



GAWGROUP

edition 2/05
limited edition

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imteam

News from the Group



Dagang III – World's biggest paper machine –
Coating color preparation and GCC grinding plant by GAW

GAW technologies
Pildner-Steinburg GmbH Nfg & Co KG, Graz
• Plant construction and engineering for the
- paper industry
- automotive industry
- chemical industry
- environmental technologies
www.gaw.at

GAW

MAW Styria Maschinen- und Anlagenbau GmbH & Co KG
Eisenerz
• Plant construction and engineering for the
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- automotive industry
• Special purpose machinery
www.maw.at

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STYRIA
MASCHINEN- U. ANLAGENBAU GMBH & CO KG

KRESTA Anlagenbau GmbH Nfg & Co KG, St. Andrä
• Plant construction and engineering for the
- paper industry
- automotive industry
• Apparatus engineering
• Tank and pipeline construction
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KRESTA
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ENVIRGY
Environment Energy Engineering & Construction GmbH, Wien
• Flue gas cleaning technologies
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ENVIRGY

OSMO MEMBRANE SYSTEMS GmbH
• Membrane technologies

OSMO
membrane systems

SPEDITION THOMAS GmbH, Graz
• Logistics and transport
www.sped-thomas.at

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ThomLog GmbH, Graz
• Logistics and transport

ThomLog
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GAW Handel & Consulting, Graz
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GAW

GAW Paper Coating Systems Inc.
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GAW

CCI Modulbau GmbH, Eisenerz
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CCI
MODULBAU GMBH

STYRCON GmbH, Graz
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in deregulated markets

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IHR GmbH, Graz
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• Trading with second-hand-equipment
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I.H.R.
INDUSTRIEHAHNEN- UND MASCHINENBAU GMBH

ETM Environmental Technology Magdeburg GmbH, Magdeburg
• Plants and components for flue gas cleaning and dedusting

ETM

● editorial

● getting to know our companies better –

Environmental Technology Magdeburg GmbH

● bestseller – group products

● lexica – Technology made easily

● proudly presents – Projects and orders

● on site – Being in the front line

● high tech – Branch relevant research

● on focus – Current news from the

companies

editorial

Austrian industrial companies have been complaining increasingly about the existing lack of skilled labor. This might seem absurd at first in view of increasing unemployment. Unemployment and lack of skilled labor, however, do not, on principle, contradict each other.

The traditional image of the industrial company has developed itself to an innovative high-tech factory. The traditional industrial jobs are also subjected to extremely complex activities with high-quality demands. The trend towards automation and consumers requests for high-tech products do not demand labor with simple or only outdated expertise.

Instead, the demand for well-trained skilled labor, being up-to-date with newest technology, as well as for creative skilled workers has been growing considerably. The search for such employees endowed with those conditions has, however, turned out to be very difficult for employers.

The declining number of graduates in science and engineering – especially in Austria – gives reason enough to cause concern in the Styrian industry. For this reason, initiatives for the support of the education system need to be taken. Read more about it on page 6.

Also the GAW Group would not be able to meet the demands of the local and global markets without its highly qualified skilled labor and key men. The satisfying order volume of the current business year has been proving again that our employees meet these qualification demands.

A proof for our successful corporate policy would be our business partner Felix Schoeller junior in Osnabrueck/Germany. GAW has been doing business with this paper mill for many years which has been relying on GAW's profound competence. The coating color processing for the coater 6 at the plant in Weißenborn/Germany is a very sensitive project. It produces photo paper and special paper which requires a lot of expertise and experience. I am convinced that we will finish this project – whose technological demand is on the highest level – profitably for both parties.

I wish all employees and customers as well as the other readers of imteam a Merry Christmas and a successful 2006, being aware of the fact that GAW Group is prepared well for the increasing international competition.



Mag. Jochen Pildner-Steinburg

Mag. Jochen Pildner-Steinburg

Editorial team edition 2/2005, December
From the left to the right: Alexandra Pichler (B&J), Nikolaus Brücke (GAW), Brigitte Paier (Kresta), Nina Pildner-Steinburg (GAW), Rene Zottler (GAW E-Abteilung) in cooperation with Gernot Stangl (CCI), Wolfgang Senner, Günther Wirth, Christian Stine, Peter Stuffer, Erich Hirschbeck, Christian Löffler, Johann Illmaier, Robert Mayerhofer (alle GAW), Manfred Wohlfahrt (Spedition Thomas), Christian Lechner (Envirgy), Dietmar Werner (H&C)

contents

- **Getting to know our companies better.**
companies of the GAW Group are presenting themselves.

ETM Ltd. – New company of GAW Group

Envirgy's subsidiary company in Magdeburg/Germany

The company Environmental Technology Magdeburg Ltd., short ETM, was founded as a subsidiary company of Envirgy Ltd. in July this year. The company will continue with the dedusting engineering of Magdeburg Ltd.

The core competence of ETM is in the environmental technology. Its customers primarily come from the steel-and-iron-industry, energy industry, earth-moving industry as well as primary industry.

ETM's services include development, engineering, project work and construction. Moreover, production and erection, implementation and the provision of whole dedusting and flue gas dust collecting plants as well as plants components are also offered by ETM Ltd.

The latter provides whole solutions which are modified to particular customers' demands and they are also adjusted individually taking into consideration space capacities.

Core components of ETM's range of delivery:

1. **fabric filters in construction mode as vertical and horizontal tube filters and pressure filters**
 - compressed-air cleaned fabric filters, so-called puls-jet-filter with either on-line or off-line difference-pressure-controlled dedusting
 - pressure-resistant tube filters for explosive dust and gas media with verified certificate
 - fabric filters as air-flow adsorber in flue gas dust collecting plants
 - hot gas filter for special applications

2. **electric filters in the construction mode as dry-electrical filters**

3. **advanced flue gas dust collecting plants on the basis of conditioned dry sorption**

4. **activated carbon filter plants**

5. **centrifugal force separators are carried out as cyclones or multi-cyclones**

6. **quenching or conditional cooling system**

ETM's wide range of services enable to establish considerable synergies with Envirgy, especially in regard to filter technology. A main component of Envirgy's flue gas dust collecting plants are fabric or electric filters which are in turn produced by ETM.

Due to the distributional activities, new customers can be reached and gained for both parties and thus, the market's presence and acceptance can be developed accordingly.



from the left to the right: Mr. Bernhardt, Mrs. Herrmann, Dr. Magnucki, Mr. Deller



flue gas dust collecting plant and dioxine separation with a quench cooler in the copper processing



tube filter as a 4-chambered fabric filter in the flue gas cleaning of a biomass combustion

- **Group products.**
Presentation of products & processes developed by companies of GAW Group.

GAW propellor-agitated mixer

Processing of media without inclusion of air

The GAW propellor-agitated mixer is able to process media very urgently under the influence of temperature with very little or even no inclusion of air.

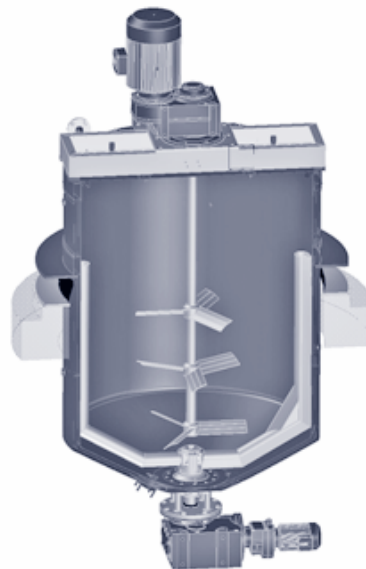
The modular construction of the agitating aggregate ensures simple assembling and operation. In addition, maintenance and compatibility with other GAW products are guaranteed.

Construction

The color mixer illustrated on this page consists of a tank with a double mounting construction. The teflon-coated interior prevents a sticking of the media to be processed. Moreover, this special mixer ensures a continuous reaction and processing temperature for the whole mixing process.

Due to the combination of anchor and blade agitator, a maximum temperature exchange is guaranteed. This specific exchange happens via the tank's mantling surface without requiring static flow breakers. The special geometry of the mixing blades ensures that the media are processed most gently.

Frequency-controlled drives enable individual revolution speed (rpm) at different filling level and therefore ensure optimal conditions during the whole processing.



propellor-agitated mixer

Moreover, in special cases the construction of the mixing tank can be designed in a way that the

mixing process is carried out in vacuum state. Inclusions of gas are thus avoided completely.

companies of the GAW Group are presented

bestseller

Structure of industrial control systems

The control of a coating color kitchen

The complete functions of relays or switches were carried out before the time of computerized controls. This meant that a great space and wiring were required which were, of course, prone to many sources of error, such as wiring errors or mechanical mistakes of the relays and switches.

Another problem was the flexibility of such systems. A great wiring effort had to be undertaken in case of any changes. It is needless to mention that a lot of time was involved.

With the introduction of SPS (memory programmable control) controls were constructed with less space required and these controls were increasingly automated. In general, the term control means the process of a change which does not course by chance but on control. The term control engineering is used accordingly for certain installations which influence technological processes based on given plans. Structure and its mode of operation are illustrated with the following example.

The control of a coating color kitchen

Industrial controls serve their purpose to centralize the control of plants. In other words, mixing equipment, starch and pigment processing plants and storage of raw material of a coating color kitchen are checked and controlled by a central controlling unit. Apart from the recipe and the corre-

sponding process sequence, the controlling unit also consists of a data base in which relevant processing data is being saved.

The programme can be found directly on the CPU (Central Processing Unit) in the control units in smaller plants. In this case, the plant's data can be read and changed directly with a panel or a PC.

GAW's coating color kitchens mostly work with a server-PC¹, the core of each controlling unit. The whole controlling unit and visualization² of the plant can be found there. This system is set up redundantly, meaning that a second computer is employed parallelly as a substitution to the server-PC. In case of any occurring problems, the controlling unit and the visualization will be switched to the second computer which ensures a secure availability of the system.

The server is connected with the peripherals (I/O³ electronic devices, frequency converter, load cells) via a profibus interface (Process Field Bus). The network connection (Local Area Network⁴ serves its purpose to connect the server with

other terminals (panels, other PCs, ...).

The I/O assemblies are responsible for the analysis of the signals in the data field and transmit the signals via the profibus to the server. The server then analyzes the signals and saves them on to a data base. The plant is operated with a visualization unit which incorporates numerous operation and display units (switch, sensor, display).

The part's components are divided into several pictures, in which smaller parts are put together functionally. The operation occurs at decentralized built work stations ranging from manual controls of the valves to the input of the complete mixing of coating color recipe.

Planning and installation

The exact engineering of the controlling unit for each project is carried out in intense arrangement between customer and GAW. The whole installation and starting up are carried out by the electrotechnical department.

1. term for a computer which is able to provide services to other computers (clients) connected to the network
2. In general, visualization describes the representation of an abstract situation with the use of optical media, with computer graphics, for example
3. I/O stands for Input/Output
4. LAN is a relatively small network which is mostly limited to a building

GAW – continous mixer for the production of pressure-sensitive adhesive for labels

Biggest plant worldwide goes into operation

At the end of this year, the biggest plant worldwide for the production of self-adhesive label paper goes into operation in the province of Guangdong, in the South of China.

Continuous mixer by GAW

Guangdong Guan hao High Tech Co., Ltd. is employing a GAW mixing plant for the processing of the pressure-sensitive adhesive. The whole order includes the unloading and storage of acrylate and resin, the stocking of process materials, a continuous mixer as well as the metering to the working stations.

The process control is carried out via the control system GAW AutomationX.

Self-adhesive label paper

Self-adhesive label paper has been required increasingly not only in the computer industry, but also in the food and cosmetics industry as well as for pharmaceutical use.

Due to the coating on the back of label paper with pressure-sensitive adhesive, the label paper remains sticky and can therefore be put on to various materials after the protection film has been removed without any previous moistening and pressurized heat exposure.

Quality with GAW technology

The quality of a self-adhesive label is considerably influenced by the relation of adhesion and cohesion

of the different mutual components for the production of pressure-sensitive adhesive.

The accurately produced recipe for the particular application in the GAW mixing control is controlled online with high-tech measuring instruments. Various recipes are developed with GAW AutomationX and they are applied in the processing optimally in regard to its quality.

The produced pressure-sensitive adhesive mainly consists of acrylate and resin as well as different additives which influence the coating performance of these materials interacting with each other - called rheology - on the carrier substrate, the immobilization as well as roughness of the adhesive layers.

The company Guangdong Guan hao concentrates mainly on the production of special paper with a yearly output of 65,000 tons of self-carbon copy paper, thermo-sensitive paper and inkjet paper. The processing of the coating color is carried out - amongst others - by a GAW multi-functional coating color kitchen of the year 2003.

GAW PCS – VST-Dispersion System for Dow Chemicals

Production with highest solid content

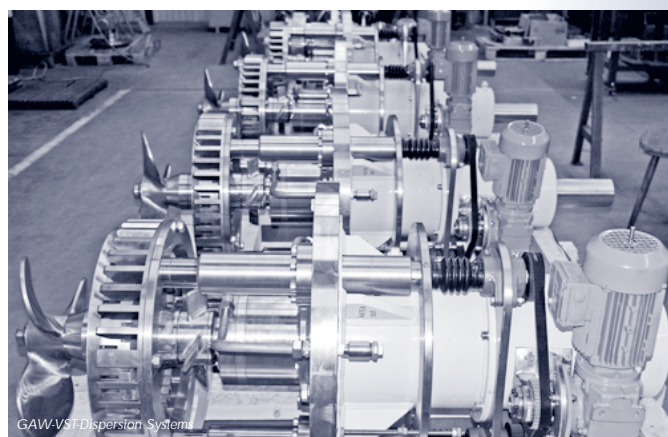
Dow Chemicals, the largest chemical company in the world, ordered four VST-Dispersion Systems for producing coatings for paper, paperboard and labels. VST is an acronym for Variable Shear Technology and is based on the infinite adjustability of the overlapping of rotor and stator during the operation. Thus the operator has the possibility to set up the optimum combination of product circulation and shear ratio for each respective application and formula.

Optimal for products with high solid contents

The VST-Dispersion System is applied for the dispersion of pigment slurries with high solid contents, for the preparation of complex formulations and in the direct metering of dry components.

Dow Chemicals benefits from the refitting of the existing system to GAW's VST in many points as for example:

- Processing of shear-sensitive products using variable stator position
- Improved particle size distribution and homogeneity due to variable shear ratio combined with adjustable product circulation
- Saves energy through faster metering of components combined with even shorter batch times
- Significant savings of binders and additives in combination with highest solid contents and optimal viscosities
- Avoidance of air intake leads to reduction of air content of the product



• **Technology made easily.**
Here, products or processes are explained comprehensibly for everyone.

• **Projects and orders.**
Presentation of current projects and orders of the group's companies.

lexica

proudly presents

- **Projects and orders.**
presentation of current
projects/orders of the group
companies.

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Spanish paper mill trusts in KRESTA-quality

Implementation of the end of 2005

A team of KRESTA has been working for Holmen Paper Fuenlabrada in Spain for more than a year. KRESTA's scope of delivery included on the whole:

- production and erection of tanks amounting to 1,500 m³ and 5,500 m³ for DIP-area (De-inked

Pulp) – and PM-area (Paper machine).

- the tanks in the DIP range (1,500 m³ to 2,250 m³) were completely manufactured in rust resistant material, whereas the tanks in the PM range in C-steel with a 2 mm plating.
- Moreover, the whole walkways belonging to



the tanks were produced and erected (total weight including the walkways mounted to 680 tons).

- production and erection of a flotation (10 double cells with 10 m, 5 double cells with 12 m) as well as a complete pipework of the flotation and erection of the walkways.
- total length of the flotation plant amounted to 83 m, the width to 4,4 m
- production and erection of the platforms and walkways for screens, dispersers and cleaners.
- production and erection of 7 pulpers, the appropriate chutes and equipment erection (mixers and gear unit)
- total weight of the pulpers and chutes about 100 tons
- production and erection of steel construction components (2 lift towers, stairs, ascents, fitting parts for the hall, and many more) – weight about 40 tons

As already reported in the 2/04 imteam issue, the single parts were pre-manufactured in St. Andrä/Austria. The final production and erection was realized in Spain. The new PM62 will start its operation at the end of 2005.

Large scale order from AEE for the forwarding company Spedition Thomas

Special transports to China

The forwarding company Spedition Thomas received an order from AEE (Austrian Energy & Environment) in summer 2005.

The order consisted of the delivery of components for a flue gas cleaning of the waste combustion plant Wuxi/Jiangsu. The order also included the delivery of two bars for the flue gas desulfurization in the power station Fuyang/Anhui in China.

Scope of delivery

The order volume ranged from 2,100 m³ to 255 tons which was carried out in three stages. The supplies came from Italy, Germany and Austria and they proved to be very difficult because of the necessary special transport with over height.

The 42 containers, and flat racks respectively, and platforms were stored in Hamburg and from

there were shipped to Shanghai. The transit time was 25 days. The penalized delivery schedule was a special challenge meaning that the arrival of the ship at an agreed day was of utmost importance.

All arrangements were kept and were carried out to customer's best satisfaction. Austrian Energy & Environment has already placed further orders with Spedition Thomas.

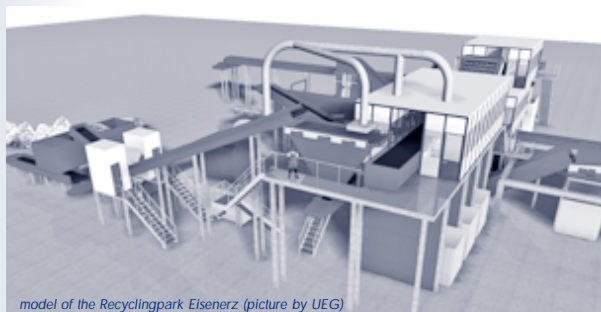
CCI – Infrastructure for recycling park Eisenerz

Investment into the environment

The biggest investment project of the past years has been realized in the upper Styrian Eisenerz/Austria.

Erection of the infrastructure

CCI Modulbau was given the order by ABG Re-



model of the Recyclingpark Eisenerz (picture by UEG)

cycling Park Eisenerz GmbH & Co KG to construct the whole infrastructure on the 12,000 m² large area. The services included

- Roofing works: roofs were partly removed and 4,000 m² were then newly roofed
- building plumbing works were carried out in both of the big halls
- locksmith works were done in the erection of wall constructions, hall doors, combustion smoke vane and smoke butterfly dampers including basis construction, external door systems outside and a 400 meter long fence
- constructional steel building: erection of steel constructions and rails construction
- glazing works
- wood and metal coating
- coating on plaster and walling

ABG Recycling Park Eisenerz was founded by the

companies UEG (Environmental and disposal engineering) and GAW. This particular company will process shredding waste, slags and other non-dangerous residues mechanically and will sort them afterwards accordingly. More about it in the next imteam issue.



steel construction

- **Being in the front line.**
Reports directly
from the construction sites.

on site

GAW-Sodium-dithionite-dissolving units

Start up at Norske Skog in Brazil – a report by Robert Mayerhofer

Apart from numerous plants in Europe, a sodium-dithionite-plant has been put into operation at the paper mill Norske Skog Pisa, Brazil, recently. The dissolving unit, which was co-developed by GAW and BASF, will be used for cellulose and kaolin bleaching.

From autumn into spring

After take-off in Graz at autumnal temperatures, the landing took place in Sao Paulo in middle of spring at pleasant 20°C. After 6 hours delay, the plane took off to Curitiba, the capital of the federal state Paraná.

The arrival in Jaguraiaiva finally took place after a total travel time of 27 hours.

Start up

The start up of the already delivered dissolving station as one unit began with the electrical and pneumatical connecting of the parts components. After the terminal had been built up in the operation station, the modem connection for the remote maintenance was ready to be tested.

Since the water test had already been tested at GAW in Graz, the dissolving plant was taken into

operation within only a short time. The customer could verify that the plant ist equipped with the maximum security features and is therefore not prone to any productions loss.

The teamwork with BASF and Norske Skog colleagues proved to be excellent during the four days' start-up.

The "calm" working philosophy of the Brazilian people was, however, not easy to deal with. The physical well-being was taken care of by excellent steaks and fish dishes and therefore it was not surprising that I came back with more weight on my hips.

Dagang III – world's biggest paper machine for online-coated paper goes into operation

A building site report by Erich Hirschbeck, GAW erection-supervision

The world's biggest paper machine for the production of online coated paper took up its operation at the company Gold East Paper in Dagang, situated in the chinese province Jiangsu (see issue 2/04).

The system for the coating color processing and a wet grinding mill for natural calcium carbonate were delivered and taken into operation by GAW. Erection supervisor Erich Hirschbeck reports:

Apart from the erection and start up of the new plants, the order also included the expansion of the existing GAW-coating color kitchen II. The PC-stations of the AutomationX system had to be first replaced with new and more efficient ones during the operation.

We started with the actual transformation works in January 2005. We had to move both of the existing large and small additive-dosing stations for the supply of the OMC II during the standstill of only 48 hours of the coating color processing. In addition, a new coating color mixing machine with a capacity of 17 m³ and the process control system AutomationX had also to be integrated.

The necessary switching-off of the complete power supply during the MCC-expansion led to such a great fall in temperature which let the water freeze due to the high amount of humidity. The Chinese erectors, who were dressed in only light clothes, even had to make a fire in order to warm themselves at least a little bit. Due to the perfectly timed coordination between my colleagues from the electronic department and me from the mechanical supervision, the plant was ready resuming its operation.

I encountered great strain during that time, especially when I got informed about my wife who had to be taken to hospital. GAW enabled me, of course, to fly home immediately. The people in Dagang who I have known since 1998 and with whom I share close contacts, bid me farewell.

After three weeks' stay in Austria, everything turned out to be fine. Thanks God. I was then able to fly back to China and to commence my work there. We started highly pressurized with the finishing of the coating color processing for the supply of the PM III.

A 17 m³ coating color mixer with all dosing lines, a new starch plant with 3,500 kg/h atro, a CMC-mixer and the coating color storage including the supply plant for the PM III were installed. The clay

processing was expanded by a 12 m³ mixer and by several small plants. The plant's components were taken into operation gradually after completion. At the same time we also started with the erection of the GCC-plant existing of 10 mills with a capacity fo 1,000 liters each. 710 tons of Hydrocarb 95 are grinded daily in 4 mills; in the other 6 mills the grinding of 370 tons of Hydrocarb 65 takes place every day. After the integration of the AutomationX-system and a one week test run, the so called Operation Test Run was completed successfully in July.

The way to the start up was accompanied by a lot of ups but also some downs. When we had to bring a colleague with a broken toe to hospital to Dagang, we had to pay first before the doctor actually came to see us. At the hospital distastous conditions still exist. Couple of months later the same colleague also cut his tendons on his palms into two and therefore had to go to hospital again. The transfer to the sick room was a surprise. Nurses like we know in Europe do not exist. Everyone must get his/her own stuff if he/she needs something. For example the food is brought by family members. We realized that my colleague had to be taken home immediately when his neighbor smoked a cigarette during an inhalation (!) and his daughter washed her feed in a basin.

Although China is a very fascinating country, great endurance is demanded in general. Hungry children in dirty clothes without any prospect of education. Men and women drag their wheelbarrows crowded with trash trough the streets and search for left-overs at home. The streets are crowded with cars – speed limits, traffic lights, double crossing lines and zebra crossings are being ignored. The police can not cope with this traffic and deadly accidents happen regularly.

Gold East Paper is the world's biggest art paper producer. The production of presently 1,6 million tons of paper is done in four shifts with 4,800 employees. It is planned to increase the output to 2 million in 2006. Both of the offline coating machines and the new online coating machine are supplied by GAW coating kitchens.



GAW GCC plant

GAW Quality-Loop

Online-monitoring system placed on the market

The GAW Quality-Loop, which took up its real-time operation first in 2004 within our PM 4 project at the paper mill LEIPA / Germany, has been delivering several 100 operating hours of continuous measuring data. This online-monitoring system has been placed on the market in a revised form.

Coating color monitoring

The GAW Quality-Loop is the online-monitoring system for the control and recording of all quality and production relevant characteristics concerning coating color for coated paper and carton-board in the coating-cycle.

The Quality-Loop is directly installed in the coating unit and measures a partflow of the supplied coating color in the specific state which is processed on the coater. The modular construction enables the specific adjustment to customers' wishes and demands.

The paramter temperature, density-, solids-, and gas content, redox-potential, pH factor and viscosity in connection with the shear rate from the low to the highshear-area are measured online and are archived.

The controlling of the GAW Quality-Loop is based on the AutomationX system through which a smooth operation, an efficient alarm handling

and a reproducable documentation of the measured value is guaranteed as trends.

Research project with Joanneum Research

The measuring methods for air content and viscosity were developed during a research project together with the well-established Joanneum Research institute in Graz. These methods thus represent downright new developments.

The measuring of the gas content is done via ultrasound. The principle behind that method is that sound is damped through media with fewer density more strongly than through media with higher density. If an ultrasound signal is sent through the coating color, the received signal is getting weaker, the more gas inclusions exist in the coating color. The intensity of the received signal is therefore a direct measurement for the gas content.

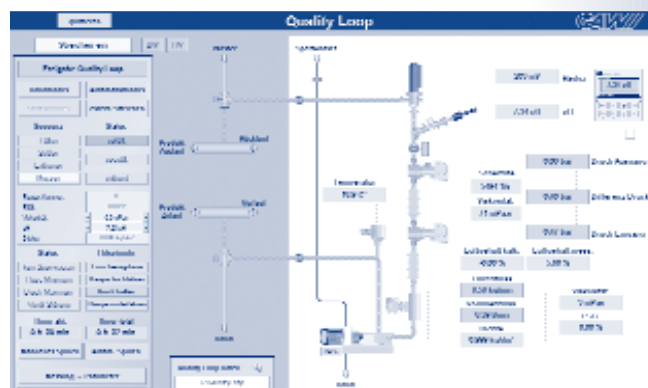
The measurement of the viscosity is done via a slit nozzle which was designed specifically for this purpose. Before and after the slit nozzle, a compression transmitter is built in. If a liquid runs through the slit nozzle, a decrease in pressure develops as a consequence.

The difference in pressure is direct measurement for the viscosity of the medium. In addition, this decrease also depends on the flow velocity through the slit nozzle.

The GAW Quality-Loop is constructed to pump the coating color through the measuring facilities in ramp sequences, faster and slower again. The viscosity from the low- and highshear area can therefore be measured directly in connection with the shear rate, and not at only one point like with other viscosimeter tool for quality control.

The GAW Quality-Loop represents an excellent instrument for the quality securing in the paper industry because of its compact structure, its user friendliness and little maintenance.

It is not unlikely that the GAW Quality Loop will be employed also in other industries for the control of continuous production processes for liquid media.



• **Being in the front line.**

Reports directly from the construction sites.

on site

• **Branch relevant research.**

product and operation

developments and

optimizations are carried

out by GAW with the most

modern technologies.

Concrete examples are given.

high tech