History of the plant

● Plant Area: 190,000 m² Building Area: 110,000 m²

● 1934 Foundation of the Plant Hannover-Linden

● 1936 Foundation of the VAW Research-Center in Hannover
  Development of Continuously Casting of Aluminium Billets until 1945

● 1993 Giving the Independence to the Extrusion Plant (AVH)
  (60% Alcoa, 40% VAW)

● 1994 Separation of
  ○ Service-Center Foundry  (100% VAW aluminium AG)
  ○ Welded Tube Company  (100% VAW aluminium AG)
  ○ Building Facility Maintenance Company  (100% VAW aluminium AG)
  ○ AVH Extrusion Plant  (60% ALCOA, 40% VAW)

● 1997 Foundation of
  ○ VAW Giesserei Hannover GmbH  (100% VAW aluminium AG)
  ○ VAW alutubes GmbH  (100% VAW aluminium AG)
  ○ IGS Hannover mbH  (100% VAW aluminium AG)
  ○ Alcoa Extrusions Hannover GmbH & Co. KG  (100% Alcoa)

● 2002 Takeover from VAW Aluminium AG by Norsk Hydro SA
  ○ Hydro Aluminium Giesserei Hannover GmbH  (100% Hydro Aluminium Deutschland GmbH)
  ○ Hydro Aluminium Alutubes GmbH  (100% Hydro Aluminium Deutschland GmbH)
  ○ LSS Hannover  (100% Hydro Aluminium Deutschland GmbH)
  ○ Alcoa Extrusions Hannover GmbH & Co. KG  (100% Alcoa)

● 2014 Merger between North Hydro SA and SAPA
  ○ SAPA Aluminium Alutubes GmbH  closing end of 2014

● 2014 Takeover from Norsk Hydro SA by Quantum Capital Partners AG, Munich, Germany
  ○ Leichtmetall Aluminium Giesserei Hannover GmbH
Plant Area: here we are

Göttinger Chaussee 12-14, 30453 Hannover, Germany
# Product Portfolio & Certifications:
Standard Alloys and Dimensions, others upon request

## Nominal Diameter vs. As-cast Dimension

<table>
<thead>
<tr>
<th>Alloy EN AW-</th>
<th>AA</th>
<th>Nominal Diameter</th>
<th>As-cast dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>AlCu4PbMgMn</td>
<td>2007</td>
<td>182 mm</td>
<td>178 ± 2 mm</td>
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<tr>
<td>AlCu6BiPb</td>
<td>2011</td>
<td>209 mm</td>
<td>203 ± 2 mm</td>
</tr>
<tr>
<td>AlCu4SiMg</td>
<td>2014</td>
<td>230 mm</td>
<td>225 ± 2 mm</td>
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<tr>
<td>AlCu4MgSi</td>
<td>2017</td>
<td>258 mm</td>
<td>252 ± 2 mm</td>
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<tr>
<td>AlCu4Mg1</td>
<td>2024</td>
<td>284 mm</td>
<td>277 ± 2 mm</td>
</tr>
<tr>
<td>AlCu2Mg1,5Ni</td>
<td>2618</td>
<td>319 mm</td>
<td>313 ± 2 mm</td>
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<tr>
<td>AlMg4,5Mn0,7</td>
<td>5083</td>
<td>381 mm</td>
<td>372 ± 2 mm</td>
</tr>
<tr>
<td>AlMgSiPb</td>
<td>6012</td>
<td>434 mm</td>
<td>424 ± 2 mm</td>
</tr>
<tr>
<td>AlMgSiSn</td>
<td>6012A</td>
<td>443 mm</td>
<td>432 ± 2 mm</td>
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<tr>
<td>AlMg1SiCu</td>
<td>6061</td>
<td>485 mm</td>
<td>475 ± 2 mm</td>
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<tr>
<td>AlSi1MgMn</td>
<td>6082</td>
<td>535 mm</td>
<td>525 ± 2 mm</td>
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<tr>
<td>AlMg1SiPb</td>
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<td>AlZn6MgCu</td>
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<td>AlZn4,5Mg1</td>
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<td>AlZn5Mg3Cu</td>
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<td>AlZn8MgCu/A</td>
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<td>AlZn5,5MgCu</td>
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<tr>
<td>AlZn5,5MgCu(B)</td>
<td>7175</td>
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</tbody>
</table>

## Management System Certifications:
- DIN EN ISO 9001 (Quality)
- DIN EN ISO 14001 (Environmental)
- DIN EN ISO 50001 (Energie)
- BS OHSAS 18001 (Work Safety)
- 97/23/EG Pressure Equipment Directive
Recycling, Incoming Metals

Environment and Recycling

It is our aim to maximise not only the environmental performance of our plant but also the environmental soundness of our products. Leichtmetall Aluminium Giesserei Hannover GmbH is therefore committed to producing the latter in an environmentally sound manner and using resources as sparingly as possible.

In pursuing this objective, we linked our already low-emission, tiltable channel-type induction furnaces and in-line filters to an exhaust gas cleaning plant, which we installed in close consultation with the authorities. As a consequence, our emissions are well below the maximum permissible levels.

By returning aluminium chips, turnings and offcuts as well as revert scrap from customers back into the production process, valuable primary resources and energy are saved.
Metal Input: scrap, prime, master alloys
The Cast House

Melting and casting equipment

Equipped with two 50-tonne, tiltable channel-type induction furnaces and a vertical DC casting unit, our foundry can produce billets with a maximum length of 6800 mm and diameters of 178 up to 525 mm.

Melting Treatment

All melting's are treated with a mixture of chlorine and nitrogen in the casting furnace. During casting, the molten metal undergoes chemical-physical cleaning by means of a chlorine-argon gas-flushing treatment in an ALPUR D 5000 in-line filter, and if required by the customer mechanically by a ceramic foam filter (CFF).

Quality Assurance

Constant checks of the analytical and processing data during melting and casting operations guarantee full compliance with the customers’ requirements and, above all, the constant high quality of our products.

Flexibility

Through our reliable Team we are highly flexible and we are able to change alloys and moulds within a short period. This allows us to respond quickly to our customers’ needs. Here again, we rely on the expertise of our highly-qualified team to safeguard the foundry’s proven product reproducibility.
Cast House: loading the furnaces
Cast House: the casting process
Cast House: extracting the logs
Cast house: the homogenisation process

Homogenisation

All billets are homogenised in 2 special direct gas-fired furnaces which boast close tolerance temperature uniformity to ± 6°C max. The latest installed furnace (2015) is even capable to guarantee a temperature uniformity range of ± 3°C acc. SAE AMS (Aerospace Material Specification) 2750.

Traceability

Complete product traceability is particularly important to us. Each billet is consequently clearly marked with the respective alloy designation and batch number, and with the position of the billet in the continuous casting unit. Every subsequent machining operation on a billet is displayed and logged with the aid of a computer.
Cast house: Homogenisation Furnaces 11 + 12
The Material Routing:

- **RAS**
  - Induction channel
  - Melting furnace 47 t

- **RAW**
  - Induction channel
  - Casting furnace 47 t

- **Degassing with Chlorine and Nitrogen**

- **Inline filter Alpur 5000**
  - with two Graphite rotors

- **Degassing with Chlorine and Argon**
  - with two rotors

- **20' CFF**

- **Homogenisation Furnace No. 12**
  - ~ 60 t

- **Homogenisation Furnace No. 11**
  - ~ 60 t

- **Casting pit**

- **Cold Measurements**
  - Dia. 178, 203, 225: 30 moulds
  - Dia. 252, 277, 313: 24 moulds
  - Dia. 372, 424, 432: 18 moulds
  - Dia. 475, 525: 5 moulds

- **Emergency outlet**

- **Billet Machining Center**:
  - Saw
  - Turning Lathe
  - US-Inspection
Billet Machining Center: cutting, turning, US-inspection under water

Product Processing

In our billet machining centre the homogenised billets are processed according to customer requirements. Our lathe allows us to turn the billets in lengths from min. 500 up to max. 1500 mm on diameters between Ø 140 and 500 mm. In this way, we are able to guarantee extremely narrow diameter tolerances and optimize the use input/output-ratio.

Ultrasonic Testing

As another method to ensure the high quality of our products, each cut and turned billet can undergo submerged ultrasonic testing on request. Two probes positioned at 90° and 74° can detect single discontinuities according to FBH 1,98 mm (flat bottom hole) following the International Standard ASTM 594 class A. We have 2 inspectors, qualified with Level 3 NDT (Non Destructive Testing), whilst all others have at least a level 1.
Billet Machining Center: cutting, turning.
Submerged-Ultrasonic testing equipment
Storage of semi-finished products
Contact details: info@leichtmetall.eu
Leichtmetall Aluminium Giesserei Hannover GmbH, Göttinger Chausee 12 -14, 30453 Hannover, Germany