ALUMINIUM 2018: New topics to meet the future

The transport sector and the energy transition are driving demand for aluminium. The lightweight construction megatrend ensures excellent growth opportunities for aluminium as an industrial material. All around the world, the industry is making new investments to gear up for an economy that continues to boom. This positive momentum in the aluminium industry is leading the way when it comes to emerging topics such as energy and resource conservation in one’s own production chain.

Technical education programme to deliver industry and science know-how

ALUMINIUM is much more than just the world’s most important trading centre. Above all, it’s a major knowledge hub: expert presenters from industry and science at the ALUMINIUM 2018 Conference and the ALUMINIUM Forum will discuss the principles, trends and innovations of the aluminium sector.

At the ALUMINIUM 2018 Conference with its motto ‘Aluminium – Material for the Future’, the various applications, air filtration systems and oil/oil mist-vacuuming systems – and show how the aluminium industry is leading the way when it comes to emerging topics such as energy and resource conservation in one’s own production chain.

New topics: Digitalisation and environmental protection

Special areas such as the innovation areas and guided theme tours are intended to provide visitors from application areas such as automotive engineering, mechanical engineering, aviation or the construction sector with better orientation. The well-known theme pavilions will serve as points of contact to lead visitors through the structured exhibition halls, including the Competence Centre Surface Technology, the Foundry Pavilion, the Primary Pavilion, the Welding & Joining Pavilion, the Recycling Pavilion and the Magnesium Area.

In the new special exhibition area Digital Manufacturing, visitors will experience what Industry 4.0 means for the aluminium industry and what kinds of productivity benefits can already be achieved today by deploying high-performance IT solutions in production.

Another new exhibition area dubbed “Environmental Engineering” will cover water treatment, air filtration systems and oil/oil mist-vacuuming systems – and show how the aluminium industry is leading the way when it comes to emerging topics such as energy and resource conservation in one’s own production chain.
of aluminium currently used will be presented together with possible further developments that will make products in the future even lighter, nicer and more resource efficient. The Congress is planned and organized by the GDA, the German Aluminium Association. Together with representatives from the different sections of the industry, manufacturers of semi-finished products, refiners, remelters and subsuppliers, the latest innovative and future-looking solutions will be presented and discussed. The five sessions and nearly 40 lectures will focus on aluminium markets, plant / processes / digitalization, surface, recycling and automotive.

Exhibitors themselves will take the podium at the ALUMINIUM Forum, which is part of the trade fair’s supporting programme. Over the course of the three-day lecture event, companies will introduce their innovations and successful projects in the fields of lightweight design, digitization, surface technologies, sustainability and recycling. The admission is free for trade show visitors.

The world of aluminium meets in Düsseldorf

The trade show is the leading industry get-together for producers, processors, technology suppliers, designers and engineers from the industries that use aluminium. The event is organised by Reed Exhibitions with valuable contributions by GDA – the German Confedera
tion of the Aluminium Industry – and the European industry association European Alumini
um.

About 27,000 visitors from 100 nations are expected to at-tend ALUMINIUM. The exhibitor side is similarly internation-al. Nearly 70 per cent of the altogether 1,000 exhibitors will travel from abroad to take part in the industry meeting in Düsseldorf. Among the largest of the 54 exhibitor nations this year (behind Germany) will be Italy followed by China, Turkey, Austina and Spain. Other Euro-pean countries as well as North America and Asia will again be represented in numbers at ALU-MINIUM, as well as European countries as well as North America and Asia will again be represented in numbers at ALUMINIUM, as well.

Hall 9
- China Pavilion
- Innovation Area
- Welding and Joining Pavilion

Hall 10
- Digital Manufacturing
- Environmental Engineering
- Foundry Pavilion
- Magnesium Area
- Young & Innovative Companies

Hall 11
- China Pavilion
- Norway/Iceland Pavilion
- Primary Pavilion
- Recycling Pavilion

Hall 12
- ALUMINIUM Forum
- Career Lounge
- Competence Center Surface Technology
- matchmaking Lounge

Hall 13
- Holland Pavilion

Hall 14
- WGM Pavilion

Themed Pavilions Set Accents

An overview of the focal themes along the process chain covers core of the themed pavilions of ALUMINIUM – from primary production to recycling.

In Hall 11 the aluminium producing industry is presented. The Primary Pavilion here focuses on technologies for aluminium and aluminium production, the equipment needed for transporting aluminium as well as electrolysis technologies for anode manufacturing.

Today, heat treatments are key for developing optimum materials and the foundry industry is characterised by accelerated technological developments. This is also demonstrated by the over 30 exhibitors in the Foundry Pavilion in Hall 10.

Industry 4.0 is one of the biggest challenges for the industry. Solutions for the ongoing development of smart manufacturing and interconnect- ing processes can be seen in the new special area Digital Manufacturing in Hall 10.

The new joint stand on environmental technology in Hall 12 will demonstrate how aluminium products cope with the ever more complex requirements made on corrosion protection, material properties or design – by coating, varnishing or anodising. The Pavilion counts on the support of the “Verband für die Oberflächenveredelung von Aluminium” (Association for the Surface Finishing of Aluminium – VOM) and the “Qualit ätsgemeinschaft für die Stick- beschichtung von Blustenelektroden” (Association for the Protection Coating of Building Components – GSB International).

The “Wirtschaftsverband Großhandel Metallhalbzuge e.V.” (Association of Wholesalers of Metal Semi-Finished Parts – WGM) will again be repre-sented with its own pavilion – WGM Pavilion in Hall 9. Here, all products for aluminium welding, bonding, soldering, joining or cutting will be presented.

The exhibitions of the Competence Centre Surface Technology in Hall 12 will demonstrate how aluminium products cope with the ever more complex requirements made on corrosion protection, material properties or design – by coating, varnishing or anodising. The Pavilion counts on the support of the “Verband für die Oberflächenveredelung von Aluminium” (Association for the Surface Finishing of Aluminium – VOM) and the “Qualitätsgemeinschaft für die Stickbeschichtung von Blustenelektroden” (Association for the Protection Coating of Building Components – GSB International).

Alongside aluminium recycling, sustainability is considered THE engineering material of the 21st century. In the Magnesium Area, Hall 10 developers and engineers find additional approaches for lightweight construction.

Start-ups and young innovative companies are presented at the ALUMINIUM at the Accent Pavilion, as well as at the Young & Innovative Companies Pavilion, as well as at the Young & Innovative Companies Pavilion.

Guided Tours...

at ALUMINIUM 2018 offers an opportunity to get a special insight into different topics of interest. The Tour will lead you in a small group of other experts to exhibition that have a special expertise in the particular subject area. The exhibiting companies will each give a short presentation of its innovations, products and services and answer questions.

ALUMINIUM 2018 offers guided tours for:
- Automotive
- Digitisation in mechanical engineering
- Additive Manufacturing
- Surface treatment
- Recycling
NDC Technologies Recertifies to New ISO 9001:2015 Standard

NDC Technologies, a leading global provider of precision measurement and control solutions, announces that it has successfully recertified to the new ISO 9001:2015 standard. This latest certification supports NDC’s commitment to providing the highest level of customer satisfaction,” says Andy Hall, Quality and Compliance Director at NDC. “We have made some significant advancements in our organization over the past few years and we are delighted that our continued hard work has been recognized. We strive to exceed our customer’s expectations in all facets of our business and this recertification reflects our on-going commitment.”

Published in September 2015, ISO 9001:2015 places notably higher requirements on companies than the previous version of the standard. As the leading standard for quality management, ISO 9001:2015 provides a clear framework for organizations to have a more robust but flexible management system. Obtained through thorough, external audits performed by an independent accredited registrar company, the certification helps organizations to develop a management system that aligns with their broader business strategy. The updated standard contains key updates including an emphasis on risk-based thinking to enhance the process approach, improve services and increase leadership.

NDC is an acknowledged leader in the design and development of on-line measurement and control solutions for manufacturing processes. The company offers a diverse range of measurements such as moisture, oil, protein and other constituents in food, tobacco and bulk materials; film thickness and coating weight in extruded films and converted products; dimensional measurements for cable and tube products; and flatness, length and speed, thickness and width of metals products. NDC’s Industry 4.0 instrumentation and productivity-enhancing process analytics software helps customers improve product quality, increase productivity and realize bottom-line advantages.

IMS: Passion for precision

The company IMS Messsysteme GmbH develops and produces isotope, x-ray and optical measuring systems for industrial use in the steel and non-ferrous metal industries.

IMS has a passion for precision and strong belief in quality. High-precision technology requires a maximum focus on quality. IMS has worked continuously on developing their products further and improving the qualifications of the staff ever since the company was established in 1980. The technical competency IMS has accumulated as a result, paired with modern technology, enables IMS to implement high-end custom-built and need-oriented solutions.

For optical measuring systems IMS Messsysteme GmbH uses unique, patented camera cluster systems (CCS). They consist of a number of high-speed, intelligent and yet inexpensive cameras that are arranged closely next to each other in groups – the clusters. By lining up multiple cluster modules next to each other, it is possible to measure foil, strip and plate of any width. The innovative technology makes the clusters highly interesting for a number of measurement tasks in the steel, aluminium and nonferrous metal industries.

IMS uses CCS for high accurate measurement in rolling mills and processing lines. With a software add-on, the system can be extended by an edge crack and/or hole detector. Information on defects is extremely important not only for quality assurance, but also to avoid broken strip. Due to the high resolution and steep angle of sight, the technology can also be used economically for the first time for inline measurement of slit strip width in slitting lines.

Especially for Aluminium and tinplate packaging material camera cluster systems are applicable for detection of pinholes in the size of several micrometers. Wherever the flatness and levelness is necessary to be measured, the camera cluster technology in combination with laser line projection (laser triangulation principle) is used. In Cuto-Length lines this technology is applicable for sheet dimension measurement such length, width, out of squareness, diagonals and camber. IMS also uses the new technology for surface inspection as well.

Measurement on aluminium rolling mills

IMs Messsysteme

Hall 12, Hall 145
www.ims-gmbh.de

THE ROAD TO A LEARNING ALUMINIUM MILL

AluControl®

Digital Twin

Artificial Intelligence

Digital Transformation

Product Quality

Plant Condition

Learning Aluminium Mill

Machine Learning

Leading Automation Expertise

DIGITALIZATION AND AUTOMATION

Are you aiming for intelligent, autonomous production? Is that a vision for the future, or is it reality? SMS group makes it possible today through machine learning, artificial intelligence, and big data analytics. AluControl® comprises proven modules of the X-Pact® electrical and automation systems and is especially dedicated to the process of aluminium production. Even more: it focuses today on the following aspects:

• Intelligent process- and production analysis along the entire value added chain
• Continuously meeting supreme product qualities and at the same time highest yield
• Maximization of plant service life at minimum maintenance effort and low capital tie-up

Let’s add value along the entire value chain, together.

Leading partner in the world of metals
Decades of experience give Schelling the advantage when it comes to producing clean cuts on aluminium plates.

Schelling will demonstrate what this highly developed technology means for users at ALUMINIUM 2018. The Schelling fm 10 cuts aluminium plates extremely quickly and precisely to an accuracy of +/-0.1 mm. If you can get steel cutting right, you can get aluminium cutting right. “Our experience with steel has shown us how to cut through aluminium like butter” enthuses Marcel Blum, Head of Business Unit Metal & Plastic. It means the machine has already been tried and tested in practice down to the last detail. And, every innovation is based on either previous successful innovations or Schelling’s experience in cutting other metals.

Reliable supplier to industry for 35 years
Schelling’s success is down to solid construction, stationary controlled motors, cleanliness, ergonomics and high output capacity. It is this that has made it the industry leader in the industrial cutting of board-shaped aluminium materials. Schelling, the highly regarded Austrian manufacturer has mastered industrial cutting technology like no other, and has been the major player in the market for more than 100 years. The company has been investing in the development of metal-cutting saws for the past 35 years. This proved to be a wise decision for Schelling: increasing numbers of Schelling’s customers are particularly impressed.

Careful handling of raw materials
As aluminium is a valuable material, avoiding scrap is the top priority. Here too, Schelling’s extensive experience in cutting metals has proven its worth. The highly regarded Austrian manufacturer has mastered industrial cutting technology like no other, and has been the major player in the market for more than 100 years. The company has been investing in the development of metal-cutting saws for the past 35 years. This proved to be a wise decision for Schelling: increasing numbers of Schelling’s customers are particularly impressed.

All of this combined results in up to 99.5% chip-free cutting, while also avoiding scratches and ensuring surfaces are protected. In addition, Schelling machines ensure a perfect, burr-free cut with high angular accuracy, avoiding the need for rework.

The finishing cut quality of the Schelling fm 10 is also down to its rugged main drive. The relatively small motor provides high torque and can tolerate a 100% duty cycle. It is reliable, ensures consistently high feeds and short cutting times.

Effective global customer support
Nowadays, it is not enough just to have a good product. An assurance of a long service life will not satisfy those who own and operate aluminium saws. Even the best tools can develop problems, which means that reliable support services are essential.

With ten locations in nine countries and an extensive network of partners around the world, Schelling Support’s ability to respond quickly with repair, maintenance and service solutions is key. Replacement parts can be supplied quickly and availability is guaranteed well into the future.

Global support, reliable machinery and high output capacity ensure almost uninterrupted productivity key to this success. This sub-sector of the aluminium industry, which is perhaps the most challenging, demands maximum productivity, continuous output and the very best precision.

Production features
The Schelling fm 10 has a number of impressive features. Sound insulation protects the hearing of operating staff and also reduces premiums paid to staff for working in noisy conditions, so it is good for the company and its budget too. The newly-designed pressure beam – complete with closing device and digital control – holds the workpiece even more precisely. An innovative function allows plate type parameters to be saved and accessed easily and the ergonomic turntable rotates heavy materials at the touch of a button.

Automated add-on modules, intelligent control and digitisation, as well as new solutions for the integration and use of Industry 4.0, Big Data and IoT point to the further optimisation of production in the future.

Schelling has demanding requirements when it comes to the industrial cutting of aluminium plates: finishing cuts without scratches, burrs or rework, and close to chip-free cutting in 24/7 operation. Thirty-five years’ experience in cutting technology for everything from non-ferrous metals to steel has made this possible.

Schelling Anlagenbau GmbH is headquartered in the Austrian town of Schwarzach, Vorarlberg. An international firm and member of the IMA Schelling Group, Schelling has a global workforce of around 500 people employed at a number of sites in Austria, China, the United Kingdom, Italy, Poland, Russia, Slovenia, Singapore and the USA. Its product portfolio consists of cut-to-size saws and systems for board-shaped materials, automatic area storage systems and stacking systems for wood-based materials, as well as precision saws and systems for plastics, non-ferrous and ferrous metals and circuit-board materials.
Sky-rocking prices for alumina – New threat for metal’s supply

US-President Donald Trump’s trade wars are still looming over the world’s steel and aluminium markets. But as huge as the resulting problems are, this seems to be not trouble enough. Alumina, which in the past mostly has been an uneventful, sometimes even rather dull, but always highly important part of the aluminium production chain, is in an unprecedented turmoil.

The disastrous development started with heavy rainfalls in Brazil in late February. After that disaster several authorities in an otherwise rare unity collaborated to force – valid from March 1st – a partial shutdown of Alunorte, the world’s biggest alumina refinery. Since then Norsk Hydro, the Norwegian owner of Alunorte and one of the world’s top ten aluminium groups, could run the refinery only at 50 per cent of its capacity. This caused the alumina market to heat up in spite of internal and external reviews confirming “that there was no overflow from the bauxite mines and three alumina refineries in Australia are on strike since August 8th, now in their second month of industrial action. These Australian companies are operated by AWAC (Alcoa World Alumina and Chemicals), the joint-venture between US-champion Alcoa with 60 per cent and the Australian listed Alumina Ltd. with 40 per cent. AWAC has other operations in Brazil, Guinea, Jamaica, Suriname, Spain and the US, but cannot easily compensate the lack of Australian output as Bill Oplinger, Alcoa’s CFO, explained in his presentation at Morgan Stanley’s 6th Annual Laguna Conference in midst September. He stressed ‘the underlying is that, ultimately, there’s very little inventories of alumina held in the world just because of the physical characteristics of the product. That means any supply disruptions can translate into higher prices fairly quick’.

Pressure on smelter margins

The price of alumina could hit another record high before the end of the year, warns Graham Kerr, CEO of South 32, the Australian metals and mining group. Prices have jumped 60 per cent this year and hit a record US Dollar (US$) 650 a ton alumina in May and is on the way up again with prices already around US$ 630 in September. At this level, alumina now costs around 30 per cent of the price for aluminium, quoted as US$ 2064 per ton mid September on the London Metal Exchange (LME). Alumina costs used to be just 16 to 17 per cent of the aluminium price. According to analysts at Goldman Sachs this is “putting an extraordinary amount of pressure on smelter margins” and is “hardly sustainable”. Even if Alunorte would get the green light to increase production quickly, it would take a full month to return the Brazilian refinery to full capacity operation. But the trigger for the alumina price rally in April and May was not only Alunorte, but the imposition of US-sanctions on Oleg Deripaska and his EN+ empire, including Rusal, one of the world’s largest integrated aluminium groups. Things calmed down when the US extended the sanctions’ deadline until October 23rd. Now the clock is ticking again. It looks unlikely that there will be another extension as long as Trump faces the mid-term elections in November. This is posing problems not only for Rusal’s customers. Since nobody knows where the alumina prices will go, the negotiations for 2019 are postponed as long as possible. The Aughinish Alumina refinery in Ireland belongs to Rusal, which supplies 11 per cent of the worlds alumina, not only from Ireland but from Jamaica and via it’s 20 per cent stake in Rio Tinto’s giant refinery in Queensland, Australia. All could be hit by the reinstated sanctions against Rusal. Last but not least China. “The blue-sky policy is real”, says Graham Kerr. “Beijing’s crackdown on pollution is starting to impact supplies of alumina from China”. According to Oplinger, last year roughly 3.5 million tons of alumina refining capacity were curtailed. Chinese bauxite flows have been disrupted by environmental inspections. Chinese producers also are hardly breathing even. So either the alumina price will have to come lower or the aluminium price will have to rise. Currently, Goldman Sachs and other investment banks are betting on the latter. Dr. Katharina-Otzen-Odrič, APR London correspondent

Alunorte production – Hydro Alunorte

But Alunorte is not the only problem. Around 1500 workers at two bauxite mines and three alumina refineries in Australia are on strike since August 8th, now in their second month of industrial action. These Australian companies are operated by AWAC (Alcoa World Alumina and Chemicals), the joint-venture between US-champion Alcoa with 60 per cent and the Australian listed Alumina Ltd. with 40 per cent. AWAC has other operations in Brazil, Guinea, Jamaica, Suriname, Spain and the US, but cannot easily compensate the lack of Australian output as Bill Oplinger, Alcoa’s CFO, explained in his presentation at Morgan Stanley’s 6th Annual Laguna Conference in midst September. He stressed ‘the underlying is that, ultimately, there’s very little inventories of alumina held in the world just because of the physical characteristics of the product. That means any supply disruptions can translate into higher prices fairly quick’.

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Solutions for the aluminium industry from SMS group  
Digitalization, e-mobility and other innovations

SMS group offers a holistic range of products and services covering everything from advanced plant engineering through to financial services. For the customer this means one-stop shopping in the true sense of the word: Everything is available from a single source, including life cycle partnerships and future-proof investments.

SMS group places special emphasis on providing solutions for the big topics of the future. This will also become obvious at ALUMINIUM 2018, where SMS group is featuring digitalization concepts designed to tap the potential of Industry 4.0, plant designs and upgrading solutions enabling the production of high-grade aluminium products for the transport and e-mobility sectors, and productivity and quality enhancing technologies. Michael Schäfer, Senior Vice President and Head of Aluminium Business of SMS group, says: “Being the ‘Leading Partner in the World of Metals’ is our vision and our commitment. Therefore, SMS group proactively conceives and develops solutions for its customers. At our booth, visitors will be able to experience the spirit behind this commitment, gain insight into our new offerings and discuss references from practice.”

Digitalization widens the look on process and product data
SMS group is all set for digitalization - the mega-trend of the future. “Already today, all our aluminium plants come with digital process control and future-proof interfaces. They are all ready for Industry 4.0. Nevertheless, we are developing additional smart digital products that enhance the efficiency of production processes even further,” says Schäfer. For example, the PQA Product Quality Analyzer. This smart system continuously acquires and evaluates quality-relevant data during production and immediately reacts to any irregularities noticed in the production process. Should the PQA, for example, identify that the quality is no longer within the defined specifications, it will immediately suggest alternative process routes or recommend other uses for the product on the basis of defined rules and guidelines. These capabilities make PQA an extremely useful digital quality management tool.

SMS group was well ahead of its time when it introduced its Plug & Work tests. These tests have meanwhile proven in numerous applications as a highly successful method of testing and optimizing the complete automation systems and the plant operation in a test field and in simulations prior to the delivery of the plant to the customer. With the PCC (Process Control Center), SMS group is now taking its digital product offering to the next level of digitalization. PCC is a holistic engineering platform covering the complete design process of a plant, from the mechanical equipment via integrated engineering and automation software development all the way down to the process and its control. This approach takes advantage of the opportunities provided by digitalization, as any digital information once captured is consistently and automatically made available and further processed to optimize the production process. Another innovation developed by SMS group is a dedicated software architecture for the automation of hot and cold rolling mills. This flexible and scalable concept forms an ideal basis for taking advantage of the potential provided by digitalization and the growing networking of data. Michael Schäfer: “This Level Model provides our customers maximum future-proofness of the investment, maximum quality, highly efficient supporting functions and more transparency in everyday operation.”

According to Schäfer, digital solutions offered by SMS group have already frequently proved their value in practice. For example, AluControl has become the digital centerpiece of the X-Pact electrical and automation system for aluminium rolling mills. Besides the technological controls, AluControl also comprises operating and sequence controls as well as controls for the peripheral equipment such as rolling oil plants and low and high-pressure hydraulics. For example, the new rolling mills that SMS group is going to build for Zhongwang Group in Yingkou City, China, will integrate AluControl. As systems supplier of the project, SMS group will provide the entire equipment and systems for the works. Also the new flat rolling complexes for Henan Tongren Aluminium in China will be equipped with high-tech systems from SMS group. Besides SMS group’s innovative rolling technologies, the customer has ordered a fully automatic high-rise store from SMS group company Amova. The store will provide the operators full visibility of all items on stock and all transport activities via an innovative 3D visualization system.

Plant solutions with new technologies for e-mobility
“Without aluminium-based lightweight engineering, e-mobility would not be feasible. The potential provided by weight-saving aluminium structures is an innovation driver for both the producers of aluminium and the manufacturers of aluminium production and processing plants. Plants like us. Without technological innovations, there would be no increase in quality, productivity, cost-efficiency or flexibility. A recent innovation in this context is our active vibration damping system,” explains Schäfer. The Anti-Chatter Damping (ACD) system has been designed for single or multi-stand cold rolling mills. By reducing the chatter effects, which are particularly pronounced in tandem mills, the system allows rolling mills to be operated at higher speeds, while increasing the yield and the product quality. This future-oriented technology is already in active use in a pilot application. Also SMS group’s X-Shape flatness measurement roll enhances the quality of cold rolled aluminium strips. Its closed surface, extremely accurate flatness measurements and the optical signal transmission make this roll an important element of advanced measuring and control systems.

In addition to rolling equipment, the portfolio offered by SMS group for the production of high-grade automotive sheets also includes Heat and Chemical Treatment Lines (HCTL). Aluminium products for lightweight engineering processed in these integrated plants receive a chemical surface treatment in addition to the heat treatment. Also the development of the newcast process is being pursued with vigor. nexcast is an aluminium strip casting process developed on the basis of the
Ecomelt furnaces combust the aluminium scrap. The company’s recycling and melting of aluminium is a key success factor in its portfolio, all over Europe. Keys to the success of these projects were comprehensive experience as a systems supplier of the mechanical, media, electrical and automation equipment, but particularly its knowhow and expertise in manufacturing and installing large, heavy-weight plant components. Recently, Tianjin Zhongwang Aluminium, China, one of our key customers, benefited from this expertise, when its No. 1 hot rolling mill was upgraded. With the objective to expand the mill’s production range. During a plant downtime of only 23 days, the finishing mill was extended to a 1+1+4 configuration by adding a rolling stand and modifying the adjacent facilities as required. Only three days after the commissioning, Tianjin Zhongwang was able to produce strip in widths of up to 2,900 millimeters and thicknesses between 2.2 and 12 millimeters. 

As the Leading Partner in the World of Metals, SMS group caters to the aluminium industry by responding to the specific and wide-ranging customer requirements and to the specifics of local markets. Through our local points of contact in all central regions of the world, we are within easy reach of our customers and always ready to discuss their requirements and inform them about our efficiency-enhancing concepts for new plant projects and plant upgrades. We offer integrated solutions from the molten metal through to the finished product - for hot and cold rolling mills, including strip processing and finishing lines for flat products, and for extrusion shops. At ALUMINIUM 2018, visitors and customers will have the opportunity to experience the full scope of our portfolio.”

Michael Schäfer, Senior Vice President and Head of Aluminium Business of SMS group.

Michael Schäfer compares comprehensive upgrades and expansions of aluminium plants to an open heart surgery. Extended downtimes of production due to improper planning or insufficient quality have to be avoided by all means as they may result in a financial catastrophe for a plant operator. During the last few years, SMS group has had many opportunities to demonstrate its high competence as a partner in handling challenging upgrading projects in aluminium plants all over Europe. Keys to the success of these projects were not only SMS group’s comprehensive experience as a systems supplier of the mechanical, media, electrical and automation equipment, but particularly its knowhow and expertise in manufacturing and installing large, heavy-weight plant components.

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**New optical measurement system for surface inspection of profiles**

Ascona, the specialist for optical measurement systems for geometry measurement and surface inspection technology located in Mecklenburg, Germany expands its product portfolio and presents its latest innovation at the ALUMINIUM exhibition.

Ascona is the global leader in dimensional measuring for extended profiles with the ability to provide optical measurement systems which can be used in both the laboratory as well as in the production environment.

Promex for dimensional measurement

The Promex Basic Fast starter models are designed for use in the lab or a light production environment, and guarantee accurate, fast measurement of cut samples either for the inspection of inco-

Promex for surface inspection

The latest innovation, Promex CSI ALU, is a system for continuous surface inspection of aluminium profiles directly integrated into the extrusion line. It detects defects like bubbles, holes, grooves and scratches at a profile speed up to 60 m/min. with the ability to individually adjust quality levels between profiles. Directly integrated into the extrusion line, the promex CSI is able to send signals to secondary equipment like an on-line marking device or saw for the removal of visually defective material. An advantage is not only the easy integration of the system into the production environment but also the fast response time. The result is able to ensure 100% inspection for surface defects, leading to reduced downtime scrap and higher customer satisfaction.

Promex measuring systems from Ascona guarantee objective, accurate results, and consistent quality control. As a result, scrap is reduced to a minimum, raw material can be saved and customer returns can be avoided. The result is increased productivity while simplifying measurement in the aluminium extrusion process.

**The Excellence in the machining of aluminium profiles with Mecal**

Promex CSI ALU – inline continuous surface inspection of aluminium profiles

Machining centres, mitre saws, accessory machines besides solutions for the handling and assembly make up Mecal wide catalogue, characterised by very high technological standards as guarantee of performance excellence. Mecal is a successful company well-established internationally in the field of aluminium and light alloy machining: the whole range of aluminium and light alloy machining, the whole range of machines and systems dedicated to the machining of aluminium, PVC, and light alloy profiles has been designed and developed in Tuscany, Pisa, for forty years.

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The complete cycle of production development, from design to final production, takes place inside the factories thanks to an articulated company structure which is fully equipped in every sector of the production activity. The activity and the know-how are applied from raw materials to the production of the finished product, without any outsourcing: compliance with the Excellence That Works protocol is thus guaranteed. The superb quality, functionality and reliability of Mecal products is guaranteed by an advanced engineering and design department staffed by dynamic and highly qualified personnel. The presence of a dedicated, full-time, in-house engineering and design department represents a key added value for Mecal’s customers.

The activity-leading team has always tuned and calibrated the production process according to the continuous and sudden evolutions of the market, relying effectively and offering products and solutions able to meet the requests and requirements of the players in thefa-
ceted and complex scenario of aluminium applications.

The 5-axis, double mitre saw TDC 622 Edgemaster and the 5-axis machining centre MC 302 Geos MDT fully express this production vision: two high-end products perfectly embodying this strategic driver.

Double mitre saw TDC 622 Edgemaster

The double mitre saw for combined cuts is characterised by high cutting capacity and utmost flexibility which enables to switch between machining types in very short times, thus optimising the production cycle. The machine is based on a 5-axis system controlled by brushless servomotors. The blades are lubricated by a spray mist system. The profile locking systems are movable with automatic movement related to the angular positions of the cutting units. The technological development of the TDC 622 Edgemaster has been greatly spurred by the world of aluminium profiles, always looking for larger and larger sections to extend their applications: the operators must have machines able to section larger sizes switching between profiles in the shortest possible time, still guaranteeing excellence quality standards. TDC 622 Edgemaster enables all this.

Machining centre MC 302 Geos MDT

The 5-axis machining centre MC 302 Geos MDT is characterised by extremely high machining capacity and, as in the case of the mitre saw, utmost versatility: the 18-position, rotary tool magazine is on the machine movable post and enables to reduce significantly the transition times between different machining types. The machining centre is equipped with a cutting module (MDT) devised to machine profiles completely, including the extruded bar section and facing. The use of digital electronics enables to apply fibre optic for the data transmission, which guarantees high speed and total absence of interferences due to external factors. The motorised vices for locking the piece are independent and can be simultaneously positioned in very short times also during the machining cycle, to speed up production and to guarantee high accuracy standards of the finished product. Profile cross sections up to 550 x 380 mm with lengths depending on the underframe size of 7800 – 13990 mm can be machined. With the pendular mode the machining times are really very reduced; however, the user software is the biggest advantage. From 3D machining drawings can be generated with few “clicks” complete machining programs, which again make the user’s operation of the Geos considerably easier.
Innovation makes Granco Clark a leader as a single-source supplier to extruders

Granco Clark, a global leader in the aluminium extrusion industry, offers a full range of equipment, including some of the world’s largest aluminium extrusion systems. The company produces all required equipment – before and after the press – to heat, cool, pull, stretch, cut, stack, age, and store aluminium extrusions.

Leading in the optimization of extrusion technologies and processes, the automated equipment is designed, fully assembled, and shop tested to the specific requirements of the extrusion process to deliver exceptional efficiency, productivity and longevity. Granco Clark is a true ‘one stop shop’ – from engineering, installing, commissioning and training, to providing service and spare parts.

For more than 60 years, Granco Clark has developed equipment to enhance productivity, reduce labour and boost profile quality. These innovations include the first direct-flame impingement furnace, a computer-controlled handling system, and the patented FusionBond Impingement Furnace, a computer-controlled handling system, and Hot Saw technologies that eliminate two-piece billets.

“Our commitment to ensuring maximum performance from equipment has earned us a record of more successful extrusion installations than any other company in North America. We also back our equipment with the industry’s best warranty,” stresses Scott M Biggs, marketing manager at Granco Clark.

Innovation makes the company a leader as a single-source supplier to extruders. “We have a reputation for manufacturing the most advanced and durable equipment in the business,” he says, adding: “Since introducing that first major innovation – the direct-flame impingement furnace – to the industry in 1959, our designs and technology have continued to evolve. Our Granco Clark furnace continues to be one of the most reliable and most efficient ways to heat billets and logs. Our Hot-Jet furnace has been redesigned with improved efficiencies to offer long-life rollers, easy access hoods, and quickly removable side panels, to name a few.”

More recent innovations include the Direct-Flame Impingement Furnace, a computer-controlled handling system, and the patented FusionBond and Hot Saw technologies that eliminate two-piece billets.

“The pull-through, high impact velocity quench system allows the head of the flying-cut double puller to pull the extrusion through the operating quench environment, virtually eliminating first-billet scrap. Combining these innovations with the FusionBond and Hot Saw technologies, you have the ingredients for the most advanced system available today,” he concludes.

According to research by materials search engine Matmatch before they launched, 80 percent of engineers and scientists relied upon basic search engine research to find what they were looking for. But Matmatch is changing that. Based in Munich, Matmatch was founded with one mission in mind – to develop a free-to-use platform for engineers to find the right materials for their projects and connect them with suppliers that carry those materials.

Matmatch has two users in mind – engineers and vendors. For engineers, Matmatch offers an unparalleled database of information on thousands of different materials, including over 15,000 varieties of sheet, rod, and cast aluminium, with more materials added to the database regularly. Matmatch partnered with aluminium industry expert Dr. Werner Hesse (amongst other data providers) to build this one-of-a-kind database. In addition, Matmatch has a team of in-house materials experts working to curate the database on a day-to-day basis, ensuring that the information provided is as accurate as possible. For aluminium suppliers, Matmatch provides the ability to put your brand in front of exactly the kind of people who are in the market for what you are selling.

Listing your materials on Matmatch opens them up to a large and growing market of potential buyers worldwide. Matmatch has gone to great lengths to ensure that its one-of-a-kind database serves its customers in as thorough and complete a manner as possible. The platform is completely free for buyers to access and offers a user-friendly interface that allows for searches by material name, the properties needed for a material, the application in which the user intends to use a material or by supplier name. Once the user has found the perfect material, they can contact the supplier directly from the platform.

The Matmatch team continues to make improvements to the platform and what it offers to users. The materials scientists and experts relied upon for product designers and engineers, finding materials to use in their projects is a critical task. However, it also tends to be among the most difficult obstacles to overcome. Where do they get up-to-date information on the physical, chemical and thermal characteristics of materials they’re looking for? Where do they find a seller with just the right material, in the right location?

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Automated machining and assembly lines for extruded products

The company SPS from Austria (formerly MFW) has been offering tailor-made solutions in the aluminium industry for years and has firmly established itself in the traditional extrusion sector. SPS has been able to convince with advanced and innovative solutions for years and accomplishes the ever-increasing demand for fully automatic production systems of complete aluminium assemblies. This significantly expands the value chain in the extrusion plant for customers. Fully automatic loading of machine tools, automated testing equipment, as well as automated assembly lines complement the scope of supply of the SPS group, based in the Austrian central area.

This enables the extrusion plant to meet the ever-growing demand of motorists for perfect automation. The combined knowledge of the SPS Group extends from traditional extrusion to over 200 fully automatic logistics solutions. Years of automation at well-known German car manufacturers offer SPS-customers a clear competitive advantage.

Battery tray manufacturing
In particular, the area of battery trays was realized with production plants of the company SPS. The internal profile baskets (skips) are transported via crane logistics to the destacking systems. Here profile layers are fully automatically unloaded and then sawn.

Using modern laser technology, the saw profiles are labelled with QR codes and then checked with a sophisticated test system. For this purpose, camera systems are used to inspect the cross sections and, for example, the air pressure difference measurement for the testing of bending, twisting, sabre shape and length. A simple, quick check of the sawn parts as well as the parts traceability is possible.

This is necessary, among other things, to guarantee a seamless FSW process (friction stir welding), which is especially necessary in the area of battery trays.

Depending on the design, the welded components are automatically loaded and unloaded using standard machining centres (multi-axis machining centres). In order to meet the purity requirements, the components are industrially cleaned, dried and then packaged in customer-specific packaging.

STEP-G is a global partner and solution provider for mobility

STEP-G stands for lightweight solutions from a single source. As an innovative partner for extruded profiles, ST Extruded Products Group, STEP-G offers great potential for the production of customized profiles with standard and special alloys through its own foundry and press lines for medium-sized and large profiles. In addition, a sophisticated profile processing and various surface treatment processes are possible. The dynamic corporate group, thus, covers the entire value chain and moves closer to its customers and their requirements.

The company benefits from multinational partnerships and, together with its customers, implements innovative projects as a one-stop-shop supplier. With less handling and just one contact, the trend towards one-stop sourcing is progressing. This path already starts with the close and customer-oriented support during the profile design by the STEP-G experts in the engineering department. Thus, STEP-G moves closer to its customers and their requirements.

At an early stage, STEP-G recognizes the needs of its automobile and rail customers and supports them in the development of future-proof complete and lightweight solutions. With one of the largest extrusion lines in Europe, STEP-G is a strong partner for large profiles. These profiles include dimensions of up to 750 mm width and 1000 mm height, as well as seamlessly pressed tubes with an outer diameter of 450 mm can be produced. Combined with the integrated further processing, a high level of vertical integration of individual components is possible.

The product portfolio is supplemented by high-strength aluminium alloys. These allow the usage in a wide variety of areas, such as the aerospace sector and the automotive and commercial vehicle industry. By using these alloys, significant weight savings can be achieved in the applications.

At this year’s ALUMINIUM 2018 STEP-G will be presenting an insight into its comprehensive expertise and range of solutions as a mobility solution provider to its visitors.

ST Extruded Products Group...

…short STEP-G, is one of the worldwide leading manufacturers of aluminium extrusion profiles. STEP-G is internationally positioned with production sites in Germany, Belgium and China. The three German extrusion plants located in Bitterfeld, Born and Vogt are highly specialized and offer a comprehensive range of profiles and rods as well as further fabrication. STEP-G’s innovative quality has earned the trust of the automotive industry and supply direct suppliers. The company also works with the aircraft and railway sector, the general engineering industries and construction. From processing to component finishing or high assembly and logistic systems, the product portfolio offers a full range of possibilities. STEP-G’s foundry is fitted with extensive capabilities for specialized alloys and offers our customers one-stop security in terms of both technology and supply.
Everything from one single source

The family company Achenbach Buschhütten presents its full scope of services at the ALUMINIUM 2018 show as specialist for rolling and foil sitting technology for the production of aluminum flat rolled products at the highest quality level. The strategic approach is to offer customers a single source’ layout, design, manufacturing, assembly, commissioning, including product lifecycle management with services and consulting. Mastering the technology in every single detail and continuously developing the machines rank among the success factors of Achenbach.

This integrated approach is continuing with the new cloud-based platform Achenbach Optilink targeted to provide the customers with an instrument for the optimization of the entire flat rolled production process comfortable, flexible and worldwide usable and honored in the market.

Technology leaders in aluminum flat rolled production increasingly count on the brand Achenbach and its product brands Optimill, Optiplan, Optiroll, Optiroll, Optipure, and recently on Optiplan. Numerous Achenbach Optimill Foil Rolling Mills are equipped with Achenbach Optiplan Roll Automation, Achenbach Optipure Media Systems for air purification, rolling oil filtration and rectification are part of the latest incoming orders especially destined to China, India and South Korea. In addition, some entire production plants for aluminum foil production designated as Miniplants are on order comprising both, Achenbach Optimill Foil Rolling Mills and Achenbach Optiplan Foil Slitting Machines. Last but not least some outstanding foil slitting machines of the brands Heavy Slit and JumboSlit for European companies are remarkable.

More and more production plants are docketed to the Achenbach Optilink platform. The necessary data for controlling the whole production process are continuously filed and visualized for the customer: In this context highest IT-security means without risk for the ongoing production. New Optiplan applications and analytical tools are presented and explained to interested visitors on the booth.

Most certainly the Achenbach rolling mill simulator will attract lots of customers to the Achenbach booth. Other visitors are looking forward to the new 6-high rolling mill technology for specific rolling applications as part of the trendsetting Achenbach Optimill rolling mill technology.

In addition 3D-motion simulations as virtual twins supporting the commissioning of new and modernized machinery are demonstrated.

Last but not least, sustainable technology and quality leadership require the continuous development of all technology components. For instance, the Achenbach DVC Dynamically Variable Crown backup-roller or the Achenbach UniSpray adaptive nozzle valve header with BUS connected Achenbach nozzle valves and hoseless rolling oil supply for significantly improved service and diagnosis functionalities will be presented on the Achenbach booth.

Achenbach Buschhütten
Hall 13, Stand M 15
www.achenbach.de

Zero Outsourced Engineering and Service

From concept to completion, all mechanical and controls engineering is completed in-house. Our trained service engineers and technicians use the most advanced tools to keep your equipment running at peak efficiencies.

100% USA Engineered & Manufactured

All Granco Clark equipment comes from our 72,000 square foot modern Michigan facility providing the industries most innovative custom equipment built with the exceptional quality you come to expect from Granco Clark. Our repeat customers attest to that.

All inclusive Turn-key System Supplier

Uranos Lith is your all-inclusive turn-key system supplier Expect superior performance, industry knowledge, unmatched and proven solutions, onsite commissioning, support, and responsive service technicians.

Our industry knowledge and experience are unmatched and proven, with our custom-engineered equipment delivering solutions and performance.

Being a full-service company means we are with you from system ordering and startup…through the times you need unmatched industry service and support.

Our Spare Parts Department is available 24/7. Our global team of trained service technicians are available to keep your production facility running smoothly at all times. They will find the best solution to meet your needs and provide on-site service (in most cases, within 24 hours) and spare parts whenever necessary.

Visit us at Booth 10 G01
Aluminium recycling cycle: High quality briquetting systems increase efficiency and yield

Aluminium’s recycling cycle begins and ends in melting plants. In between, this light metal is machined in many different industrial operations. The production chain ideally is then pressed into a compact briquette using a briquetting system from Ruf. How are chips produced and why does briquetting usually make economic sense?

Aluminium chips are produced throughout the entire product creation process: during the surface treatment of cast bolts and rolling ingots, during profile, plate and sheet production as well as the machining of components. Depending on whether they are produced by milling, turning, grinding or sawing, the chips, which are often wet, vary in form and properties: wool-like, spiral, rough, fine etc. What they all have in common is: they will be re-melted, whether in a Remelter or a Refiner. This phase describes both: the end and the beginning of the eternal Aluminium-Recycling-Cycle.

Within this cycle, four branches, above all, are concerned with the importance of handling of aluminium chips: Rolling mills, Stamping/pressing plants, Machining companies and Melting works. But what are the key considerations in detail? Loose chips have a large volume and low weight; so they display low storage and transport costs, which are often very quickly instead of melting. This means they can be used as alloying additions during the melting process, which is very much in demand in the melting plants as they means they have to purchase less, very expensive, alloying elements and aggregates.

Benefits in brief: reduced storage and transport costs, sales revenues optimized, optimised remelting.

About 130 Ruf briquetting systems in operation, worldwide.

Briquetting in pressing plants

Pressing plants produce chips primarily through reprofiling and sawing of casted round bolts as well as finished extruded sections. As very few of these types of companies are affiliated with a melting works, storage and transport costs are extra significant.

Another factor above all in achieving higher sales revenues is that Stamping/pressing plants dispose of single-origin chips with a clearly defined composition. This means they can be used as alloying additions during the melting process, which is very much in demand in the melting plants as means they have to purchase less, very expensive, alloying elements and aggregates.

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Briquetting in machining companies

Machining companies are to be found in many branches like e.g. in the Automobile industry, Aerospace and Mechanical engineering. Handling chips is daily business for these companies, and it has the association of a “waste product” of machining. The advantages of briquetting regarding storage and transport costs are that just like the optimisation of sales revenue, cause of the volume reduction of the chips after briquetting by a factor of between six and twenty. Furthermore, there is another important factor in this area of application: the recovery of cooling lubricants, emulsions or oil.

Ruf’s systems are equipped with an integrated catchment device for fluids. This ensures that your storage area remains clean, which is very much in alignment with orderly production processes and environmental protection in practice. Personnel costs are reduced and work safety levels are increased when the machine works automatically and only the conveyance of chips or briquettes requires service personnel.

Benefits in brief: reduced storage and transport costs, sales revenues optimized, optimised remelting.

About 850 Ruf briquetting systems in operation, worldwide.

Briquetting with Remelters and Refiners

Remelters and Refiners are smelters, which are differentiated by e.g. the products they manufacture. Remelters mostly produce wrought alloys as wire, bolts and rolling ingots. Refiners produce casting alloys in the form of ingots. Both unlike chips, amongst others. The difference between using loose chips or briquetted aluminium for remelting is, in both cases, significant.

Because under the effect of flames, the light material burns off very quickly instead of melting. And as the relation between surface area and density is particularly big with chips, a lot of material is lost through this burn-off. Moreover, the large exposed aluminium surface area of the chips mean a high tendency to oxide formation. This leads to further losses in the melting furnaces in the form of dross.

A further problem factor in the melting of aluminium when the liquid metal comes into direct contact with other liquids such as cooling lubricants, an almost explosive reaction takes place. Therefore, the factor of residual moisture is important. Loose chips often have a moisture content of 20 per cent and more. If they are not briquetted, the chips must go through a centrifuge and further drying systems in order to remove the residual moisture. In contrast briquetting is significantly more economically effective, especially when high quality systems are used. An appropriately high pressing power reduces the moisture content down to between three and five per cent. If the briquettes are subsequently stored in a dry place this reduces to values finer than two per cent. And the briquettes can be safely and efficiently melted.

Benefits in brief: reduced storage and transport costs, sales revenues optimized, optimised remelting.

About 180 Ruf briquetting systems in operation, worldwide.

Adapted briquetting technology from Ruf

Whether Rolling mill, pressing plant, Machining company or smelters, what is decisive is always using a needs based, high quality briquetting system. Ruf has an appropriately large range of systems with customised automation for all applications. Moreover, the numerous users of Ruf systems confirm the high level of robustness, reduced maintenance costs as well as reliable service. This means BOI is achieved often within one or two years. As a leading innovator, the Bavarian company invests regularly in the optimisation of its systems and cooperates with research institutions and universities. Furthermore, Ruf works intensively together with their customers. Ruf offers the companies the opportunity to test the briquetting of their own chips in in-house test systems and or/and they rent them briquetting machines. This is a basis for Ruf engineers to optimise system solutions for individual cases and it is a way of introducing new areas of application.

Ruf Maschinenbau delivers tailor-made briquetting solutions for all areas of application – Rolling mills, Extruders, Machining companies as well as Remelters resp. Refiners.

Smelters requirements

Because of burn-off and oxidation, loose chips cannot be used in some melting furnaces or only after very cost intensive treatment. The melting process of loose chips in a rotary drum furnace requires the addition of salt. The inherent problem here is, the left over salt slag has to be disposed of or undergo re-treatment, which is very expensive.

Heath type melting furnaces can also be equipped with so-called Vortex-installations, which can be operated with electro-magnetic or mechanical pumps. This leads to the chips being stired into the molten mass. This functions pretty well, but it requires a lot of effort. And apart from the purchase costs, the installation needs space, regular maintenance and there are also extra personnel and operating costs involved, particularly due to the high wear factor.

Two to seven per cent more yield from the melting process

Independent of which furnace technology is implemented, the melting process functions at its best with highly compressed briquettes. What is decisive is the density of the briquettes, which lies between 2.200 and 2.400 kg/m³. The density of liquid aluminium is, on average, around 2.350 kg/m³, depending on the alloy. Therefore the briquettes hardly float at all, which means burn-off and oxide formation are reduced to the minimum. This is the reason why Refiners generally report a yield at least two per cent higher. Some have confirmed five to seven per cent more metal yield.
Additive manufacturing: Excellent opportunities for aluminium in 3D printing

Large-scale industrial production the goal

The technology of metal 3D printing has been long-established in the production of complex parts and for challenging short production runs. But the potential of additive manufacturing (AM) is far from exhausted. Research and application technology work is currently underway on the next generation industrial 3D printing, which is supposed to lay the foundation for large-scale industrial production. Experts are crediting aluminium with being a leading material in this regard. It could develop into one of the most sought-after materials. Research institutions and application industries are engaged in a variety of diverse activities. “NextGenAM”, a joint programme aimed at developing a production system for large-scale additive manufacturing, has been running since mid-2017. Three powerful partners – the aerospace supplier Pretium Aerotec, the technology provider EOS and the automotive manufacturer Daimler – have set out to further advance industrial 3D printing and make it more efficient. Combining their firepower, their goal is to integrate manufacturing processes into one production line while qualifying aluminium as a universal material. On this basis, they’re laying the foundation for large-scale automated industrial production. The project team is leveraging the synergies and varying requirements of the partners. They’re considering the entire process: from the metal powder to the individual processing steps to the printing process to any required rework. Even though the project partners are looking at the target from different angles, economic efficiency and production times are at the very top of everyone’s agenda.

New approaches for design engineers

In addition to the planning of highly effective manufacturing lines, engineers must also think about designing universal components. 3D printing opens up new technical opportunities, providing completely new approaches for design engineers. There are many diverse application-related benefits. Parts used in aerospace rely on the material properties of aluminium or titanium, combining them with the design freedom of additive manufacturing. The outcome are low-cost components that are substantially lighter in weight than conventionally produced ones. The task now is to transfer these experiences to large-scale production in, for example, automotive engineering.

Compensating for process-related drawbacks

When it comes to developing new components, one must think about not just component design and production planning but also about the materials to be used. For the “classic” manufacturing processes such as milling or turning, casting, forging, or pressing, a large number of aluminium alloys are available to product developers, each optimised and designed to match the respective application or requirement. Not all alloys are suitable for additive processes. While Aluminium AlSi10Mg is the material most often used today, one important task will be the roll out of new and special aluminium alloys – high-performance materials that are tailored to additive manufacturing and that compensate for process-related disadvantages.

US automaker Ford serves as an example to illustrate the enormous potential of 3D printing processes in lightweight construction. The car manufacturer aims to save up to 50 per cent of the weight by using printed brake discs made from aluminium. Ford has filed a patent for this process.

isoTherm AL-Flex: Flexible launders – leakproof casting

Tremendous requirements are made when the molten aluminium from the casting/smelting furnace is poured into the distribution system.

Textile launders made from a composite material supplied by Frenzelit adapt to the movements of the casting furnace and make sure at both the mechanical and thermal levels that a precise connection is established which guarantees reliable operation throughout the casting process. They are tailor-made to satisfy customers’ specific needs, have a multi-layer structure, are ready for immediate installation – and are revolutionary into the bargain, because they require no maintenance.

Tipping movements of the smelting/casting furnace in relation to the distribution system are compensated for by the flexible, multilayer textile structure. The temperature lost by the molten aluminium in the casting process can in addition be reduced substantially by isoTherm AL-Flex. The flexible textile launder has a long service life, while it can be installed and removed quickly and reliably – a considerable advantage for maintenance staff over the usual rigid launders.

When they are used to seal launder segments at the mould table as a replacement for ceramic fibre gaskets, isoTherm 800 packings can also extend useful life by a factor of 15 and reduce service and maintenance costs as a result.

A short film about how the launder works in practice can be watched on the trade fair stand as well as in the “Flexible launder” section of the website www.frenzelit.com.

AssanAlüminyum

CREATING THE FUTURE TOGETHER

We aim to stand by our business partners, unconditionally. We produce tailor-made solutions for you. We create the future together with you, using our reliable, flexible and innovative approach.

Hall 11, Stand E60

www.frenzelit.com
Within the production of aluminium foils for demanding applications, finishing processes such as doubling, slitting and separating of the foils are of utmost importance for the quality of the finished products.

Kampf Schneid- und Wickeltechnik: Foil slitting and separating with documented quality

The processing of the most diverse web-shaped materials has been the key competence of Kampf Schneid- und Wickeltechnik GmbH & Co. KG for almost 100 years. Especially in the production of aluminium foils and strips, the machines of Kampf convince with solid mechanical engineering and best process control. Many hundreds of satisfied customers are the best references for this.

Slitting accuracy, consistent excellent winding quality and reproducibility of product properties are most important factors for profitable foil production together with high productivity and sustainability in the production process. Kampf’s Diplomat, Sepamat and Unial machines are therefore the first choice of market leaders in foil production.

Kampf foil separator machines are available in four different sizes Sepamat 6, Sepamat 8, Sepamat 10 and Sepamat 12. The numbers stand for the rewound diameters 600, 850, 1,000 and 1,200 mm. In addition to the precise slitting technology, the uniformity and reproducibility of the winding quality is of utmost importance for these machines. In order to meet even the highest demands in the processing of the thinnest films with a thickness of 5 µm or even below, the Sepamat machines have a very sensitive, state-of-the-art control system for speed, tension and contact pressure.

The smaller machines have a well-proven pneumatic contact pressure control. The Sepamat 10 and 12 models have the so-called air-over hydraulic contact pressure system developed by the company for particularly wide and heavy finish rolls, even with difficult specifications.

The advantages of both media are exploited – the rigidity of the oil in the special Kampf diaphragm cylinders and the particularly precise possibility of pressure control of the air in the system. The dead weight of the contact rolls is balanced in a swing arm arrangement so that the rolls can react very sensitively to the pressure settings. This is the only way to produce excellent coils with a width of over 2,000 mm and winding diameters of 1,000 mm or more, even with very thin films.

An intuitive machine monitoring system for controlling the machines is available to the operator. The HMI offers not only the storage and recall of preset routines by means of an extensive recipe memory, but also the possibility of operating the machine individually and with adapted process parameters. Extensive reporting options serve to document the product history and are part of the basic configuration of every machine.

Kampf also offers its customers many optimized solutions in the machine environment. Already at an early stage, the company took up the diverse customer requirements and realized the potential of automated and networked processes. The new Automation department develops individual automation concepts closely integrated with the machine design. The specialists are involved right from the start of the projects. In this way, the customer receives not only a high-quality machine, but together with the automation solutions, in and around the machine, a tailor-made production line. The optimum interface between the Kampf lines with the existing customer infrastructure insure the best productivity as well as the quality of the final products.

For example, adapted handling systems for loading, unloading and packing ensure a smooth production process alongside the machines. Kampf has, at the same time as developing the automation solutions, dealt with the topics of digitization and networking. As part of the Converting 4.0 project, the@vanced, an integrative platform for networking machines and components was developed. Users are thus in a position to initiate improvement measures based on the evaluated real-time data and thus optimize the entire production.

Smallest pinholes in sight

An example of a successful integration of Kampf machines and high-end analysis systems is the combination of Sepamat machines with pinhole detector systems from EDS Srl. Here, the desires of manufacturers for continuous improvement and end users for comprehensive documentation of product quality are fulfilled in an exemplary manner. On the one hand, the manufacturer can document the quality of the produced foils for the end customer in full. On the other hand, the operator receives detailed information about the wound foils in real time.

The system detects and locates holes smaller than 10 µm even at the highest machine speed. A special software analyzes the data and supports the production manager in eliminating sources of pinholes in upstream processes. The fully mechanical and electrical integration of the pinhole systems guarantees a trouble-free operation within the daily production routines.

The flexible design of all four Kampf separator models allows the integration of further systems, such as camera-based surface inspection.

Special machine lighting against dust and insects

A further important aspect for the quality of the finished product is to avoid contamination of the foil with dust or insects during operation. Normal machine illumination can attract insects. To prevent such insects from being wrapped in the coils, all Sepamat machines are equipped with special lights that do not attract insects. Very efficient suction systems on the slitting systems collect possible slitting dust and optional housings with air management ensure more cleanliness at the machines.

With the continuous further development and improvement of existing products, Kampf offers its customers the opportunity to successfully meet their customers’ requirements with the best quality and productivity. The Kampf retrofit department offers many of these developments as expansion and modernization packages for existing Kampf machines.
Intralogistics in modern extrusion plants

Aluminium offers its great success as a material not least to its universal surface design. If it is coated with plastics, painted or machined these days, its lightweight material is universally applicable and indispensable to many areas of technology and daily life.

It is easy to re-form, to join and to process. Thanks to its natural oxide skin aluminium boasts a high resistance to external influences even without any additional coating. Depending on the application, function or optical requirements this material can be varied in terms of colour, design and texture using industrial surface treatment methods. And the composition of alloys also impacts the desired surface properties and is already often taken into account in product design.

Exquisite and valuable look & feel

Next to coating with plastics, the dominant surface treatment today is anodising. Already known as the electrolytic oxidation of aluminium, it is one of the most frequently used processes. Here the aluminium surface is converted into an anodic layer that has extremely fine pores and is very hard thanks to an electrochemical process. Compared to the natural oxide layer it is over a hundred times harder and its thickness can be precisely defined. This makes products wear and corrosion resistant and extends the industrial applications for aluminium many times over. Additional processes also make it possible to design the colour. The characteristic metallic appearance of this light metal is retained despite this coating. On many target markets this effect is highly appreciated because the classic look and feel of metal provides designers, architects and product developers with ample scope for creativity. The anodising companies ensure the highest quality of coatings and are constantly busy expanding the functionalities of these oxide layers so as to serve new markets. In cooperation with the producers of the required chemicals they develop high-wearing coatings free from heavy metals or environmentally toxic. Since quality control guarantees outstanding light fastness and weather resistance with the aim of retaining the shiny effect of aluminium for both indoor and outdoor applications.

Endless choice of colours

Those not attaching importance to the natural surface of aluminium, can look to an inexhaustible variety of colours thanks to plastic coatings. Regardless of whether it’s powder coating or wet paint, designers and developers have all RAL tones or any pattern can be applied to metals. Here, often a special powder coating is applied as a background shade and then complemented with the desired motif in a second stage. Depending on the technology used, the resulting decoration can also feature a tactile texture. To this end components are wrapped with a film printed with the desired motif and then heated to 200°C. The ink then migrates from the film into the powder coating

Experts anticipate that the combination of engineering benefits and personalised component design will open up entirely new applications for aluminium. Aluminium that is coated in this way can be used for just about any application and can re-create the look and feel of wood, steel or glass.

Developments in Aluminium Coating Technology

Striping and recycling

Once coated components have reached the end of their useful life, they can easily be stripped and even re-coated. A case in point here are airplanes: they are often stripped after a short time already to take off again with a new design. Surfaces are scarcely a factor in recycling anymore: the current processes can remove all coatings making sure that aluminium can be turned into new products time and again.

Surface pavement at ALUMINIUM 2018

ALUMINIUM 2018 again dedicates a special exhibition area to the surface treatment theme. More than 20 companies will be presented here as part of the Competence Centre Surface Technology in Hall 12. This is where paintshops and anodising workshops, chemical companies and paint manufacturers exhibit their solutions. The pavement is supported by the professional associations GSB International Gießergemeinschaft für die Metallbearbeitung e.V. BASILEAN e.V. (Association for Piezoelectric Components) and VOA Verband für Außerveredelung von Aluminium e.V. (Association for Aluminium Surface Finishing).

Hall 12, Stand G35

Surface pavement at ALUMINIUM 2018
Investment in new production hall and slitting line

Niemet has its new slitting line with 2,100 mm of usable width in operation since September 2018. With this investment, the company has adapted to the fast-growing market and ever-increasing demands of its customers.

The new slitting line and production hall with crane runway for loading and unloading coil trough vehicles extend the Niemet service area and increase its capacity. The new system has a max usable width of 2,100 mm and a max. thickness of 4 mm. With seven slitting lines in the future and currently two core-length lines the company offers its customers more productivity and profitability. High material availability, tailor-made and pre-fitability. High material availability, tailor-made and pre-fitability. High material availability, tailor-made and pre-fitability. High material availability, tailor-made and pre-fitability. High material availability, tailor-made and pre-fitability. High material availability, tailor-made and pre-fitability. High material availability, tailor-made and pre-fitability.

Niemet has its new slitting line

www.niemet.de

Nokia products – laser-optical measurement for global players and market leaders

High-performance laser-based thickness measurement is key for competitiveness in many production processes. In the Industry 4.0 era, the demands placed on the digitalization of production data are steadily increasing. Higher data densities lead to an ever more sophisticated understanding of process, more efficient production and higher, documented quality.

Numerous industrial enterprises around the world are already leveraging nokra’s ultra-precise inline geometry measuring systems based on laser measuring technology to establish themselves as global market leaders.

Automotive solutions are a prime focus of nokra’s mission. Today’s vehicles contain a broad array of components that are already being measured using nokra’s technology: from sheet metal panels to brake disks, from a wide variety of camshaft types to complex and bulky axle cross-members. The advantages are clear: production and quality reliability and immediate feedback to ongoing production processes. Particularly in the automotive industry, instrument capability and traceability play a major role – and nokra measuring systems easily assure both.

A further example: series-scale windshield measurement directly downstream from the hot bending furnace. This requires a robust measuring system that can deliver high accuracy at ambient temperatures of up to 100°C. For years now, the major players in this industry have been depending on proven, innovative alpha.ti technology from nokra.

The importance of instrument-capable, traceable inline measurement is steadily increasing in the metalworking industry as well, as more and more customers are placing ever greater demands on the documented quality of materials. To meet this demand, nokra offers a range of flatness and thickness measuring solutions for sheet, long and strip products. Alpha.ti 4.0 is the latest milestone in laser-based thickness measurement: close to 20 years of experience have gone into this product, which was engineered from the ground up. Our top priority was making the system simple to integrate, simple to handle and simple to use. At the same time, accuracy and precision were increased even further, so as to ensure that QM-critical instrument capability is achieved even for the most demanding requirements. Equipped with an array of standard interfaces, alpha.ti 4.0 enables flexible, customized integration in the plant equipment environment.

The most important new features include temperature-independent measuring accuracy, flexible measuring ranges with tool-less sensor exchange without needing adjustment, as well as the quick-exchange sensor pairs and invisible air knives to keep the optical paths clear. The system is available as C- or O-frame, in both cases the measuring operation can be traversing or using a fixed measuring track. Due to the simplicity and compactness of alpha.ti 4.0, it is possible for the first time to use the system as an offline system for laboratory measurements. For this purpose, a sample scanning mode is available to deliver either a single measurement or a composite area profile of an entire sample section efficiently.

Future software options – if desired even custom expansions – allow alpha.ti 4.0 to grow flexibly with new demands, for instance for data filtering or data aggregation in the context of Industry 4.0.
Tomra to spotlight sensor-based sorting technologies

Tomra Sorting Recycling will show how X-Tract and LIBS technologies can help increase the worldwide supply of aluminium at the same time as enhancing sustainability.

Tomra MRA Sorting Recycling will showcase its sensor-based sorting technologies at ALUMINIUM 2018, the world trade fair and conference, at Messe Düsseldorf, Germany, from 9th to 11th October. Tomra’s exhibition stand will spotlight the company’s X-Tract machine, which separates valuable materials from metal waste, and its state-of-the-art LIBS technology, which accurately sorts and separates different aluminium wrought alloys.

ALUMINIUM 2018 is expected to attract more than 27,000 visitors from 100 countries and will share latest insights into everything from aluminium production to processing, finished goods and recycling. Tomra can be found on Hall 11, stand no. 11|54. The company’s technical experts will be available during all three days of the event to answer visitors’ questions.

Tomra’s participation at the fair highlights how the company provides technical solutions to two of the industry’s biggest challenges: global production of aluminium pushed to an all-time high because of the increasing need for light metals for energy transition and transportation, recycling can help meet demand for the material, and with intensifying pressures for sustainability, recycling improves resource conservation.

Frank van de Winkel, Tomra Sorting Business Development Manager Metals, said: “High levels of aluminium production plus the high accuracy of modern alloy-sorting techniques make it more and more worthwhile to unlock the value from secondary materials that would otherwise be lost. What’s more, re-using scrap metal is an environmentally-friendly practice which demonstrates the industry’s commitment to sustainability. For these reasons we’re looking forward to discussing our technologies at Aluminium 2018 with refiners and remelters.”

Tomra’s X-Tract separates heavy metals from aluminium alloys with such high precision – irrespective of the materials’ size, moisture, or surface pollution level – that it achieves aluminium purities of 98-99%, even from a varied mix and with small grain sizes. This technology employs an electric X-ray tube so that broad-band radiation can penetrate the material to provide spectral absorption information. This data is then measured with a highly sensitive X-ray camera to identify the atomic density of the material, regardless of its thickness. Material is sorted into high and low-density fractions, with Tomra’s Duoline sensor technology using two independent sensor lines with different spectral sensitivities.

Material is sorted into high-quality fractions from waste streams that maximize both yield and purity. Tomra Sorting Recycling is part of Tomra Sorting Solutions which also develops sensor-based systems for sorting, peeling and process analytics for the food, mining and other industries. Tomra Sorting is owned by Norwegian company Tomra Systems ASA, which is listed on the Oslo Stock Exchange. Founded in 1972, Tomra Systems ASA has a turnover of around €750m and employs more than 3,500 people.

Tomra’s LIBS-based sensor sorting technology extends the options for the use of scrap and secondary-aluminium. By employing a dynamic laser which can monitor the entire width of the belt, this has the unique advantage of eliminating the complex and costly need to separate materials into single lanes. This enables the sorting and separation of different aluminium wrought alloys with unprecedentedly high levels of efficiency, achieving sorting accuracies of 99% purity (or greater) with high throughputs of three to seven tons per hour. ALUMINIUM 2018 will also be an opportunity for recyclers, smelters and remelters to learn how Tomra customises technical solutions to fit customer requirements. The combination of state-of-the-art technologies and personalised technical support explains why Tomra has become one of the leading suppliers of sorting units in Europe, Asia and the USA. Over 60 Tomra units have been sold worldwide for the separation of different scrap sources, such as taint tabor from cold sheet scrap, extrusion profile scrap, used beverage-can scrap, and production scrap and new scrap from manufacturing waste.

About Tomra Sorting Recycling

Tomra Sorting Recycling designs and manufactures sensor-based sorting technologies for the global recycling and waste management industry. Over 5,500 systems have been installed in almost 100 countries worldwide. Responsible for developing the world’s first high-capacity near infrared (NIR) sensor for waste sorting applications, Tomra Sorting Recycling remains an industry pioneer with a dedication to extracting high purity fractions from waste streams that maximize both yield and profits.

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Successful cooperation for almost 20 years
Assan Alüminyum invests in High-Value Added Flat Rolled Aluminium Products

Assan Alüminyum currently provides services such as sales, supply chain management and after sales technical support, it is also evaluating opportunities to grow in the North American market in the medium term. Güngör states: “We differentiate ourselves through our core values of reliability, flexibility and innovation. With our global culture, we work closely with our business partners, providing them with creative, tailor-made solutions, to become their valued solution partner. Hence our motto: Creating the Future Together, as our team is only complete when our business partners are also part of it.”

Global pioneer in continuous casting technology
Assan Alüminyum focuses on Research & Development (R&D), as it is believed to be a major contributing factor to consistent high customer satisfaction and to the company’s growth. Assan Alüminyum’s officially certified R&D Center is dedicated to continuous improvement through innovations that improve light on the industry through many papers and publications. Assan Alüminyum constantly strives to produce less waste, less emissions and to consume less energy by developing new processes every year. The in-house recycling facility also makes positive contributions to the company’s sustainability strategy.

Short term investments completed, allowing for the production of high-value added products
Assan Alüminyum has invested in new casting lines, in record time, that have started production in the first half of last year, and a state-of-the-art foil mill, which has started production at the end of 2017. Five new coil and six new foil annealing furnaces and a world-class, high-precision grinding machine are also part of the completed investment. A high-precision coil-to-coil aluminium slitting line has also been installed and complements the high-capacity coil coating line. With these new expansions, the company now has 19 continuous casting lines and 16 foil rolling mills. Especially with the addition of the new foil rolling mill, the company is now able to concentrate more on high value-added products. The General Manager of Assan Alüminyum, Göksal Güngör, who is also currently serving as the President of Global Aluminium Foil Rollers Initiative (GLAFRI) notes: “We firmly believe that aluminium, with its superior qualities such as lightness, excellent barrier properties, flexibility and durability, will play a key role in the future of packaging, as well as many other industries. This is why we believe in the bright future that our industry promises the world.”

New investments being planned
In addition to its recently completed investments, the company is currently planning a large-scale investment, consisting of a direct chill (DC), hot rolling facility. The negotiations are ongoing for this investment project, which is estimated to have a total value of 900 million dollars and to accommodate approximately 650 additional employees. With this new facility, the company is targeting strategic industries, such as defense, aerospace, marine and other transportation and specialized packaging. With this investment, in which there is an integrated port and an R&D Center, the company aims to create further added value through high performance products.

The specialist for customized automotive blanks made of aluminium
MN Coil Servicecenter GmbH is the market-leading supplier of 2D-customized blanks for the automotive industry. We stand for a modern, highly automated production, cleanest surfaces due to a modern HSC cutting process and optimal edge formation for the best possible forming. Benefit from our visual inspection on both sides and material usage optimized for board contours.

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MN Coil Servicecenter GmbHHall 11, Stand E60
www.assanaluminyum.com

Assan Alüminyum has become one of the fastest growing flat rolled aluminium producers in Europe.
Welded AL sandwich panels – A new product for many industrial applications

Qingdao Taihong in China is a company of about 300 employees specialized in patented development, design and production of welded Aluminum sandwich panels. Several automated production lines are operationally to ensure high-throughput and cost efficient production of panels according to international quality standards.

Product characteristics
Welded AL sandwich panels are produced by brazing welded honeycomb as core with two aluminum plates (face sheets) on both sides. Between the aluminum honeycomb and face sheets, there is a welding connection without any non-metallic material such as glue. Such an approach creates a new type of metal structural material providing mechanical and thermal characteristics, which are superior to classically glued AL sandwich panels. Some key characteristics are as follows:

- High mechanical strength such as bending, compressive, peel
- High temperature resistance/thermostability up to ~ 600 °C
- Fire rating/resistance non-inflammable/
  a sample was kept perfectly after 45 min in flame (EN 1363-1:2012)
- Acoustic noise suppression: > 26 dB
- 2D and 3D molding
  Simple machining and welding

Product offerings
Welded AL panels are produced according to customer specifications:

- Typical panel size: 1200 x 2600 (mm²)
- Thickness in total: 4.5 mm to 100 mm
- Core structure: lattice (max thickness 6 mm)/honeycomb
- Face sheets: 1 mm – 2 mm

Standard panels are available.

The product could also be used as resilient damper and deformation energy-absorber, being perfectly able to restore to its original shape after encountering a force within its safety limit – when the crash energy exceeds the specified value of safety limit, crushing chains will absorb energy by deforming itself to ensure safety of passengers and the vehicle.

Potential Applications / Markets
Welded AL sandwich panels are considered to be proven well in the following applications/market:

- Rail: bottom cover, skirt, side wall, front cover, … already significantly being applied in Chinese high-speed trains
- Car: crash energy absorption, bus & truck components
- Aerospace: aircraft floors, inner compartments, wing-box, …
- Naval various applications in mega yachts, fast going Navy ships
- Construction: interior walls, ceilings, fire protection doors, heat and acoustic insulation,
- Defense: shelter, control modules, electromagnetic shielding rooms, …

Cooperation
Qingdao Taihong is interested in accessing the European market with their products. In principle various cooperation models could be conceived, such as direct delivery of customized panels to end customers in Europe (see list of potential markets/products above)

- Direct delivery of standard panels to distributors/trade- and machining companies
- License production in Europe

Conclusion:
A new type of metal structural material, i.e. welded AL sandwich panels are offered at competitive prices to end customers, trade- and machining companies in Europe to support a broad range of applications. The transport from Qingdao to any destination in Europe can easily be realized via conventional containers. The creation of a dedicated sales office of Qingdao Taihong in Europe is considered near term.

Precise HSC cutting for industry, automotive and aviation

MN Coil Servicecenter GmbH (MN CSC) is one of the most modern coil service centers in Europe. MN CSC has been machining 2D-blanks for industry, the automotive sector and aviation for more than seven years using the most modern and extremely precise cutting process.

In addition to the main exhibition MN Coil Servicecenter, MN Metall GmbH and MN Alucoc Market GmbH will also be presenting their innovations at the ALUMINIUM. MN Metall GmbH is a specialist for design facades and sheet metal processing, while www.mn-alumarket.com is the first B2B trading platform for overlaps or stocks in the automotive supply industry.

Innovative cutting process ensures maximum quality and low process scrap
The cutting process of the MN Coil Servicecenter can be used flexibly for all required sheet thicknesses. This makes optimum use of the output board. The process scrap is thus kept to a minimum and the resulting cutting gaps are minimal. The clamping technology of the board, further developed by MN CSC, also prevents possible surface damage that would result from fakir tables.

MN CSC has also optimized the cutting process so that imperfections such as splashes, dust or chips cannot get onto or under the board. The automotive industry in particular benefits from this, as the maintenance and repair costs of the press shops for deep-drawing dies can be significantly reduced. The visual control of both sides of the board ensures a consistently high surface quality.

Thanks to the fast CNC programming and the high degree of automation, the innovative cutting process can be used for both small and large series. Even small batch sizes are delivered optimally and quickly. In an age of increasing model variety with up to 50,000 units per year, this is particularly attractive for many companies.

MINIMUM. MN Metall GmbH
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• Precise HSC cutting for industry, automotive and aviation

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Welded AL sandwich panels from Qingdao Taihong

Welded AL sandwich panels from Qingdao Taihong

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Hall 13, Stand N25

Photo: Qingdao Taihong
Aluminium Cutting with XL package

Specifically for cutting aluminium, the Behringer Eisele GmbH with the VL-560 has designed a sawing system that sets new standards. Both in solid material as well as in pipes and profiles with sophisticated cross-sectional geometry. The powerful machine scores with unparalleled high output and very short rest pieces of only 50 millimeters. The VL-4 is designed for using carbide tipped circular saw blades with a diameter of 500 mm to 560 mm. With the XL package it is possible to achieve a cutting range of 240 mm round or 340 x 175 mm square material, using a 620 mm diameter blade.

The robust overall design with the latest drive technology in the feed axis and a very stiff saw blade guiding ensures an optimum, low vibration sawing process with excellent cutting performance, excellent surface quality at maximum availability. The frequency in the feed axis and the robust overall design of occupational safety and ergonomic design: The circular saw is completely encased in a gentleover in conjunction with optimal access for easy saw blade changing, cleaning and machine maintenance. Extra long profiles with complex profile geometries are generally very difficult to machine. To ensure that the material is securely clamped while avoiding unwanted marks produced by pressure points on parts, the use of specially adapted shaped jaws is advisable. Rapid jaw changer in conjunction with optimum machine accessibility helps reduce tooling times to just a few minutes. Automation is the key word when it comes to economic production processes. Savings with personnel and the use of additional low-operator shifts are only two options to make inroads into costs. The use of transport and removal systems and the possibility of linking up to magazines and storage systems means that operation becomes independent of day and night shifts with aluminium machining as well. A high level of automation gives employees more time for other activities and helps to save their capacities. Material collection is no longer positioned manually but is program-controlled. Operators are then mainly busy with process monitoring. Strength-reducing work becomes an exception. Operating automated machines is also the superior alternative in terms of safety as well. "With the handling of materials you shouldn’t only look at aspects of economy but also the safety of operating personnel when handling heavy, unwieldy parts," says Manfred Grüninger, focusing on another important factor. Particularly where large production batches are being processed, producers should consider link-up to downstream machining steps such as sorting or chamfering to ensure added streamlined efficiency.

Daily practice has also demonstrated that adaptation to continuously changing markets requires a high level of flexibility with material handling and with the use of personnel for customers. "We don’t yet know the demands of future orders, so in many branches they invest in a diversified production system optimised for future requirements and cost pressures on each individual component." Consequently, in the manufacture of wheels, forgings and castings, the demand for innovative approaches and new ideas is greater than ever. Customers and suppliers are called upon to jointly develop appropriate solutions here in order to prevail in global competition.

Cost savings through tailor-made heat treatment equipment

Aluminium is the material of the future, and automotive engineering is no exception to this rule. The more aluminium parts are used in carmaking, the more exacting are the requirements and cost pressures on each individual component. Consequently, in the manufacture of wheels, forgings and castings, the demand for innovative approaches and new ideas is greater than ever. Customers and suppliers are called upon to jointly develop appropriate solutions here in order to prevail in global competition.

These considerations have prompted, Schwartz GmbH – a global industry partner in heat treatment equipment to install an exceptionally versatile trial system in its R&D facility. It consists of a high-convection furnace with a useful furnace chamber size of 1 m x 1 m x 4 m, a W X H and a quench providing an exceedingly variable cooling rate. With the aid of this equipment, the customers of Schwartz are able to develop specific heat treatment parameters for their own components and alloys.

Schwartz quench system

This is particularly important in the design of new production lines and to optimise existing ones. Especially in the T6 heat treatment the soak time in solution annealing varies by several hours according to the subsequent hot forming production process (forging or casting). Additionally the critical cooling rates in the subsequent quenching step differ by orders of magnitude depending on the alloy. A particularly striking example of this is the group of Al-Mg-Si alloys (forx). Here, the critical cooling rates that must be achieved to obtain the maximum hardness of the artificially aged product vary between 30 K/min and 8000 K/min, depending on Mg and Si content. Such cooling rates can now be optimized to match the given part thickness, even with a certain degree of localized control, by means of the Schwartz quench system. Accordingly, each product is cooled down faster than necessary to obtain its required mechanical properties.

Moreover, component distortion is significantly reduced by the more homogeneous cooling. With a production system optimised in this manner, it is possible to reduce material inputs and to design more sustainable, resource-saving and, ultimately, more cost-efficient processes.

Hot forming of automotive aluminium blanks

Another application of this high-convective pilot system is the heating and subsequent hot forming of automotive aluminium blanks. After years of research and development related to the manufacture of high-strength structural steel components for crash-proof passenger compartments using the pres-hardening process, investigations into hot-forming and simultaneously strengthening of the lighter material aluminium are now also being intensified. First results obtained with the Schwartz furnace system confirm the importance of high convection in economic, rapid and homogeneous heating for press-hardening of aluminium components.
Milliging machine for aluminium plates sets new standard

At the ALUMINIUM 2018 show in Düsseldorf, Georg is going to introduce its new portal-type milling machine – Georg ultramill – for high-precision aluminium plates. With an accuracy of surface parallelism of +/- 0.05 mm achieved by this machine, Georg is setting a new standard. At the same time, production throughput increases significantly as Georg has doubled the machining speed and implemented a high degree of automation compared to machines generally in use so far.

The new machine mills the surfaces of up to 3,000-mm-wide aluminium plates with a unique precision of surface parallelism. While +/- 0.1 mm used to be the industry standard, the new machine achieves an accuracy of 0.05 mm. In a single run – without rough and finish machining – it provides a surface roughness Ra between 0.28 and 0.4 µm.

With milling speeds of up to 4,000 mm/min and feed rates of up to 60 m/min, machining times are more than 30 percent shorter than those of conventional machines. This is enabled, among others, by the extraordinarily high milling unit drive power of 200 kW.

Also the high degree of machine automation has contributed to the marked increase in throughput: The plates are automatically fed into the machine, held firmly down by a vacuum clamping table, automatically turned over when the top side has been milled and again held down automatically by the vacuum clamping table while the other side is being milled.

Dr. Wieland Klein, Head of Georg’s machine tools division, has already received feedback from users of the new machine. “First users of the machines have been reporting dramatic reductions in machining and non-productive times. And the product quality has become much better. Our preloaded and backlash-free, guideways guarantee highest precision and long-time accuracy of the machine.”

Georg measures the plate thickness in three tracks by means of laser triangulation. The integrated Georg Maintenance System (GMS) continuously monitors the complete machine, among others also the tool wear. The machine data is transferred to the host computer, linking the machine with the plant-wide process network.

At the trade fair, Georg will also showcase a new portal-type milling machine that machines all sides of aluminium slabs with the slabs having to be turned only once during the process. Also this machine excels in terms of precision and provides very short machining times.

About Heinrich Georg Maschinenfabrik

Georg is a worldwide well-reputed partner for reliable and powerful high-tech engineering solutions. The company’s cutting-edge finishing lines and machine tools as well as production lines, machines and equipment for the transformer industry are in operation in numerous renowned companies around the world.

The various product areas of the family-owned company, which employs more than 480 people and is now in its third generation, cater to most diverse markets and companies throughout the world. The divisions Georg Fischbeck Lines, Georg Transformer Lines and Georg Machine Tools are supported by the company’s own manufacturing facilities at the headquarter in Kerusiel, Germany. The company maintains a worldwide network of sales and service branches to be within easy reach for its international customers.

Georg machine tools

The Georg machine tools division develops and manufactures advanced value-adding machine tools for turning, drilling, milling and grinding in close cooperation with its customers and optimally tailored to their individual requirements.
One for all: New Fehr honeycomb high bay storage system for Alukon KG

Within the framework of expanding their headquarters in Upper Franconia, Alukon KG was looking for an experienced partner for the planning and installation of a high bay storage system to satisfy the company’s complex requirements. The tailored solution originates from Switzerland: from Fehr’s warehousing logistics experts production – from individual system components to the finished product. Also required to rise to this challenge was the new high bay storage system, with which the Swiss storage logistics experts were able to impress right from the outset.

**Visualisation of the planned processes even before order placement**

In order to optimally satisfy the customer’s requirements, Fehr created detailed planning of the future processes during the project planning phase, and subsequently visually presented these in a simulation. “This step takes place frequently prior to order placement”, explains Thomas Lehner, the engineer responsible for simulation and planning at Fehr. “The earlier our planning experts are involved in the design of a new warehouse, the greater the optimisation potential and therefore also the longer the life cycle of a new storage system.”

During the next stage, a detailed WMS specification – corresponding with the optimised process sequences – was compiled and likewise visualised in a simulation.

3 blocks with 4,256 cassettes for long goods

The resulting honeycomb type high bay storage system offers space in three blocks for a total of 4,256 cassettes for long goods, each with a payload of 1.2 tons. The principle storage goods comprise aluminium and plastic components, as well as finished products. The route-related picking without intermediate storage places certain demands on the warehouse management of Alukon KG, and requires rapid handling capability. The materials are delivered in complex warehouse management processes and prepared in boxes, such that they correspond with the respective tour. Rapid access times for fast picking was therefore one of the main requirements placed on the new high bay storage system. To satisfy this requirement, a carousel was combined with a retrieval point at each of the workstations. “An additional feature of these workstations, specially designed to meet the requirements of Alukon KG, is their low height”, explains project manager Markus Scherrer. “Furthermore, the retrieval point was designed such that the cassettes can be handled not only lengthwise, but also from the front.” This means that it is also simple to manually access materials that do not require a vacuum handling device.

**One vacuum handling device for all materials**

A further challenge in optimising the processes in the high bay storage system was posed by the handling of different items with just a single vacuum removal device. To enable this, a vacuum removal device that can be tilted and swivelled was designed, which is equally capable of gripping round, flat, long and short items.

The construction and assembly of the high bay storage system required almost two years. At the end of January 2017, after a ten-day induction phase with the Fehr project team on site, it was possible to put the new warehouse into regular operation. It is now possible to retrieve and pick all stored components and parts for roller shutters, venetian blinds, garage doors, insect protection and insulation systems. Alukon KG will therefore be able to further maintain their reputation as a rapid, reliable and top quality supplier to the construction component sector in the future.

**Project details**

**High bay storage system for Alukon, Konradshueh**

Bay type: Fehr honeycomb storage system for long goods
- Payload: 1200 kg
- 3 blocks
- 4256 cassettes of type A that can be serviced lengthwise and transversely
- 3 storage and retrieval machines
- 1 light storage and retrieval machine
- 2 carousels with retrieval point
- 2 order picking stations
- 4 transfer areas
- 6 weighing systems, integrated in the processing stations
- 8 excavation devices
- 2 vacuum removal devices that can be tilted and swivelled
- Warehouse management software: Fehr WMS

**New striking shade for transforming applications**

Clariant invites aluminium anodizers, product designers and engineers visiting ALUMINIUM 2018 to heighten their creativity with the latest high-durability sustainable color solutions for aluminium finishing.

**Clariant’s colorful anodized aluminum dyes lend an extra touch of quality to a wide range of applications.**

Clariant’s energy efficient anodizing enhances the appearance of the aluminium, as well as serving as a protective coating that resists corrosion and increases the durability of the anodized coating. The dyes provide metallic luster, subtle effect, and a high degree of colorfastness. They can be used in all anodizing processes for enhancing the appearance of aluminum in general, as well as for specific applications.

**DIMENSIONAL MEASUREMENT for aluminum finishing.**

The latest high durability, ten their creativity with ALUMINIUM 2018 to heighten their.

**Warehouse management software: Fehr WMS**

**Fehr honeycomb high bay storage system for Alukon**

A vacuum removal device is capable of gripping round, flat, long and short items.
Maximizing the contribution of aluminium to a sustainable society – that is the vision of the Aluminium Stewardship Initiative. The ASI Performance and Chain of Custody Standards have been developed and designed to enable the aluminium industry to demonstrate responsibility. Dr. Fiona Solomon, CEO of ASI, explains the mission.

Dr. Fiona Solomon: We were excited to see the first Performance Standard Certifications come through less than six months after the launch. The focus on responsible production and responsible sourcing continues to grow across a range of raw materials, as downstream users are seeking to better understand and manage supply chain risks relating to environmental and social issues. We are also seeing a continued growth in new members joining ASI – new downstream users wanting to formalise their commitment to a more responsible, more sustainable sourcing of aluminium, as well as from upstream producers, including from China – all of our members are motivated and engaged in the program’s implementation and further development.

Why is it important for the industry to demonstrate sustainability?
Dr. Fiona Solomon: Aluminium is a very important metal to support transitions to greener economies, but at the same time it also needs to address sustainability issues in its own supply chains. Improving recycling, better management of large-volume wastes, and improved engagement with Indigenous peoples around mining and primary production are some of the important areas where the industry can lift performance. The industry should be proactive throughout the value chain to demonstrate why it is a material of choice.

Which are the core elements of ASI’s certification program?
Dr. Fiona Solomon: ASI’s Standards set out the high level expectations for members, with supporting Guidance providing advice on how these can be implemented in diverse contexts. The Certification process is set out in ASI’s Assurance Manual, explaining the role of members in preparing for, and auditors in carrying out, independent audits. ASI provides support for these processes via educationAL, our learning platform, and elemenAL, our online assurance platform. Our goal is to maximise uptake of ASI and help companies reach their goals.

How many companies have received a certification to date?
Dr. Fiona Solomon: As of July 6, 2018, two ASI members have received certification under the ASI Performance Standard. Rio Tinto was the first member to be certified and their certification scope includes a bauxite mining operation in Australia, alumina smelting, aluminium refining, casting, semi-fabrication and remelting operations in Canada. Constancia Flexibles, the second Performance Standard certified member, has certified a rolling operation in Austria. We anticipate more members to become certified to both the Performance Standard and Chain of Custody Standard in 2018.

What are the topics of ASI’s presentation at ALUMINIUM 2018?
Dr. Fiona Solomon: We plan to cover ASI’s progress since ALUMINIUM 2016 – our certification program was still in development at that time – and our plans looking ahead. A key challenge for ASI is to support broad implementation and be able to evaluate its impact in diverse areas such as biodiversity management, human rights, waste management, and material stewardship. So we will include a focus on ASI’s ‘Theory of Change’ and how we plan to monitor and evaluate our impacts as a certification program, identifying key indicators for success.

About ASI
The Aluminium Stewardship Initiative (ASI) is a global, multi-stakeholder, non-profit standards setting and certification organisation. It works toward responsible production, sourcing and stewardship of aluminium following an entire value chain approach. To this end, ASI launched its Performance Standard and Chain of Custody Standard in December 2017. ASI’s 60+ members include leading civil society organisations, companies with activities in bauxite mining, alumina refining, aluminium smelting, semi-fabrication, product and component manufacturing, as well as consumer and commercial goods, including the automotive industry, construction and packaging, as well as industry associations and other supporters. ASI continues to seek engagement with commercial and industrial stakeholders in the aluminium value chain from across the world. Organisations interested in membership are encouraged to learn more about our membership structure and how to join.

Dr. Fiona Solomon
CEO, Aluminium Stewardship Initiative

Götz Sondermann
Technical Director, Siempelkamp
Aluminium – Material for the Future
The Aluminium 2018 Conference programme is set

Conference Day 1 – 09 October
SESSION 1: ALUMINIUM MARKETS
Chair: Juergen Hentsch, Aluminium Consulting – Koeln/Karlsruhe, Germany
Senior Consultant for Hydro Aluminium Rolled Products GmbH

09:10 Aluminium, an ideal material with a great future
Juergen Hentsch, Aluminium Consulting

09:50 Aluminium market outlook: More supply or looming shortage?
Ben Thomas, CB Group

10:30 Aluminium markets – latest trends
Andreas Pöge, GSA

10:50 Business portfolio strategies of mining and metal groups in the era of globalisation
Bruno Rottmann

11:00 Coffee break

11:30 3D printed aluminium: Is it the right choice?
Sergio Fischbach, Siemens Digital Industry

12:00 Aluminium in electric vehicles – the battle for every kilo
Oskar Stojakovic

12:30 Lunch & Book for 1h

SESSION 2: PLANT, PROCESSES, DIGITALIZATION
Chair: Kai F. Karhausen, head of Rolling Technology at Hydro Aluminium Rolled Products GmbH

13:30 Integrated process models as part of thermo-processing plants
Simon Karnes, Otto Junker GmbH

14:50 Cluster management at cold rolling mills today
Jörg Körner, SAZ

14:30 Hydrogen measurements in EN-AW 6082 alloy
Lucas Maier, IMS Technologie

15:10 Opportunities of numerical simulation in the design and optimisation of extrusion processes
Andreas Schenk, Hammerschmiede Aluminium Industries, Extrusion GmbH

14:50 Coffee break

15:30 Processing routes for new aluminium plate products with improved tooling performance
Werner Frager, Arburg Austria Metall GmbH

16:10 Selection of the right cooling conditions to achieve the perfect match
Stephan Ucsnik, Matthias Hartmann, AIT – Austrian Institute of Technology

16:50 Digital transformation of the metal industry
Stephan Ucsnik, Matthias Hartmann, AIT – Austrian Institute of Technology

17:30 Chair: Kai F. Karhausen, head of Rolling Technology at Hydro Aluminium Rolled Products GmbH

Conference Day 2 – 10 October
SESSION 3: SURFACE
Chair: Willem Beljans, chairman of board, GSA International

09:00 Chromium-free and Chromium-free surface pre-treatment
Werner Mader, GSA International

09:50 Improving productivity for Elaisi
Oliver Katschmarzek, ELMER GmbH

10:30 Anodizing as pre-treatment for powder coating
Jürgen Hirsch, Aluminium Consulting

10:50 Metal powder coatings – a challenge for the supply chain
Michael Weinhardt, Nico Nobel GmbH

11:00 Coffee break

11:30 Latest market trends in the European architectural market and sustainable solutions
Ludovic Beal, Axiya Coating Systems Germany

12:10 High-temperature and abrasion-resistant coatings for automotive exterior trim applications – applied nanotechnology & functional properties
Wolke Hafko, Mowernit Performance Materials GmbH

12:30 Comparative electrochemical and intergranular corrosion-resistance testing of wrought aluminium-alloy-based and products
Varun Kandekar, Impol Group

12:00 Break for 1h

SESSION 4: RECYCLING
Chair: Veg H. Sola, head of Recycling and Sustainability, GSA

10:00 Secondary and alternative sources of aluminium scrap
Nils Baur, Hydro aluminium Rolled Products GmbH

10:50 Econmetal T562 – an economical and ecological alternative to primary AA562 / AA5754 for many applications
Martin Hantsch, Econmetal

11:30 Recycling dirty aluminium tinfoil into biomass catalyst and other useful products
Ahmed Otman, Queen’s University Belfast

12:00 Aluminium drives innovation for the future of mobility
Michael Hofheinz, Novigages AG

12:50 Coffee break

13:30 The Aluminium Stewardship Initiative: implementation and impact
Fiona Solomon, Aluminium Stewardship Initiative

14:10 Recycling of contaminated aluminium scrap in twin-chamber furnaces
Rüyka Gürel, Sinaoöf DT Thermoprocess

14:50 High efficient alloy selective melting with laser light
Edwin Buchner, 다autért GmbH

15:30 Circular economy and waste shipment regulation, legislative developments – the way forward
Magdalena Gąsiorczyńska, Marten Labbentein, European Aluminium