The **GAW** Group Magazine

No. 01 / 2018

imteam

Plain-talking
Conversation with the GAW Beteiligungs-gesellschaft P. 4

Focus Bakeries
Modular Solutions from the AutomationX P. 30

Acknowledgement
Export prize for ECON Group P. 42

Editorial

Dear Readers!

We are pleased to announce that, with the Group magazine, we will pick up and continue the tradition of regular information from the GAW Group. Since our last publication, much has happened both in world affairs and in the GAW world, which will continue to have a significant influence on our business activities in the future.

From a global perspective, the Brexit decision, the election of Donald Trump as President of the United States and the Russian embargo, as well as the ongoing digitalisation of business models and processes, should be mentioned as those events that intensify the current planning uncertainty and fast pace. This means that we all need to be constantly vigilant and willing to change - especially in order to take full advantage of the opportunities and chances this opens up for us.

The current developments on "Economic Nationalism" and the construction of barriers and restrictions, we do not, of course, approve, but we do not regard this as a threat exclusively. The openness to internationalisation and the overcoming of borders, which has always been anchored in our corporate genes, enables us to deal with this situation confidently.

We see this, for example, as a result of the establishment of branches and representative offices of our GAW Group companies in the USA, India, China, Russia and Kuala Lumpur confirmed over the last two years.

For our group of companies, the time since the appearance of the last imteam has brought with it some major changes. In addition to our exit from the Kresta industries Group in the summer of 2016 and the sale of Artec in the fall of the previous year, the strategic realignment of the GAW Group's structure and management implemented in the previous year deserves special mention.

In addition to the change in the management of the GAW Group, we are pleased to report in this issue on the strategic participation of the RAG Foundation in the GAW Group, which has been in existence since the summer of the last year and through which the further expansion strategy of the GAW Group has been sustainably secured.

You can find more information in the magazine on these two events which are essential for the future sustainable orientation of the GAW Group.

Finally, we would also like to inform you that the GAW Group continued to grow in line with our expansion strategy as early as summer 2018. Therefore, we would like to welcome the teams of M-TECH Systems GmbH and LÖMI GmbH to our group of companies.

Now we wish you a lot of fun reading the current group magazine, which presents itself in the sense of the above-mentioned change in a new layout, as well as a wonderful autumn for you and your families!

Robert Assl-Pildner-Steinburg Alexander Rinderhofer

Contents

For reasons of better legibility, the simultaneous use of male and female language forms is avoided. All personal designations, unless assigned to a specific person, apply to both sexes.

GAW Group

Editorial 3
Plain-talking 4

GAW technologies

Two disciplines from a single source 12
GAW technologies – Excellence in Planning 16
From the Technology Centre into the World – the GAW Airvac 20
The Kaiser's new deaerator 24
Audi–Special Design 26

AutomationX

Uniqueness (@)MPREIS 28
The solutions of the AutomationX 30
Automation Fresh 32

OSMO

Water is a precious commodity! 34
OSMOs Laboratory system for membrane experiments 37

UNICOR

Good morning, Tiên Phong! 38
Forza UNICOR! 40

ECON

And the export prize goes to 42
ECON Machinery Pvt. Ltd. 44
Research is fun, especially in the Technology Centre 48

Spedition THOMAS

Around the World 52

Welcome

Welcome M-TECH 54
Welcome LÖMI 55
GAW Group worldwide 56
People 57

Imprint: GAW Beteiligungs GmbH, Puchstraße 76 / PF 64, 8020 Graz, Austria
Tel.: +43 (0) 316 27 04-0, Fax: +43 (0) 316 27 32 66, office@gaw.at

Plain-talking.

On the happy occasion of the new publication of the GAW Group Magazine, we and the management of GAW BeteiligungsgmbH have organised an extensive double conference on the topics of strategy, participation of the RAG-Foundation Beteiligungsgesellschaft, guiding principles as well as organisational development.

Interview: Marc Pildner-Steinburg **Photo:** Marija Kanizaj

We don't mean to dazzle you with management dialectics. On the contrary, we hope that this interview will give you an insight into the precise movements of the GAW Group and give you an idea of the existing synergies between the individual Group companies.

Dear Managing Director of GAW Beteiligungsgesellschaft! In June 2017, the RAG-Foundation Beteiligungsgesellschaft (RSBG) acquired a stake in GAW Investment Company. Can you please give our interested readers an overview of the entry of RSBG and the associated organisational developments in the GAW Group?

Gladly, but we have to go back a bit for this. GAW Beteiligungsgesellschaft in which all operating companies of the GAW Group are combined was founded back in 2016.

GAW Beteiligungsgesellschaft sees itself as an industrial holding company from which both investment management and strategic, cross-group development and expansion are controlled. In the holding company we, Robert Assl-Pildner-Steinburg and Alexander Rinderhofer, have assumed the motivating, honourable and demanding task of shaping the orientation and development of the Group companies for the coming years. In July 2017, RSBG acquired a stake in the company, which secured our long-term expansion strategy. Next to the organic growth, additional company acquisitions have become possible. In other words, the development of the Group companies is controlled by GAW Beteiligungsgesellschaft, in which GAW Group Pildner-Steinburg Holding holds 75% and RSBG 25%. The highest organisational unit is the GAW Group Pildner-Steinburg Holding (GAW Holding), which is 100% owned by the Pildner-Steinburg family.

This shareholder structure is extremely exciting and, above all, sounds challenging. On the one hand, there is a German giant in the form of the RAG Foundation's investment vehicle, which holds investments in the Hahn Group, Dorsch Group, Heidelberg Instruments, Qvest Media, Masco Group and others. On the other hand, there's the family-owned Austrian GAW Group. How can one imagine your work in this area of tension?

Our minority shareholder, RSBG, challenges us with visionary development aspirations, supports us with comprehensive knowledge of industry and offers an exciting network of company investments that is suitable for attractive cooperations. The partners of the family Pildner-Steinburg accompany us with their rich entrepreneurial experience and ability to judge. The support of both shareholders, GAW Holding and RSBG, gives us the necessary scope to develop and implement our corporate strategy. We do not focus on turnover or profit, but on the benefits and added value that our range of services can bring to our customers. Turnover and profit are their logical consequences.

What were the essential steps that could already be taken in the first year of your work?

Our first year was essentially characterised by the strategic and, in part, operational support of our companies. In doing so, together with managers and employees, we are primarily concerned with putting existing corporate strategies to the test in terms of topicality, future orientation and clarity. We often have a very practical disposition in our daily work, we energetically get involved in upcoming tasks, implement them and often perceive strategy work as detached, theoretical, only slightly concrete and clichéd. However, if we want to continue to be

(Continued on page 8.)

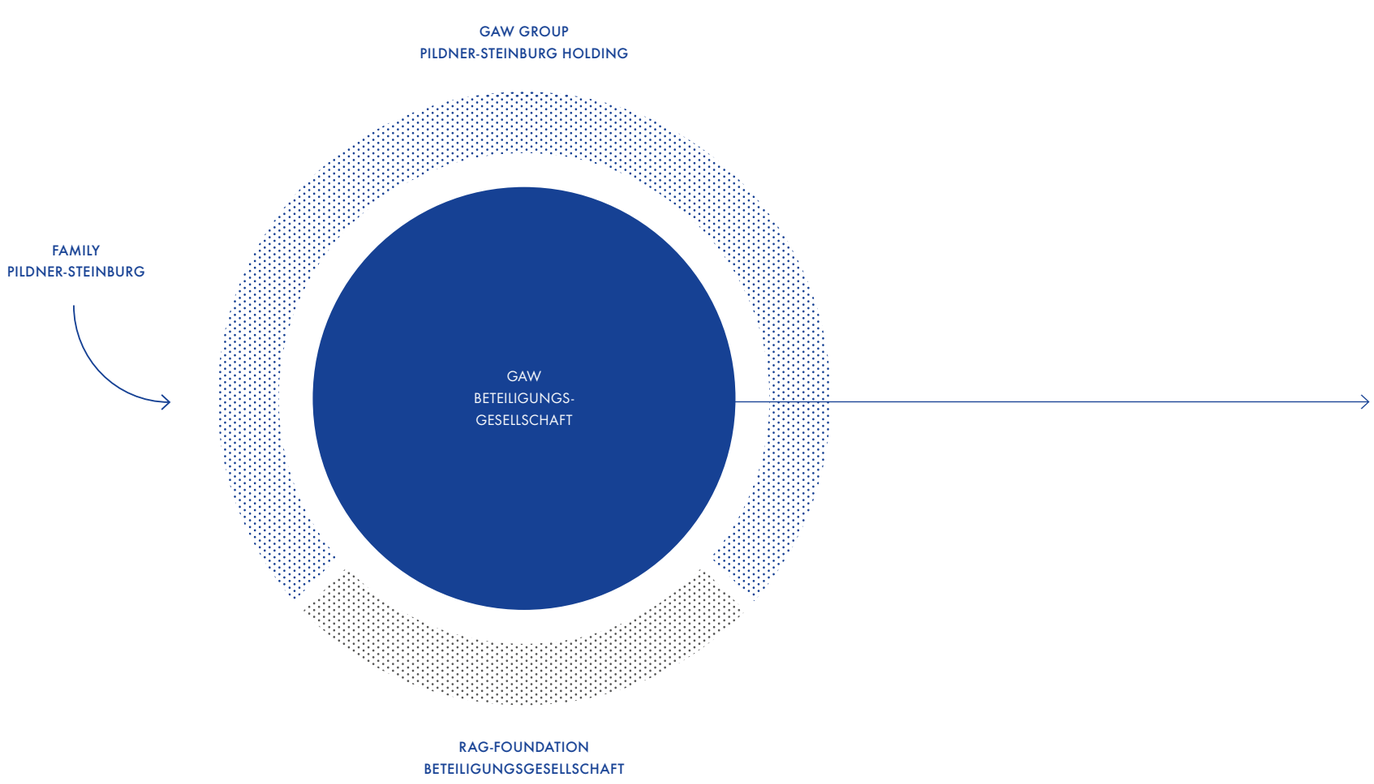
Corporate Structure of the GAW Group

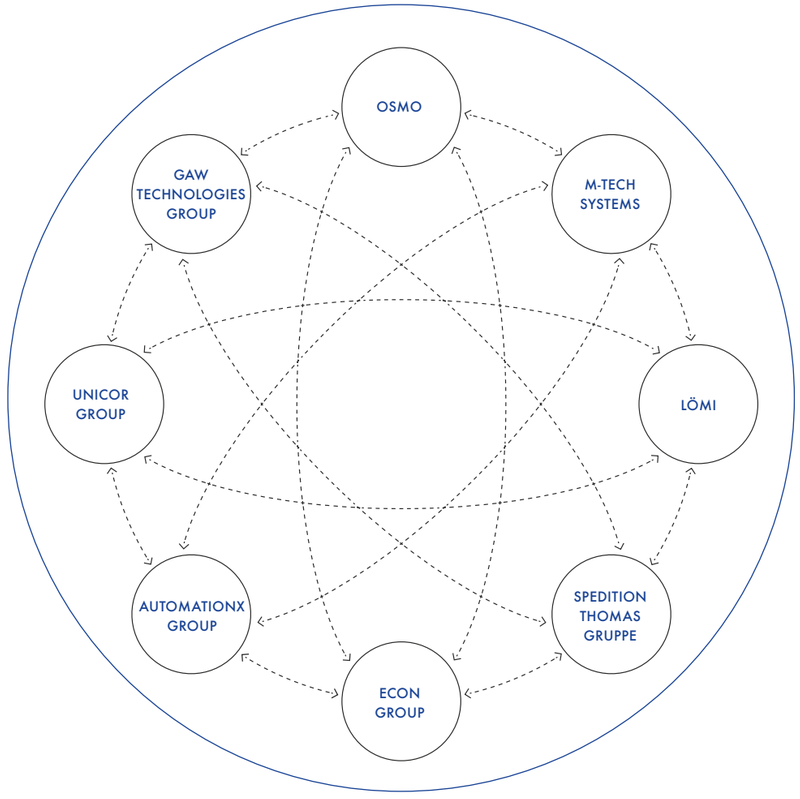
OSMO
Development and realisation of high-quality industrial membrane separation plants for various process applications and water treatment. Special plants for the chemical industry, high pressure reverse osmosis systems, innovative water treatment.

M-TECH Systems
Innovative company specialising in special machinery and plant construction, whose machine vision systems are used in industrial manufacturing processes in the fields of automation technology and quality assurance.

LÖMI
Processes and plants for selective dissolving of materials, in particular for debinding as well as for solvent recovery.

Spedition THOMAS Group
Complete logistics provider with international partnerships. Offers comprehensive logistics services worldwide in addition to pure transport business. Optimal solutions from a single source tailored to the needs of the customer.





Family Pildner-Steinburg
The families of the brothers Jochen and Jörg Pildner-Steinburg are the owners of the GAW Group Pildner-Steinburg Holding.

GAW Group Pildner-Steinburg Holding
The GAW Group Holding, headquartered in Graz, Austria, is the management holding company of the global technology group.

RAG-Foundation Beteiligungsgesellschaft
Since 2017, the RAG-Foundation Beteiligungsgesellschaft has been a trusted and reliable partner in the strategic corporate expansion of the GAW Group.

GAW Beteiligungsgesellschaft
GAW Beteiligungsgesellschaft manages the operating units of the technology group and is responsible for corporate development.

ECON Group
Innovation leader in pelletising systems. Worldwide technological leader in machine manufacturing for the plastics production and processing industry. The specialist for underwater pelletising.

AutomationX Group
Globally active technology company with a focus on integrated total solutions in the field of automation technology.

UNICOR Group
World market leader in the development and production of specific corrugated pipe extrusion systems optimally adapted to the needs of pipe manufacturers.

GAW technologies Group
World market leader in preparation systems for the production and coating of paper and cardboard, reliable partner for conveyor technology in the automotive industry. Enables efficient process solutions in the chemical industry and environmental technology.

successful in the long term, there is no alternative than to consistently plan our future strategically. A coherent, clear, precise and attractive corporate strategy that is easy for our employees to understand helps us to make the optimum use of our opportunities to assess market and environmental developments and to react specifically to them.

When it's concrete, it's good. Then please let us become even more concrete. Can you outline the future of the GAW Group for our readers? Which strategic core areas do you recognise and which development perspectives do you see for the GAW Group?

When we imagine the future of the GAW Group with its diverse corporate investments, we see four key strategic core areas and development perspectives, in which we are already competent and active today:

- Process technology for raw material preparation for the paper industry,
- Specialty technology for the processing of plastics,
- Special conveyor technologies for the automotive industry as well as
- Cross-divisional technologies with independent market positioning and high cooperation potential in the aforementioned segments.

Our common challenge in the coming years will be to intelligently network these core areas and further develop them with a high degree of customer orientation, market proximity and taking into account relevant technology trends.

To what extent are the recent acquisitions of M-TECH Systems and LÖMI already affecting these strategic core areas?

Fortunately, we succeeded in acquiring a majority stake in these two innovative companies.

M-TECH Systems, a specialist for special machinery and plant construction, fits perfectly into our picture with its cross-sectional technology focusing on image recognition and image processing. As a result, the Group's expertise in automated manufacturing and quality inspection processes has increased enormously.

By joining LÖMI, we are taking ahead an important step in the field of plastics recycling. Their technology, developed in collaboration with research and industry partners, for the selective solution, separation and sorting of multi-layer plastic waste, such as packaging films, is one of the few outstanding innovations of the last decade. Especially in this business segment we see excellent cooperation opportunities with all GAW Group companies.

A closer look at the strategy areas mentioned naturally raises the question of the positioning of the respective GAW Group companies. How far has market development progressed?

In all four development perspectives, we stand for unique special technologies with a high level of differentiation from our competitors. Our aim is to be the technology and market leader in the industries we serve. Our aim is to clearly identify attractive customer segments and focus on them, that is our claim - not the arbitrariness of seemingly large markets.

Allow us to summarise, please: GAW Beteiligungsgesellschaft ensures the future viability of the GAW Group through consistent strategic planning. What motives do you have for this? And can you give us one or two case studies of what this means for the respective group companies?

So, if we were to condense our guiding principles, then we would be most likely to focus on growth, profitability, precision, networking and inspiration, whereby we would have to differentiate here again. Growth, for example. This is not a wish, but a necessity in order not to disappear into meaninglessness in the long run. In a growing economy, not growing at all or only at a below-average rate means losing one's way and giving up positions in favour of our competitors. Our corporate strategies therefore require clear, ambitious but realistic growth targets from which concrete measures can be derived to ensure profitable growth.

What does this mean to be broken down to individual group companies?

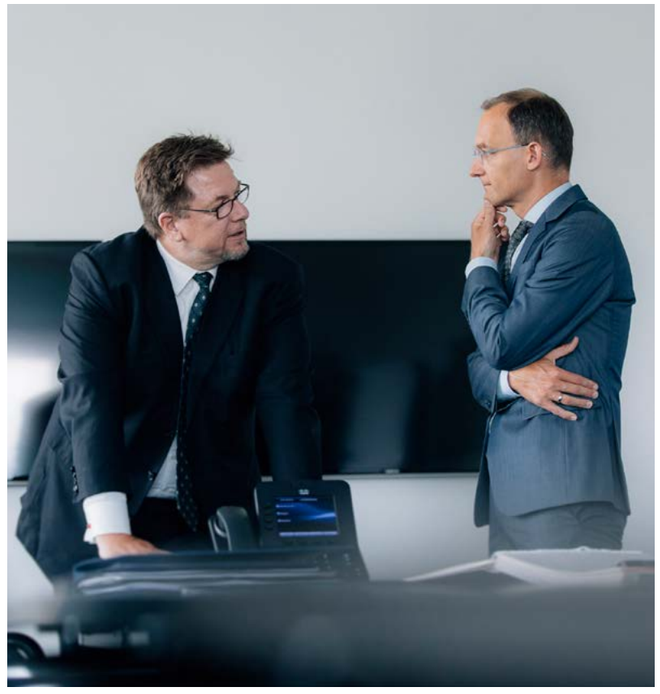
For example, the growth strategy worked out and implemented by the ECON team in recent years has led to a doubling of turnover; subsidiaries in India, the USA and currently also in China have been founded and ECON has already assumed market leadership in certain regions in the technology niche of underwater pelletising. The strategy adjustment of GAW technologies envisages to realise growth by identifying and processing customer groups that have not yet been perceived. For this purpose we want to make use of existing competencies for "related" industry segments, such as construction materials chemistry, composites and the like. As a controlling industrial holding company, we will make a corresponding contribution to growth by investing in companies with attractive, complementary, forward-looking technology.

And profitability as a guiding principle? How long-term are we thinking here?

Profitability secures our long-term existence and our independence, quite clearly! We achieve profitability through highly efficient, value-added processes. Competent purchasing, efficient project management, internal standardisation and modularisation of our plant and machine components, knowledge management, avoidance of errors and waste, high productivity, short lead times, lean organisational structures - these are the prerequisites for a successful business.

These are indeed a large number of general conditions. Which individual, specific measures to be implemented at the company level are to be particularly emphasised here?

The introduction of project planning on the basis of a computer-aided engineering (CAE) solution at GAW technologies represents an important strategic initiative for securing profitability. In the future, all employees involved in a project, from sales staff to project team members, will work in a common database. To create and further develop flow diagrams, calculate quotations, document drawings and drawing changes, generate daily updated parts, material requirements and order lists or structure the plant documentation. Thanks to the consistent technical project documentation, quotations can be prepared faster and more precisely, we speed up project development and are thus always up-to-date with the latest technology, we avoid repetitive errors and also increase our economic accuracy - "knowledge management" in its purest form!



Robert Assl-Pildner-Steinburg (right) is responsible for Finance, Human Resources and Central Services. Alexander Rinderhofer (left) is responsible for Innovation, Technology and Sales.

With the transformation of UNICOR into a project organisation, the establishment of a professional purchasing department and the introduction of SAP, we are currently working intensively on creating the basis for profitable work. The close cooperation of the sales staff with project management, engineering, procurement, production and assembly enables us to define economically sensible plant configurations during the sales process and to negotiate prices and delivery times with suppliers at an early stage in order to increase planning and reduce costs.

Thank you for your precise answer! Which brings us to the next guiding principle: Precision?

Precision in customer orientation enables us to be market and technology leaders. Operating in a market segment where we cannot be at the forefront means using our strengths and competencies inappropriately.

To make it right for all interested parties, i.e. a lack of focus on our target groups, means that we are perceived as arbitrary and interchangeable. Our claim in strategic work is therefore to analyse our customer groups, their current and

future needs as well as our competitors in detail and to precisely align our strengths, our range of services accordingly.

Some of the GAW Group companies are already tapping new value creation potentials. How exactly can we imagine that?
Let's take the AutomationX as an example. As part of its strategic positioning, the company is developing into a leading supplier in the customer segment of industrial and branch bakeries. With comprehensive know-how of the processes in large bakeries, we at AutomationX develop highly specific automation solutions - from flour silos through fermentation and baking process control to deliverable baked goods - which make a relevant contribution to process stability, productivity and cost efficiency and thus have a high utility value for our customers. Or the OSMO Membrane Systems. The strategic focus on customer segments from the paper industry, polymer chemistry or biotechnology enables OSMO to identify promising customers. With our solution competency, we specifically address their individual problems and convey security with our experience and reference portfolio. For example, we developed a tailor-made filtration and reverse osmosis process for a biotech customer to isolate proteins from a fermentation process that are used in high-quality cosmetics.

As a globally active group of companies, the pooling of resources has been an essential success criterion for the GAW Group since the internationalisation of the company that began in the 1970s. And networking also seems to be the central topic in the strategy work carried out so far. Are we getting this right? Perhaps you also have an example for our interested readers?
We see networking as the establishment of intelligent networks and as our core strategic task par excellence. The aim is to identify opportunities in all areas where we can develop attractive customer benefits by networking our individual competencies, enable additional growth, become more profitable or differentiate ourselves from the competition with innovative solutions. Networking and cooperation are not self-evident. The interaction of complementary skills must be concentrated and consistently worked on in order not to be lost in day-to-day business. Revenues are generated, but require a high degree of preparation, mutual understanding and trust. It is even more challenging to establish successful cooperation with partner companies of the RAG Foundation: If you ask us for particular examples. As part of an RSBG initiative, Stilmas, Hahn Automation and the GAW Group are attempting to realise savings potential by purchasing certain standard components. The foundation of the new ECON office in China is done in close cooperation with GAW China. Unicor will build a new customer pilot plant at Hahn Automation USA. Together we can design a professional appearance for our target customers and offer multidisciplinary technical solution competency. The logistics and transport competence of the THOMAS forwarding company is highly appreciated by UNICOR when large corrugators are shipped from Hassfurt in Franconia to Vietnam, Morocco or India. GAW technologies, GAW Brazil and OSMO are pooling their complementary competencies and working on a market strategy "Water for Paper".

Networking therefore takes place "thread by thread". Since it is well known that Rome was not built in one day, this requires not only a long breath but also a good portion of intrinsic motivation. What is the inspiration behind it?
Inspiration is the prerequisite for progress, enthusiasm and long-term economic success. The greatest enemy of progress is not the error, but inertia. We see it as a permanent task to evaluate trends, developments and new technologies and to assess their strategic relevance for our future business. The use of our strengths and competencies for the targeted development of new, attractive market segments represents an additional opportunity to expand our economic position in a future-oriented manner. Investing in companies with creative, complementary and innovative niche technologies is another strategic option for developing our performance and competitiveness intelligently and over the long term.

If we briefly review the points of networking, opening up further market segments and value creation potential, then we can see a synergetic know-how network within the Group companies. What is the state of knowledge cooperation outside, i.e. cooperation with national and international universities, universities of applied sciences and research institutions? What can you talk about?
Thanks for the pass. It is true that due to existing confidentiality agreements we can only talk about a small part of our knowledge cooperation with key customers. We are currently working on a digitisation strategy for UNICOR production lines within the framework of a funded research cooperation between UNICOR and the competence centre pro2future (Graz University of Technology, Johannes Kepler University Linz). Empirical values of the employees, production data, innovative measurement and control concepts, statistical process data analyses are to be integrated into a learning, adaptive machine control system. Building materials, composites, recycling are industrial segments in which we have identified an attractive potential for success on the basis of the existing competencies of our subsidiaries.

Last but not least, the big issue of transparency. In many companies there is yesterday's prejudice that strategy work takes place in the "little quiet room". How do you feel about that?
For us, transparency means that our corporate strategy is clear, comprehensible, coherent, documented and known to our employees. It sets out in particular terms how our companies want to achieve their goals and involves the employees in their development process. Goals are realistic, measurable and comprehensible and are based on analyses, data, assumptions, expectations, scenarios and consistent conclusions. We are all called upon to consider in which company we want to work in

five years' time. The world in which we operate is constantly changing. This is the central challenge for any successful corporate strategy. In our view, our employees play a central role in strategy development. By relying on the experience and know-how of our employees. After all, who knows production processes and procedures better than your own employees? Who is more familiar with our customers than our sales staff? Who is better to recognise customer requirements than our service technicians or commissioning engineers? And who is more familiar with our systems than our technicians and designers? Therefore, we would like to encourage all employees to inquire about the respective strategies in their companies, to constructively question them, to contribute their own ideas and expectations and to actively participate in shaping our future within the framework of our guiding principles.

Thank you for the time to answer our questions. We wish you success with your next steps and look forward to receiving further insights into our strategy work in the next issue of our group magazine.

At GAW Beteiligungsgesellschaft, Robert Assl-Pildner-Steinburg and Alexander Rinderhofer took on the motivating, honourable and demanding task of shaping the orientation and development of the GAW Group companies for the coming years.

Two disciplines from a single source.

Text: Marc Pildner-Steinburg **Photo:** BillerudKorsnäs AB

In this article we would like to introduce to you two forward-looking and prestigious projects of our customers in which AutomationX and GAW technologies work together in excellent partnership.

BillerudKorsnäs AB – „the next generation project“

BillerudKorsnäs AB is a Swedish pulp and paper manufacturer headquartered in Solna, Sweden. Listed on the Stockholm Stock Exchange, the company is the result of a merger between Billerud AB and Korsnäs AB. The company has production sites in Grums, Skärblacka, Karlsborg, Gävle, Frövi (all Sweden), Jakobstad (Finland) and Beetham (England).

After GAW technologies had already been commissioned by Voith in 2016 with the supply of working stations, starch and chemicals preparations in the first "milestone project" "Skärblacka", GAW technologies was now directly entrusted by Billerudkorsnäs AB with the forward-looking "next generation project".

The “next generation project“ – Solutions of the next generation

The "next generation project", the largest strategic investment in the history of BillerudKorsnäs AB, is taking place against the background of a steadily increasing worldwide demand for sustainable packaging solutions for food and beverages. The new cardboard machine at the Grüvon mill, with an annual production capacity of 550,000 tons, one of the largest of its kind, will produce beverage, folding carton, top and food packaging cardboard.
In the production of food packaging cartons, the safety of the consumer has the highest priority. An innovative, environmentally friendly and consumer-friendly barrier concept, which perfectly protects the packaged food against undesirable substances from the packaging environment, is the key to this.

GAW technologies has already successfully accompanied a world market leader on its quantum leap in cardboard production and is aware of the special requirements of such demanding barrier coatings. For these applications, special deaerators have been developed which are specially tailored to the needs of the cardboard industry. See report of GAW technologies from the Technology Centre.

SAICA – care for the future

The SAICA Group is one of the world leaders in the production of cardboard and corrugated cardboard, with production capacities of almost 2.4 million tonnes. The Spanish family-owned group is divided into the paper production (SAICA Paper), collection and processing of recyclable materials (SAICA Natur) and corrugated packaging (SAICA Pack) sectors. The group employs over 8,000 people in Spain, France, Italy, Portugal, Turkey, England and Ireland.

In the previous year GAW technologies was commissioned by the SAICA Group with the supply of systems for batch coating colour preparation, a system for the recovery of pigments, a modular measuring system and laboratory equipment.

Both projects are conceived as "productions of the future" and "factories of the future" respectively and therefore strive for a high degree of automation. A case for AutomationX.

Pulsating automation – The factories of the future

AutomationX and GAW technologies, two strong synergy partners within the GAW Group, can already refer to several hundred automated and optimised plants in the pulp and paper industry worldwide. It goes without saying that "future-proof packaging solutions manufactured in factories of the future" place correspondingly high demands on the automation solution.

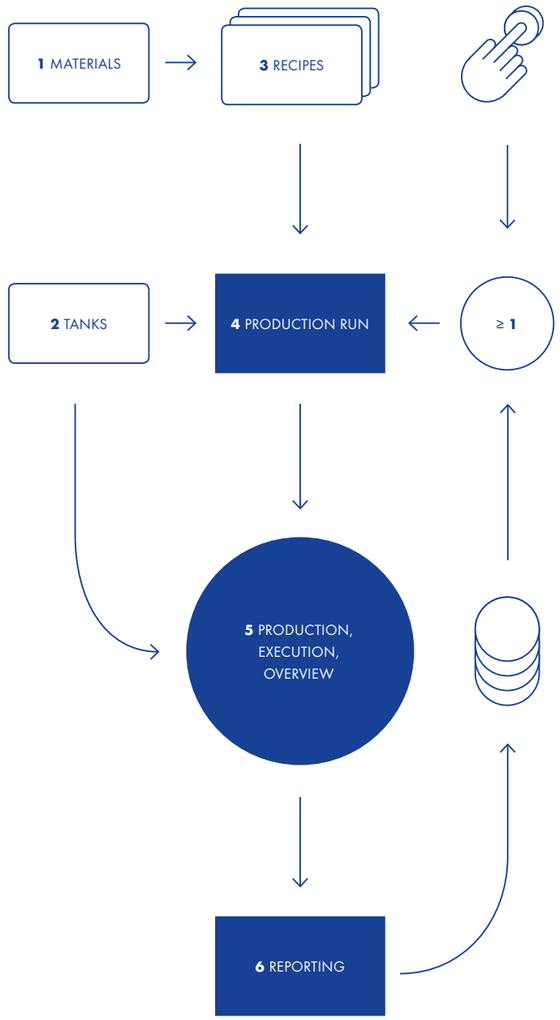
Production of the future – Spot landing for the production of the products

Because the declared goal of the newly introduced driving style of a future-oriented production is the precision landing for the manufacture of the products. Not more and not less. This involves calculating the quantities of raw materials and semi-finished products in order to produce exactly only the required quantity of product which is ultimately required on the paper or cardboard. Another requirement for production in these "factories of the future" is automated business resource planning.

Production of the future – Enterprise Resource Planning (ERP) Coupling

Enterprise Resource Planning (ERP) refers to the coupling of productive systems to superimposed commercial systems.
This means that the production specifications are transferred via a standardised interface. The industrial "Simple Open Access Protocol" (SOAP) standard is used as the protocol for this communication.

For example, the ERP system sends the quantity of reel spools with the grade, and the production system calculates the necessary materials and schedules the entire production process.
To implement these two requirements, the Advanced Process Control solution from AutomationX was newly developed and contains extended functionalities. This solution has already ensured convenient and efficient analysis of process data and intelligent control and regulation of the process on the basis of the acquired data:



- Managing varieties
- Communication via SOAP to ERP systems
- Calculation of the required material mix
- Assignment of orders to system units (mixers)
- Compatibility of recipes
- Fully-automated processing of orders
- Confirmation to the ERP system
- Order-related reporting

Communication to the ERP system - as a first step, the Operator enters the data, and in the second phase, the online transmission takes place. This means that all processes can be carried out without an ERP system and the customer may have the alternative in the driving behaviour.

GAW technologies – Excellence in Planning.

GAW technologies networks planning processes - and relies on highly efficient offer engineering.

Text: Wolfgang Schmölzer **Photo:** AUCOTEC

GAW technologies is engaged in the optimisation of its customers' plants to the extent of 99%. However, it would be more than contradictory to act only in external relationships and thereby disregard internal relationships. How could we plan the "productions of the future" for others if we ourselves still act like yesterday?

GAW technologies has now taken the first step in order to expand its leading international position in preparation systems for the production of paper and cardboard and has implemented an integrated planning system for piping and instrument diagrams (P&ID).

After careful research and thorough consideration, the decision was made in favour of the "Engineering Base" (EB) of AUCOTEC.

Office compatibility, object orientation, change tracking, mobile solutions and the user-friendliness of the "Engineering Base" were all decisive factors in the decision. In addition, AUCOTEC's support, secure data migration from ELCAD to EB and cost-benefit assessment have contributed significantly to the decision for the Engineering Base. The central plant model of the planning system eliminates sources of errors and ensures the effective linking of mechanical and electrical planning.

In the course of the implementation, the effectiveness of the planning system was increased to meet the special requirements of GAW technologies. "We always welcome suggestions from practical experience. The cooperation with GAW technologies, the mutual inspiration, the mutual learning from each other has always been important to us", Heinz Rechberger, Managing Director of the Austrian AUCOTEC subsidiary, is pleased about the successful implementation.

After the successful complete introduction at the headquarters of GAW technologies, the next milestones are now being set. For example, all subsidiaries abroad - starting with GAW USA, Chicago (IL) - are to be integrated into the new system and converted to it. →

A further stage is approaching us with the connection to SAP. This means that order enquiries and information can then be exchanged consistently between the two systems.

We asked the technology manager of GAW technologies, Wolfgang Schmölzer, who is responsible for the project, for a short interview.

“Constantly optimising the customer's systems is already a great challenge in itself. How can we then imagine the area of internal optimisation? The introduction of such a planning system will probably turn a large part of the usual operational procedures upside down, won't it?”
Turning upside down is a little exaggerated, but yes, Engineering Base was and is making adjustments to the necessary processes. "Engineering Base" is a computer program without which internal networking on this scale would not be possible. Ultimately, however, it remains a computer program. And in order to make the best possible use of this, it is necessary to maintain a logical engineering chain. If you want to bake a cake, you don't put the candles in the eggs.

A fitting comparison, we would like to continue. If we stick to the recipe when baking the cake, we can expect the cake to taste good. Hence the question. "What are the particular expectations of the Engineering Base? How is efficiency increased in planning? How does the intended minimisation of potential sources of error come about?"
In contrast to yesterday's way of working, quotations are used one to one as a project basis today in the case of an order. This means that a pipeline and instrument flow diagram with high planning progress and all lists necessary for specification are already available at the start of the project.

In the special case of GAW application, we also have to consider the cooperation between the electro-technical planning department in Kapfenberg and the mechanical planning department in Graz. There are almost 80 kilometres between the locations.
Here the EB helps us enormously, especially since it is now finally possible to carry out changes "live". The colleagues from electro-technical and mechanical planning now always fall back on the current planning status. Mr. Narenhofer and Mr. Lenger from the electrical department have achieved a great deal here, so that a high degree of implementation already exists in the electro-technical planning.
In addition, it is now easy to create and access small and large style templates. Thus, we have a suitable tool to advance our technology management.

In summary, these are already remarkable advantages for making our processes more modern and streamlined in many respects, and we are only at the beginning!

"The effectiveness of the planning system was increased in line with the special requirements of GAW technologies." - What can we imagine? What was the cooperation with AUCOTEC like?
There is still considerable potential in these planning tools that needs to be raised. Let's remember the Excel of the 90s and compare it to the Excel of today.

The product managers at EB know this, of course, and so we had the impression right from the start that our suggestions for improvement would be welcomed.

At the beginning of July, a test version of a completely newly developed module was installed, which made it possible to assign fabrics directly to objects, dynamically change sizes of shapes and treat pipelines on a functional basis.

These are all points that we urged last year on a massive scale and are now being implemented. I think that speaks for itself.

One of the coming stages will be the integration of the worldwide subsidiaries into the planning system. The principle of "other countries, other customs" in the back of my mind says: Isn't some kind of “Culture Clash” preprogrammed here? If so, how is this counteracted?
When we integrate the subsidiaries, we are already using a well-established system with the associated libraries. It is therefore not necessary to follow the stony path of many individual system adaptations. Clearly, what remains are the adjustments to internal processes. However, this should not be a problem considering the flat and flexible organisational units of our subsidiaries.

GAW technologies
trusts in the Engineering Base of the company AUCOTEC.

June 2018
Implementation of the integrated planning system for piping and instrument diagrams (P&ID).

Next stage
Integration of subsidiaries worldwide.

Concerning "Culture Clash", I see enormous advantages, because if we do it intelligently, and we will, we have the perfect tool to combine our know-how from Graz with the know-how from Chicago, the new wind from Brazil and the pragmatic solutions from Kunshan.

Wolfgang Schmölzer is responsible for technology management and plant planning at GAW technologies.

From the Technology Centre into the World – the GAW Airvac.

The GAW Airvac is a vacuum deaerator that is used for deaeration of media, dispersions, emulsions and coating colours. Its use withdraws air from the coating mass and thus enables a bubble-free coating application on the paper web.

Text: Marc Pildner-Steinburg **Photo:** Thorsten Urschler

The first non-contact systems for the application of coating colour and emulsions with a barrier effect on paper or cardboard had to be withdrawn from the market due to a variety of reasons, but above all, because of inefficient deaeration of the coating compound. Special requirements on the coating compounds for a Curtain Coater made it necessary to further consider the coating colour properties and apparatus requirements for coating colour deaeration.

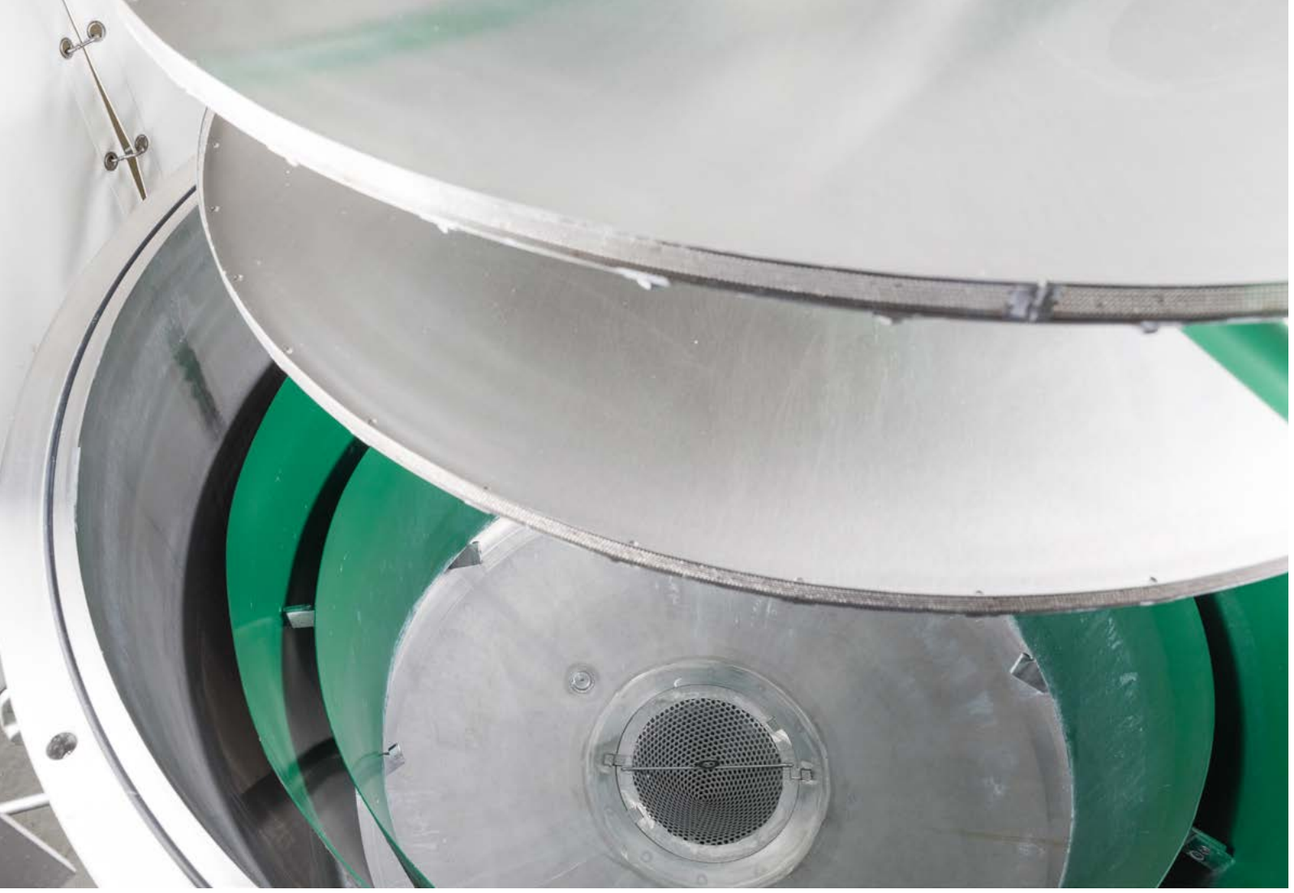
The deaeration of coating colours turned out to be the essential process step in curtain coating, since air bubbles are not rubbed on the paper or cardboard but occur as defects in the form of oval uncovered areas.

After gaining experience in our projects with all of the deaerators available on the market, all of which are, for the most part, non-purpose solutions from the food industry, we were aware that the deaeration of coating compounds can be made much more efficient.

And thus we set out to launch our own development.

Quantum leap in cardboard production – the initial situation

The initial situation was good. One of our highly valued customers was ready for the quantum leap in cardboard →



production. This customer has already been researching for years on an in-house development regarding the protection of cardboard-packed food. Over five years of research and development, thousands of migration analyses and several million pieces of produced, secure folding cartons made this future technology ready for industrial production. The core component was an innovative, environmentally compatible and consumer-friendly barrier concept.

The master examination for such demanding barrier coatings is, in particular, to meet the special requirements for the preparation of the coating mass. An extension of the excellent cultivated and fruitful partnership of the companies for decades was therefore obvious.

In the course of the cooperation, GAW technologies was entrusted with the challenging and honourable task of rebuilding and expanding the existing facilities to implement this forward-looking concept. This was the ideal opportunity to develop deaerators specifically tailored to the needs of the cardboard industry.

From the sketchpad to the pilot plant – the development begins

Since both the vacuum deaerator and the cardboard coating are new developments, a joint test period was planned, which should be used for trials, adjustments and improvements.
At the beginning, a series of trials was started at the GAW technologies' own pilot plant to determine the process, in which we dealt with all the vacuum deaerators established on the market and their processes in depth.

In this test series, it was established beyond doubt that one or more basic procedures were used in the previously established vacuum deaerators:

- A medium to be deaerated is introduced into a closed system in which the negative pressure prevails. Due to the negative pressure in the system, air or gas inclusions expand, burst and are virtually sucked out of the medium.
- The shear forces introduced into the coating mass to be deaerated serve to burst the micro-structure and separate it into the smallest particles. Gaseous inclusions are brought to the surface and detected by the applied vacuum.
- The medium to be deaerated is distributed in a thin film on as large a surface as possible. This also serves to bring gaseous inclusions to the surface so that they can be detected by the applied vacuum.

With the knowledge of the procedures used and the experience gained in practice, a combination of all common methods was forced in the development of the GAW Airvac.

The medium to be deaerated is distributed in parallel to the rotating centrifugal discs via three separate connections. From these, the coating colour is centrifuged radially against a triple wall system, runs off and is collected in the lower part of the container.

During this process, fine drops of colour are formed, which promote deaeration. The air bubbles contained in the paint droplets expand and burst as a result of negative pressure in the vacuum container. The air thus released is extracted by the vacuum system.

From the pilot plant to the machine – the GAW Airvac "performed"

After completing the tests, the development of the GAW Airvac from the pilot plant led us directly to the cardboard machine's application unit. The (prototype) deaerator was put through its paces and optimised in a lengthy test phase with regard to the following criteria:

Deaerator capacity at different parameters with respect to:

- Throughput
- Vacuum
- Speed
- Design of the application nozzle
- Contamination
- Deposits
- Design of the application nozzle
- Cleanability
- Operational performance
- Noise level
- Vibrations
- Duration of start-up and shut-down scenarios

The Kaiser's new deaerator.

After more than a year of testing, we asked the developer, Philipp Kaiser, for an interview about the status quo of the development.

Interview: Marc Pildner-Steinburg **Photo:** Thorsten Urschler

Mr. Kaiser, you were significantly involved in the development of the GAW "Airvac" vacuum deaerator. What is the status of the development after completion of these lengthy, over a year-long test series?

The tension before and during the first series of tests was, of course, very great. Fortunately, the first quality defects could then be quickly traced back to a defective seal, which could be replaced quite easily. From the very first moment the deaerator also ran very quietly in terms of volume and vibration. In the 1st improvement step, we have completely revised and replaced the application units for the discs 2 and 3, which improved the deaeration performance even more. In the 2nd and last major adjustment, we equipped the deaerator with a splash guard insert, which should make cleaning easier for the operating personnel and minimise downtimes. The elaborate and expensive internal coating with which we have equipped the deaerator has unfortunately turned out to be superfluous and rather obstructive during the cleaning process. Nevertheless, our customer is more than satisfied and we were able to gain some additional know-how.

You have mentioned an improvement in deaeration performance. Where does the GAW "Airvac" vacuum deaerator rank in comparison to the competition?

As we combine several deaeration mechanisms in one device, which has also been specially developed for the paper industry, non-automotive deaerator systems can no longer keep up. Even in direct comparison with a competitor's product for this application, we were able to maintain our position and even exceed the deaerators performance.

How did you feel about working with your colleagues in this very production-oriented design phase?

The design of the vacuum deaerator ran smoothly over long distances. Due to the close cooperation with the in-house production and the resulting short distances, essential difficulties could be recognised and eliminated in advance. We were also able to implement and retrofit the improvements mentioned above in record time.

Complex barrier coatings present producers of food packaging with a particular challenge. To what extent does the deaeration of the coating mass influence the result?

Due to the ever-increasing demands placed on such barrier screeds, our customers have to put all their know-how into the formulation of the coating mixes. Especially in test runs, where the rheology may not be perfect yet, it is important that you can rely on our deaerator and also present your customers with an optimal product.

How did you come up with the idea of combining the common methods of deaeration into one system?

The concept development was a longer GAW-internal process in which many clever minds were involved. After a lot of research work and some discussions, we jointly agreed on the implemented variant.

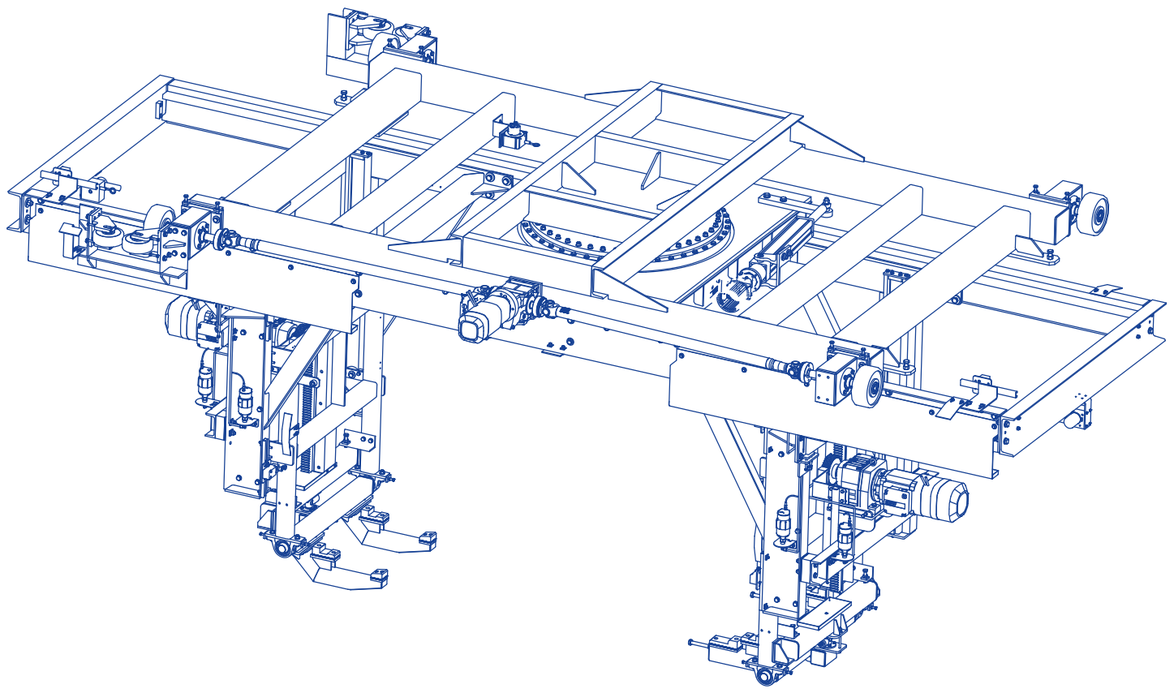
It is probably not very often that you can advance your development from the very beginning with such a renowned customer. What was the cooperation like?

Right from the start, our client fully supported us and critically questioned important points. We were also always able to access the plant or other resources after a short appointment. In return, we were constantly on site during the initial test phase and were not slowed down by deep winter conditions or holidays. This is exactly how I imagine a constructive and friendly cooperation.

Audi – Special Design.

GAW technologies has developed a special solution for Audi for the automatic insertion of the car bodies into the existing conveyor technology. With the specially developed converter, car bodies in four different derivatives are introduced into the automated material flow system.

Text: Robert Freisinger **Illustration:** GAW technologies



The special design is located in the material flow between the end of body construction and the start of the painting process. While car bodies are transported in large numbers from the body shop to the paint shop on the existing conveyor line, the new lifting and moving device is used for car bodies that are fed in small numbers to the automated painting process. By means of the newly installed system, finished body-in-white bodies will also be infiltrated into the existing skid conveyor technology. For this reason, the GAW converter is dimensioned for a car body weight of up to 750kg.

The process sequence specifies that a worker transports the body, which is loaded on a trailer, with a tractor to a defined delivery point. This delivery point is located on a highly frequented lane within the factory hall, which is why no mechanical signposts could be installed on site. In accordance with this restriction, the car bodies are carried by the worker at the delivery point in slightly different positions.

The task of the new system is to detect the position of the car body to be inserted and to automatically transfer it to the skid conveyor system. Thus, the new lifting and moving device must recognise the type and position of the body, lift the body out of the trailer and deliver it to a specific location within the existing conveyor system. This requires a movement sequence of the transfer device in the Z-Y and Z axis. In addition to these movements, the newly developed special design must be able to automatically compensate for an inclined position of the trailers. The challenge was to master the interface from a manual system to an automated system.

At the beginning of the concept phase GAW invested sufficient time in the analysis of the existing processes and developed a technical solution according to these requirements. The aim was not to influence the existing logistical process within the hall, to implement different derivatives with one device and to implement a stable and error-free system. Every day, several dozen car bodies are automatically fed into the material flow system.

Depending on the derivative, the converter developed by GAW lifts car bodies on existing assembly subframes or directly on the body. Due to the different car bodies, these are lifted at different points. In addition, the system should be suitable for future derivatives. The developed special construction consists of a multi-axis system to map all necessary motion sequences. The ceiling of the hall is fitted with rails to allow movement of the entire structure. Two wheel blocks are guided by a drive and thus enable a defined driving style parallel to the body. A slewing ring is mounted on this movable travel frame, which enables the rotation of the entire lifting and shifting device. This rotary movement is necessary to compensate for the different entry angles of the trailers. Below the turntable is the actual mechanism for gripping the body according to its position and enabling the movement sequences for picking up and delivering the body. Two gripper arms are installed on this rotating frame, which allow movement along the body. These two gripper arms can be controlled independently of each other in order to pick up the different car bodies. In addition to the longitudinal movement, both gripper arms have a stroke in the Z-direction. Thus each gripper arm can be controlled independently in X and Z direction. Both gripper arms are equipped with receiving jaws on which the different car bodies are picked up. All axes of the system can be controlled independently and are equipped with state-of-the-art sensors and drive technologies. All movements of the system are monitored and controlled according to the requirements. The lifting and shifting device developed by GAW can have a total of six independent travel axes.

In addition to the challenge of design and development, it was also necessary to master the tight schedule for implementation at the customer's site. This was a sporty four-day period for the assembly and initial commissioning of all mechanical, electrical and control systems. But thanks to excellent project planning, which also provided for a test run of the plant in the Graz pilot plant, this task could also be fulfilled with flying colours.

Once again, this project allowed us to demonstrate our decades of experience in special machine construction and automation technology and to put a fully functional plant into operation smoothly. Following the successful commissioning of the system, feasibility studies for the integration of further derivatives have already been commissioned from Audi.

Uniqueness @ MPREIS.

AutomationX implements a unique central control station and control concept for MPREIS.

Text: Pildner-Steinburg **Photo:** MPREIS

MPREIS, the Austrian supermarket chain in Salzburg, Carinthia, Vorarlberg and Tyrol, is building a production facility for bakery products and a meat processing plant in Völs near Innsbruck. Both companies are combined in one building. In a first step, AutomationX was commissioned to control the silo systems, the central control technology via the bakery production systems, the warehouse management system and the quality assurance system.

Under the premise of a uniform control station concept, the aim is to control and monitor as many technical trades as possible with AutomationX. Due to the strength of the company and its rich experience in various fields, AutomationX was able to implement the following trades:

- Control technology of the silo plant
- Recipe management system
- Warehouse management
- Connection of kneaders
- Production planning software
- Quality assurance
- Central control technology for all bakery equipment
- Building control systems and energy data acquisition systems for meat factories and bakeries
- Control of conveyor systems
- Control of the refrigeration systems for the meat factory and the bakery as well as the deep-freeze warehouse
- Integration of the block-type thermal power station into the AutomationX control system

Continuous traceability

Particular attention was paid to the continuous traceability of the production process, from goods receipt up to delivery. The system takes over the raw materials upon delivery and reports the total stock to the MPREIS merchandise management system.

The AutomationX warehouse management module handles the monitoring of the minimum shelf life, storage at storage locations, stock transfer and picking. Hand components are prepicked in RFID-coded containers for the lines with batch accuracy. At the mixing station, the manual additions are displayed and added via the container number.

Once the raw materials have been dosed, the AutomationX system transfers the information relevant for the kneading process to the two fully automatic kneading systems. On one line, the kettles are manually fed to the kneaders. This process is monitored via RFID tags on the kneading bowls and readers at the dosing station and on the kneading machines. There are touch panels along the production line for entering quality parameters. Weights and temperatures are measured using connected scales and temperature sensors. Dimensions must be entered manually.

Building control system, MSR

The entire measurement, control and regulation technology (MSR) of the three building sections, butchery, bakery and technology, is controlled by AutomationX, with the focus on the energy-saving operation of the building. For this purpose, a large number of heat recovery circuits from refrigeration plants, and furnaces feed a buffer tank. Energy consumption is recorded by the AutomationX system either via interfaces, such as directly from the block-type thermal power station, or via flow and temperature measurement and forwarded to a database. The freely programmable, adaptable, object-oriented AutomationX controller shows its strength in these complex, cross-plant controls.

Refrigeration Units

The refrigeration systems for the production complex, with more than eighty refrigeration points and a cooling capacity of two megawatts, were installed by a well-known refrigeration system manufacturer from Vorarlberg. In order to remain true to the central control station concept for the entire operation, AutomationX was allowed to implement the control of these systems. Here, too, the freely programmable controller should prove to be the right decision. This is because recooling in particular, which for the most part takes place via well water and air coolers, includes special control engineering requirements. A sliding condensation temperature, depending on the outside temperature, ensures energy-saving operation.

Auxiliary systems, central control technology

All production machines are connected to the central AutomationX control system via interfaces. Technical status data such as fault and operating messages are recorded, quality-relevant data such as temperature trends can be called up at the touch of a button. AutomationX also controls various conveyor systems in this operation. The central control station and control concept, which is unique in this environment - from production control to the control and monitoring of auxiliary systems - was implemented with flying colours thanks to the trust of the MPREIS Group in our company and the excellent cooperation of highly qualified and experienced specialists.

Finally, we can hold on: Only one software system for all tasks makes operation, service and maintenance enormously easier, energy-saving operation through status information on all trades, as well as central data storage and evaluation. In addition, the technical administration of only one system lowers the running costs.

The solutions of the AutomationX

Modular software solutions from AutomationX leave nothing to be desired in the control and monitoring of your bakery. The modules are also made individually ready for use by you.

01/ axStorage

It starts with the goods carrier ...

Module for checking incoming goods, feed-back to merchandise management systems, batch-specific storage and picking

- Incoming goods inspection
- Labelling
- Batch accurate traceability

02/axProd

... exactly what you want to know ...

Software module for the planning of production and manufacturing orders, recipe management system, flow definition of the entire manufactur-ing process, control of systems for dosing liquids and solids

- Fluid components
- Flour and small components
- Pre-dough systems
- Planning

03/axWater

... exactly what you want to know ...

(8 systems, expandable to a further 12 next year), water mixer, industrial components, precise

- Fluid components
- Flour and small components
- Pre-dough systems
- Planning
- Evaluations
- Process definition

04/axRest

... is process accuracy an issue for you?

Module for guiding pre-dough and dough in boilers

RFID-guided monitoring of the boiler fermentation process
Control of kneaders and lift tippers
Detection of dough temperatures

05/axQuali

... exactly what you want to know ...

Quality assurance system for recording quality data as a stand-alone system or integrated into the production process.

- Fluid components
- Flour and small components
- Pre-dough systems
- Planning

06/axOEE

... exactly what you want to know ...

Module for checking incoming goods, feed-back to merchandise management systems, batch-specific storage and picking

- Fluid components
- Flour and small components
- Pre-dough systems

07/axFermentation

... exactly what you want to know ...

Software module for the planning of production and manufacturing orders, recipe management system, flow definition of the entire

- Fluid components
- Flour and small components
- Pre-dough systems

08/axCool

... exactly what you want to know ...

Software module for the planning of production and manufacturing orders, recipe management system, flow definition of the entire

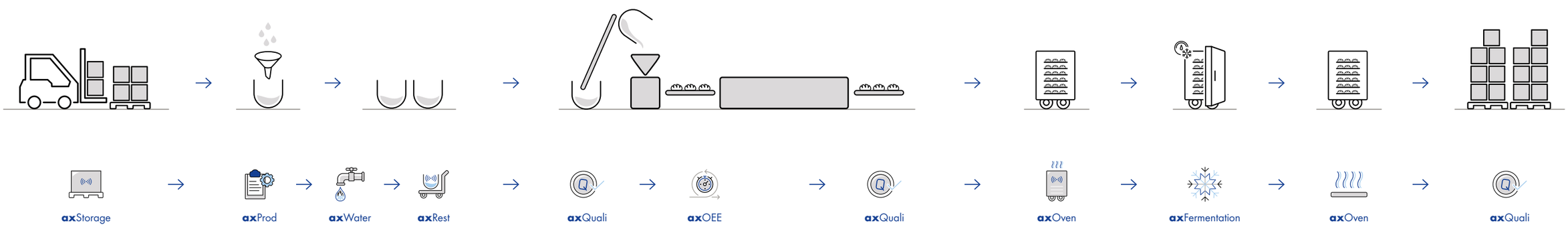
- Fluid components
- Flour and small components
- Pre-dough systems

09/axOven

... exactly what you want to know ...

Software module for the planning of production and manufacturing orders, recipe management system, flow definition of the entire

- Fluid components
- Flour and small components
- Pre-dough systems



Automation Fresh.

The modular software solutions for Resch&Frisch allow you to control and monitor the production lines.

Text: Marc Pildner-Steinburg **Photo:** Resch&Frisch

Founded in 1924, Resch&Frisch has developed into an internationally active baking goods specialist. High quality standards in the premium segment and our own Resch&Frisch system offer a first-class range of products for various target groups. In addition to fresh products, 80% of pre-baked products are also produced, which are ready-baked on site in the stores or at the consumer's premises. Such a diverse and extensive production is only possible with state-of-the-art automation technology.

Resch&Frisch operates four production lines in Wels, Austria. After the control of the first two lines had been replaced by AutomationX in the first step in a carefully prepared weekend construction, the next step was to enlarge the building. In the third step, the control system will be extended by two further lines and a goods preparation station.

In order to implement a uniform control technology concept, all air conditioning, ventilation and heating systems are also controlled by AutomationX.

- Control technology of the silo plant
- Recipe management system
- Connection of kneading machines
- Production planning software
- Quality assurance
- Control of the building control system

Production scheduling

The production orders are entered in the AutomationX production planning system. The planning can be done on the basis of the sales articles (a 6x6 item bun carton), on the basis of the production article (buns) or on the basis of the dough. The material master is mapped in the system. The conversion to dough batches as well as the grouping of different sales or production articles into a possibly common dough takes place in the AutomationX system.

Kneader connection

The kneading recipe is part of the mixing recipe. This allows a comfortable adjustment via control station, as there is no need to operate the kneaders via a separate program. The new lines do not require a control panel either, as they are operated from the panel at the mixing station. This saves hardware costs and enables simple operation on a single interface.

Quality assurance

Several quality assurance stations are located on the lines themselves. In production, a rotating light signals to the employee that a quality inspection is to be carried out. The measurements required for a product such as length, width, weight and measuring cycle are specified in the respective recipe. The values are entered via a clearly arranged input window. Since the measured values are transferred to a database and stored for each production batch, analyses such as standard deviation and mean value chart for all measured values are possible.

Goods preparation

The calculated material list can be called up from the production plan for a defined period at the push of a button. If this material list contains semi-finished products, for example a pizza sauce to be mixed manually, an order is created in the system for these and the order appears on the panel of the corresponding work centre.

Evaluations, traceability

All production data is stored in an SQL database specifically for each batch. The aXProduction module offers a multitude of possibilities for web-based evaluation. If irregularities occur in the delivered products, the production process can be traced exactly. An evaluation shows the planned, as well as the actual machine utilisation, and enables a simple and clear presentation of production bottlenecks. A batch-related evaluation of different parameters such as dough temperatures and measured values can also be presented at the QA stations. The possibility to filter and store evaluations by time period, line and product increases the ease of use enormously.

Building control system

Since all ventilation systems are controlled by AutomationX, uniform maintenance and operation of buildings and production technology are guaranteed in a uniform system. This increases the quality of maintenance and operation and reduces the amount of training required by technical personnel.

Water is a precious commodity!

OSMO Membrane Systems, a highly specialised company of the GAW Group, develops and implements high-quality industrial membrane separation systems for a wide range of process applications. The focus here is on tailor-made special systems, ultra-filtration, nano-filtration and reverse osmosis systems as well assolutions for water and process water treatment.

Text: Peter Hubert **Photo:** OSMO

Regulatory requirements, increasing demands on efficiency and increasing competitive pressure in international markets place high demands on the operators of existing water treatment plants. OSMO Membrane Systems GmbH has been developing innovative and cost-effective water treatment systems and optimising existing systems for many years. The most important thing here is to minimise investment and operating costs without neglecting the requirement for high system availability. For existing systems in particular, there are a number of starting points for reducing operating costs, e.g. in terms of energy and chemical savings, and significantly increasing the efficiency of the systems.

Optimisation of existing ion exchanger systems

Existing ion exchanger systems can be optimised with regard to production and regeneration processes. This results in a noticeable saving of regeneration chemicals, lower waste water quantities or considerably longer production cycles. In addition, the use of a modern membrane degassing system to remove CO_2 upstream of the anion exchanger can help to improve deionised water quality. The metrological inspection of the entire system often offers considerable potential with regard to the protection of downstream systems. The use of state-of-the-art detection methods for quality parameters (conductivity) and trace substances (silicic acid) extends the desalination intervals of boiler systems or, for example, protects downstream turbines from deposits. Prevention is the key to safe and efficient systems operation, because the costs resulting from production downtimes or damaged systems components are much higher.

Future technologies that improve the "Energetic Footprint"

OSMO and GAW technologies, two excellent synergy partners

More than 30 years Experience

Use of alternative raw waters (e.g. surface water) is replaced by an upstream ultra-filtration

In many cases, a reassessment of available raw water sources offers new approaches, in particular to changes in procurement costs, restrictions on discharges or changing water quality (e.g. organic). Modernisation of existing systems makes sense, especially for larger process streams. The treatment of river water using ultra-filtration and reverse osmosis can make a significant contribution to increasing efficiency and conserving natural water resources. The best example of this is the upstream installation of ultra-filtration and reverse osmosis systems in front of existing ion exchanger systems. OSMO Membrane Systems GmbH has developed concepts for this together with well-known industrial customers, in which the use of precious drinking or well water can be completely dispensed with in the future. In addition, the upstream membrane system provides a consistently high quality for the existing ion exchangers, independent of raw water fluctuations. This has enabled the operating cycles to be extended, chemicals to be saved and the availability of the system to be increased.

→

Optimisation of existing reverse osmosis systems

A process-technical examination of existing reverse osmosis systems often offers great optimisation potential. Many existing systems can be operated much more efficiently in terms of energy consumption, operating costs and membrane service life if they are brought up to the state of the art. By using frequency-controlled high-pressure pumps, the energy requirement of reverse osmosis systems can be reduced by up to 30%. The installed membrane area has an equally large influence. Some customers operate the systems at or above the designed performance limit. This has a negative effect on the service life of the diaphragm. Modern systems can generally be controlled in the range of 70% to 100% of the generation capacity. This is necessary due to unsteady and fluctuating consumption values of process water in many branches of industry in order to be economical and competitive.

Many reverse osmosis systems are still fed with city water today. The prices for this have risen noticeably in recent years. The OSMO Factor X system offers an optimal and sustainable treatment concept for this purpose. In this process, the waste water stream produced by reverse osmosis is further processed, which makes it possible to halve the waste water stream. This not only reduces the amount of waste water, but also saves costly city water.

Summary

The potential for cost savings and the possible increase in availability through optimisation of existing systems can be determined transparently and reliably. In most cases, a large savings potential can be achieved with little effort and a renewed process engineering evaluation. OSMO incorporates existing and proven process technology such as ion exchangers or gravel filtration into the overall concept in order to create the best economic conditions. The amortisation period of such optimisations is usually between 6 and 24 months. This illustrates once again that the optimisation is not only technically sensible, but also economically justifiable. Our task at OSMO as one of the leading systems constructors in the field of process water treatment is now to advise and support companies in the implementation of such efficient and ecologically and economically sensible optimisation measures.

OSMOs Laboratory system for membrane experiments.

We are pleased to present Auto MemCell, the latest addition to our OSMO laboratory system family.

Text: Peter Hubert **Photo:** OSMO

As part of the OSMO laboratory system family, the Auto MemCell was developed to perform manual and automated laboratory tests and support their research and development work. For membrane manufacturers and institutes, the MEMCELL product family can be adapted with cells in parallel or in series so that, for example, different membranes can be tested simultaneously. The system is suitable for membrane screening, cleaning tests, laboratory tests and quality management. All common flat membranes can be used, optionally also other membrane types.

Technical data:

- Operating pressure up to 64 bar (standard), 80–100 bar on request
- Material stainless steel (standard 1.4571), other materials on request
- Capacity of feed tank: 0.5–2 Litre
- Cooling or heating, e.g. by double-walled tank design
- Active membrane surface: 80 cm²
- Option: Application of other membrane types

Good morning, Tiền Phong!

UNICOR, one of the world's leading corrugator manufacturers since 1984, wins Tien Phong, an important Vietnamese pipe manufacturer, for itself.

Text: Fabian Spitzner **Photo:** UNICOR

Tien Phong, a listed Vietnamese company, produces PVC and PE plain pipe on over sixty systems. This makes Tien Phong one of the three largest pipe manufacturers in Vietnam. The main factory is located in Hài Phòng the third largest city in Vietnam. Hài Phòngan industrial and port city on the Gulf of Tonkin, is located about two hours by car east of Hanoi and south of the Chinese border.

UNICOR already found itself in advanced talks and negotiations with Tien Phong in 2014, but at that time the decision was made in favour of a Chinese corrugator manufacturer. Since then, Tien Phong has produced double-walled composite pipes from 150 to 800 mm ID at two plants.

Due to increased quality requirements and purchase quantities, an expansion of production was now on the agenda. The profile and procedural challenges of this project were correspondingly demanding and presented UNICOR's E&V with a major challenge. For example, a technical solution was developed for a combination moulded jaw profile that enables the production of PP SN8, PP SN12 and PE SN4 in combination with the double-layer in-line sleeve.

A total of eight nominal diameters from 200mm to 1000mm inside diameter will be produced in the future. These eight nominal widths, each in three different versions, result in a total of twenty-four different pipe products.

Delegation from Tien Phong at a visitation in Hessfurt.

Forza UNICOR!

After China, Italy is home to the most corrugator manufacturers and UNICOR nevertheless succeeded in securing an important order for itself. UNICOR has thus succeeded in positioning itself as market leader even for small corrugators.

Text: Fabian Spitzner **Photo:** UNICOR

The Italian electrical accessories manufacturer Bocchiotti joined the French-German Hager Group at the end of 2014. TheHager Group is a leading provider of solutions and services for electrical installations in residential, industrial and commercial properties.

In the course of the restructuring and integration into the Hager Group, Bocchiotti made extensive investments in order to align the company for the future. This also included the renewal of the corrugated pipe production. Up to this point, Bocchiotti in Northern Italy had produced more than 20 corrugator lines of corrugated PVC and PP pipes.

UNICOR succeeded in inviting company representatives of the parent company and decision makers of Bocchiotti together to the first demonstration of the UC 36/80 V at UNICOR in Hassfurt, and the visitors were very enthusiastic. It was clear: What is needed are UNICOR corrugators, as they are not surpassed in performance. With this fact, UNICOR was able to position itself accordingly well against the competitors from France and Italy. Since Bocchiotti wanted to take over the complete product range (including Bicoflex, a PVC corrugated pipe with PP sheathing) from the existing production as well as to integrate a new orientation with regard to Pre-Wired (cable protection pipe with drawn-in electrical wires - a product which is in great demand in France, Switzerland, BENELUX and also Scandinavia), UNICOR's technology pulled out all the stops in order to carry out the project successfully.

And so, in addition to the UC 36, the new SWP 58ML spray head also played an important role. Every step that "teased" more output out of the corrugator and spray head meant that the upstream equipment also had to be adapted.

All four turbines were successfully installed step by step over the course of 2017 and, fortunately, are operating at such full capacity that there are already discussions on further investments.

And the export prize goes to ...

At this point, we originally wanted to inform you about two ECON projects, but for good reason we have rejected this plan and will do so in the next issue. Instead, we can congratulate the ECON on winning the Austrian Export Prize 2018.

Text: Marc Pildner-Steinburg **Photo:** ECON

Uwe Neumann (CSO of ECON),
Gerhard Hehenberger (CEO of ECON)

The Austrian Export Prize 2018 was awarded at the Exporters' Nite on 21 June. Austria's top exporters are the focus of this award. Every year, the export prize honours the above-average commitment and success of Austrian entrepreneurs in international markets.

The export performance of previous years is assessed. Or the company has acquired a strong position on the world market, has an efficient foreign network or is a pioneer in exports.

In the case of the awarding of ECON, all criteria were met together. The CEO and owner Gerhard Hehenberger, for example, has successfully built up a team over decades of work, which tirelessly and step by step advances the internationalisation of the technology company. Yesterday Austria, today China, India and the USA, tomorrow the whole world.

We congratulate on this appreciation and recognition as an Austrian model company and look forward to reporting on the future development of ECON.

Photo 1 (top right): from left to right: Harald Mahrer (President of the Austrian Chamber of Commerce), Uwe Neumann (CSO of ECON), Gerhard Hehenberger (CEO of ECON), Margarete Schramböck (Minister for Economic Affairs and Digital Affairs), Renate Scheichelbauer-Schuster (WKO Chairwoman of the Federal Trade and Crafts Division)

Photo 2 (bottom right): ECON-Team at the award ceremony from left to right: Sales Manager Herwig Auerbach, Sales Manager Wolfgang Schaner, CFO Sandra Luger, CEO Gerhard Hehenberger, CSO Uwe Neumann

ECON Machinery Pvt. Ltd. - the success story in India continues!

In February 2018 the most important plastics trade fair Plastindia took place again in Gandhinaggar in India. The global event takes place in a 3-year cycle and thus gives the worldwide plastics industry a perfect opportunity to enter into the Indian market.

Text: Uwe Neumann **Photo:** ECON

ECON not only participated successfully in the trade fair, but was also able to draw an excellent balance over the development of the last three years. ECON India is and remains a success story.

The Indian market has developed into a hotspot on the ECON world map in the last two years due to the high commitment of the local team with the support from Austria by sales manager Uwe Neumann. In the meantime, ECON is the absolute market leader there with a market share of approximately 80% for pelletising systems sold to end customers. In addition to ECON's main product, underwater pelletisers, other systems, such as air pelletisers and pyrolysis furnaces, were also placed on the Indian market last year.

With the highly motivated team under the site manager Vinu Chavda, an absolute highlight took place at the beginning of 2017 with the move into the new building. All customer trials can now be carried out professionally and successfully in a very representative building. In addition to extensive peripheral equipment, the ECON EWA 150 hybrid machine, the only one of its kind in the world, was also newly installed. ECON India now offers its customers tests with underwater and air pelletising systems. In the now perfectly equipped pilot plant, customers gain a comprehensive picture of the running machine and can successfully test their own materials.

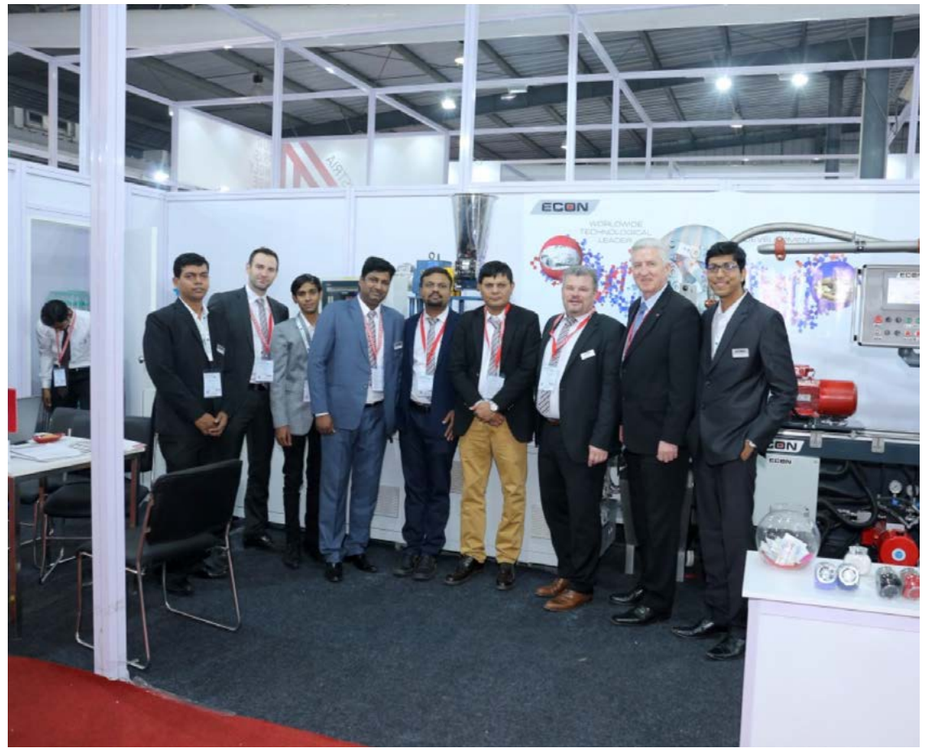
In addition, the new location offers plenty of space to assemble and test the machines sold. Under the technical leadership of Kaushal Patel, our customers find a professional environment which proves to the Indian customer the high quality of ECON machines.
At Plastindia in February 2018, the next step in development was initiated. For the first time in the history of the trade fair, a running →

ECON
Indian market leader in the field of pelletising systems

160
potential new customers visited the ECON booth at Plastindia in February 2018

Technical Manager Kaushal Patel on pilot line with customers

Trade fair booth ECON Machinery Pvt. Ltd. with complete compounding line



from left to right: Sumeet Sharma, Wolfgang Schaner, Sagar Jagav, Ram Dayama, Kaushal Patel, Vinu Chavda, Uwe Neumann, Gerhard Hehenberger, Kaushal Mehta

compounding line was presented at the ECON booth. With the extruder of an important OEM partner from India and an EUP 150 underwater pelletiser manufactured in India, the efficiency of the ECON was presented in regular live demonstrations. The active visit of new interested parties and existing customers underlined the excellent trade fair appearance. The machine was almost permanently surrounded by interested parties.

Consistent trade fair preparation, increasing market awareness and the professional appearance of the ECON team with its stand led to a huge success. A total of 160 enthusiastic visitors came to ECON and discussed new projects in India. Thus, many new customers could be made aware again to ECON.

At the fair itself, the Indian team was actively supported from Austria. CEO Gerhard Hehenberger and Sales Manager Uwe Neumann were also present, as was Wolfgang Schaner, who as Area Sales Manager will help to shape the operative sales in India in the future.

The numerous complete enquiries and trade fair contacts were processed directly at the stand at the highest level. Finally, ECON India already received new orders from customers after the trade fair, who found their first contact to ECON at the trade fair.

In India, trust is the basis for a sustainable partnership. The professional and trust-building behaviour of the entire team stands for this principle. Therefore, immediately after the fair, the long-standing and largest customer in India commissioned ECON with the supply of two underwater pelletisers EUP 1500 with two screen changers ESK315-2 from ECON. During the contract award negotiations, it became clear that, in the meantime, these were not only customers, but rather friends.

The success story of ECON in the exciting and demanding market of India continues and through professionalism coupled with honest action, this market will continue to deliver important earnings contributions in the long term.

Research is fun, especially in the Technology Centre.

In this area, too, we have chosen a slightly different path and are pleased to be able to report on ECON's first participation in the "Long Night of Research", in which a particularly interesting station was dedicated to the company's own pilot plant.

Text: Uwe Neumann **Photo:** ECON

ECON is a so-called "Hidden Champion" in Upper Austria. On the one hand, the products are hardly visible to the general public, on the other hand, the products are rarely used in Austria. In recent years, ECON has had a permanent export share of more than 90 %. This leads to the fact that ECON is not truly perceived as an innovative company and high-quality employer in the direct environment.

Therefore, ECON has decided to participate in the "Long Night of Research" in 2018. At this event, innovative companies throughout Austria open their doors and present their research activities to the general public. People who would otherwise not come into contact with these companies are given the opportunity to get to know them. The demonstration of performance is combined with exciting and entertaining activities. Local and national politicians as well as the media are also aware of the companies in the region.

An eight-member interdisciplinary organisation team, led by HR Manager Martina Thöress-Kofler, meticulously prepared the appearance of ECON. Guided by the maxim "we are a great company and like to show our strengths" numerous ideas were collected which came from all areas of ECON. In the end, a station operation with five stations in the ECON buildings was put together. Our visitors should get to know the entire ECON process. They were able to go on a voyage of discovery from the development/design to the finished machine in the ECON. The organisation team put a special focus on the fact that the visitors could actively accompany the processes and participate in large parts themselves.

The journey through the ECON began in a part of the assembly halls, which was transformed into a large lounge with a stage. Under the motto "Plastic is cool ..." the visitors were welcomed by sales manager Uwe Neumann with a short introduction into the world of plastics. The visitors discovered that plastics have become an indispensable part of our daily lives. After the introduction, the visitors were guided to the stations in groups by ECON employees and were able to gain a lot of information there. →

Herwig Auerbach with a fascinated group of visitors

In the first station, the design office had set up the "Design and Development" station. Under the expert guidance of the experienced designer Christian Heinzl visitors were able to design machines themselves in the CAD system and "look inside" the machine using a tablet. Technology enthusiasts, young and old, enjoyed the uncomplicated use of ECON's development tools. So, a 10 year old visitor already constructed his own parts and said he could do it all day long. Maybe we'll see this guy again later as a new designer at ECON.

This was followed by the station where our great assembly team assembled a complete machine in record time. At the beginning of the event the individual parts of the machine were ready and the group around Andreas Piber managed to finish the machine almost completely during the event. The guests were often amazed at how all of the parts fitted together so perfectly. It also became clear that even the most innovative companies cannot operate without manual work.

One of the highlights was certainly the station of the running pilot plant machine. Our head of the pilot plant Bernd Enzenhofer demonstrated the machine together with the apprentice Nina Stökl. The guests experienced how plastic granulate is produced. This station was particularly fascinating for many children as they were allowed to start the machine themselves and then take the granulate in their hands. At this point, we supplemented the station with a specially created exhibition at which the granulate with the resulting end products was presented. ECON was able to show the numerous visitors which products are made of plastic granulate in daily life and in the leisure sector. This exhibition helped the guests to realise that plastic is really "cool" and urgently needed.

Christian Heinzl with two small researchers at the CAD station

The groups of visitors returned to the lounge area via a finished large production machine, which was set in scene fantastically with coloured light. There ECON served the guests small snacks, which had their origin in the ECON subsidiary countries Austria, India, China and the USA. In the lounge area Anamaria Juric had prepared a children's table with lots of games and handicrafts which was enthusiastically received by the youngest guests. This in turn encouraged many adults to stay longer at ECON and gave them the opportunity for further discussions.

In addition, there was also a job island in the lounge where vacancies, especially apprenticeship needs, were presented. Many potential candidates accepted the opportunity and it is to be expected that one or the other will now regard ECON as a future employer.

A total of 315 guests came to ECON. The guests consisted of neighbours from Weißkirchen, family members of the employees, random visitors who were brought to ECON by shuttle bus and many other interested people who had read about ECON in the press. The large number of visitors was more than surprising and was the reward for the many helpers from our own ranks. Almost all ECON employees volunteered to help with the event on Friday evening, so that the mayor, various press representatives and even a regional television station were also enthusiastic about the ECON team.

In addition to the positive image cultivation, it also became clear that the team spirit and the will to achieve something great motivated the employees of ECON. Since the "Long Night of Research", this spirit has been brought into day-to-day business. The praise and recognition by the many visitors gave ECON further impetus for the future.

Andreas Piber and his team assemble the machines in front of an audience

Our enthusiastic guest are producing together with Bernd Enzenhofer.

The ECON team of the "Long Night of Research"

Around the World.

In its more than thirty-year history, the THOMAS logitsics & freight company has already moved a lot and made the seemingly impossible possible.

Text: Thomas Frühauf **Photo:** THOMAS

This time the task was to transport a system with a total size of 69 parcels with 150,000 kg and 1,200 cbm from Grambach, Styria, Austria, to Marysville, Michigan, United States of America.

The schedule was tight. THOMAS had a time window of two weeks for packaging (parallel to M&R's dismantling of the system) and delivery to Liège Airport and the seaports to ensure timely delivery in Marysville.

In addition to a specially chartered B747-400F (22 parcels), another 22 parcels were delivered via two scheduled flights to New York, JFK Airport. A further eight containers, including three oversized and over-height cases, were shipped by sea. All in all, the system had to be dismantled, packed and delivered to the end customer within four weeks in order to enable on-site installation on schedule.

Here the personal care of the customer was the key. Long before the transportation, concepts were developed together with the customer, the packer and the possible transport providers in order to ensure a smooth process. On the basis of this detailed planning, the project could be carried out exactly and on time.

The THOMAS freight company benefits from its thirty years of experience in the field of project logistics. In this way, the customer is offered competent and personal advice in order to explore the best possible options together with the customer. The worldwide partner network, which includes professionals in every area of transport processing, ensures complete control throughout the entire transport route.

And yet: Despite the experience, every project is a new challenge, which produces new, exciting solutions.

Welcome M-TECH ...

GAW Group looks (mechanically) to the Future. With M-TECH Systems the group expands by a highly innovative company specialised in special machinery and system construction.


Photo by xiaoliangge

M-TECH Systems GmbH has been a reliable partner since 1998 when it comes to high-quality support through engineering services and solutions in mechanical and plant engineering. Whether retrospective automation of existing systems or development of ultra-modern robot systems - M-TECH Systems is the specialist for special machine construction with a high degree of automation with a focus on image recognition and image processing (machine vision). The machine vision systems of M-TECH Systems are mainly used in industrial manufacturing processes in the fields of automation technology and quality assurance. Customers come from the electronics, opto-electronics and optics industries, automotive suppliers and the abrasives industry, among others.

For the GAW Group, this entry means an expansion of competence in the field of special machinery and plant construction for industrial automation with a focus on manufacturing and quality control processes.

M-TECH Systems is headquartered in Klagenfurt, Austria, and generates sales of € 6 million with 30 employees. The management of the company lies in the proven hands of the founding shareholder, Mr. Hermann Fröschl, who also continues to hold a significant stake in the company. Mr. Fröschl has decades of professional experience in the field of machine vision applications in special mechanical engineering, and in addition to his function as Managing Director is also responsible for the technological development of the company.

... and LÖMI

With the acquisition of LÖMI, the GAW Group has ventured into the field of solvent-based plastics recycling.

At the end of July 2018, the GAW Group acquired the majority of the shares in LÖMI GmbH. The remaining shares are held by company founder José Fonseca and Christian Marques, who has worked for LÖMI since 2005. The two gentlemen also continue to exercise the management of the company.

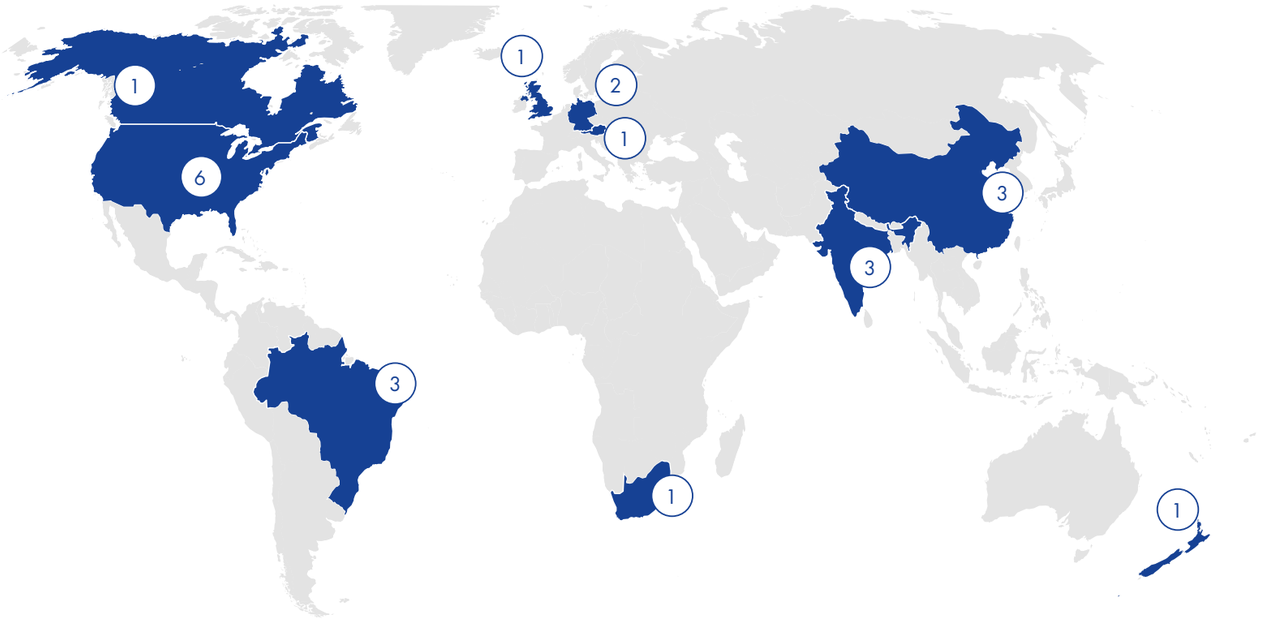
In its previous core business, LÖMI supplies processes and equipment for selective dissolving of materials (debinding) and solvent recovery. Its customers include Leica, Swatch Group and Unilever.

LÖMI has been developing a new business field in the field of solvent-based plastics recycling for several years. Based on the solvent competence of LÖMI, a process has been developed together with research and industry partners which makes it possible to selectively dissolve multi-layer plastic waste (e.g. packaging films), to separate the different plastic fractions (PE, PP, etc.) and to recycle them according to the type. We see excellent opportunities for cooperation with all GAW Group companies in this business segment in particular.

Founded in 1991, LÖMI currently has 30 employees and a turnover of € 4 million. The seat is in Großostheim in Bavaria.

For the GAW Group, this entry represents an expansion of competence in the field of solvent-based plastics recycling. This technology is one of the few outstanding innovations in plastics recycling of the last decade and has a global growth perspective, as the high-quality recycling of plastic (packaging) waste has become one of the central tasks of our time and sustainable plastics recycling worldwide has the highest political and social priority.

GAW Group worldwide*



AutomationX

GF Linamar LLC, Process control system (CA)
PKE, Traffic control technology, A7 Voest Brücke (AT)
Codex, Control technology, dry mortar plant (GER)

GAW technologies

Kruger Inc., Starch Preparation Systems (USA)
West Rock Mahrt, Working Stations and Starch Preparation Systems (USA)
Lawton, Coating Kitchen (USA)
Green Bay Packaging, Starch Preparation Systems (USA)
Guizhou Pengsheng, Working Station and Starch Preparation Systems (CN)
Henan Longyuan Paper, Working Stations and Starch Preparation Systems (CN)
Ecoimport, Working Stations and Chemical Preparation Systems (BR)
Trombini Curitiba, Starch Preparation Systems (BR)
ITC, Starch Preparation Systems (IN)
Khanna Paper, Sodium Dithionite Solvent Systems (IN)

ECON

Delphi, EUP 1500 (USA)
Pioneer Chemicals, EUP 600 (CN)
Artivinco, Enzymatic Conversion (BR)
Inventia Healthcare, ELG 50 (IN)

UNICOR

ADS, UC1800 (USA)
Fisher & Payckel Healthcare, UC58 (NZ)
Duraline, Tooling sets, NW160 (ZA)

OSMO

Bitop, Ultra-filtration (GER)
Palm Paper, Condensate cleaning (UK)

* The orders marked are only an excerpt. Due to binding confidentiality agreements, we can only represent a fraction of our incoming orders. (Version 01/06/2018)

People

Consulting competence, experience and enthusiasm at the service of our customers.

Stefan Divjak
GAW technologies GmbH
E-Mail: divjak.stefan@gaw.at
Telephone: +43 (0) 316 2704-161

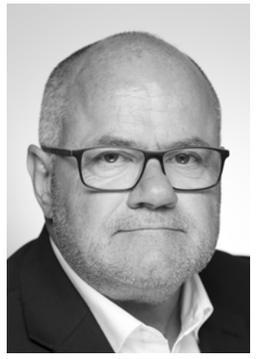
Stefan Divjak has been a new member of the GAW technologies sales team since the beginning of 2018. The graduate process engineer with many years of practical experience in industrial systems construction underpins GAW's solution competence in the paper and cardboard industry as well as other business segments with his specific knowledge.

Among other things, Mr. Divjak also represents the central interface to the sister company LÖMI, with which projects in the field of solvent-based plastics recycling are planned and carried out jointly.

Christoph Maurer
OSMO Membrane Systems GmbH
E-Mail: c.maurer@osmo-membrane.de
Telephone: +49 (162) 2313305

Since autumn 2017, Christoph Maurer, another highly competent contact person from the sales team, has been available to OSMO customers.

After training as a DI in process engineering, Mr. Maurer worked for many years for well-known companies in the environmental technology sector. For OSMO, he develops the markets in north western Germany as well as the Benelux countries and France.



Klaus Battistata
Unicor GmbH
E-Mail: k.battistata@unicor.de
Telephone: +49 (9521) 956 132

Klaus Battistata joined Klaus Kaufmann as UNICOR's new Managing Director in September 2018. He will be responsible for Finance, HR, Organisation and Central Services.

Mr. Battistata has specific industry experience in plastic pipe production, in which he spent 15 years in a leading position, as well as extensive knowledge in strategy, organisation and team development.