASTM (the American Society for Testing and Materials) Committee D35 on Geosynthetics and International Organization for Standardization Subcommittee on Geotextiles (ISO/TC38/SC21). The symposium was sponsored by ASTM's Geosynthetics Committee and was chaired by Dr. Ian D. Peggs of GeoSynTec, Inc.

Twelve papers were presented. They were evenly split between those which considered microstructure as related to the polymeric material itself and those which considered the voids within geotextiles to be the geosynthetic microstructure. Interesting comparisons could be made between the different methods used by different researchers to assess geosynthetic performance, and the nuances of similar methods used to assess the same (e.g. filtration) performance characteristics.

The keynote paper, presented by Dr. J. Daniel of Reemay Inc., raised the question "Is Microstructure Important to the Performance of Geosynthetics?" Depending upon one's interpretation of the word "microstructure" the answer expressed through the subsequent presentations appeared to be "Yes!" Three papers discussed thermal analytical techniques to investigate geosynthetic durability, and three discussed electron and light microscope techniques to examine cross-sections and fracture faces. Four presentations related microscopy and related imaging techniques to the determination of geotextile pore structure. One especially interesting paper examined the effect of freezing on the surfaces of geotextile fibers. All these factors were tied together by a presentation requesting that they all be carefully considered in an attempt to reliably project the service lives of the geosynthetic lining systems of hazardous waste landfills.

The proceedings of the symposium will be available as an ASTM Special Technical Publication (STP) later in the year.

First Indian Geotextiles Conference

The First Indian Geotextiles Conference was held in Bombay, India on December 8-9, 1988. Organized under the auspices of the International Geotextile Society (IGS) and the International Society for Soil Mechanics and Foundation Engineering (ISSMFE), the conference was attended by nearly 300 delegates from 12 countries. Prof. B. Nag, Director, IIT., Bombay opened the conference and Prof. D.N. Buragohain, Head, Civil Engineering Department welcomed the delegates. Dr. J-P Giroud brought greetings on behalf of the IGS.

The exhibition of geotextiles, geojute and related products involved a total of 8 booths from different countries. The exhibition was open to the public throughout the conference and a large number of attendees took the opportunity to view the range of products displayed by the manufacturers.

A special lecture on geotextile filters and a State-of-the-Art report on geosynthetics were delivered by Dr. J-P Giroud on the first and second days of the conference respectively.

A total of 61 papers were presented and discussed at the various technical sessions. The session topics were chosen to be relevant to the current areas of geotextile usage in the world and comprised: properties and laboratory evaluation, ground restraint/stabilization, reinforced soil, slope protection/erosion control, drainage and filters, special applications or problems, and a special session on geojute. The conference provided plenty of scope for interaction between the delegates both during the very lively technical sessions and the social occasions.

Activities of the Japanese Chapter of the IGS

The Japanese Chapter (JCIGS) organized a seminar which was held at the Japan Press Center Hall on Tuesday, 11 October 1988. The lectures were: "Design of Retaining Structures" by Dr. E. Leflaive (France); "Reinforced Embankments Constructed on Soft Soils" by Dr. R.K. Rowe (Canada); "Protection of Waterway Banks and Slopes" by Prof. R. Floss (West Germany); "Leakage Control Design for Lining Systems" by Dr. J-P Giroud (U.S.A.); "Geomembrane Testing" by Prof. J.M. Rigo (Belgium).

The seminar was attended by approximately 150 people including Dr. J-P Giroud, president of the IGS, Mr. Massenaux, secretary, many council members, foreign scholars who had taken part in IS Kyushu, Japanese IGS members, and researchers. Following the technical presentations, the election of Prof. Masami Fukuoka as an honorary member of the IGS was announced.

A very successful get-together, attended by the lecturers, council members and the JCIGS members, was held following the seminar.

A dinner party, attended by IGS council members and JCIGS corporate members, was held at Gakushi-Kaiken Hall.

On 12 October 1988, the IGS council members visited Kuriyama Dam of the Tokyo Electric Power Company and Nikko National Park (Toshogu Shrine) (see IGS News, Vol. 4, No. 3).



From left: Dr. J-P Giroud, the President, IGS (addressing the delegates at the First Indian Geotextile Conference), Mr. B.M. Nagporewalla, Mrs. A. Lall, Dr. J.N. Mandal, Prof. B. Nag, Dr. R.K. Katti, Mr. K.R. Datye, Prof. D.N. Buragohain.

Another highlight of the conference was a general assembly meeting for the formation of an Indian Chapter of the International Geotextile Society.

The First Indian Geotextiles Conference proved to be a great success and the organizers are to be congratulated on a job well done.

*(Reported by Dr. J.N. Mandal
Organizing Secretary)*

The Japanese Chapter held the 3rd Japanese Geotextile Symposium on 2 December 1988 at Hatsumei-Kaikan, Tokyo. Approximately 120 individuals attended to hear the presentation of 19 papers and one committee report on the classification and application of existing geotextiles. The paper topics included: reinforced retaining walls; reinforced steep and high embankments; mechanical behaviour of soil reinforced by continuous threads; dynamic behaviour of a reinforced embankment; strength and permeability of sand mixed with synthetic fibers and cement; field measurements on drainage due to a geotextile.

At the General Assembly of the Japanese Chapter it was reported that there are 108 individual members and 8 corporate members. The members of the Chapter Council are: Chairman M. Fukuoka; Advisors S. Tanaka and T. Yamanouchi; Secretary K. Iwasaki; Treasurer F. Umabayashi; Auditors S. Yamato and Y. Watari; Members T. Akagi, H. Abe, K. Kutara, K. Kumagai, K. Nakamura, Y. Nagano, S. Horiya, K. Makiuchi, S. Nishibayashi. Ohbayashi Co. is a new corporate member.

The next Japanese Symposium on Geotextiles will be held on 2 December 1989. Seminars on geotextiles will also be held in Tokyo and Osaka between 28-30 November 1989.

The ordinary General Meeting will be held in January 1990.

(Reported by M. Fukuoka and K. Iwasaki)

North American Geosynthetics Society

The North American Geosynthetics Society, NAGS, held its General Assembly as part of Geosynthetics '89 (see separate article) in San Diego, California, U.S.A. on 22 February 1989. The Society, which is the North American Chapter of the IGS, has grown rapidly over the past two years and has now over two hundred members. Mr. Joe Fluet handed over the Presidency of the Society to Prof. Bob Koerner. The executive of the Society for the next two years will consist of

Professor R. (Bob) Koerner	- President
Professor R. (Bob) Holtz	- President Elect
Mr. R. (Bob) Carrol	- Executive Vice President
Dr. Jay Beech	- Vice President
Professor R. Kerry Rowe	- Vice President
Mr. John Paulson	- Treasurer
Mr. Joe Fluet	- Past President

The Society is planning a series of regional meetings to deal with the use of geosynthetics in waste applications. Tentative plans are for six of these local meetings to be held in 1990 at the following locations: Seattle, Edmonton, Toronto, Montreal, Boston and Milwaukee.

The North American Society is planning to establish "Awards of Excellence" to recognize achievement in the field

of geosynthetics by members of NAGS. The NAGS awards are intended to complement the awards system which has recently been established by the IGS. The NAGS awards will be presented bi-annually at the NAGS regional conference and the first presentations will be made in 1991. A committee to formulate draft policies and procedures has been established under the chairmanship of Mr. Bob Carrol of the Tensar Corporation. It has been announced that the Tensar Corporation and Gundle Linings will donate funds to initiate and maintain the award. Other corporations have also been invited to contribute.

Other activities planned by NAGS include encouraging university student interest in geosynthetics by means of lectures and field trips organized by NAGS members and the provision of the Geotechnical Fabrics Report to full-time undergraduate or graduate students at a nominal cost. NAGS members interested in these activities should contact Professor Kerry Rowe of the Faculty of Engineering Science, The University of Western Ontario, London, Ontario, Canada N6A 5B9.

The next regional conference of NAGS will be held in 1991. Dr. Jay Beech of GeoServices is chairing a committee set up to identify a suitable time and location.

German Section "Synthetics in Geotechnics"

In September 1988 the German Society of Soil Mechanics and Foundation Engineering established a section "Kunststoffe in der Geotechnik", under the chairmanship of Prof. Dr. -Ing. Rudolf Floss of the Institute for Foundation Engineering, Soil and Rock Mechanics of the Technical University at Munich.

With this, the German Society institutionalizes a new field of activity, the importance of which has grown remarkably in numerous aspects of soil mechanics and foundation engineering, construction of traffic ways, environmental protection, waste disposal engineering and more. The scope of the Section will cover geotextiles, geomembranes, joint sealings, synthetic reinforcing elements and other geotechnical synthetic products.

It will be the aim of the new section to promote cooperation and communication between owners, specifiers, contractors, engineers, manufacturers and other users of synthetic products, including the collection and distribution of the results of scientific research.

The first activity of this new Section in 1988 was the First Kongress "Kunststoffe in der Geotechnik" (K-GEO 88) on September 29 and 30 at Hamburg. Membership in this Special Section is open to all interested specialists in Germany and abroad.

For further information regarding the Section call:

- German Society for Soil Mechanics and Foundation Engineering
Hohenzollernstrasse 52, D 4300 Essen 1
Telephone 49.201.782723, Telefax 49.201.782743
- Professor Dr. -Ing. R. Floss
Chairman of the Section
Institute for Foundation Engineering, Soil and Rock Mechanics
Technical University Munich
Baumbachstrasse 7, D 8000 Munchen 60
Telephone 49.89.8895-200, Telefax 49.89.834 92 91

News of Members

Milligan Awarded Engineering Honor

The Association of Professional Engineers of Ontario, Canada, has awarded Victor Milligan the 1988 Engineering Medal for Engineering Excellence. Milligan, a professional engineer and senior principal of Golder Associates of Mississauga, Ontario, received his medal November 5 at an awards ceremony in Toronto in recognition of his contributions in the geotechnical engineering area.

Milligan has helped design containment for waste dumps and environmentally hazardous mine tailings. He has worked across North and South America, Europe, the Middle East, Africa, Hong Kong and Australia.

Rollin elected Chairman of ISO Subcommittee on Geotextiles and Geotextile Related Products

Dr. André Rollin of École Polytechnique, Montreal, Canada, was unanimously elected chairman of the International Organization for Standardization's Subcommittee on Geotextiles and Geotextile Related Products (ISO/TC38/SC21) at the meeting held in Orlando, Florida, in January 1989. The British Standards Institution acted as secretariat for the subcommittee meeting which was attended by thirty-five delegates from twelve countries. The next meeting is scheduled to be held in The Hague, The Netherlands on 23-25 May 1990.

Call for Papers: 4th International Conference on Geotextiles and Geomembranes

The organizers of the 4th International Conference on Geotextiles, Geomembranes and Related Products (to be held in The Hague 27 May - 1 June 1990) have issued a call for the submission of Abstracts of original contributions. A total of 10,000 copies of the bulletin were mailed and by February 15 more than 200 people from 36 countries had requested one or more abstract forms. To date, the most popular conference theme is soil reinforcement (mentioned in 25% of the replies).

There is still time for you to submit an abstract! Abstracts should be typed on a special Abstract Reproduction Form which will be sent by the Conference Secretariat on request. Abstracts should be received by the Secretariat before 15 May 1989.

Potential authors are reminded that they should indicate the relevant Conference theme and that **only abstracts in English** will be considered.

All abstracts will be reviewed and evaluated by two members of the Scientific Committee.

The Paper Selection Committee will select 90 papers for presentation in one of the parallel sessions, 40 for presentation in poster session; 180 selected abstracts will be published as such in Vol. 1 of the Proceedings.

All authors will be notified of the decision of the Paper Selection Committee before October 1989.

The full paper of each accepted abstract should reach the Secretariat before 15 March 1990. The subject matter of the full paper should be identical with the subject matter of the accepted abstract and of the relevant presentation at the Conference.

English will be the official language for the Conference. However, there will be simultaneous translation from and into English, French and German.

The next issue of IGS News will provide details concerning the abstracts submitted, the keynote speakers and the Conference schedule. Any questions concerning the Conference and requests for abstract reproduction forms should be directed to:

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

Phone: 31.70.65 78 50; Fax: 31.70.65 58 07
Telex: 33111 (hoc NL)

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.

Fibertex Aps

by
Mr. S. Mortensen

Postbox 8029, Svendborgvej 16 DK - 9220 Aalborg Ost Denmark

Fibertex Aps is a fully owned subsidiary of the Danish East Asiatic Company. It was founded in 1968 and established in the northern part of Jutland in the surroundings of the town Aalborg.

While Fibertex Aps may be a rather small company from an international point of view, this is compensated for by being highly specialized and by utilizing very modern production equipment run 24 hours a day, 7 days a week, 48 weeks a year.

About 90 percent of the production is exported, originally mostly in Europe, but now to many other parts of the world.

For the many staff members who have been participating since the start of the company, the past twenty years have represented a period of continuous expansion. On the occasion of our 20th anniversary, Fibertex Aps announced a 50 percent increase in production capacity over the following 18 months through an investment of DKK 120 Million.

From the very beginning Fibertex Aps has been deeply involved in the development of geotextiles and in the study and promotion of the technology for using them.

The products in the Fibertex Aps range are nonwovens and the main raw material is polypropylene. The production method has been developed and refined with the aim of being as flexible as possible. Products may be adapted to each specific end-use by adjusting the mix of fibers, degree of pre-stress, and the wide range of needle-punching controls.

The Fibertex *Elephant* Geotextile range covers all the typical nonwoven applications: stabilization by separation, drainage system protection, erosion protection and prevention of reflective cracking in asphalt layers. In addition, these materials are used for membrane protection, membrane creation by bitumen impregnation, for an underlay in concrete casting and for the lining of concrete formwork.

Don and Low Limited (Geotextiles)

by
Mr. John King

St. James Rd., UK-Forfar, Angus DD8 2AL United Kingdom

Don and Low Limited produce an extensive range of woven polypropylene geotextile products sold under the tradenames Lotrak and Trammel.

Based in the traditional centre of the Scottish weaving industry in Forfar, Angus, Don and Low Limited traces its history to the late 18th century. Geotextile manufacture began in 1974 and has developed rapidly in parallel with the company's other polypropylene weaving activities.

The Geotextile Division is staffed by experienced technical and commercial personnel who provide a service to designers, specifiers and end-users of geotextile products. This level of service has proven to be of great advantage to the construction industry and has assisted in gaining acceptance of geotextile products in the marketplace.

The Lotrak woven polypropylene geotextiles have masses per unit area ranging from 90 g/m² to 1200 g/m² and tensile strengths ranging from 9 kN/m to over 300 kN/m.

In addition to plain woven geotextiles, Don and Low Limited also produce composite geotextiles which are manufactured by needle-punching staple fiber onto woven polypropylene base fabrics.

The company's Trammel fin drain system has been in use since 1976 and has been incorporated in many civil engineering projects within the United Kingdom and abroad.

Don and Low's geotextile products have been used in a number of important contracts including the Royal Navy base at Rosyth, RAF Alconbury, RAF Leeming, RAF Sculthorpe and other military establishments.

Important civilian contracts have included the A17 Long Sutton Bypass in Lincolnshire, where 135 000 m² of Lotrak 35/30 was used to resolve particular problems related to construction in the area. Other projects include the Nissan factory at Sunderland, British Nuclear Fuels Sellafield, Sizewell "B" Power Station and Stansted Airport.

Over the past few years, Don and Low have also received international recognition and success with sales to Scandinavian countries, The Netherlands, the Middle East and also



Lotrak 1 - Lotrak 35/30 used in separator and reinforcement application. A17 Long Sutton Bypass, England.

the Falklands. They have achieved their reputation by providing customers with high quality products at a cost effective price and with comprehensive service including full technical support.

Recent multi-million investment in new technology and quality will enable them to fully support this commitment to current and new customers worldwide.

Future developments include the introduction of various new distributorships in countries including Singapore, Malaysia, Hong Kong, Spain, Portugal, West Germany, Switzerland, Austria and various African countries.

Seminars on the use of geotextiles are frequently given to various local and national government authorities and an ongoing programme of training for Don and Low staff and distributors is maintained.

The company is involved in a number of geotextile research programmes with the Construction Industry Research and Information Association and various United Kingdom universities.

Don and Low Limited were the first U.K. corporate member of IGS and have supported international activities and actively encouraged the formation and development of the U.K. Chapter.

Report on the Activities of the U.K. Section of the IGS

The Meetings Programme initiated by the U.K. Section has been extremely successful so far. More than forty people attended a meeting held in Bristol, 6 December 1988, on the subject of "Fin Drains". A meeting was held at the Institution of Civil Engineers in London on 16 February 1989, where the topic was "The Use of Geotextiles in Temporary Works". There will also be a meeting in Glasgow on 19 April 1989 where the subject will be "The Use of Geotextiles in Relation to Problems Involving Mining Subsidence".

The Section is trying to start a collection of examples of geotextile usage in the U.K. It is hoped that something will be ready for publication early next year, but as yet the response has been limited. Members are encouraged to provide input to the Chairman.

*(Reported by Mr. P. Rankilor
Chairman, U.K. Section)*

Asahi Chemical Industry Co. Ltd.

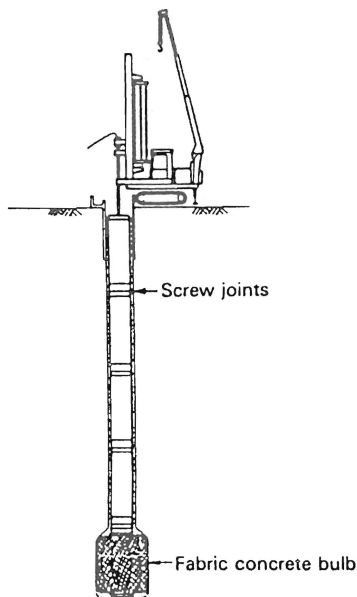
by
Mr. Sinichi Yamato

Technical Manager of Construction Materials Division Someya, Sakai machi, Ibaragi 306-04 Japan

Throughout the more than 50 years since its founding, the Asahi Chemical Industry Co. Ltd. has expanded its operations from the supply of raw materials to the development of finished products. Asahi Chemical makes full utilization of by-products and derivatives, based on the latest technology and development. Full self-sufficiency in basic production materials was established in the early 1970s, with the completion of the Mizushima petrochemical complex in Okayama Prefecture. The corporate base was further strengthened in 1982 with the absorption of Asahi-Dow Limited which had a strong complementary position in resins and plastics.

Today Asahi Chemical continues its growth with comprehensive operations and products which have become an integral part of everyday life, including synthetic fibers, industrial chemicals and petrochemicals, plastics and rubber, food products, pharmaceuticals and medical equipment, construction materials and housing, and has expanded into new, high growth areas such as biotechnology and electronics.

Over the past fiscal year, Asahi Chemical's sales increased by 5.2 percent or 47,451 million yen (US \$380 million) over the previous year, to 951,988 million yen (US \$7,616 million) with a profit of 24,418 million yen (US \$195 million). New sales of the fibers and textiles division were about US \$2,000 million.



Asahi Chemical Industry Co. Ltd. is now producing and marketing various geotextile products through both the fibers and textiles division and the construction materials division. One of these geotextiles, Fabriform, is applied for slope protection. Another special geotextile developed recently is TenacSD. This is a super-drawn material made of polyacetal, which has a diameter in the range of 0.5-2.0 mm O.D. TenacSD has the advantage of high tensile strength (greater than that of piano wire) combined with the capability of bending and folding like mild steel. A new application for geotextiles is the "City Guy" method for constructing small piles used in restricted areas (see photograph). This method is characterized by having a woven geosynthetic bulb at the tip of the pile. After placing the pile, this bulb is expanded by a cement grout thereby increasing the bearing capacity.

Asahi Chemical is active in the Japanese Chapter of the IGS and Mr. S. Yamato is on the council of the Japanese Chapter.



Fully automatic piling system "City Guy" for use in confined inner-city areas. Photo shows expanded pile base formed using a geotextile (see text).

New Corporate Member of IGS

The IGS News begins a new tradition with this issue: effective immediately, we will welcome new Corporate Members of the IGS in the issue of the IGS News after they become a Corporate Member. Thus, it is with pleasure that we welcome Texsol, a French Company, as a new Corporate Member.

Texsol develops and markets a patented material and technique based on the in situ mixing of continuous synthetic fiber and granular soil. This new composite material has high

cohesion and fairly high deformability. The Texsol material has a wide variety of applications: mainly slope protection and retaining structures, but also foundation layers under railroads and roads, protection against erosion, shock resistant structures, foundation layer on soft soil, etc. Texsol has now been used in more than 100 structures in France. There are current licensees in Japan, The Netherlands, Malaysia, Australia and soon in West Germany, the U.K. and the U.S.A.

Publications on Geotextiles and Geomembranes 1987-88

Compiled by Dr. R. Douglas

- ASTM Geotechnical Testing Journal**
Halse, Lord and Koerner. 1988. Effect of dissolved oxygen (and bubbles) on the measured permittivity of geotextiles. Vol. 11:2 (158).
- Canadian Geotechnical Journal**
Li, L. and Mitchell, R. 1988. Effects of reinforcing elements on the behavior of weakly cemented sands. Vol. 25:2 pp. 389-394.
- Geotechnical Fabrics Report**
St. Paul, Minn. Industrial Fabrics Association, International, 345 Cedar Building, Suite 450, St. Paul, Minn., USA 55101. Published bi-monthly.
- Geotextiles and Geomembranes**
Bergado, D.T., Bukkanasuta, A. and Balasubramaniam, A.S. 1987. Laboratory pull-out tests using bamboo and polymer geogrids including a case study. Vol. 5:3, pp. 153-190.
- Holtz, R.D. and Sivakugan, N. 1987. Design charts for roads with geotextiles. Vol. 5:3, pp. 191-201.
- Hausmann, M.R. 1987. Geotextiles for unpaved roads - a review of design procedures. Vol. 5:3, pp. 201-234.
- Degoutte, G. 1987. Practical examples of geotextiles used in small earth dams. Vol. 5:4, pp. 239-250.
- Valsangkar, A.J. 1987. Model tests on peat-geotextile-lightweight aggregate system. Vol. 5:4, pp. 251-260.
- Halse, Y., Koerner, R.M. and Lord, A.E. Jr. 1987. Effect of high levels of alkalinity on geotextiles. Part 1: Ca(OH)₂ solutions. Vol. 5:4, pp. 261-282.
- Van Der Sluys, L. and Dierickx, W. 1987. The applicability of Darcy's law in determining the water permeability of geotextiles. Vol. 5:4, pp. 283-300.
- Fowler, J. and Edris, E.V. Jr. 1987. Fabric reinforced embankment test section. Vol. 6:1-3, pp. 1-32.
- Koerner, R.M., Hwu, B-L and Wayne, M.H. 1987. Soft soil stabilization designs using geosynthetics. Vol. 6:1-3, pp. 33-52.
- Rowe, R.K. and Soderman, K.L. 1987. Stabilization of very soft soils using high strength geosynthetics: the role of finite element analysis. Vol. 6:1-3, pp. 53-80.
- Swan, R.H. Jr. 1987. The influence of fabric geometry on soil/geotextile shear strength. Vol. 6: 1-3, pp. 81-88.
- Ko, F.K. 1987. Seaming and joining methods. Vol. 6:1-3. pp. 93-108.
- Holtz, R.D. 1987. Preloading with prefabricated vertical strip drains. Vol. 6:1-3, pp. 109-132.
- Lord, A.E. Jr. 1987. Geosynthetic/soil studies using a geotechnical centrifuge. Vol. 6:1-3, pp. 133-156.
- Richardson, G.N. and Bove, J.A. 1987. Testing and monitoring of high strength geosynthetics. Vol. 6:1-3, pp. 157-172.
- Voskamp, W. and Risseuw, P. 1987. Method to establish the maximum allowable load under working conditions of polyester reinforcing fabrics. Vol. 6: 1-3, pp. 173-184.
- Willibey, G. and Van 'T Hoog, L.S. 1987. Design optimization of geosynthetic reinforced embankments over soft foundations. Vol. 6: 1-3, pp. 185-196.
- Myles, B. 1987. Shore line extension with high strength geotextile and ice assistance - a manufacturer's view. Vol. 6:1-3, pp. 197-210.
- Paulson, J.N. 1987. Geosynthetic material and physical properties relevant to soil reinforcement applications. Vol. 6:1-3, pp. 211-224.
- Mattox, R.M. 1987. Geogrid reinforcement for Cochrane bridge embankment. Vol. 6:1-3, pp. 225-232.
- Uibel, B.L. 1987. Overview of Wilmington harbor south project. Vol. 6:1-3, pp. 233-246.
- Mandal, J.N. 1987. Geotextiles in India. Vol. 6:4, pp. 253-274.
- Fourie, A.B. and Fabian, K.J. 1987. Laboratory determination of clay-geotextile interaction. Vol. 6:4, pp. 275-294.
- Halse, Y., Koerner, R.M. and Lord, A.E. Jr. 1987. Effect of high alkalinity levels on geotextiles. Part 2: NaOH Solution. Vol. 6: 4, pp. 295-306.
- Cooke, T.F. and Rebenfield, L. 1988. Effect of chemical composition and physical structure of geotextiles on their durability. Vol. 7:1-2, pp. 7-22.
- Leflaive, E. 1988. Durability of geotextiles: the French experience. Vol. 7:1-2, pp. 23-32.
- Murray, R.T. and Farrar, D.M. 1988. Temperature distribution in reinforced soil retaining walls. Vol. 7:1-2, pp. 33-50.
- Segrestin, P. and Jailloux, J-M. 1988. Temperature in soils and its effect on the aging of synthetic materials. Vol. 7:1-2, pp. 51-70.
- Petrik, P.M. and Baslik, R.B. 1988. Design of geotextiles reinforcing embankments with reference to long-term loading. Vol. 7:1-2, pp. 71-80.
- Jewell, R.A. and Greenwood, J.H. 1988. Long term strength and safety in steep soil slopes reinforced by polymer materials. Vol. 7:1-2, pp. 81-118.
- Rollin, A.L. and Lombard, G. 1988. Mechanisms affecting long-term filtration behavior of geotextiles. Vol. 7: 1-2, pp. 119-146.
- Koerner, R.M., Lord, A.E. Jr. and Halse, Y.H. 1988. Long-term durability and aging of geotextiles. Vol. 7:1-2, pp. 147-158.
- Indian Geotechnical Conference, Allahabad**
Gupta, K.K. and Yadav, R.K. 1988. Geosynthetics in road pavements - a critical appraisal for use in India. pp. 211-218.
- Indian Geotechnical Journal**
Rao, G.V. and Pandey, S.K. 1988. Evaluation of geotextile soil-friction. Vol. 18:1, pp. 77-105.
- Rao, G.V., Kate, J.M. and Tyagi, S.K. 1988. Evaluation of soil reinforcement friction. Vol. 18:2, pp. 154-160.
- PhD Theses**
Mohammed, M.K., 1987. A comparative study of earth reinforcing elements. PhD Thesis, University of Sheffield.
- Kwok, C.M.R. 1987. Finite element studies of reinforced embankments on soft ground. PhD Thesis, University of Sheffield.
- Proceedings: Conferences and Symposia**
First Indian Geotextile Conference. Bombay. December 8-9, 1988.
- International Geotechnical Symposium on Theory and Practice of Earth Reinforcement. Fukuoka-Kyushu, Japan. Yamanouchi, T., Mirua, N. and Ochiai, H., ed. 1987.
- NATO Advanced Research Workshop on Application of Polymeric Reinforcement in Soil Retaining Structures. Kingston, Ontario, Canada. Norwell, Md., USA: Kluwer Academic Publishers. (ISBN 90-247-3716-8)
- Symposium: Geosynthetics for Soil Improvement. Nashville, Tenn., USA: ASCE Geotechnical Division. Reported as ASCE Geotechnical Special Publication, No. 18.
- Third Canadian Symposium on Geosynthetics. Kitchener, Ontario, Canada. Canadian Geotechnical Society. October 1988.
- Miscellaneous**
Bonaparte, R. and Christopher, B.R. 1988. Design and construction of reinforced embankments over weak foundations. Symposium on Reinforced Layered Systems, Transportation Research Record 1153, Washington, D.C.
- Giroud, J-P. March-April 1988. Dai geotessili ai geosintetici: una rivoluzione nell'ingegneria geotecnica. Impermeabilizzare, Vol. 2, pp. 25-40.
- Institution of Engineers, Vadodara. 1988. Geotextile reinforced soil structures - problems and perspectives for use in India. Proc. National Seminar on Nonwovens and Geotextiles. pp. 251-269.
- Mandal, J.N. 1988. Mud plus: reinforcing mud. The Indian Architect and Builder. Vol. 1:12, pp. 62-64.
- Mandal, J.N. and Divshikar, D.G. 1988. Apparatus for testing geotextiles. The Indian Textile Journal. Vol. 98:11, pp. 174-179.
- Peggs, I.D. December 1988. Stress cracking of polyethylene geomembranes: field experience. Proceedings of the Second GRI Seminar - Aging and Durability of Geosynthetics, Philadelphia, PA.
- Timblin, L.O. Jr., Grey, P.G., Muller, B.C. and Morrison, W.R. 1988. Emergency spillways using geomembranes. Denver, Colorado, USA: US Dept. of the Interior. REC-ERC-88-1. 20 pp.

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, USA 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 DGEG
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 June 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
Mr. Silvio Tonus
Associate Editor, IGS News
Du Pont de Nemours Int. S.A.
P.O. Box 50
2, Chemin du Pavillon
CH-1218 Le Grand-Saconnex
Geneva, Switzerland
Fax (22) 885109

Officers of the IGS

Dr. Jean-Pierre Giroud (President)
GeoServices Inc.
1200 S. Federal Highway
Suite 204
Boynton Beach, FL 33435
U.S.A.

Dr. Guy Massenaux (Secretary)
EDANA
Avenue des Cerisiers, 51
1040 Brussels
Belgium

Mr. Charles Schaerer (Past-President)
Buchenweg 2
8116 Wuerenlos
Switzerland

Prof. Ir. Koos van Harten (Vice-President)
Mechanical Engineering Department
Technische Universiteit Delft
Postbus 5036
2600 GA Delft
The Netherlands

Mr. Peter E. Stevenson (Treasurer)
James River Corporation
545 North Pleasantburg Drive
Greenville, SC 29607
U.S.A.

Calendar of Events

TRI 59th Annual Conference

Washington, D.C., U.S.A.
5-6 April 1989
Contact: Textile Research Institute
P.O. Box 625, Princeton
New Jersey 08542, U.S.A.

3rd International Symposium on Numerical Models in Geomechanics

Niagara Falls, Ontario, Canada
8-11 May 1989
Contact: Prof. S. Pietruszczak
Dept. of Civil Engineering
McMaster University
Hamilton, L8S 4L7 Canada

2nd International Symposium on Environmental Geotechnology

Shanghai, China
15-17 May 1989
Contact: Prof. S. Pamukev
Dept. of Civil Engineering
Lehigh University
Bethlehem, PA 18015, U.S.A.

Short Course: "Les Géosynthétiques"

Montreal, Canada
30 May-1 June 1989
Contact: Prof. A.L. Rollin
École Polytechnique de Montréal
C.P. 6079, Succursale A
Montréal, H3C 3A7, Canada

Twelfth International Conference on Soil Mechanics and Foundation Engineering

Rio de Janeiro, Brazil
13-18 August 1989
Contact: Prof. Costa Nunes
12th ICSMFE
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

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.

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

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

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
Philadelphia, PA 19014, 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

List of Corporate Members of the IGS

AMOCO FABRICS AND FIBRES – U.S.A.
ASAHI CHEMICAL INDUSTRY CO. LTD. – JAPAN
ASSOCIATION SUISSE DES PROFESSIONNELS DE GEOTEXTILES
SWITZERLAND (ASPG-SVG) – SWITZERLAND
CHEMIE-LINZ – AUSTRIA
DON AND LOW PLC – UNITED KINGDOM
DU PONT DE NEMOURS INT. S.A. – SWITZERLAND
ENKA INDUSTRIAL SYSTEMS – THE NETHERLANDS
FIBERTEX APS – DENMARK
FRITZ LANDOLT AG – SWITZERLAND
HOECHST CELANESE CORPORATION – U.S.A.
HUESKER SYNTHETIC GMBH AND CO. – GERMANY
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
NAUE FASERTECHNIK GMBH – GERMANY
NICOLON B.V. – THE NETHERLANDS
OKASAN KOGYO CO. LTD. – JAPAN
RHONE-POULENC FIBRES – FRANCE
SANDY HILL CORPORATION – U.S.A.
TOKYU CONSTRUCTION CO. LTD. – JAPAN
N.V. UCO – 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
 c/o James River Corporation
 Route 4, Box 607
 Easley, SC 29640
 U.S.A.
 Telephone: (1.803) 240-2600
 Telex: 9102401933 Telefax: (1.803) 240-2695

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
 Telex: 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).

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.

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): _____

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