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Issue 16

inside acat

Newspaper for customers, friends and employees

INNOVATIONS FOR PAPER PRODUCTION

Polyvinylamines
Anti Linting
Biopolymers

WINNING ENERGY OUT OF VIENNA SEWAGE SLUDGE

A Mega Project by EBS
and the Vienna City Government

ACAT SOUTH AFRICA

Applied Chemicals Anwendungstechnik
Technical Service is our Success

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EDITORIAL

Photo: Spiola

Manfred Zabl

Dear readers,

this is already the 16th issue of our company magazine and again it focuses on paper and board production, which is one of the main pillars of our business. It seems that our modest publication is very popular among an increasing number of readers. We were surprised and pleased about that and we are really motivated to continue. As we are trained technicians some articles do not read very professionally. None of us is trained as a journalist, but two times a year we are enthusiastically on board and dabble in writing to inform our readers about news and activities of our company.

The time of reading should not be a senseless time and with this in mind each issue of "inside acat" is produced. Of course, we have the advantage that there is no great need to increase reader numbers or circulation or to have better headlines than our competitors and so free from those constraints we can report on our own experiences, insights and results, which we obtain in the course of our business activities in the areas of environmental technology, industrial chemicals and paper industry. Independence and impartiality allows honest reporting, and maybe this is a pleasant contrast to most of today's media.

On the following pages you can read lots of news and interesting information about the paper and board industry, where technological development is taking giant steps forward. Rapidly changing conditions require ongoing new developments for this very ecofriendly industry. Today paper and board are virtually 100% recyclable, and the increasing series of cycles require new production technologies, to obtain the usual strength and characteristics of the final product. You will find more on this topic on the following pages.

It is surprising that public opinion still ignores the enormous efforts of the paper industry in terms of environmental friendliness and sustainability. The common opinion is, - you can read it in many e-mail attachments - that for paper-and board production trees have to die. "Printing an e-mail is killing forests" is latently suggested there.

To a large extent people of industrial countries dispose of their waste paper in waste separation systems, but they are often not aware of the fact that today this waste is the main raw material used in paper production and the main virgin fibers originate from sustainably managed forests. The extreme glorification of the e-paper, which is based predominantly on commercial grounds, is beginning to have an impact on paper consumption. That has nothing to do with environmental care, considering that compared to the recycling of electronic components the recycling of paper is very easy.

Maybe paper and board need a broader setting concerning environmental friendliness. This has already been successful in the competition with paper bags against plastic bags.

Everyone should know that he acts environmentally friendly, when he buys prints for reading books or newspapers or when he presses the button for a printout, and writing a letter or making graphs are not detrimental to the environment.

Paper is an important part of our culture and it is one of the most ecofriendly products of our civilisation. A great deal of educational work is still required in our society to lead public opinion in the right direction. I am sure, that the competent authorities will work to ensure that this will happen soon.

With this in mind, I wish our loyal readers joyful festive days and a happy, successful New Year - with increasing paper consumption.

Manfred Zabl
CEO Applied Chemicals International AG

ACAT SOUTH AFRICA

Our New Sales Office in Durban

Photo: wikipedia/PhilippN

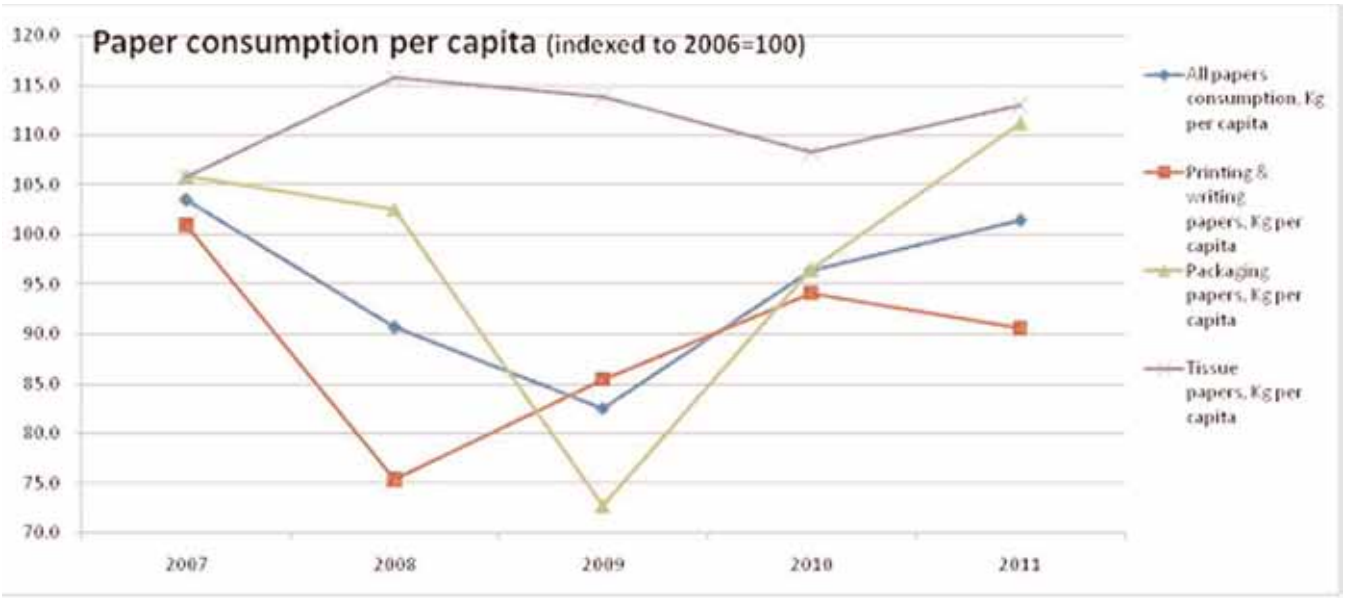
In June 2012 ACAT expanded by opening a sales office in Durban, South Africa. The ACAT ZA organisation will focus primarily on the South African Pulp and Paper Industry, with a view to expand into the environmental sector as well. Durban is ideally placed to provide a centre for the ACAT activities in South Africa.

SOUTH AFRICAN PULP AND PAPER INDUSTRY

Summary findings from 2011 production, import and export statistics

June 2012 Overview

As the worldwide recession pales, the local pulp and paper industry has settled out with some grades of paper showing small growth in demand. Selected grades of pulp, packaging and tissue are still produced sustainably in South Africa, however, with rising imports, increasing costs and global over capacity in products like newsprint; profitability and therefore the sustainability of producing certain grades in



South Africa may be a challenge going forward. Printing and writing grades are definitely under some pressure.

Please note that all graphs are indexed against 2006, which has the value of 100.The left axis is a numerical value given to a product relative to its performance in the base year of 2006.

South African consumption profile

Overall, consumption per capita has risen, driven by the increased consumption of packaging and tissue. Printing and writing grades are, however, showing the first indications of a per capita decline. The 0,86 kg/per person change is a statistically significant movement given that, generally speaking, we are no longer seeing the effects of massive stock changes related to the recession's impacts on packaging and paper. However, as South Africa's Living Standards Measure profile develops, so tissue and packaging demand should grow.

Author: Arthur Austin

Production Summary Tonnes('000)	2007	2008	2009	2010	2011
Production	(tonnes)	(tonnes)	(tonnes)	(tonnes)	(tonnes)
Printing & Writing Papers	1,132	1,066	922	939	790
Packaging Papers	1,400	1,440	1,097	1,341	1,223
Tissue Paper	195	220	224	217	219
Total Paper	2,727	2,726	2,244	2,497	2,233
Total Pulp	2,311	2,572	2,130	2,307	2,321
Imports	(tonnes)	(tonnes)	(tonnes)	(tonnes)	(tonnes)
Paper	708	666	734	753	786
Pulp	82	114	99	77	79
Value	(mill rand)	(mill rand)	(mill rand)	(mill rand)	(mill rand)
Value of Paper Production	14,911	16,533	14,237	16,377	15,859
Value of Pulp Exports	3,747	5,054	4,317	5,672	6,553
Value of Paper Exports	3,684	3,859	5,592	3,839	3,550

BONDSTAR® POLYVINYLAMINE

ACAT enriches the BondStar® series with a further innovative development of known technologies

Photo: Spiola

AUTHOR: **NURI KERMAN**

After the successful introduction of our dry strength agents based on GPAM (glyoxylated polyacrylamides) we add now two new products based on polyvinylamines (PVAm) to our portfolio of dry strength agents and additives to increase the efficiency. The products are:

BondStar® 206L und BondStar® 284L

Mainly on older types of paper machines like fourdrinier machines, top wire formers or paper machines equipped with a dandy roll they can increase the dry content and they can deliver an increase of speed of up to ten percent. This effect is mainly due to the formation of a fine flock structure which has a positive impact on the vacuum dewatering and on the dewatering behavior at the press section. In addition to the side effect of increasing strengths the efficiency of the paper machine can be improved by the reduction of web breaks.

With the application of the new products in fine papers it is possible to produce papers with higher fillers content without significant loss of strength.

With the following case study we want to discuss this advantages in more detail:

Case study: packaging paper machine:

Type of paper:
- Testliner 1-3

Paper machine:
- Top: top wire former, back: fourdrinier wire
- 170.000 t/a production
- speed 600 - 820 m/min
- 150 – 240 g/m²
- retention agent RetStar® 205P, 320 g/t

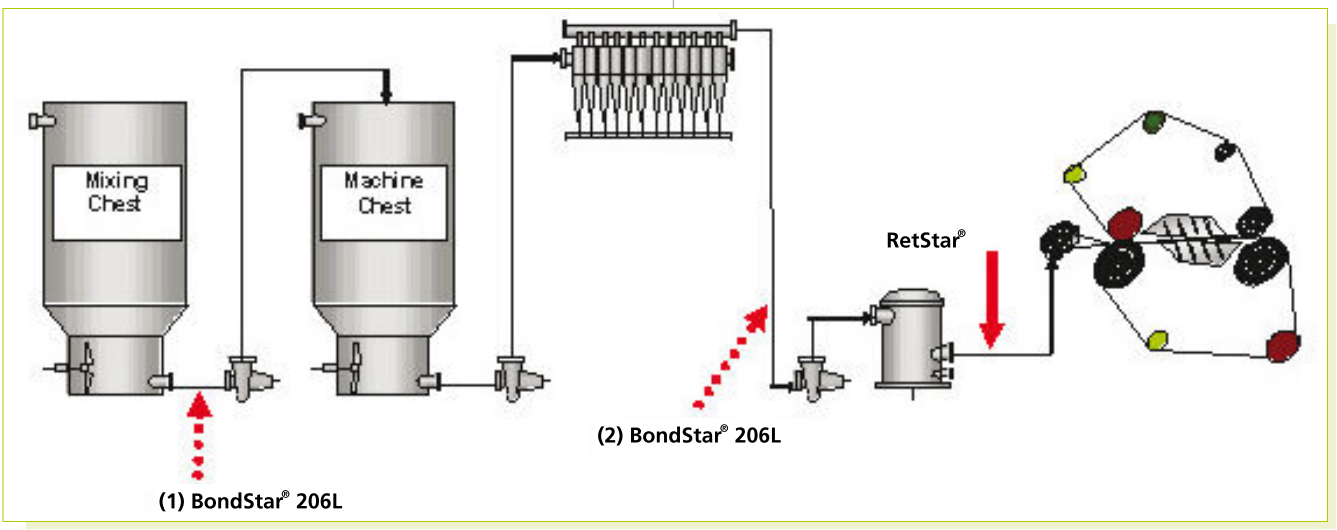
Dosing point and quantity:
- Test 1: Dosing between mixing and machine chest (high density pulp)
- Test 2: Dosing before the headbox pump (low consistency pulp)
- dosing quantity: 9,5 kg/t BondStar® 206L

Results test 1:
- increase of paper machine speed 3%
- increase of SCT: plus 15%, burst pressure: plus 17%
- reduction of retention agent 30%
- reduction of vapour 2,5%
- reduction of breaks 37 %

Results test 2:
- increase of paper machine speed 7%
- increase of SCT : plus 8%, burst pressure: plus 12%
- reduction of retention agent 50%
- reduction of vapour 4%
- reduction of breaks 26%

Conclusion:
If the focus is on the improvement of strength, it is better to dose the agent at the high density area.
If the focus is on an increase of speed, it is better to dose the agent near the head box.

To prove this in practice the staff members of the ACAT application technology department would be happy to introduce the advantages of this specific development of the already known polyvinyl technology to interested customers in laboratory and machine tests.



BIOPOLYMERS

Enhancement of strength, Anti Linting, Fixing and AS Emulsification on Biological Base in Top Quality

AUTHOR: **NURI KERMAN**

Photo: Andreas Hermsdorf/pixelio.de

Natural raw material: the biopolymers BondStar® and FixStar® are based on barley starch

For 12 months, ACAT and the Finnish company Chemigate OY have cooperated in the field of highly cationic bio-polymers based on barley starch. These are known in large parts of Europe and South Africa under their trade names BondStar® and FixStar®.

Due to their versatility, biopolymers have received greater attention in recent years. They can be used

- as a dry strength agent
- as a retention- and dewatering agent
- as a fixing agent
- for the ASA emulsification
- in water water treatment
- against dusting and linting
- to improve printing propertiesn

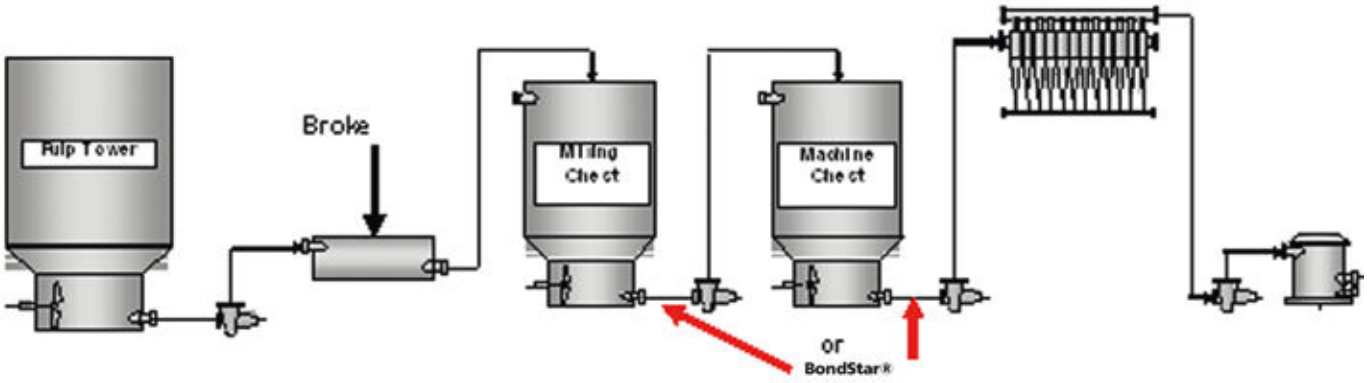
Modern large paper mills and especially smaller paper mills benefit from their use. Because of their various features producers of tissue paper can use biopolymers as a dry strength agent, as a retention- and dewatering agent, as a fixing agent as well as against dusting and linting. These examples show that with one and the same product different properties are affected simultaneously. A number of treatment plants and the storage of some chemicals are no longer necessary.

With a pump the biopolymers are dosed directly from the container or from the storage tank. In contrast to the classical cationic starch no expensive starch cooker with periphery is needed.

Biopolymers offer the following advantages:

- flexible, soft film, no fibre breakage
- reduces fines and acts as a fixing agent
- enhanced fines and filler retention without loss of strength
- higher retention of the additive
- reduced water retention compared to starch, and therefore reduced steam consumption
- increase of productivity because of higher machine speed
- increased strength in z- direction
- reduces dusting and picking
- possibility to adapt creping properties at tissues either to maximise production or to improve softness
- handling compared to cationic starch is much easier
- durability 6 to 12 month
- solids content 20 and 40%

The typical dosing points for these products are in the high-density area as shown in the figure at page 7.



Examples for the dosing of BondStar® und FixStar® at the high-density area

Case study:

Aim:

- to enhance strength of paper and to reduce dusting

Actual status:

- Tissue production 23000 t/a
- 16 - 50 g/m²
- 100% recycled fibres
- vPM: 1220 m/min

Results:

- 4 kg/t BondStar® 300L 15 vor before pump machine chest
- refining energy reduced from 40kW to 30kW for achieving the same strength
- reduced dusting at processing
- higher retention up to 25%
- steam consumption at the Yankee-dryer 6% less.

ACAT Presents Paper-Tech-Portfolio at Pap-For 2012

PAP-FOR The International Exhibition for Wood Processing, Pulp and Paper Industries - ACAT was among the exhibitors

PAP-FOR is the largest and oldest exhibition for all sectors of the paper industry - from pulp to paper processing and paper finishing. The exhibition takes place every two years and it is a meeting place for manufacturers and suppliers of papermaking equipment, chemicals, measurement equipment, and products of related industries with the manufacturers of pulp, paper and board. It has been recorded as being the most remarkable event in Russia's pulp and paper industry. The aim of the exhibition is to present the latest developments and technologies from regional and international markets.

At the booth of our sales partner, BumTechno, ACAT was one of the exhibitors at this major event in St. Petersburg. We introduced our extensive portfolio and we could strengthen our position in Eastern Europe in numerous and detailed discussions and we forged ties with a number of new clients.

ANTI LINTING

Offset linting of Newsprint and Uncoated mechanical papers has been an ongoing quality issue for many years. With the increased use of recycled deinked fibre and increased printing speeds, the issue can have a major effect on press runnability and print quality.

Photos: The faster times (1), hclp.net (1)

AUTHOR: **HOWARD JOHNSTON**

Linting is the removal of material from the surface of Newsprint and Uncoated Magazine Papers during offset printing and can result in reduced image quality and press productivity.

Piling is the term used for a build-up of ink and ink components and paper linters onto the printing blanket, and is of major concern for web printers because of the waste generated and the time taken to clean the blanket. As the material builds up on the blanket, the thickness increases in local areas and print quality will deteriorate. Generally this build-up will be in the non – image areas of the blanket and worse at the trailing edge of the solid printed areas.

Linting can be caused by a number of factors:

1. Excessive tack of the ink or blanket. This is the force exerted by the filaments of the ink film as it splits. Possible solutions to this include adjusting the ink formulation and adjusting the fountain solution by the inclusion of release agents.
2. A major source of linting is poor surface strength of the sheet allowing paper fibres and filler to be pulled from the surface of the sheet and build up on the blanket. This can be exacerbated by too high penetration of ink or water into the paper surface.

A paper with a high linting tendancy will almost certainly cause

a much higher frequency of production stops for blanket cleaning with a consequent increase in waste generated and time lost.

Typical lint reduction mechanisms in the paper mill will include:

- Adjust refining
- Remove dissolved solids
- Reduce recirculation of paper fines
- Retain ray cells more evenly throughout the sheet or improve cleaners to remove more ray cells
- Adjust drying profile

ACAT has developed a new product SizeStar® 300L to reduce the frequency of linting problems by addressing the fundamental issues of surface strength characteristics, ink and water holdout.

SizeStar® 300L is a internal sizing polymeric additive which contains a semisynthetic polymer in combination with a range of hydrophobic agents to improve the printing characteristics of Newsprint and Uncoated Magazine grades. SizeStar® 300L will give better control of sheet hydrophobicity with a subsequent improvement in offset printing performance and decreased linting and dusting.
Use of SizeStar® 300L will improve:

- Sheet smoothness
- Linting propensity
- Ink and water holdout
- Printability
- Dimensional stability
- Pressroom runnability

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Direkt angetriebene Rührwerke mit Hohlwellenmotor
- extrem präzise Wellenführung
- einfache Rührwellenmontage
- verstärkte Lagerung
- geringe Bauhöhe
- lange Lebensdauer
- Rührwellenlängen bis 8m

Direkt angetriebene Rührwerke mit Normmotor und Hülsenkupplung
- besonders Preiswert
- Verwendung eines IEC Normmotors
- lange Rührwellen möglich
- zusätzlichen Lagerung möglich

Getrieberührwerke
- mit Hohlwellengetriebemotor
- mit zusätzlicher Lagerlaterne
- mit Scheibenkupplung

Kristaller

Krählwerke
- mit Anker
- mit Fingerrührer
- mit Räumer
- mit Abstreifer

Gegenlaufrührwerke

THE FRESHWAVE-IAQ TEAM

Our Aim: The Conquest of Europe

Aldo Randisi

Theo Weinbrenner

Petra Stierli

Alex Frank

Odour neutralisation with essential oils is of great interest for the industry using Ecosorb and for the commercial application using FreshWaveIAQ. Across the structure of our company a whole host of people is responsible for the first successes.

AUTHOR: **PER BJÖÖRN**

The planned marketing strategy is that FreshWaveIAQ is mainly marketed by local distributors.

Aldo Randisi is responsible for the development and the support of the distribution network, he organises sales training and represents ACAT at European exhibitions. We intend to support these activities with an additional assistant soon. Customers also have the option to order the product under their own brand (private label).

This demands internal management of the order process, which is undertaken by **Petra Stierli**. Production and bottling take place in Scheibbs.

Theo Weinbrenner is responsible for the production and the raw material acquisition, Iris Spieler fills the bottles and labels them and **Mario Langwieser** packages the bottles and makes them ready for transport. Storekeeping and administrative issues are in the hands of **Sabine Spieler** and **Helga Rolek**. Finally the entire responsibility for the product quality lies on the shoulders of Theo Weinbrenner.

In addition to this "hands-on" activities a lot of background work has to be done , which is the foundation of the high quality of the product.

Edith Haas is responsible for supply and replenishment. As our products are used in health and in hygienic fields, our "International Business Support Team" , headed by **Alexander Frank**, assisted by **Karin Pruckmair**, has to ensure that the safety documentation on marking and labelling of the products is in accordance with the law. They are also responsible for the necessary approval procedures.

I would like to take this opportunity to thank all those involved for their unflagging efforts that have already borne fruit.

Mario Langwieser

Sabine Spieler

Helga Rolek

Karin Pruckmair

Iris Spieler

IFAT 2012: A Review of the Environmental Trade Fair - a Highlight for Application Technology

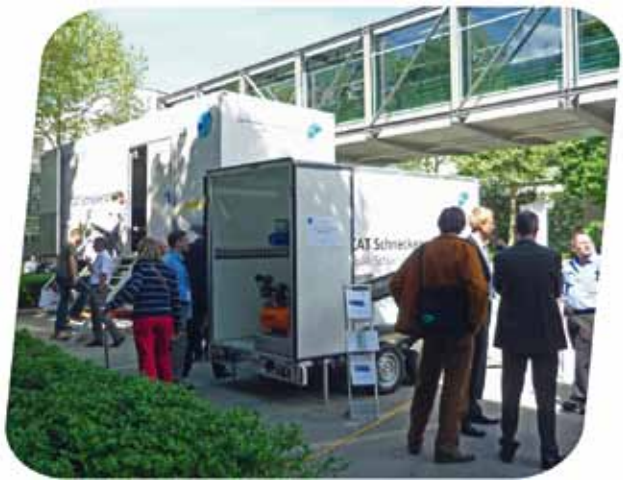
More than six months have passed since the IFAT 2012 took place in Munich, but we still notice the after-effects.

AUTHOR: **EWALD KERN**

This year some project contracts can be directly related to our presence at this exhibition and some order options are still in process. From the perspective of the plant engineering of ACAT, an essential part of this success can be ascribed to the international presentation of the ACAT screw press 505 S. In many discussions we were able to convince interested customers of our real interest concerning the development in process engineering, of the high manufacturing standard, the easy maintenance and the high quality of materials used for our products.

For the first time we also had a stand outdoors with the new ACAT screw press AS 250. Sometimes the rush of visitors was so high that despite our efforts, long queues formed, up to dimensions you normally only see at attractions like the Europa-Park in Germany.

The compact concept of the press is offered in various standard versions and it is very economical. It meets the requirements of small sewage treatment plants and so the interest of the customers was high.



Heavy influx of visitors at the ACAT outdoor stand

In the center of attention: ACAT screw press 505 S

If combined with the solar StorageDryer of Thermo System (Stuttgart) it provides an essential part of the mechanical pre-dewatering before the sludge is carried to the drying hall. This version is used by our partners worldwide.

This resonance and the already existing references for our small screw press inspires us to expect great things.

With our screw presses we also reached the German market. The combined efforts with our distribution partner "Werkstoff+Funktion (Ober-Mörlen)" at the IFAT was a success, generating many requests for demonstrations, also including important reference projects.

In addition to the presentation of our latest developments it was a pleasure for us to chat with old friends and new clients and to exchange experiences with a glass of wheat beer and some snacks.

We thank all visitors for their interest and their visit to our stand and all our ACAT colleagues for their exceptional personal commitment during IFAT. Now there is intense activity in our laboratories and at our testing plant following the motto: "stagnation is regression".

IFAT 2014 - we will definitely be there again!

A CONTAINER FULL OF TECHNOLOGY

By 2020 the Main Wastewater Treatment Plant in Vienna EBS wants to realise a project called "EOS – Energy Optimisation in Sludge Treatment". ACAT is part of it.

AUTHOR: **RONALD POELGEEST**

Currently the sludge obtained from the sewage clarification in the Main Wastewater Treatment Plant in Vienna EBS is thickened, dewatered and finally burned. But the sludge contains high amounts of organic material. For the foreseeable future it is planned to convert this material with a sewage sludge digestion in six digestion towers into methane and the obtained methane into electric power. So the EBS will be able to produce the entire energy requirement for the waste water treatment. Further benefits of this measure are to be found in the ecological sphere, where an amount of savings of approximately 40.000 tons of CO_2 equivalent is expected.

The Vienna City Council has decided to realise the project "EOS - Energy Optimisation in Sludge Treatment" by 2020.

The engineering office Dr. Lengyel ZT GmbH was entrusted with the planning of a pilot plant for the sludge digestion, which is necessary to generate new knowledge for assessing the technical details and for the optimisation of the operation. One part of the pilot plant is a sludge dewatering for the drainage of the sludge with the main focus on the digestion filtrate water (turbid water). In a separate turbid water treatment system, nitrogen is degraded in biological processes. With special procedures like deammonification it is possible to realise significant nitrogen decomposition with low energy consumption in a partly ventilated reactor.

The complete system consists of one buffer container and two turbid water containers. The turbid water is discharged directly from the sewage dewatering plant into these containers. The treatment of the turbid water is operated on the proven principle of SBR in an aeration plant. Alternately the previously aerated activated sludge is allowed to settle and the supernatant is removed.

ACAT is pleased to be entrusted with the planning, construction and startup of the compact sludge dewatering unit which is equipped with the ACAT screw press Type AS 250.

The screw press AS 250 is best suitable for this application because it is designed for a throughput of 0,3 - 1,0 m^3/h or 10-20 kg DS/h depending on the sludge quality.

The complete dewatering unit plus its associated periphery is installed within the smallest space in a container that is also suitable for winter operation.

Plant Description

With a thin sludge-eccentric screw press the digested sludge is pumped from the sludge piling containers into a mixing reactor where the sludge conditioning with an agitator takes place. Before entering the container a polymer solution is added at a special injection point.

The polymer solution is prepared in a polymer processing plant, where the concentrated liquid flocculent is diluted with water to the determined concentration. The required mixing energy is gained from a high performance mixer. The totally condi-

tioned sludge is pumped with a slight overpressure into the screw press for dewatering. The filtrate water runs into a separate filtrate storage tank and is finally pumped into the turbid water container. The dewatered sludge is conveyed with a heavy-duty piston pump through a pipe into the sludge container.

Further components of the sludge dewatering unit are: a compressor for the generation of compressed air, measuring instruments for the measurement of the water flow rate, sludge and a polymer solution, a pressure controller and some other measuring and control devices to ensure a fully automatic operation.

The entire dewatering process is regulated with a control unit operating with SPS. For the operation of the control unit a touch panel is used.
The system is designed for unattended 24- hour operation.
Because of the extremely low speed of the screw press (0,2 - 1,5 min^{-1}) the wear is reduced to a minimum.

Photo: Christine Nestler-Kenzian

ACAT Screw Press Type AS 250 including pump for dewatered sludge

ACAT is proud to make a small contribution to this pre-project, and we wish the operators lots of success for the realisation of this project!

SLUDGE DEWATERING

in the Swiss Mountains

With the order for sludge dewatering at the municipal sewage treatment plant in Engelberg, ACAT has created a reference in the center of Swiss tourism.

Photo: Berggeist007/pixelio.de

AUTHOR: **RONALD POELGEEST**

Engelberg is a municipality in the canton of Obwalden in Central Switzerland. The name of the place comes from the Benedictine monastery Engelbert founded in 1120. The village is situated on a flat high valley at an altitude of roughly 1050 m above the sea between the 3238 m high Titlis in the south and a mountain range in the north with the mountains Engelberger Rotstock, Ruchstock, Rigidalstock and the Walenstöcken rising 2800 m high. The charming village is dominated by the 2600 m high

mountain Hahnen. Today Engelberg has 4400 inhabitants, who live in a place where others spend their holidays.

In the middle of the 19th century Engelberg was discovered for tourism, which became the most important economic factor in the 20th century. With the opening of the Stansstad-Engelberg electric railway winter tourism started, which is now also a key economic factor for Engelberg.

With more than 11.000 guest beds and approximately 800.000 overnight stays Engelberg is one of the strongest tourist municipalities of Switzerland. Anyone who has spent their holidays in this region can confirm this. Due to the mixed slopes for every level of ability and the reliable snow coverage it is a very popular ski area. But also in summer one can find lots of opportunities for sporting activities like hiking and climbing - or just for relaxing. Also for adrenaline junkies it is a real paradise.

Such enthusiasm makes it difficult to devote my attention to the original topic, but in tourist regions a large amount of waste water is produced and that has to be treated.

In 1967 the first simple waste water treatment plant WWTP started operation and in 1978 the larger plan, which still exists, was put into operation.

Photo: KA Engelberg

For 45 years Engelberg has a waste water treatment plant - always according to state-of-the-art technology - that helps to keep the beautiful surrounding area clean

The screw press achieved dewatering results that the WWTP plant operator never did expect

Because of the high demands at that altitude and the steadily increasing tourism since commissioning, a value maintenance concept was developed that meets the existing financial resources of the municipality.

Since 2008 the proposed measures of planners and management have been implemented at a cost of CHF 8.300.000.

Own Power Generation and Biogas Plant

In the course of the reconstruction the WWTP was extended to a capacity of 15.000 inhabitants. Furthermore in 2010 a small-scale hydro production SHPP was built at the discharge of the WWTP for the generation of electricity from the treated waste water. The power plant has an output of 40kW. The additional costs amounted to CHF 850.000.

In 2011 the obsolete combined heat and power systems CHP was replaced by a new, more efficient system that converts the biogas produced during the sewage treatment process into electrical energy.

It is planned, that in October 2012 a small photovoltaic system will be installed on the roof of the plant. After the energetic refurbishing of the façade of the building the CHP (with 50 kW electrical power) will cover the entire heat requirement of the WWTP, so soon not a single drop of heating oil is required for the operation of the plant.

All these energy generation initiatives enable the

WWTP to generate an electrical power of 450.000 corresponding to the consumption of approximately 100 households. So WWTP can produce about 60 % more power than needed. Work started in 2008 and will be finished in 2013.

The measures for the maintenance of value also included the replacement of the existing sludge dewatering. In the course of a public tender ACAT was awarded the contract to supply and install the new sludge dewatering unit. As a preliminary, extensive dehydration tests were carried out and the results achieved by the ACAT screw press exceeded all expectations. Also the very low energy demand of the screw press fits to the environmentally friendly energy supply concept of the WWTP.

Recently the municipality of Engelberg obtained the label "Energy City", which proves that the municipality has made special efforts in environmental and energy fields.

We know that technicians arriving to support a screw press are not the target group of the local Tourist Board, but we are already looking forward to visiting WWTP Engelberg occasionally to admire the beauties of this region with its mountains, lakes, forests and willows, whilst ensuring the efficient operation of the WWTP.

Many thanks to all participants for their excellent collaboration! We really would be happy to come again.

THE APPLICATION OF DISPERSING AGENTS

ACAT distributes a number of dispersing agents from Münzing Chemie. I want to introduce some fields of application of our various products.

AUTHOR: **ALEXANDER FRANK**

First of all I want to deal with pigments and the dispersing process, primarily with the dispersion and stabilisation of the pigments in aqueous solutions. The key criteria are particle size and the specific surface of the different pigments and fillers. Some of the most important products are presented in table 1.
The dispersing process consists of three stages. First is the wetting of the pigment surface, thereby the adsorbed air is displaced from the particle surface. Then the pigment agglomerates are destroyed by mechanical shear forces. Finally, the dispersion is stabilised to prevent a further agglomeration of the particles (see table 2). For mechanical dispersion dissolvers or mills are used.

The following parameters are the decisive factors for the dispersing properties of the pigments

- density
- chemical composition

Table 1

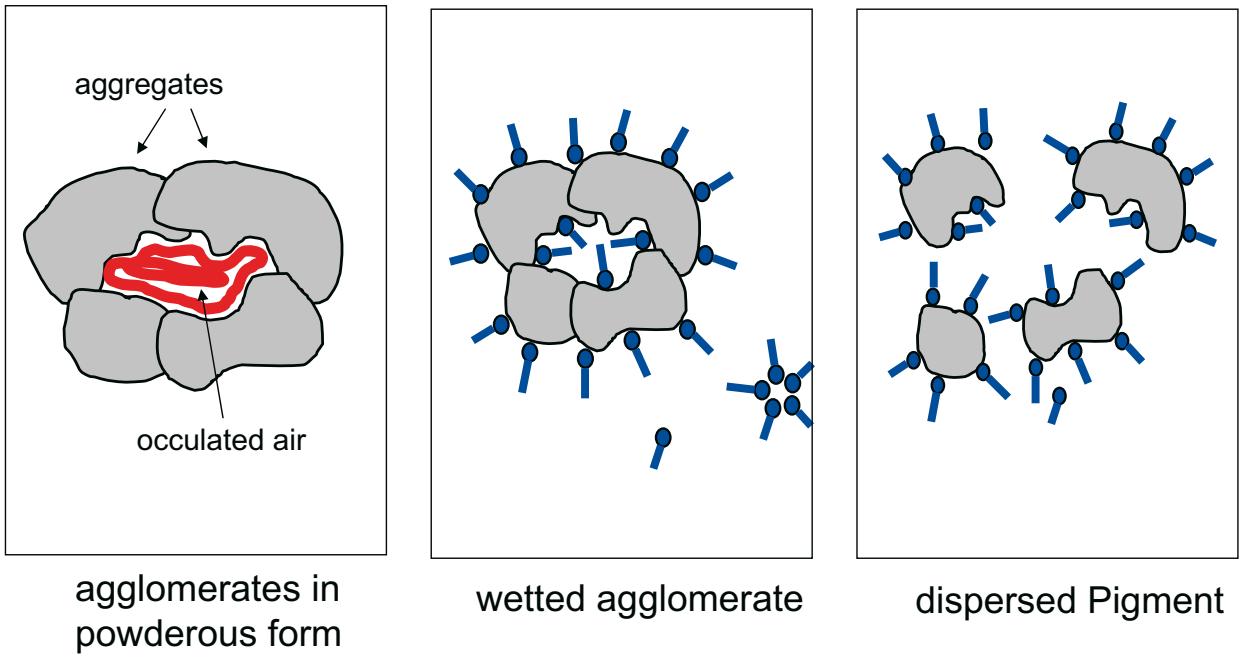
Particle sizes and surfaces

Dispersing Agents

	Particle size (µm)	Surface (m^2/g)
Inorganic Pigments and Fillers	0,3 – 5,0	5 – 20
- Calcium Carbonate		3 – 8
- Titanium Dioxide	0,3 – 1,0	8 – 15
- Standard Iron Oxide Red	0,1 – 1,0	
Organic Pigments	0,05 – 1,0	50 – 100
- Phthalo Cyanine Blue	0,06 – 0,1	30 – 120
Carbon Blacks	0,05 – 0,5	30 – 1600
- furnace black	0,05 – 0,1	15 – 50
- gas black	0,005 – 0,03	100 - 1000
Transparent inorganic pigments		
- transparent Iron Oxide Red	0,001 – 0,01	500 - 5000

Table 2

Dispersing process



- production process
- crystal structure
- size of particles
- surface treatment
- surface conditions

The dispersing agents have to meet the following requirements:

- wetting > displacement of air and humidity
- support of the grinding process > short dispersing time, optimal degree of grinding
- stabilisation of the dispersion > colour intensity, shine
- reduction of the viscosity of the grind > high charge of the pigments, viscosity
- good compatibility with resins > no flocculation or coagulation, wide range of possible applications
- no influence on coatings > water repellence, coating properties.

The stabilisation of the dispersion is based on several effects depending on the dispersion agent used. It may be either an electrostatic stabilisation, where the charge of the dispersing agent plays an essential part, or a steric stabilisation, where the chemical construction and the molecular weight of the dispersing agent are the key factors. If the wrong agent is used problems may occur:

- Bad dispersion
  - agglomerates or aggregates will remain in the colour
  - rub – out effects occur
  - a low colour intensity
- Flocculation of the already settled ground pigment
  - loss of shine, settling, bad flow behaviour
- Incompatibility of the binding agent
  - reduced covering capacity, bad flow behaviour

Our supplier Münzing Chemie, offers a large number of laboratory tests for the selection of the most suitable agent and we can offer this service also to our customers. Our sales team will be happy to advise you on the optimal use of our products.

„DAUGHTER'S DAY“ AT ACAT VIENNA

This year more than 179 companies participated in the „Daughter's Day“ in Vienna, where girls between the ages of 11 and 16 get the opportunity to gain an insight into future-oriented jobs – this year also into the ACAT office.

AUTHORS: **MAREN KIRCHNER & LAURA HORAK**
ALEXANDER FRANK (INTRODUCTION)

On 26 April 2012 „ Daughter's Day“ was held for the tenth time this year in collaboration with the Vienna Chamber of Commerce and the Vienna School Council. On this day girls between the ages of 11 and 16 get to know companies from various industries, with a focus on trade, engineering and science. Daughter's Day is designed to make young women aware of future-oriented training opportunities of non-traditional vocations, which are often better paid. In Vienna about 50% of the girls are still choosing one of the classic female professions: hairdresser, trained retail saleswoman and office clerk.

ACAT Vienna was visited by Maren Kirchner und Laura Horak (11 years). First the two girls had a guided tour through our office. Then they conducted interviews with some employees to obtain an insight into the different professions within the company.

It's great that the two girls drew up a comprehensive report at home. For reasons of space we only can give an extract of it. The complete report and the interview questions are the work of Maren Kirchner und Laura Horak only. Now it is Maren and Lauras turn:

Report ACAT-Applied Chemicals - Anwendungstechnik GmbH

What kind of company is the Applied Chemicals Anwendungstechnik GmbH??
ACAT is a Swiss company that has a worldwide presence through its own branches in Italy, Hungary, Austria, England, Singapore and South Africa.

The activities are:

1) chemicals for paper industry - worldwide
2) chemicals for sewage treatment
3) environmental, mechanical and plant engineering in Europe
4) chemicals for construction, paints and coatings

Questions for the staff:
1. What is your job at ACAT?
2. What was your job training how long was the duration of your education?
3. Why did you choose this profession?
4. What do you like most about your job?
5. How many hours a day do you work?
6. Do you like your job here?
   (Note: all of the respondents answered this question with “very good”)

Interview partner Alex Frank:
1.) I am head of the Department „Industrial Chemicals“ and I am responsible for international business, data sheets, contracts, buying and selling prices and so on.
2.) Six years HTL for Chemistry
3.) Because of personal freedom, I can organise my work on my own
4.) Because it is diversified and demanding

Interview partner Gerhard Zima:
1.) I am a sales representative for paint and coating.
2.) HTL (TGM) for technical and analytical chemistry; this is my 6th job; with every job you can learn something new.
3.) You can meet many different people, offer technical solutions, sell products and if you are successful it feels good,
4.) Flexible working hours and success

Interview partner Susanna Weinrother:
1.) I prepare invoices and I plan and coordinate the work assignment of the installers and technicians for our various projects
2.) Matura (HBLA)
3.) I have nice colleagues and my work is really varied
5.) I work 30 hours a week

Interview partner Karin Pruckmair:
1.) I am responsible for security issues
2.) Successful completion of AHS, university and a College for plastics technology (it took three and a half years)
3.) I like many things here, one of it is that I can spend much time with my children although I am working
4.) I can live out my tendency towards perfectionism
5.) I work 24 hours a week

Interview partner Michael Fuchs:
1.) I work at the Paper department and I am responsible for orders and transport.
2.) AHS (8 years) & Matura
3.) By pure chance
4.) Because my job is very diverse.

Interview partner Andreas Nikel:
1.) I am responsible for all matters concerning IT, internet connections and communication (mobile phone)

On „ Daughter's Day“ Maren Kirchner and Laura Horak (11) came to ACAT to gain knowledge about our job-life

2.) AHS Matura, self- study and practice
3.) It simply happened
4.) Because it is a job with much variety

Interview partner Christine Nestler-Kenzian:
1.) I support the CEO; make travel planning for business trips and contracts
2.) Matura at a Tourism School (at the age of 19) Following this I worked in England for one year and later I took a job at a hotel
3.) Because it is close to my home and because it is very interesting
4.) Because my job is very diverse.

Interview partner Harald Reis:
1.) I am responsible for invoices and accounting
2.) Matura, then I spent four years for studies at the Vienna University of Economics and Business Administration
3.) Because of my interest and feeling for numbers
4.) Because it is a job with much variety

We enjoyed our day at ACAT very much. It was funny and interesting, and we have talked to many nice people there. We have learned to approach others and communicate with them confidently. We had a guided tour through the laboratory and the entire company building. It was a great day with much information.

TIME IS THE BREATH OF FREEDOM

The ACAT-art calender 2013 with pictures taken by the Vorarlberg photographic artist Reinold Amann deals with time, a valuable commodity we should use effectively.

I wish you more time, because it is the breath of freedom. Hans Kruppa

AUTHOR:
GERTRUDE MITTERBÖCK

In our daily life we are rushing from one appointment to another, from one decision to the next one - we are always on the go. Since the last century the speed of our life has increased continuously, developments are going faster and faster. Wherever you may look, today`s world is loud, bright and hectic – not only in professional life, but also in private life.

Our aim should be:

FREE TIME instead of LEISURE TIME!

Let us be honest: How often do we postpone things we really want to do to a later date? Maybe because the timing is not perfect, because there is a need to consider fellow men, because…

Every single moment is life! Let us have the courage to stop. No one can halve or quarter himself. Therefore it is time to:

STOP the world, RELAX!
Slow down and concentrate on yourself.
Do nothing at all.
Turn your gaze inward for a while; hear, say and see nothing.
Find peace, learn to relax, rediscover the pleasure of

slowness, and take some breaks.
Just be yourself, here and now
Slow down and enjoy, close your eyes, relax your mind and imagine you are lying on a meadow.
Dream, build castles in the air where you have a carte blanche and receive new impetus
In the times in which we live it is certainly not as easy as it sounds. But let us try it, now!!
Slow down your speed of life, enjoy the moment and try to stop sometimes. We have so much time: 24 hours a day. That is a whole day for a lot of chances for new discoveries. Each single moment offers the chance to improve your life.

It`s up to us to spend time well. LESS IS MORE! Let us have a break now: we need interruptions, breaks and rests sometimes.

PEACE…..SILENCE Although I longed for peace, silence….but after some time of resting I thought:" isn't it a little bit strange? Nobody wants something"? At the beginning it was not easy for me to turn inside, the silence was not easy to bear. It was hard for me to slow down, but it was worth doing it.

SLOWING DOWN

Learn to defeat speed with slowness. In 1979 Jürgen von Scheidt introduced the term" slowing down", but the idea is much older and can be traced back at least to the 19th century.

To counteract speed in professional and private life means to slow down and to make room for more slowness in you daily life.

The slogan for 2013 will be: "To slow down"!

With the photographs taken by the Vorarlberger Reinold Amann we would like to seduce, motivate and remind you of it.

Mix DOING and DOING NOTHING and you spend your life in happiness . (Russia)

ACAT - SPONSORING

HEINZ JÜRGEN RESSAR - AN IRONMAN FOR THE "HERZKINDER"

The motto of the life of the Klagenfurt paper engineer Heinz Jürgen Ressar is: "no limits", in the true sense of the word. As a specialist for ultra-distances and as a visionary serving the good cause, he overcomes his personal limits every day.

Why does he do that? Long distance triathlons, 24-hour race, 48-hour race, 100-hours race, ultra mountain runs and so on. There is no distance that he has not overcome to date. Is it addiction, insanity or madness?
"Certainly, it is none of it. It is only the feeling to overcome my own limitations that strives me to achieve exceptional peak performances, which sometimes are also astonishing for me" Heinz Jürgen Ressar says.

The extreme athlete knows that in a time that automates us and that facilitates our life to a large extend some performances are perceived to be superhuman. "I take up this perception and try to convince my admirers that with perseverance and endurance it is possible to achieve performances they never dared to dream of. Within all of us there is ambition. The whole trick is to waken it, and that is what I myself practice every day.

Is it a kind of self-realisation trip that urges Ressar? Not at all! This man wants to be an example for others to become active – also for the good cause.
"With my performances I try to call attention to various issues and I want to encourage people to stand behind a cause, not only as a donor, but also as an active member. Years ago Heinz Jürgen Ressar himself had a serious tumour, so he knows what he is talking about: "The sense of my extreme sports activities is to convince people to dare something. Physical and mental extreme situations combined with benefit always show that there are "no limits". Next time he will prove this is in August 2013 when he will participate in the " Calling31", a charity run for the „Herzkinder Österreich", where 31 ironmen start within 31 days. All together they swimm a total of 117,8 km, cycle a total of 5580 km and run a total of 1308,2 km. Supported by ACAT the Klagenfurt ironman will be one of them.

Photo: privat

The sporting career of Heinz Jürgen Ressar
(Full-time job: a paper engineer - shift worker, father of a family, three daughters)

- *Football (SV Haka Küchen Traun and SV Wartberg/Krems*
- *A total of 67 marathons*
- *3 long-distance duathlons (in Zofingen and Weyer)*
- *6 long-distace triathlons (3.8km/180/42)*
- *6 ultra montain races*
- *1 12-hour race (Grieskirchen)*
- *4 24-hour races*
- *1 48-hour race (charity run, Trauner Stadion)*
- *1 100-hour race (charity run , Oedtersee Traun)*
- *56 marathons in 56 Tagen (Traun)*
- *5 1oo km race (Steyr)*
- *1 gigathlon (Switzerland)*
- *cycling tour for the „Herzkinder Österreich" (nonstop: 4 days, 7 hours)*

The total receipt of the charity runs: 70000 Euro

ACAT promotes the young kickers from TSV 1898 OPPURG e.V.

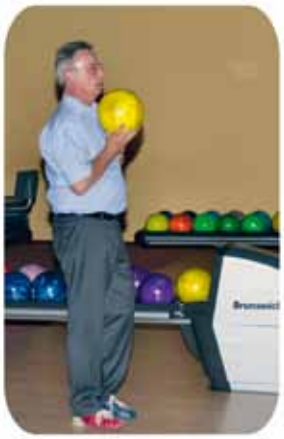
ACAT puts great emphasis on sporting activities. Whenever it comes to encouraging young people in sporting activities we always are happy to support them – the TSV 1898 OPPURG e.V. is a club we have sponsored.

ACAT is a socially committed company without any barriers and when Mrs. Daniela Müller, a laboratory assistant at the Jass Schwarza GmbH, asked me for a sponsorship for a junior football team, I was hooked immediately to support it.
I know from my own active career as a football player that it is difficult to find sponsors. The financial situation of clubs is usually difficult. Most clubs would not work without sponsors and volunteers.
But it is very important to entice young people away from the street. In a club membership and team spirit are encouraged. Although it was only a drop in the bucket, for me it was a matter close to my heart and we agreed to support the C-Juniors of the TSV 1898 OPPURG e.V with the donation of new tracksuits. We wish the young people much success!

Nuri Kerman

ACAT - SIDE GLANCES

European Sales Meeting: ACAT - Always in Motion!



From 3 to 5 September 20 employees and partners from all over Europe met in Vienna for the traditional European Sales Meeting.

At this year's sales meeting in Vienna a positive forecasts regarding sales and business development for the current calendar year could be announced. The past years were hard for CEO Manfred Zabl and no one had a cushy job at ACAT. Nevertheless together we achieved a notable success. At the Skyline Bowling Center in Auhof a few of us drank a toast to the success and made future plans, the others were tirelessly in motion...

ACAT - SIDE GLANCES

Two Couples had the Heart to do it – They Married

On 10 August 2012 Rahima Schostal und Andreas Nerival said 'Yes' to each other.
The wedding took place in the small romantic Laurenzikirche in Markersdorf (Lower Austria). The bridal couple celebrated the wedding with family members, friends, colleagues and Rahima`s son Dowsen.
We cordially wish the new family all the best for their future together !

On 30 June 2012 the fondest wish of Anabela Tujkics came true: in Marienpfarre in Vienna Hernals she married her Denis. At the beginning of the wedding ceremony she was very nervous, but the bride's father Mato led her to the altar with a calm hand, where was Denis already waiting. 260 guests coming from all over the world celebrated the wedding with the young couple until four o`clock in the morning. The beautiful photos showing the couple in front of Schloss Schönbrunn will be a marvelous memory of this unforgettable day forever.

ANNIVERSARIES

Keep on smiling: 10 Years Gabi Szabolics

We congratulate Mrs. Gabi Szabolics for being a member of ACAT Budapest team for ten years.

Gabi joined us at a very difficult time and helped to ensure the success of the ACAT Budapest team.

Gabi is always friendly and even in times of great stress she finds time for a smile.

For relaxation after a hard working day Gabi likes to go hiking and to have picnic, and in winter she likes to go skiing.

We wish for Gabi to keep well and fit and we hope she will be a member of our team for at least another ten years.

Michael Rieger: 10 Years – Always 100%

A locksmith training, HTL for Mechanical Engineering in evening class, some years of planning for a renowned engineering office for agricultural engineering and water management, the ability to work under pressure and enthusiasm: the ideal candidate for an ACAT project manager has a name - Michael Rieger. The unique combination of training and expertise makes him particularly valuable for our company. He meets the job requirements including the implementation of complex projects from the very beginning of planning to the handover of the plant to the client. Michael Rieger is an engineer with heart and soul and he is the epitome of reliability, at work as well as head of a family. That´s why he likes to spend his free time with his wife Barbara, his son and his two daughters. It sounds like an idealisation, but that´s what Michael is. Dear Michael, thanks for your great commitment during the last ten years for the ACAT team!

Harald Reis: 15 Years Backstage Management and Administration

For our customer-orientated company we need first-class servicing and sales teams, but this is not enough. Backstage we need efficient accounting, IT-supported order processing, banking, ISO certifications, statistical evaluation and support and training of our employees in IT, tax audits, handling of all legal issues, for all this and much more……. And there must be also someone who calculates and pays the salaries.

It seems to me that our company would not work without Harald Reis. For the past 15 years he has headed the "support" of ACAT Vienna with great patience and empathy. He is responsible for important agendas for the entire group. It is a gigantic task he masters superbly every day, and the growth of grey hair is included. Harald, we cordially congratulate you on your 15th anniversary with our company and we owe you many thanks and respect that you have endured us for such a long time. Always an open ear for all our minor and major issues as well as the various solutions combined with your high degree of social skills- that is more than a valuable support for us all! We thank you for your excellent personal commitment and your loyalty and we are looking forward to many, many further anniversaries and we proudly will report on them again!

Stefan Schaub - 15 Years Paper Technology for Central and Eastern Europe

In 1997 a young man has made the decision to change his life. Equipped with an inbuilt knowledge of paper technology Stefan Schaub joined the ACAT team of paper technicians. Previously he has worked at MONDI, where he has gained impressive technical knowledge and a good deal of experience.
His determination as well as his technical competence has been an important support for our customers dealing with the very difficult wet-end-technology. And anyone who knows Stefan knows he can be relied upon! He never gives up before he has solved the problem in a satisfactory way, he never beats around the bush, he does his job properly!
15 years later and with some additional grey hairs he is head of the ACAT Paper Technology for Central and Eastern Europe. The „Playing Captain" and his experienced team are still striving to advise and support our customers!
As he has a high degree of social skills he is rendering service to the general public in his limited free time. He has a leading position within his local voluntary fire department and in the framework of firefighting and disaster operations he is selflessly active for us all!
Stefan, we thank you for your enormous dedication and loyalty to our company. We congratulate you on your 15th anniversary and we look forward to a successful future together.

NEWCOMERS AT ACAT

Ronny Schulz

Since the 1st of June Ronny Schulz has been giving support to our customers mainly in southern Germany, but sometimes also in Austria and Switzerland. He is a qualified industrial foreman for paper production. For several years he has worked in paper production, latterly as a foreman at the paper mill Jass Schwarza GmbH. With his immense practical knowledge Ronny Schulz is an asset for our company and he is already fully integrated into our paper technology team. He devotes his free time to playing football and to snowboarding, the latter he will enjoy much more, because he moved to a new homeland in the Alpine country.

David Nowakowski

On the 1st of September David Nowakowski has joined us. Apart from the personal customer service in central and eastern Germany he is entrusted to establish our business in Poland. So David Nowakowski has a large task to cope with, but we are convinced that he meets this challenge.

Due to his work as a production engineer at Jass Fulda and at Jass Schwarz for several years he has previous experience in paper making and in the application of chemical additives.

Our new staff member uses his free time for travelling to foreign countries, for snowboarding and for go-kart driving.

NEWCOMERS AT ACAT

Aldo Randisi:

Since 2003 Aldo Randisi has been travelling throughout Europe and he has sold nonwovens with a great success. In order to exploit synergies he is entrusted with the setting of a sales network for FreshWaveIAQ in Europe. Now he is exclusively committed to the marketing of FreshWaveIAQ. We wish him and FreshWaveIAQ much success to gain access to the European market.

Nicole Lebersorger

As Michael Fuchs took over the processing of the paper technology department the environmental department needed support in processing and customer service. The ideal person for this position we found with our new colleague Nicole Lebersorger. We take this opportunity to extend a warm welcome to her and we wish her much joy and success.

Petra Stierli:

Since February 2010 Petra Stierli has been working at ACAT, and since July 2012 she has been employed part time at ACI-Basel. Her responsibilities include the commission business of papertech, the processing for evirotech (FreshWaveIAQ), marketing, the organization of exhibitions and the telephone customer care services. Privately she loves sports, travel, fashion, concerts and house and garden.

Vincenzo Carco

For many years Vincenzo Carco worked at several chemical industries and as manager of one of the largest Swiss sewage treatment plants. Since 1st of October he joins the environmental technology team at ACAT Switzerland. Mr. Carco is responsible for the support of existing clients in Germany and in the Ticino. He spends his free time with his family and is interested in cars and motorcycles.

Arthur Austin

Arthur Austin worked for several chemical suppliers for the past 22 years, the last ten years as Sales Director of the largest chemical supply company to the South African Pulp and Paper Industry before joining ACAT ZA on 1st of June 2012. He has many years' experience in dealing with customers from the South African Pulp and paper Industry.
Arthur is a keen golfer.

Kirsty Austin

Kirsty studied and graduated with A BCom Law degree at the University of South Africa. She will be involved with all the administrative duties of the Durban branch including Payroll, orders and accounting. Kirsty will soon embark on her first trip to Europe including Basel and Vienna for induction and training of the Navision accounting system. We wish her success and much satisfaction in her new job.

Danie Pauw

Danie started his working career with Sappi Ngodwana as a paper maker before joining a chemical supplier where he has 17 years sales and technical service experience. Danie Pauw joined ACAT ZA on 1st of June 2012.
Danie's keen interests include motor cycling, 4x4 excursions into deep Africa, and golf. We wish him much satisfaction in our new ACAT venture in South Africa.

Our Products:

chemical tech

Various speciality chemicals for the paint-, building supply-, ceramics-, polymer-, and various chemical industries.

Defoamers, Powder Defoamers and Specialties
Wetting and Dispersion Agents and Additives
Thickeners and Rheology Additives
Agricultural Products
Mineral Flame Retardants
Pigments and Pigment Preparations
Fillers

enviro tech

Environmental products for improvement of soil and air aside of waste water treatment

Odour Control Aids and Application Systems for Several Industries and Commercial Applications
Leading-Edge Technology to provide continuous on-site Odour Monitoring and Dispersion Modelling
A unique System for removing VOC's (Volatile Organic Compounds), TRS (Total Reduced Sulphur) and Odours from industrial Exhausts
Portable Measurement Instrument for Capture and Transmission of Gas Concentration in Air
Biochemical Products

machine tech

Designing, producing and installing of make-up and storage equipment, conveying systems and various peripheral equipment.

Complete Solutions and System Components for Mechanical Sludge Dewatering
Process Engineering
Solar Drying Systems
Low Temperature Conversion
Components of a Mechanical Sewage Treatment Plant
Machinery Service / Spare Part Sales

paper tech

Chemicals, minerals & machinery for all kinds of paper and board production processes and effluent treatment

Retention Aid Systems
Fixing Agents and Coagulants
Bentonites and Flocculants
Dry Strengths Products
Defoamers and Deaerators
Coating and Size Press Additives
Machinery and Equipment
Odour Control Aids

water tech

Chemicals and specially designed equipment for municipal and industrial effluent treatment and odour control

Flocculants and Coagulants
Ferric and Aluminium Salts
Biochemical Products
Odour Control Aids
Defoamers and Deaeration
Special Products for Cooling, Boiler and Condensate Systems
Make up and Dosing Systems

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