

# NEWS

The latest news magazine from the NAUE Group

Issue 31 - November 2007

## Introduction

On 1 December 2007, we shall be able to look back on 15 years of successful development at the NAUE production site in Adorf, Vogtland, Germany. After taking over the Vowetex operations in 1992, at first only nonwovens were produced at the site by a workforce of 42. In 1996, the production programme was extended to include Secudrain® and Secumat®. On 17 December 1999, the first geogrid plant was officially started up by Dr. Tassilo Lenk, district administrator for the Vogtland, Germany. The two products Secugrid® and Combigrid® developed and patented by NAUE made an enormous impact on the market for reinforcement

reasons, investments were made in two further geogrid plants and an additional bar extruder in 2005 and 2006. The number of employees in Adorf was doubled, apprentices were recruited and turnover more than tripled. We would like to take this opportunity of congratulating the site's workforce for these 15 years of successful company history and to thank them for their commitment within the NAUE group. All of us wish them continued success.

But without success (and even prohibited under a preliminary court injunction) was a campaign by one of our competitors who suggested that Secugrid®

allegedly lacked robustness when installed. Among others, the Technical University Munich and the TRI Environmental Inc. in Texas have certified on the basis of independent installation investigations that regarding robustness against damage caused during installation, results were excellent with, between 90% and 98% remaining strength. This demonstrates that Secugrid® is one of the best.

These investigations have

likewise been confirmed in practice – with to date more than 40 million square metres having been successfully installed.

As regards the expansion of our sales mar-

kets, we have succeeded in partnering with Propex Geosynthetics company as exclusive sales partners for the base reinforcement market using Secugrid® and Combigrid® in the

infrastructure sector in the USA. Propex is one of the leading suppliers of wovens, nonwovens and erosion control products worldwide and employs a large sales team in the USA. We are looking forward to our cooperation with them and are extremely optimistic that it will further increase our sales of geogrid in this region and enable us to capture shares in ever-expanding markets. The potential is enormous as still too few engineers take the benefits of using geosynthetics into consideration when planning and designing – there is still a major deficit in communication and training!

In previous editions of NAUE News, we repeatedly referred to increasing prices for crude oil. Just to remind you: In the NAUE News No. 22 from September 2004 we lamented a barrel price of 44 US\$- today we are looking at 95 US\$, with further trends indicating up to 100 US\$ per barrel! The price of oil has a major effect on our pre-products and thus on our manufacturing costs. We regret therefore that we must reckon with further price increases for the geosynthetics which however have hardly any impact on the superior cost-effectiveness of building with geosynthetics.

We would like to thank all of our employees for their dedicated performance during 2007. It is this commitment of each individual member of the

teams which allowed NAUE to increase its turnover again this year by a two-digit figure. We view 2008 with optimism

as the share of geosynthetic constructions compared to those using conventional solutions will continue to increase. But before we fully face the challenges of 2008, we would like to thank all of our customers for the confidence and trust they placed in us – something we shall continue to justify in future. We wish all of our readers a happy and peaceful Christmas with their loved ones and a great beginning to the New Year. ■

materials. Our welded geogrids, which Professor Alan McGown refers to as the Third Generation of reinforcement material after extruded and woven geogrids are excellent not only in their engineering properties and superior force-elongation ratio but also present an attractive economic solution for the customer. The multi-functional Combigrid® with its reinforcement, separation, and filtration properties all combined in one product is being more and more used. For these



## National projects

### Stabilising embankments in the Harbour-City (Hafen-City) Hamburg, Germany [Marc Iken]

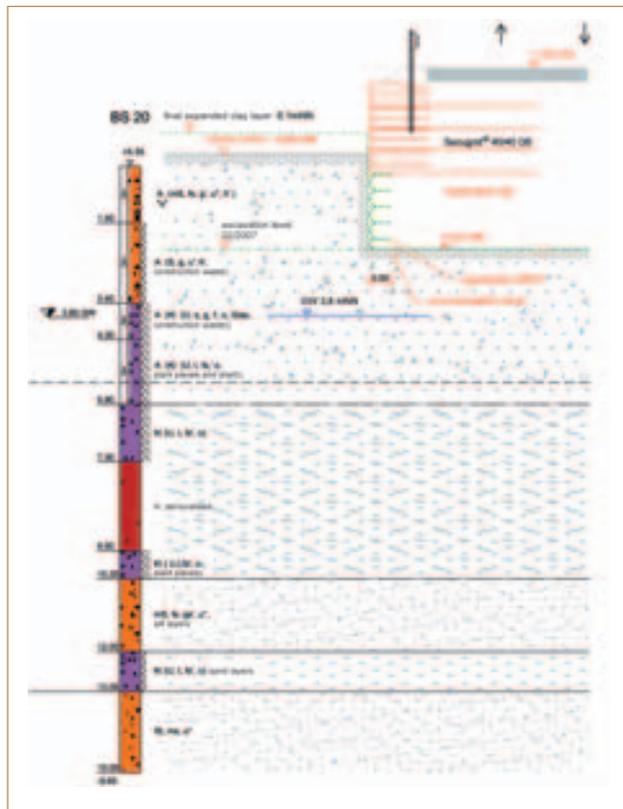
Covering an area of more than 155 hectares, the Harbour-City (Hafen-City) in Hamburg, Germany, is probably Europe's largest new municipal building project today. By approximately 2025, around 5,500 residential units, workplaces for 40,000 people, facilities for restaurants, culture, tourism and retail are planned to be constructed step by step on the former duty-free port area. Many parts of the area lie several meters below the mean sea level of + 7.50 and therefore are not safe against storm surges. The heart of the Harbour-City, the Overseas

Quarter will be secured against future flooding by means of embankments approximately 2 m high. As the old waterfront cannot be subjected to any additional loads, the embankments are being built at a distance of up to 20 metres from the quayside wall. Measures must be taken to prevent damage to the newly installed pipes or roads and neighbouring areas through subsidence. Comprehensive measures are also required to improve the foundations. When the Paulmanngarage was demolished the backfill from the former multi-storey car park and the transition areas was

deposited on to stabilised columns in order to absorb additional load (foundation concept: Steinfeld and Partner), whereby the columns grid had to be aligned to the existing founda-

tion system of wooden piles. Geogrid Secugrid® 200/40 R6 and Secugrid® 80/80 Q6 were placed above the columns to improve load distribution. The geogrid layers were placed flat without any wrap-around at the edge. The dimensioning was based on ZAESKE (2001) according to EBGE0 6.9 (2004).

In addition to the streets, three existing Baakenbridges also had to be elevated by two to three metres. After the Baakenbridge has been elevated, the heightened Versmannstreet will be stabilised for about two years during the construction works with reinforced earth. As the geosynthetics do not present any obstacles in



Temporary reinforcing of the elevation in conjunction with the "Baaken Bridge"

the foundations and do not suffer deformation through subsidence and subsequent building work, the construction does not need to be reconverted. Secugrid® 40/40 Q6 was used with the wrap-around method.

The design has proven its robustness and support the construction under low and high loads. Secugrid® geogrids in combination with the soil material play an important role in one of the most demanding and challenging projects in Europe. ■

### Outdoor facilities of supermarkets in Germany [Marc Iken]

#### LIDL supermarket, Plön, Germany:

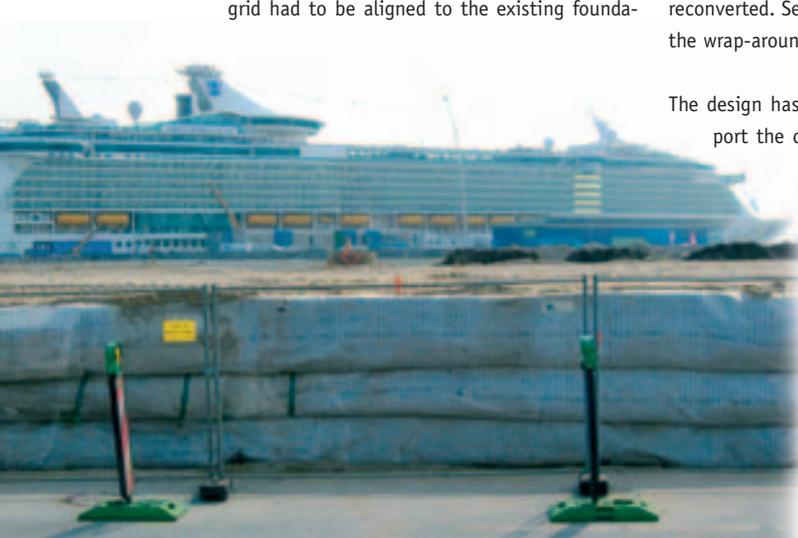
A new LIDL supermarket had to be built with crushed rock in Plön on an existing car park. The property is very well located for traffic and is on the corner of a main town road and the federal road. The soil analysis was assessed by the Geological Consultant Hempel from Dannewerk, Germany, who determined that the subsoil consisted of peat and soft clay containing sea silt. It was predicted that there would be large-scale subsidence which had to be reduced to a minimum by means of preliminary load fills. The time schedule required that the fill time be as short as possible. The client's high demands regarding the final surface were met by reinforcing the planned car park and road construction with two layers of Secugrid® geogrid. The intrinsically-rigid reinforcement layers allow the expected wheel loads to be



Secugrid® under recycled material for load distribution

evenly distributed over the entire base surface to achieve a uniformity in subsidence and to prevent the formation of rutting. The cross-section is as follows (from top to bottom): paving, underlay, base layer of recycled material (≥ 30 cm thick), Secugrid® 40/40 Q1, subgrade of recycled material (≥ 30 cm thick) and the bottom layer of Secugrid® 60/60 Q1.

The car park has in the meantime been in use for about one-and-a-half years and its predicted efficiency has been confirmed. Moreover – in one small area where no pre-load fill had been possible, the formation of ruts has been effectively prevented by the reinforcement with Secugrid®. ■



"Freedom of the Seas" at the cruise terminal in Hamburg, Germany

## International projects

### Ämmässuo landfill, Finland, quality capping with NAUE products [David Bishop]

Opened in 1987, the municipal landfill Ämmässuo in Finland extends over 50 ha, making it one of the largest in all of Scandinavia. Two

layer as well as a cover soil layer. The slope lengths vary from 75 m to 120 m and the slope angles from 8° to 18° (V:H 1:17...1:3). The angle of friction between individual geosynthetic materials and mineral layers was investigated in shear tests before the installation

mentation. Furthermore, moisture measurements were made in various depths to determine the moisture content of the mineral seal.

The Ämmässuo landfill operating authorities decided to use NAUE geosynthetic materials for both test fields, supplied by our local sales partner OY Via Pipe AB. The Niska & Nyssönen Oy company was awarded the contract for installing the cover.

To optimise transportation costs the roll length for the Secugrid® 200/40 R6 geogrid was 70 m for this project. A downhill overlap of Secugrid® geogrids to cover the 140 m long slope areas was not permissible. The solution: an hidden anchor trench at the midpoint. The first published results came from a short-term measurement (six months). These are to be viewed as preliminary for the selected Secugrid® reinforcement. On the basis of settlement and elongation measurements that have been made to date, the selected safety factor for the slope calculation can be described as sufficient. Future measurements and findings from the field tests, laboratory examinations and other evaluations will put the effectiveness of Secugrid® and the sealing system with Bentofix®, Carbofol® and Secutex® to the test. ■



Bentofix® B 5500-1:	48,100 m <sup>2</sup>
Secutex® R 1204:	78,800 m <sup>2</sup>
Secugrid® 200/40 R6:	23,000 m <sup>2</sup>
Carbofol® 406 2.5 f/f:	27,500 m <sup>2</sup>
Carbofol® 2.5 f/f:	27,700 m <sup>2</sup>

Slope reinforcement with NAUE geosynthetics



Installation of Carbofol® geomembranes

test fields were set up to find a suitable solution for the surface sealing system and future slope reinforcement. The structure of these fields consists of a mineral gas-drain layer, a mineral sealing layer, a geosynthetic clay liner, a protection geotextile, a polyester geogrid with low creep characteristics, a mineral drain

took place. Prior to installing the sealing system, calculations were performed on the basis of analytical models and an FEM program. In order to verify these calculations and obtain further information, one slope that had been reinforced with Secugrid® geogrid was monitored with settlement and elongation instru-

### Reinforced slope in Vignale (Italy) [Alessandro Lemma]

Vignale is famous for its dance festival around the ancient hilltop and the church located on the top of a hill. On the doorstep to the hill a building was substantially renovated and trans-

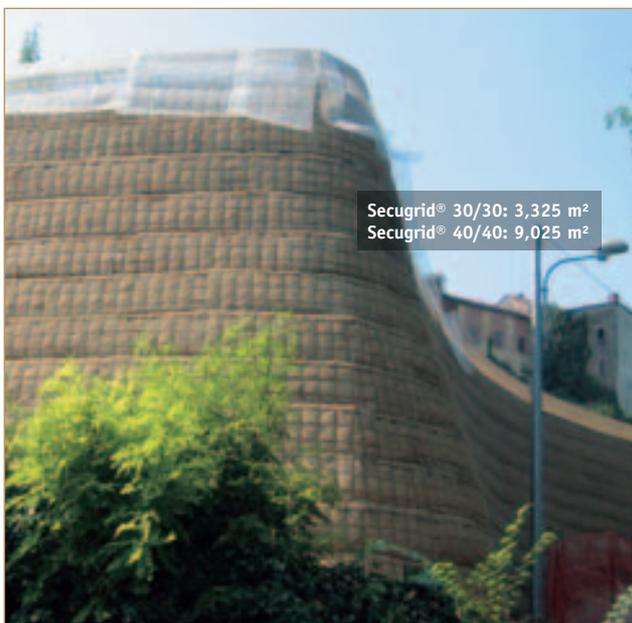
formed into a hotel. But due to the lack of leveled terrain, both the owner and designer (arch. Carlo Assandro) had to find a solution which would cause the least impact on the environment, and which at the same time, would allow them to gain a maximum of leveled terrain for recreation purposes.

After a meeting with the owner, the architect, general contractor Cavallo Company and NAUE Geosystem a design was recommended that included reinforced slopes, to ensure the internal and external stability of the construction. A main reinforced slope was created with the aim to surround the property. Additionally two smaller reinforced and rectangular slopes which are orthogonally arrayed to the main one allowed three levels of different sizes in the inner park.

The Secugrid® reinforced slope has an approximate inclination of 75°. The soil was reinforced by installing one Secugrid® geogrid layer every 60 cm. The anchorage lengths varied from 4.50 to 5.50 m. The highest reinforced structure has 15 geogrid layers. In order to obtain an even facing, wire mesh mats were used. Coconut mats between the wire mesh and soil were used to prevent soil erosion due to wind and water prior to plant growth.

Approximately 12.350 m<sup>2</sup> of geogrid layers were installed in this project. With this soil reinforcement solution it was possible to add additional area to the surrounding of the hotel and shape a suitable structure around the hotel with a cost effective budget. This additional space was filled with tennis courts, swimming pool and solariums.

This construction method based on the soil reinforcement with Secugrid® has increased the client's property value and also the recreation possibilities for the hotel. ■



Secugrid® 30/30:	3,325 m <sup>2</sup>
Secugrid® 40/40:	9,025 m <sup>2</sup>

Secugrid® reinforced slope surrounding the hotel property

## Your opinion counts!

With the distribution of the NAUE News 20, August 2003, all readers received an assessment survey for our company magazine. The feedback we received was very high and 89 % of the readers evaluated the NAUE News as a good or very good magazine and 71 % stated that the NAUE News is an important or very important information source. The readers were most interested in project and product information,

Therefore we would like you to attend in the NAUE News voting.

**For this reason please visit**  
[www.naue.com/voting-e](http://www.naue.com/voting-e)

For sure the NAUE advertisement campaign caught your attention. The main target of these advertisements was to point out the efficiency of geosynthetics and several readers called in and confirmed this. We even got telephone calls asking about the next adverts. However, now we want to pick up the idea of one customer. If you browse to the above listed website you can vote for your favourite advert. If you have new advert ideas or any other suggestions, please mail to:

**Kent von Maubeuge, [kvmaubeuge@naue.com](mailto:kvmaubeuge@naue.com)**



We are already working on new adverts for 2008 and we hope you will like them as well as the others because as stated in the foreword "applications potential is still enormous"! Unfortunately several authorities, planners and contractors have not yet discovered the possibilities of geosynthetics: more durable, eco-

logical and economical alternative to conventional construction methods. ■

## Did you know?

...that the company NAUE is now present in Atlanta, USA with a local office? This step was necessary, due to the increasing demand of our soil reinforcement geogrids Secugrid® and Combigrid®. With this step NAUE wants to be able to support their customers in a timely and technical manner and start their next strategic steps on the American continent.

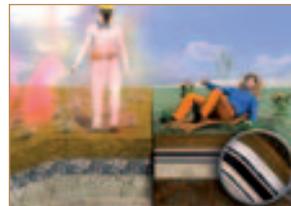
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news about exhibitions and events as well as to get the latest information from the NAUE group. 65 % of the readers wished to receive the NAUE News in future as hard copy in comparison with 30 % that would like to receive the News in electronic form. We think the time has come for a new assessment to check if the NAUE News still meets your requirements and to find out what improvements are possible.

## Have you heard?

The NAUE Group took part in the "Touring Lectures on Ground Improvement (ISSMGE) held from 30 April to 6 May 2007 in Hanoi, Ho-Chi-Min-City, Vietnam and the "16th Southeast Asia Geotechnical Conference" from 8 to 11 May 2007 in Malaysia with great success.

The conference in Malaysia which had been organised by the Institute of Engineers Malaysia (IEM) was accompanied by an exhibition and focused on civil engineering. Over 600 people attended and NAUE contributed greatly to the success of the events with two lectures and a booth. ■



## Exhibition and Seminar Schedules:

### December

- |                |   |                   |
|----------------|---|-------------------|
| 06.-07.12.2007 | International Symposium on Geotechnical Engineering, Ground Improvement and Geosynthetics for Human Security and Environmental Preservation | Bangkok, Thailand |
| 10.-14.12.2007 | 13th Asian Regional Conference on Soil Mechanics and Geotechnical Engineering   | Kolkata, India    |
| 17.-18.12.2007 | ISSMGE Touring Lecture Sri Lanka  | Sri Lanka         |

### 2008

#### January

- |                |  |                          |
|----------------|--|--------------------------|
| 03.-04.01.2008 | 38. International Hydraulics Engineering Symposium Aix-la-Chapelle (IWASA) | Aix-la-Chapelle, Germany |
| 22.-23.01.2008 | 6. Colloquium Building in Ground and Rock                                  | Ostfildern, Germany      |
| 24.01.2008     | BAUTEX 2008 trade fair   | Chemnitz, Germany        |

#### February

- |                |  |                   |
|----------------|--|-------------------|
| 07.-08.02.2008 | 24. SKZ Conference "The Safe Landfill" | Würzburg, Germany |
| 12.02.2008     | VSVI seminar                           | Münster, Germany  |
| 19.-20.02.2008 | 4. Leipzig Landfill symposium          | Leipzig, Germany  |

#### March

- |                |  |                    |
|----------------|--|--------------------|
| 02.-05.03.2008 | GeoAmericas 2008, The First Pan-American Geosynthetics Conference              | Cancun, Mexico     |
| 09.-12.03.2008 | Geocongress New Orleans  | New Orleans, USA   |
| 11.-14.03.2008 | Smagua 2008 trade fair   | Zaragoza, Spain    |
| 13.03.2008     | 15. Darmstadt geo-engineering colloquium at the Technical University Darmstadt | Darmstadt, Germany |

#### May

- |                |                      |                 |
|----------------|----------------------|-----------------|
| 05.-09.05.2008 | IFAT 2008 trade fair | Munich, Germany |
|----------------|----------------------|-----------------|

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