

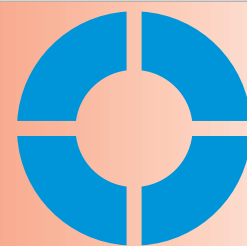


Merry Christmas !



AGRU TIMES

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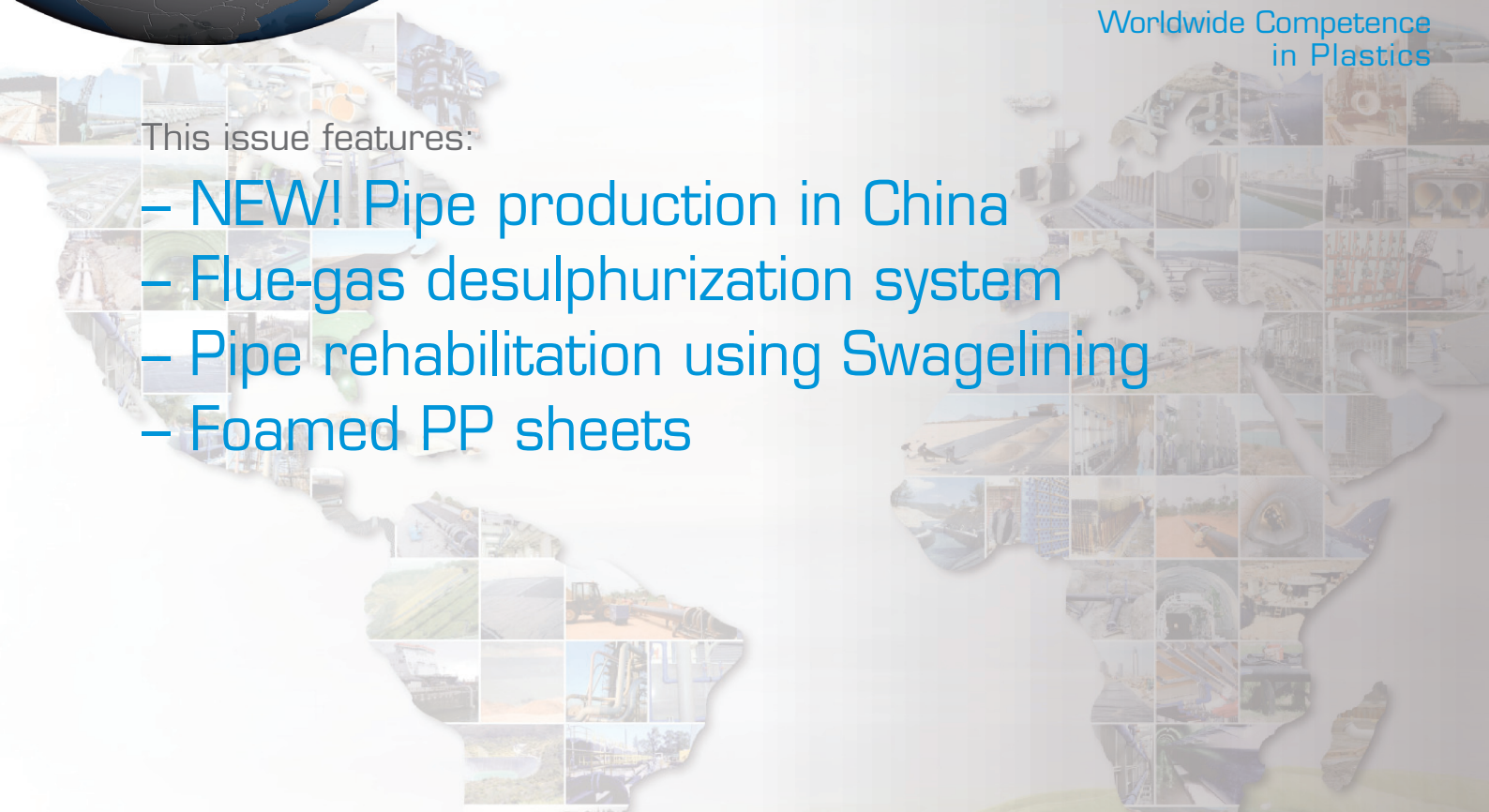


agru

Worldwide Competence
in Plastics

This issue features:

- NEW! Pipe production in China
- Flue-gas desulphurization system
- Pipe rehabilitation using Swagelining
- Foamed PP sheets



*It's Christmas time...
Time for best wishes!*

*We would not like to start the new year without expressing
our sincere thanks for your loyalty and the successful
cooperation in the past year!*

*With this in mind we would like to wish you
and your families a joyful and relaxing
Christmas time.*

*Merry Christmas
and a Happy New Year!*

The image shows a large, three-dimensional logo for 'AGRU' mounted on the roof of a modern building. The letters are blue with a metallic finish and feature small white stars. The building has a white facade with large windows that reflect the sky. The background is a clear blue sky.

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NEW! AGRU pipe production in China

1. Key figures of the new company

- ⊙ Rented property
- ⊙ 6,000 m² storage, production area & welding zone
- ⊙ 3 workshop aisles
- ⊙ Transformer station, 800 kVA capacity
- ⊙ Cooling water system consisting of: cooling tower (chiller), tank and supply system

2. Production capacity

- ⊙ PP (PP-H, PP-R, PP-B) and PE pipes OD 20 mm - 400 mm
- ⊙ Machine 1: OD 20 mm - 110 mm: maximum 250 kg/h throughput
- ⊙ Machine 2: OD 110 mm - 400 mm: maximum 500 kg/h throughput
- ⊙ Currently SDR 11 and SDR 17, later all SDR
- ⊙ Extrusion lines „Krauss-Maffei“, with the latest technology (e.g. „C5 control system“)

3. Office wing

- ⊙ Approximately 1,200 m² office area
- ⊙ 35 employees
- ⊙ Quality control of the raw material as well as the finished product (e.g. hydrostatic pressure test station for 20 °C and 95 °C)

Since the foundation of **Taicang AGRU Plastics Co. Ltd.** in 2005, a building with a storage area of approximately 1,000 m² was rented. Due to the economic upswing in recent years the management decided to expand the branch in China. As a next step a production for pipes was started. This required the move into a larger building. For several reasons this is important for AGRU and for AGRU customers:

1. Flexible production planning according to customer needs



2. Faster delivery times (Currently a container needs 7 - 8 weeks from our factory in Austria to arrive at destination AGRU China) – For many projects faster delivery times are required



Our major customers and markets

Most of our sales are generated in PP and PVDF piping components used in the photovoltaic and semiconductor industries. Well-known solar companies, companies in the semiconductor industry and in the plant engineering sector are already on our reference list.

We have also noticed a very positive development in concrete protective liners. After a cautious start in 2006, we were able to acquire some projects, such as in China's largest copper mine „Jiangxi Copper Corporation“.

Furthermore, several FGD (flue-gas desulfurization tower) projects have been carried out in cooperation with a strategic Chinese partner from Nanjing (the former capital of China). In these projects our concrete protection liners have been used. In addition, our PE natural concrete protective liners for renovation of underground concrete sewer pipes were used (e.g.: in Tianjin, a coastal city near Beijing).

The top five Chinese steel factories have been equipped with machinery from Andritz. For the use in pickling and acid regeneration plants, there have been used almost exclusively AGRU products from our branch in China.



AGRU ASIA OCEANIA SUMMIT

Due to the relocation of AGRU Taicang Plastics in China and the start of the PP pipe production a sales meeting for our representatives was organized.

On this occasion AGRU representatives from Asia, Australia and New Zealand were invited. Besides the General Manager Mr. Alois Gruber, his son Mr. Alois Gruber jun., and Technical Manager Mr. Lueghamer from Austria, 18 guests followed the invitation of AGRU China. The goal of this event was primarily

Our guests mainly focused on developing contacts, talking about projects and discussing possibilities for cooperation, not to forget that they had a lot of fun. For dinner, all participants had the opportunity to enjoy traditional Chinese food. The programme was very diverse and contained the Expo visit, a golf event and a visit to a 900 years old Chinese city called „Chinese Venice“.



to organize a social event for the participants in order to get the latest information about AGRU products and its areas of application. Furthermore AGRU Taicang Plastics was presented and the visitors got the opportunity for networking.



At the end of the summit our guests were invited to present either a special project or their own company.

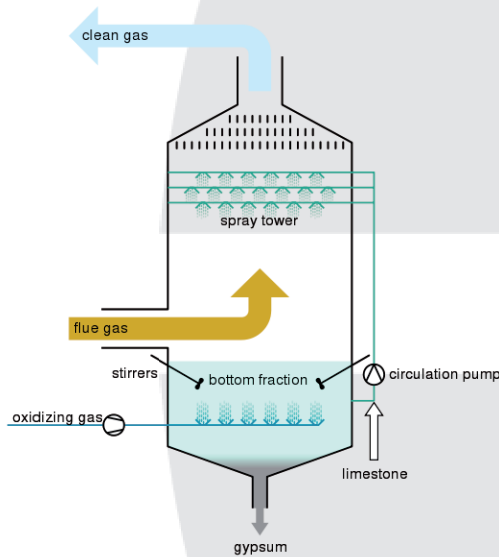


Especially the presentation about the „7 star Shangri-La“ project on the Maldives - in which AGRU products were installed - was highly appreciated, not least because of the wonderful scenery, the beautiful blue sea, and the impressive hotel.

Since this event was a great success, it is intended to be repeated on a regular basis.

Flue-gas desulphurization System

Ammonia desulphurization technology is widely used in power and waste combustion plants. People use ammonia water as a desulphurization absorbent which is mixed with the coal combustion flue-gas in the desulphurization tower (FGD for short).



The sulphite has a certain degree of corrosion property. Besides, the dust and particles in the fuel-gas cause an abrasion to the lining. So the lining of the tower must provide abrasion and corrosion resistance.

In the past people used to build the FGD towers with steel and lined with anticorrosive rubber or glass flake coating. However, in recent years a growing number of customers have started to use concrete lining with polypropylene sheets to build FGD towers since PP provides a very good chemical resistance and smooth sur-



face. AGRU's patented concrete protective liner (CPL for short) becomes a preferred choice, if the customers choose PP as lining material. There are 420 studs/m² on the liner which are extruded synchronously onto the sheets. This enables that the CPL is casted into concrete. The especially designed anchoring system provides high pull-out and over 1 bar back-pressure resistance. Moreover, each stud can withstand more than 1500 N shear force. Conventional lining methods lead to the problem of lining separation (blistering) from the tower wall. The AGRU concrete protective lining system solves that problem and ensures a high durability. ■

Customer	Size of the tower
Shan'xi Chemical Fertilizer Company	diameter 10 m, height 30 m
Shan'xi Xingping Chemical Fertilizer Company	diameter 9 m, height 30 m
Urumqi chemical fertilizer Company	diameter 10 m, height 28 m

The main advantages of liners in the flue-gas desulphurization system are:

- Corrosion and chemical resistance over a long period
- Perfect anchoring between concrete and plastic sheets
- Good impact resistance and mechanical properties
- Easy transportation, installation and maintenance
- A mature system with a large number of global references
- Economic lining system
- Compared to other lining systems, CPL has a longer lifetime
- Smooth, non-sticky surface
- Even after years of operation, there is no negative change on the surface of the liner
- Not necessary to make any surface treatment before installation
- Fast construction and easy installation



If you like to receive the entire technical essay, please contact Mr. Peter Gruber: peter.gruber@agru.at

Swagelining

Successful rehabilitation of large diameter pipeline

The municipal water supply in Baden-Württemberg (Germany) provides potable water for more than 3 million customers. Altogether, 735 km of medium-sized and large diameter pipelines are in use.



Figure 1 Swagelining tool to reduce diameter



Figure 2 Pull in of the pipeline with OD 900 mm

A pipeline from Aalen to Stuttgart, which was made of cast iron, suffered from pitting corrosion which led to increasing water losses. In 2005 an extensive programme was started to replace this pipeline.

Most of the pipes were replaced in open cut, but this was impossible in the town of Essingen where the pipeline is located in the city centre. To reduce inconveniences for inhabitants (digging-up roads, parks and gardens) and also to reduce costs a trenchless rehabilitation method was chosen. It was decided by the client and the pipe rehabilitation specialist Pfeiffer to use the well established Swagelining process for this 620 m long segment.

Rehabilitation using Swagelining

PE 100 pipes, manufactured by AGRU, with an outside diameter of 900 mm and a wall thickness of 53.3 mm (SDR 17) were used. The outside diameter is slightly larger than the inside diameter of the existing pipeline. In the beginning the PE pipes were welded together to form a continuous pipe with a length of 640 m. Then the pipe was pulled through a reduction tie, which temporarily reduced the diameter by 7 %. This process enables the liner to be pulled through the host pipe.

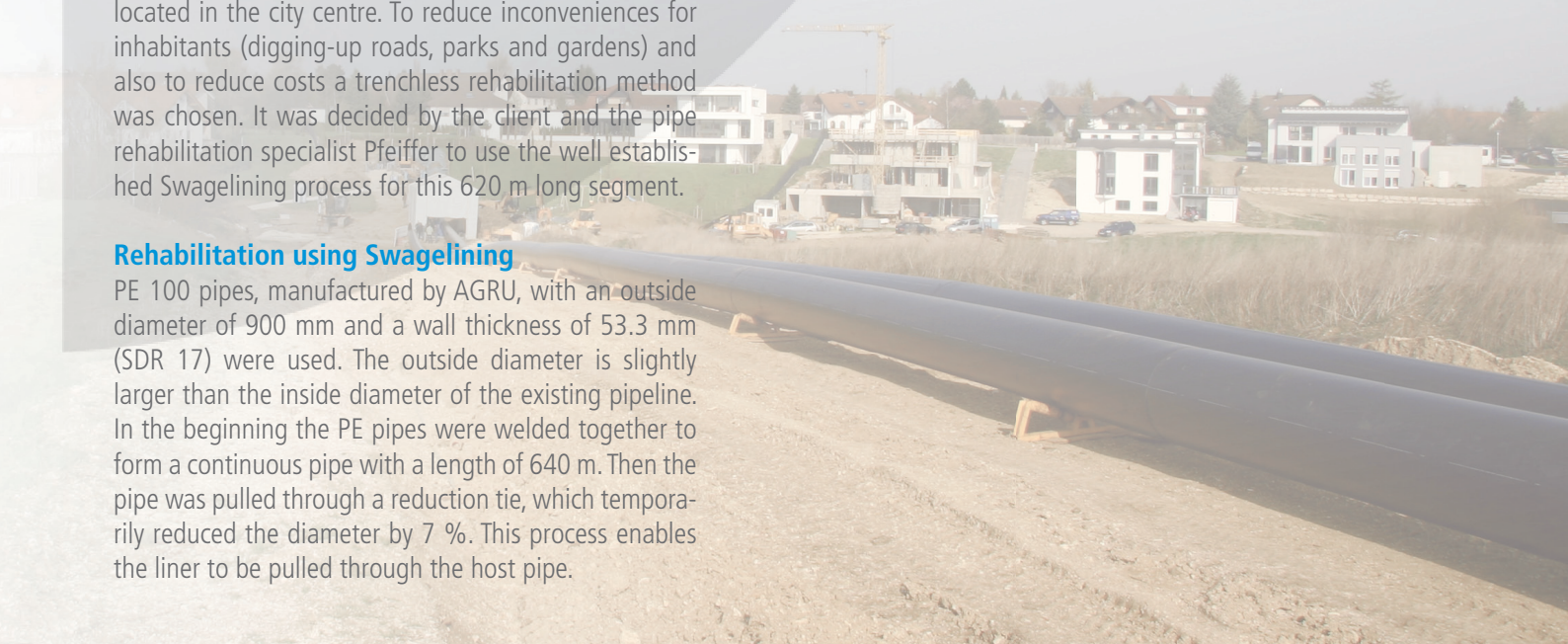
After the PE-pipe was completely positioned within the old pipe, the pulling force was removed and the liner returned to its original diameter. By doing this, a close-fit to the existing pipe was reached. The welding of the PE 100 pipe and the preparations on-site took several weeks, whereas the placing in the old pipe using Swagelining was done within one day - on April 20, 2010.

Successful completion

With the completion of this sensitive part in the city centre of Essingen, the last section of a 33 km pipeline was finished. It is now one of the backbones of the potable water supply in Baden-Württemberg. ■



Figure 3 Heated tool but welding



Products made of HDPE, PP and PVDF used in pickling plants

The company ASAS Alüminyum is one of the market leaders in Turkey for the anodisation and powder coating of aluminium profiles. Based on a fully automatic line system, annually up to 3.6 million m² of profiles can be anodised and up to 18,000 t of powder can be processed. Company Gezer Endüstri İnsaat installed piping systems and basins made of HDPE, PP and PVDF, which were provided by AGRU Kunststofftechnik GmbH. The project started in May 2009 and lasted for one year. Operating conditions in the basins are 5 % NaCl and 20 % HNO₃ at a temperature of 50 °C. The piping system transports exhaust air and oleaginous wastewater between 10 °C and 30 °C at a maximum pressure of 9 bar.

The surface pre-treatment of aluminium for anodisation and powder coating is done by pickling the metal surface via inorganic acids, which is also called pickle liquor. For this process, mainly hydrochloric acid, sulphuric acid, nitric acid, chromic acid, phosphoric acid and hydrofluoric acid are used. This etching process removes the natural oxide layer as well as impurities such as stains, inorganic contaminants and rust of the aluminium surface from ferrous metals, copper and aluminium alloys.



Due to its excellent chemical resistance against inorganic acids, thermoplastic material is frequently used for pickling processes. Sheets made of PP and PVDF are used to manufacture pickling tanks. Piping systems for process control lines made of PP and PVDF, as well as ventilation pipes out of PP, PP-s and PVDF are also installed.

The final refinement in case of anodisation is done via electrolysis. In this process, direct current anodises the material within sulfuric or oxalic acid and the top metallic surface reacts to aluminium oxide.



Furthermore, the aluminium can also be powder coated, which means that powder lacquer will be used to cover the electrostatically charged material. Then the aluminium profiles will be processed to a drier on a rail system in order to cure the powder. ■

Concrete connection socket type 2

For potable water supply and sewage piping systems it is necessary to create a leak proof connection between concrete structures and PE pipes. The main objective is to protect the potable water against pollution from the outside and to protect the soil against contamination by sewage.

The concrete connection socket type 2 ensures a watertight and secure anchoring of PE pipes in manholes and wall ducts. It is mounted aligned to the formwork and cast into concrete. A pre-assembled puddle flange is used for lining between the concrete connection socket and the concrete. Prefabricated grooves ensure secure anchoring. The concrete connection socket type 2 is joined to PE pipes by means of electrofusion welding. ■



OD [mm]	L [mm]
110	135
125	135
160	135
180	135
200	135
225	135
250	135
280	135
315	135
355	135
400	135

Foamed PP sheets

AGRU Kunststofftechnik is enlarging its supply programme for semi-finished products.

From the beginning of 2011, AGRU offers chemically foamed polypropylene sheets. These sheets have a fine, closed cell structure. Due to this structure the main mechanical properties of PP solid wall sheets stay nearly unchanged, but simultaneously a reduction of weight is achieved. The foamed PP sheets of AGRU have a compact, structured surface on both sides. The outside layers are made of PP, which is in compliance with the relevant regulations for the food and beverage industry.

Foamed PP sheets are processed in a similar way concerned to standard sheets. However, this product novelty of AGRU offers significant advantages in comparison to standard sheets. Most important is the low density, the excellent sound insulation and the low thermal conductivity. Due to the special properties, there is a wide range of applications for foamed PP sheets (packaging, automotive and furniture industry). ■



Supply programme

Colours:

white (RAL 9003)

red (RAL 3020)

blue (RAL 5020)

grey (RAL 7032)

Length x width:

2440 x 1450 mm

Thickness:

10 mm

12 mm

Other dimensions (length, width, thickness) or different colours are available on request.

Exhibition reports

By the end of the year 2010 a very successful exhibition year draws to a close. AGRU could welcome many customers and initiate new contacts.

IFAT 2010 / 13.-17. September

On the IFAT ENTSORGA 2010, the number of international visitors was highly satisfying. This year AGRU, Frank and G² were able to inform a lot of interested people about new technologies, products and its fields of application. Especially the large diameter pipe which AGRU is able to produce up to a diameter of 2,200 mm and a thickness of 150 mm was a hub for the IFAT - visitors. Furthermore, the big diameter electro fusion fittings attracted the attention of many people.

Besides the daily business there was enough time for having fun in the evenings. For Wednesday the AGRU - G² booth party was arranged. While playing table-top football the invitees cultivated friendships and had sufficient opportunities for networking. ■



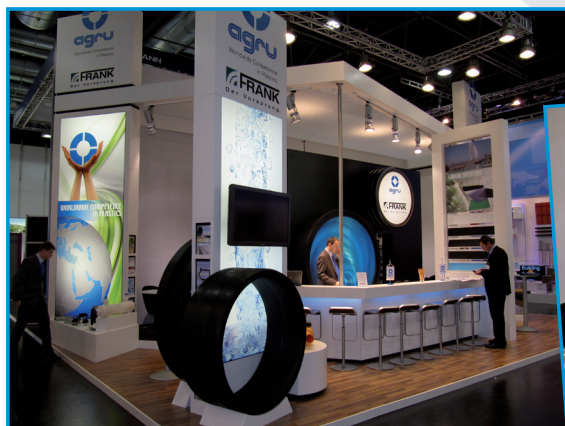
K 2010 / 25. October - 3. November

This year the K 2010 was with 19 halls and over 3,000 exhibitors of 57 countries one from the most well attended exhibitions. More than 220,000 specialist visitors from 100 countries were informed about products of the plastics industry. Besides from Europe, especially visitors from Asia and Latin America were attracted.

Apart from the conversation with customers, the contact to suppliers of raw material and machinery is of importance. The K 2010 was a good opportunity to get in touch with them.

The success of this exhibition has shown the importance of this event for the entire plastics community. ■

In hall 5, AGRU and Frank impressed with an excellent booth performance, showing highlights such as the 2 m PE pipe, large diameter electrofusion fittings and the new PVDF welding machine SP 110-B.



AGRU China

Since May 2010, Jürgen Krenn is supporting the team of AGRU Taigang Plastics in China.

He is succeeding Peter Gruber as general manager, who returns to AGRU Austria to meet new challenges.

Jürgen Krenn

China is a big market which involves big challenges and demands for AGRU and also for me. The challenge for the company is to follow up with a very dynamic and fast growing market. My own challenge is to fully meet the requirements and to steer Taicang AGRU plastics in the right direction. I already got used to my new life and job here in China and I am quite happy about the decision I made. The opportunity for further developing in an international sphere is a great chance. ■



Peter Gruber

After more than five years in China I am looking forward to the challenges back home in the head quarters. In the future I will focus on new markets and market development and I will make use of the knowledge I have learned. Working in a complex economy culture like China is a challenge and requires cosmopolitanism and tolerance. I wish Jürgen Krenn good luck for his future and I look forward to the achievements in the factory and upcoming projects. ■

New publications...

New publications...

Your request!

Please send your request for these new publications

by e-mail to our

marketing department,

Ms. Gerlinde Ganglbauer:

pr@agru.at

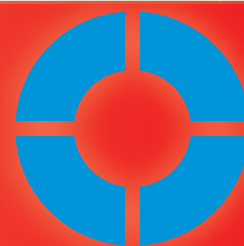


Schedule & Exhibitions

Jan 11 - 14, 2011	Infratech	Construction and infrastructure	Rotterdam / Netherland
Jan 17 - 22, 2011	BAU 2011	Architecture and building material	Munich / Germany
Jan 25 - 28, 2011	Interplastica	Plastics	Moscow / Russia
Feb 08 - 11, 2011	Middle East Electricity	Energy industry	Dubai / V. A.E.
Feb 15 - 17, 2011	Reinraum Lounge	Clean room	Karlsruhe / Germany
Feb 22 - 24, 2011	SNEC 5th international Photovoltaic Power Generation	Photovoltaic	Shanghai / China
Mar 10 - 11, 2011	3. Österr. Dachkongress	Roof	Salzburg / Austria
Mar 29 - Apr 02, 2011	Coneco	Construction	Bratislava / Slovakia
Apr 07 - 09, 2011	ITA SEE congress	Tunnel	Dubrovnik / Croatia
May 04 - 06, 2011	Interalpin	Alpine technology	Innsbruck / Austria
Jun 20 - 24, 2011	WASSER Berlin 2011	Water	Berlin / Germany

We would like to inform you about our Christmas holiday. Our office is closed from Friday, 24 December 2010 to Sunday, 02 January 2011.

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