

# INSIDE SAG

Progress in Aluminium



## EMBRACING PROGRESS

SAG Group – Solution provider  
for sustainable mobility







## SAG'S PATH TO BECOMING A LEADING LIGHTWEIGHT SOLUTION PROVIDER

*As a leading producer of aluminium tank systems for trucks and innovative aluminium components for the automotive industries, the SAG Group contributes significantly to weight reduction and thus sustainability. Karin Exner-Wöhrer, CEO of the SAG Group, with insights about the company's development and strategy.*

### **The decarbonisation of motorised transport is having a major impact on developments in the transport industry. What role does SAG Group play in this context?**

We see ourselves as a solution provider for OEMs in the field of green mobility. Why? Because aluminium is a real game changer in vehicle construction. Due to its low weight, stability and corrosion resistance, it has excellent mechanical properties. In addition, it can be recycled an unlimited number of times without any loss of quality, making it a resource-efficient raw material. Our guiding principle is "Progress through aluminium" because we are convinced that aluminium is the ideal material

*As a development partner, we accompany our customers on the way to a low-CO2 future from the idea to series production.*

for developing innovative and environmentally friendly solutions for the automotive industry due to its excellent material properties and unlimited recyclability.

### **How did SAG come to become a leading manufacturer of aluminium tanks and components?**

Coming from raw aluminium production, which began at our headquarters in Lend/Austria as early as 1898, we were one of the first producers to focus on the production of aluminium tanks from the 1980s onwards. With these light and robust tanks for trucks, we quickly became one of the market leaders. But this was just the beginning.

### **What were the next steps towards becoming a solution provider?**

We started our expansion in Europe and México. And we expanded our product range with starting the serial production of hydraulic tanks, compressed air tanks, air accumulators, complex aluminum components for trucks and cars and products for special vehicles and trains. Next, we brought the so-called Rheocasting technology to series production. A special technique for casting aluminum which enables unique material properties, very useful for the electric car industry. And at the same time, we developed a tank system for LNG-powered trucks, and based on that, our LH2 cryotank system, which has already traveled thousands of kilometers across Europe in the GenH2 Truck by Daimler Truck. With all these developments we became solution provider for green mobility.

### **Seems that innovation plays a major role in the SAG Group?**

Exactly. As a development partner, we accompany our customers on the journey to a low-CO2 future, from the initial idea to series production. We have made an international name for ourselves with technological innovations. However, it is also very important to offer accompanying services. With just-in-time and ready-for-assembly deliveries, our products are integral components in the production chain. This is made possible by short transport routes from our nine locations to our customers and an experienced team with extensive logistics know-how.

### **Is customer-centricity central to SAG's corporate philosophy?**

Yes, we consistently strive to adopt our customers' perspective and prioritize delivering added value for them at the core of our decision-making. This commitment begins with developing innovative products specifically tailored to their needs and extends to providing services that support the entire lifecycle of our products. We continuously invest in research and development to ensure our products and services not only meet but exceed our customers' expectations. Our customers are central to everything we do, and we take pride in advancing towards a sustainable future alongside them. ■



Karin Exner-Wöhrer, CEO of the SAG Group  
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#### **SAG Group: Global player with a local footprint in 6 countries and 9 locations**

Global Tier 1 supplier to OEMs, founded in 1992

#### **Industries**

Heavy trucks, cars, commercial vehicles, special vehicles, rail vehicles

#### **Main products**

fuel and hydraulic tanks, compressed air tanks and air reservoirs, special products and lightweight solutions, Rheocasting components

#### **Technology leader in the field of cryogenic tanks for LNG & LH2**

#### **Pioneer in Rheocasting serial production**

a special aluminium casting process

**1 100 employees**

#### **Locations:**

Austria, The Netherlands, Mexico, Slovakia, Spain, USA

**Turnover 220 million EUR (2023)**



Further information





## SAG GROUP – APPRECIATED LONG-TERM PRODUCTION PARTNERS FOR MANY OEMS

*As a leading manufacturer of aluminium tank systems for trucks and innovative light-weight components the SAG Group has established strong partnerships with major OEMs worldwide for more than 30 years. Rob Jongeneel, MD of SAG Group and SAG Netherlands gives some insights.*

### **Which advantages do customers gain from working with the SAG Group?**

Beside our strong focus on innovation and sustainability an advantage lies in our strong "follow the customer" approach, means that we set up our facilities close to the production sites of our customers. This principle simplifies logistics, reduces costs and contributes to less CO2 emission. Operating close to our customers also reduces cultural differences and helps to keep the partnership lively. With all that we were able to establish excellent relationships with many major OEMs over the years.

*We see ourselves as a partner from first idea to serial production. We think along with our customers and make the impossible happen.*

### **SAG is well-known as a pioneer in processing aluminium. How does it come?**

Being a leading manufacturer of aluminium tanks and products for many decades lead to much technical experience and deep R&D know-how, made us to an authority the field of aluminium processing. In setting the highest quality standards in our production processes we have proudly received of example the 10PPM award from DAF or the Quality Award from Daimler Truck North America many years in a row. That all proves that our quality assurance process is watertight, and thanks to dedicated and skilled staff, we are able to maintain 100% delivery performance.

### **How manages SAG to remain internationally successful?**

I think, that beside of our engineering know-how and experience in production and logistics our flexibility is what sets us apart. Unlike many companies, we adapt to our customers' needs, even if it takes more time and effort. In addition, we focus heavily on automation and invest a lot to make our processes more efficient. Our high quality and delivery reliability also contribute to our competitiveness. That is also shown in numbers: we are operating in 6 countries in Europe and México. With our 1100 employees we achieved a turnover of 210 million € in 2023.

### **How can the SAG Group address the challenges of the customers?**

Staying ahead of innovation is a major strategy. With our sustainable products and technologies we are on the right track. For example with Rheocasting, a casting process where metal is processed in a semi-solid state. This brings improved material properties and precision and offers customers higher structural integrity and a better environmental impact due to reduced material usage. We are the first who brought this technology to serial production. Additionally, we are innovators in the field of hydrogen storage by developing the first tank system for liquefied hydrogen for heavy trucks providing highest safety standards, efficiency, and durability. In the field of manufacturing skills we stand out with our ability to weld completely leak-proof. Also a USP of our group on a technical level. And of course we focus highly on automation and efficiency e.g. with cobots and robots in the production process.

### **SAG has long-term relationships with its customers. What is the secret to keeping customers satisfied?**

We see ourselves as a partner from first idea to serial production. We think along with our customers and make the impossible happen. Means we have a flexible and problem-solving approach with high focus on the needs of our partners. We are operating as a one-stop-shop for R&D, prototyping, testing and serial production. For some orders, we even do the assembly, thus relieving our customers of this task. To summarize, our customer orientation stands out and this is appreciated and honored by the OEMs with long term partnerships. ■



Rob Jongeneel, MD of SAG Group and SAG Netherlands

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#### **Facts about SAG Group**

**6 production sites in EU and North America**

**Reliable Tier 1 supplier for many OEMs worldwide**

**Highest certified quality standards**

**Logistic specialist for just-in-time and just-in-sequence production**

**Development partner from prototyping to large-scale production**

**Specialist for tailor-made special products**

**European market leader in fuel tank production with over 500 000 units p.a. (market share about 66%)**



Further information



## SAG'S CRYO TANK SYSTEM FOR HEAVY TRUCKS: THE WAY TO ZERO CO<sub>2</sub> EMISSIONS

*The use of liquid hydrogen as fuel offers significant advantages in transportation business, including greater range and payload, shorter refueling times, and zero CO<sub>2</sub> emission. Thomas Stepan, Team Leader Cryo R&D, about SAG's LH<sub>2</sub> tank system and its benefits.*

**SAG Group's innovative storage technologies for liquid hydrogen make a significant contribution to climate protection and support OEMs worldwide in achieving their emission targets. What makes the cryogenic tank technology developed by SAG so revolutionary for truck traffic?**

The high energy density in direct comparison with other zero-emission solutions makes liquid hydrogen a promising alternative to fossil fuels, especially for long-distance use in truck traffic. Our cryogenic tank system for liquid hydrogen is therefore a game changer in the direction of green mobility. It makes it possible to store hydrogen at extremely low temperatures of mi-

nus 253 degrees Celsius and moderate pressure in the liquid aggregate state, ensures safe and fast refuelling and a reliable supply of pure hydrogen to the fuel cell.

**What technical challenges did you have to overcome in the development of the cryogenic tank system?**

The biggest challenge was to develop a tank system that would meet the extreme

requirements of the medium in terms of temperature and pressure. Our cryogenic tank system consists of a double-walled, vacuum-insulated stainless steel tank, which thermally insulates the cryogenic hydrogen from the environment. In addition, the fuel tank

*A long-haul truck equipped with two LH<sub>2</sub> tanks can travel over 1000 km on a full tank.*



is equipped with a special piping and valve system, which is designed for the extreme temperature fluctuations that occur during operation and meets the safety-critical leakage requirements (note: H<sub>2</sub> is a very small molecule). Subsequently, the optimization task was to design our tank as compact as possible in order to be able to guarantee the highest possible hydrogen capacity in the limited installation space on the vehicle.

### **Can you tell us more about the successful test run of Daimler Truck's GenH2 truck?**

The test run was a great success. The GenH<sub>2</sub> truck, equipped with our cryogenic tank system, covered a distance of 1,047 km across Germany with around 80 kg of hydrogen, without any CO<sub>2</sub> emissions. This long-distance test impressively shows that hydrogen-based drives are a realistic and environmentally friendly solution for long-distance transport. Our system therefore not only brings technological progress, but also contributes to environmental protection.

### **How do you see the future of liquid hydrogen in truck transport?**

Liquid hydrogen has enormous potential to play a decisive role in truck traffic. Thanks to its high energy density and short refuelling times, especially compared to battery-electric solutions, it is particularly suitable for long-haul journeys. We are convinced that hydrogen-based propulsion systems will make a significant contribution to achieving the EU's climate targets. However, it is important that the entire supply chain and infrastructure for hydrogen on the main transport routes are expanded.

### **Why do SAG focus on liquid hydrogen in the development of the tank system?**

Liquefied hydrogen has a significantly higher energy density compared to gaseous hydrogen compressed to 350 or 700 bar. As a result, more hydrogen can be carried in the limited space available on the truck without losing payload, which significantly increases the range and enables comparable performance with a conventional diesel truck. Distribution and transportation efforts can be significantly reduced with liquid hydrogen, and LH<sub>2</sub> tanks also offer advantages in terms of cost and weight. ■



Thomas Stepan, Team Leader Cryo R&D  
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#### **The advantages of SAG cryogenic storage technology at a glance**

##### **High volumetric storage density**

of the tank system (1.5 kWh/L), especially compared to alternative CO<sub>2</sub>-neutral fuels

##### **Short refuelling times**

times (~ 10 min/1000 km), ideal for applications in long-distance and continuous operation, e.g. Heavy Duty Transport Segment

##### **Optimized thermal insulation**

to avoid/minimize H<sub>2</sub> boil-off outside of regular driving (e.g. parking, maintenance)

##### **Better recyclability**

and reduced costs of the purely metallic cryogenic storage system compared to the alternative storage form of H<sub>2</sub> in Type IV high-pressure vessels (-30%)



Further information



## SAG MÉXICO: THE RELIABLE PARTNER FOR LIGHTWEIGHT COMPONENT NEEDS IN NAM

*Interview with Hector Nuñez, Managing Director of SAG México about the role as a leading Tier 1 manufacturer of aluminium truck tanks, air reservoirs and lightweight components for OEMs in the automotive and commercial vehicles industries on the North American market.*

**Mr. Nuñez, congratulations on the recent major orders for aluminium components worth more than 30 million euros. What leads to your success?**

Thank you. We are very proud of this success. With our quality products and strategically positioned locations in Tlalneantla (Estado de México) and Monterrey (Nuevo León), we ensure satisfaction and proximity to key clients in Mexico and the USA, thereby reducing logistical costs. Our main customers are large OEMs in the North American automotive industry. Our extensive expertise in the development of our core products, combined with our commitment to tailoring these

*We are reliable partners with enormous know-how, which enables us to design tailor-made components within shortest time and manufacture them in serial production*

products to the specific needs of OEMs, ensures high customer satisfaction and close proximity. Our products are extensively used in heavy trucks, medium-duty trucks, and ICE (internal combustion engine) SUVs. Additionally, we are developing solutions for a variety of electric vehicles, which will complement our product portfolio in the future.

**Tell us more about your product range.**

We are a renowned Tier 1 manufacturer of a range of products primarily for the automotive and commercial vehicle industries. Our portfolio includes fuel tanks, air pressure tanks, and air reservoirs. We produce high-quality lightweight



products, and our extensive expertise in the aluminum industry positions us as a reliable partner capable of supporting a wide range of customer needs, from product development to final manufacturing. The North American market offers enormous potential for our products, especially concerning CO2 reduction in vehicle construction and lightweight design in electromobility. This has established our leading position as a reliable partner for many OEMs.

**What can customers expect from an cooperation with SAG México?**

We are reliable partners with extensive development and production expertise, enabling us to design tailor-made components in the shortest time and manufacture them in serial production. As part of the SAG Group, we collaborate closely with R&D experts in Lend, Austria, and can offer all steps from idea to series production. Our customers greatly appreciate this advantage, and the quality of our products and our flexibility in logistics make a significant difference. Recently, we received the Quality Award from Daimler Truck North America for the seventh consecutive year. This, along with other awards, is a valued confirmation to our reliability as a Tier1 supplier and to the high quality standards of our products.

**Tell us about your strategy for further grow in the North American market?**

Our focus is clearly on expansion to meet the growing demands driven by the trends of electromobility and CO2 reduction through lightweight vehicle construction. With two production sites and approximately 500 employees, we hold a strong market position and play an important role within the SAG Group. With a turnover of around 80 million euros, we contribute about 40% of the total turnover of the SAG Group. The prospects for further expansion are promising.

**What are your concrete plans?**

We are about to acquire a third location here in México. This new site is to be specially equipped for the production of tailor-made aluminum components using the die casting and rheocasting process and will be operational by 2025. This allows us to meet the increasing demand for our products on the North American market. With these plans we will further strengthen our position as renowned Tier 1 supplier on the North American market in future. ■



Hector Nuñez, Managing Director SAG México

*Pictures © - SAG*

**SAG México**

**80 Mio. EUR Turnover 2023**

**500 employees**

**2 production sites in Tlalnepantla and Monterrey**

**Focus on automotive and commercial vehicles industries**

**Number of produced parts per year (2023):**

- Fuel tanks: 212,407
- Air pressure tanks: 233,724
- Air reservoirs: 175,664

**Renowned Tier 1 manufacturer**

**Leading position as a reliable partner for many OEMs on the NAM market**



Further information



## RHEOCASTING: SO LIGHT EVEN GRAVITY IS IMPRESSED

*With aluminium components made with Rheocasting technology SAG gives OEMs a clear advantage in sustainability and efficiency. Learn more about Rheocasting in an interview with Fabian Hofstätter, Teamleader Rheocasting R&D, SAG New Technologies GmbH.*

### **Could you provide us with some insights into Rheocasting?**

With our Rheocasting process (a special casting technology) we are able to produce lightweight aluminum parts, which have the benefits of high pressure die casting parts but can offer some more important features. Caused by the high casting quality, it is feasible to replace components that were traditionally forged, while still meeting the mechanical strength requirements. Thanks to the good die filling and solidification properties, both thin-walled and thick-walled structures can be realized in one component. Together

*Rheocasting is in demand wherever components are exposed to highly dynamic loads and maximum weight reduction is to be achieved.*

with the good mechanical properties, a considerable potential for lightweight construction can be realized. SAG has set the goal to refine the Rheocasting process and has been a pioneer in industrializing a unique approach to it for years. Since then, we have succeeded in producing high-quality components for large-scale automotive serial production. And the demand is continuously rising. Because, the net weight of vehicles, which tends to increase due to the design, can be significantly reduced by using weight-optimizing SAG rheocasting components. This reduces fuel consumption and thus CO2 emissions.



### **What is the difference between Rheocasting and conventional high pressure die casting?**

Both Rheocasting and die casting utilize high-pressure die casting machines. However, Rheocasting necessitates an additional process step and equipment for material preparation. In the Rheocasting process, aluminum is manipulated in a semi-solid state, implying that some of the molten phases have already solidified into a globular shape. Consequently, the filling is executed in a laminar flow. This results in fewer defects in the part, extended tool life due to lower temperatures, and a highly dense part.

### **What are fields of applications of Rheocasting?**

The areas of application are nearly limitless. Rheocasting offers several features that can be leveraged for various applications. For instance, Rheocasting parts can be welded to be helium tight, which is crucial for pressure vessels or components of a car's air suspension system. Even without welding, the low porosity of Rheocasting parts proves beneficial for components like CO2 manifolds in cooling systems. Moreover, the superior casting quality of Rheocasting enhances the mechanical properties to such an extent that forged parts can be replaced. This allows mass reduction and near-net-shape design. SAG's rheocasting lines are dedicated to large-scale production. Once a CAD design is available, our R&D team brings a product to series production readiness in short time.

### **Seems that Rheocasting is a great technology with much potential. What is your conclusion?**

Indeed, Rheocasting is a transformative technology with immense potential. Its ability to produce high-quality, lightweight parts and components cost-effectively makes it a game-changer in various industries. The process's unique advantages, such as reduced energy consumption and CO2 emissions, further enhance its appeal. With the increasing demand for such innovative and sustainable solutions, Rheocasting is ready to play a significant role in shaping the future of manufacturing. The SAG Group, with its pioneering work in this field, is well-positioned to lead this change. In conclusion, Rheocasting represents a significant step forward in sustainability and efficiency. ■



Fabian Hofstätter, Team Leader Rheocasting R&D

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#### **The advantages of rheocasting**

##### **Up to 60 % less weight**

compared to steel parts of the same size.  
Weight optimization with the same installation space.

##### **Optimum mechanical strength and elongation**

Higher fatigue strength than steel.

##### **Best weldability and pressure density (helium density)**

##### **Best thermal and electrical conductivity**

20 % higher thermal conductivity, better EMC properties.

##### **Cost-effective, as no post-processing is required (net-shape)**

No milling, deburring, grinding necessary.

##### **Allows wall thickness variations and any design**

Full design freedom, different wall thicknesses possible, higher functional integration



Further information



## UNLIMITED SOLUTIONS: SAG SLOVAKIA – THE SYSTEM SUPPLIER FOR SPECIAL NEEDS

*Discover more about the capabilities of SAG as a solution provider for developing and manufacturing lightweight products tailored to special requirements, from Pavol Kubica, Managing Director of SAG Slovakia*

### **What solutions does SAG Slovakia offer to customers needing special components?**

We offer our customers decades of experience in the development and production of special products combined with a high level of technical manufacturing expertise. We see ourselves as problem solvers for industries that require lightweight and sustainable components. Our product portfolio ranges from space- and weight-optimized tank systems for various liquids (hydraulic oil, fuel, urea, coolant) ranging from 0,2 liter to 4,500 liter. Furthermore, structural parts for roof and frame constructions for locomotives, special storage containers, ventilation grilles, guide ducts

*We are provider of the entire value chain of customized, weight-optimized components from scratch to series production through advanced casting, joining, bonding, welding, and bending techniques.*

and claddings as well as space-optimized pressure vessels.

### **Seems that there is no limit in the product range?**

Right! We also design and deliver customized tanks for agricultural vehicles or components for construction machinery or fire engines. Cold storage tanks for truck manufacturers are just as much a part of the portfolio as water tanks for vehicles used for road or sewer cleaning. Even large orders such as the production of thousands of window systems or storage boxes and hydraulic tanks are no problem and are delivered quickly.



Of course, for all our products the highest quality and environmental standards are taken into account.

**What are the core capabilities of SAG Slovakia?**

We are provider of the entire value chain of customized, weight-optimized components from scratch to series production through advanced casting, joining, bonding, welding, and bending techniques. We stand for a pioneering spirit, uphold the highest product standards, and provide exceptional customer service combined with great flexibility, allowing us to fulfill even the most unique customer demands. Handling large orders, such as manufacturing thousands of window systems, storage boxes, or hydraulic tanks, is seamless and executed with prompt delivery. From initial design to series production, we offer a comprehensive one-stop-shop solution.

**It sounds like you provide not just a comprehensive range of products but also a broad array of advanced manufacturing skills?**

Yes, one of our specialties is our sophisticated manual aluminium welding technology, which has a long-standing tradition here. This enables us to manufacture complex lightweight structures that endure high stresses, along with our capabilities in press bending, laser cutting, and numerous other manufacturing techniques. Furthermore, we are advancing our capabilities with automated robot welding technology to handle high-volume projects. Using modern CAD and simulation software, we customize products to meet specific customer requirements. Our laser cutting can handle materials ranging from 0.8 mm to 10 mm thickness, while plasma cutting handles sheets from 10 mm to 30 mm. Additionally, we offer bending with various tools, bonding with specialized adhesives, and diverse surface treatments

**You are part of the international SAG Group. Could you provide us with some details about your facility?**

Our site is situated in Sihot park near Trencin, occupying approximately 12,000 square meters. We have a team of 110 highly qualified people. As a member of the international SAG Group, we operate globally and collaborate closely with our other production sites across Europe and México ■



Pavol Kubica, Managing Director SAG Slovakia

*Pictures © - SAG*

**SAG Slovakia at a glance:**

**Industries:**

- Automotive •Trucks
- Special vehicles for agriculture, construction, military and emergency services
- Rail vehicles High-speed trains, trams

**Products:**

Complex welded aluminium structures, customised crash management systems, structural parts, active and passive components for pedestrian protection, customised body parts, roof structures and special components for rail vehicles, window frames, oil tanks, hydraulic tanks for dual-use

**Certificates:**

- ISO 9001 – Quality • ISO 14001 – Environment
- DIN 2303 – Military applications
- EN 17460 – Standard for safe bonding in rail vehicle sector
- EN ISO 3834-2 – Fusion welding of metallic materials
- STN EN 15085-2 – Railway applications
- DIN 286-1 – Pressure vessels



Further information



## WITH PASSION AND STRATEGY FROM IDEA TO INNOVATION

*The wide range of know-how in the R&D area has made SAG the preferred development partner for many customers of SAG. Learn more about the innovative spirit and excellence of his team from Peter Loidolt, Head of R&D at SAG New Technologies GmbH.*

### **Could you tell us about SAG's approach to research and development?**

At SAG, research and development is truly our passion. We engage closely with our clients right from the outset, whether it's refining a design space, working through framework conditions, or homing in on specific technical specifications. This collaborative approach ensures that we tailor innovative solutions that are not only cutting-edge but also ready for seamless integration into series production. We offer our services as a one-stop shop from design to prototyping, from material development to the planning of optimal

*From the initial stages of conception and development to the final handover of prototypes, we ensure that every step is meticulously planned and executed.*

production processes. A network of partners in universities and research institutes enables us to work interdisciplinary on complex tasks. This is why we became a preferred development partner for many of our customers.

### **How do SAG's R&D experts collaborate with clients during the development process?**

Our team of R&D experts operates globally, working hand in hand with our clients' development departments.

This collaboration is key as it allows us to leverage our extensive know-how to craft bespoke product solutions. The starting point of the R&D process can



be a design space, framework conditions or specifications. From the initial stages of conception and development to the final handover of prototypes, we ensure that every step is meticulously planned and executed.

### **What role do virtual tests and simulations play in SAG's R&D process?**

Virtual tests and simulations are integral to our process. They enable us to validate designs and optimize performance parameters early on, significantly reducing development time and costs. This iterative approach ensures that by the time we move to physical testing, we're confident in the robustness of our prototypes. Our well-equipped laboratories also facilitate extensive physical testing, allowing us to validate prototypes under real-world conditions. This exceeds expectations in terms of reliability and performance, giving our clients a competitive edge in their markets.

### **How does SAG support clients in series production transfer?**

We work closely with our clients to transfer knowledge gained during development to their production teams. This ensures a smooth transition and minimizes any potential challenges during scale-up. Our goal is to see our innovations successfully integrated into our clients' manufacturing processes.

### **Could you share an example of a successful collaboration with a client?**

Certainly! Recently, we partnered with a client in the automotive sector to develop a lightweight component for their new vehicle model. Through close collaboration and leveraging our advanced manufacturing concepts, we were able to deliver a solution that not only met their performance targets but also enhanced fuel efficiency and reduced production costs.

### **Looking ahead, what are the key focus areas for SAG's R&D efforts?**

Moving forward, we're focusing on advancing materials science and exploring sustainable manufacturing practices. These areas are pivotal as we strive to offer our clients innovative solutions that not only meet current needs but also anticipate future market demands. ■



Peter Loidolt, Head of R&D SAG New Technologies GmbH.

*Pictures © - SAG | ADOBE STOCK*

#### **SAG's services in product development:**

- Conception • Development
- Virtual testing & simulations
- Prototype production • Physical testing
- Handover of prototypes • Process development
- Series production transfer

For SAG, the process doesn't end with the delivery of prototypes. There is a rich history of developing outstanding production processes and manufacturing concepts for lightweight products. Our experts in process and manufacturing technology design the optimal production setup for manufacturing the designed components at scale, customized for each specific case.



Further information

# SAG GROUP: STRONG PARTNER, STRONG VALUES



## Progress in Aluminium

“Progress through aluminium” is our guiding principle. Aluminium is the material of the future, easily molded and shaped, and extremely efficient due to its recyclability. It enables sustainable, innovative, and unique solutions for the automotive industry to reduce CO2 emissions.

## Together for the environment

Aluminium materials and products help save energy and conserve resources. We recycle aluminium to close the value creation cycle, ensuring its reuse.

## Strong because of internationality

We prioritize our customers' needs. Through our follow-the-customer strategy, we support clients worldwide with our products and services.

## Innovation in motion

Utilizing aluminium, we create high-quality, innovative products for the automotive, rail, and aviation industries. Partnering with customers, we develop tailored solutions.

## Facing the Future together with joy and pride

Our employees continually contribute to our company's legacy. We are proud of our achievements and foster a respectful and appreciative environment within the SAG family.



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# SAG

Progress in Aluminium

