Welcome to SAG

SAG is an international supplier of components and systems for the several Industries:

• Automotive & Commercial Vehicles
• Motorcycle
• Aviation
• Defense
• Railway
• Renewable Energies
• Special vehicles and constructions
Our passion worldwide
## Company Data

<table>
<thead>
<tr>
<th>Industry</th>
<th>Metalworking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turnover 2018</td>
<td>SAG Motion Group € 220 Mio.</td>
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<tr>
<td></td>
<td>Alutech Slovakia € 16,2 Mio.</td>
</tr>
<tr>
<td>Export quota</td>
<td>90%</td>
</tr>
<tr>
<td>Employees</td>
<td>SAG Group 1,300 (Jan. 2019)</td>
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<tr>
<td></td>
<td>Alutech Slovakia 139 (Jan. 2019)</td>
</tr>
<tr>
<td>Locations</td>
<td>Austria, France, Mexico, Netherlands, Slovakia, Spain, Sweden</td>
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</tbody>
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SAG Motion GmbH - Markets

**Commercial Vehicle**
- Fuel and hydraulic tanks incl. accessories
- Air pressure tanks
- LNG Tank Systems
- Storage boxes
- Compartment doors
- Window and door systems
- Lightweight seat structures

**Automotive Industry**
- Air reservoirs for air suspension systems
- Structural parts and hinges
- Crash management systems
SAG Motion GmbH - Markets

Aviation Industry
Cabin lightweight parts
Lightweight structural parts

Motorcycle Industry
Tail brackets
Swing arms
Cockpit mounts
Oil tanks

Railway Industry
Window systems
Customised lightweight constructions
Air pressure tanks
Special Markets
Innovative user-specific solutions
Special tanks
Special welding projects

Hydraulic tank
Exhaust silencer
Loading platform
Military tank
Tank for alternative fuels
Military tank
SAG Motion GmbH – R&D Capabilities

We are more than a production company, we

- Create concepts
- Design products
- Simulate real life conditions on our products
- Simulate the manufacturing processes of our products
- Develop new process technologies
- Produce prototypes
- Perform physical test our prototypes
- Provide prototypes for customer testing

Sloshing Simulation in a diesel tank
Virtual product and process development

- CAD design (Catia V5)
- Stress analysis (ABAQUS, Radioss)
- Fatigue analysis (FEMFAT)
- Topology Optimisation
- Crash analysis (Radioss, LSDyna)
- Casting simulation (Castingsoft)
- Sheet metal forming simulation (HyperForm)

Testing and laboratory facilities

- Climate chamber
- Test equipment for pressure and cryogenic vessels
- Shake rig for truck frame hang on parts
- Mechanical strength testing of components
- Optical / 3D measurement
- Prototype manufacturing
- Material and structural component testing
Development according to customer requirements

- Packaging space optimised solutions
- Lightweight design optimised solutions
- Fatigue design driven development
- Specification of material and heat treatment
- Corrosion resistance investigations
- Flexibility for design changes
- Broad base of manufacturing technologies available at SAG group for engineers to derive from
- Physical testing in State-of-the-art SAG Technology Center

Optical microscope investigation of a semi-bold cast microstructure
Liquid Tanks for small & high volumes

Applications for:
- Fuel
- Hydraulic oil
- Water / Tap water / Water recycling
- Chemicals
- AdBlue (Stainless steel / coated aluminium)

Integrated solutions e.g.:
- Integrated step and/or battery boxes
- Integrated mudguard
- Special mounting solutions

Supply of complete tank systems incl. e.g.:
- Pre-assembled system components (level sensor, filter, brackets etc.)
- Explosion protection
- Inside/outside surface treatment and “Self sealing coating”
Combined solutions with integrated:
Fuel- and hydraulic tanks
Luminous elements
Operating units

Possibilities for additional benefits:
Pre-assembled systems e.g. with:
- Sealing
- Gas filled suspension
- Hinge & locking devices
- Air grids, strainers
Walk-on-able, anti-slip coating/rubber
Inside/outside surface treatment
Shelter and Housing Systems

Vehicle structures and cabins such as:
- Sheet-metal construction
- Frame / roll over construction

Housings and shelters for additional components like:
- Power generators
- Ground radar control devices
- First aid facilities
- Batteries & Energy chains
- Water preparation devices

Possibilities for additional benefits:
- Lightweight base construction
- Walk-on-able
- Special mounting solutions
- Pre-assembled systems
- Inside/outside surface treatments
Example for special constructions

- **Seat structures**
- **Door and window frames (incl. glass and opening systems) and panels**
- **Front constructions, fenders and bumper bars**
- **Structural parts e.g. for:**
  - Roof Constructions (for Locomotives)
  - Frame Constructions
- **Special storage containers e.g. for:**
  - Camouflage net
  - Battery
  - Ammunition
- **Ventilation grids, channels and housings**
- **Hydraulic stands and control panels**
- **Space optimised pressure tanks**
Examples for railway applications

Roof construction for locomotives (serial product)
Production according to customer drawings

Frame construction for generator on roof of train
R&D & FE-Analyses done by SAG Alutech

Cover construction of aggregate on roof of train
Production according to customer drawings

Locomotive drivers cap
Production according to customer drawings

Air Dryer & other brake system components
Dimensions: variable
R&D & FE-Analyses done by SAG Alutech
## Certified Quality Standards

- ISO 9001:2015
- ISO 14001
- DIN 2303 (Welding and allied processes - Quality requirements for production and maintenance companies for military products)
- DIN 24394 (Welding for aerospace applications)
- STN EN 15085-2 (Welding of railway vehicles and components)
- DIN 6701-2 (Adhesive bonding of railway vehicles and parts)
- EN ISO 3834-2 (Production of pressure vessels made aluminum and aluminum alloys)
- ISO / TS 16949 (Automotive Management System)
- IRIS: 2009 Rev. 2. (International Railway Industry Standard)
- ECE (E8) certificate by Czech Ministry of Transportation / TÜV SÜD Czech s.r.o
- NATO Commercial and Government Entity Code NCAGE – 1304M

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### Product portfolio – Special products

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[Image of a product or logo]

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[Image of a certificate or logo]
SAG Group – Progress is our passion

Let’s stay in touch!
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