

Automotive quality from AMAG - the shape of things to come



Premium quality for a premium product segment – automotive materials play a major role in the AMAG product portfolio.

Today, aluminium constitutes an indispensable part of automotive manufacturing. This is due to the enormous diversity of advantages offered by this light metal. Low weight, good corrosion resistance and excellent recyclability are essential characteristics for the automotive industry.

Aluminium casting alloys for applications such as engine blocks, cylinder heads and also the chassis can already be designated as standard. Moreover, as far as sheet is concerned, bodywork and structural components constitute the segment with the greatest future growth potential. However, in order to meet the demands of this product sector, modifications to the alloying systems in line with specific require-

ments are vital. Therefore, as a specialist for heat treatable aluminium alloys, AMAG has developed numerous variations of classic 6xxx alloys against a background of highly diversified customer specifications. These variations account for differing application profiles, such as forming, bending and strength optimization, rapid hardening, suitability as a visible component and crash behaviour.

Special alloys with adapted processing methods represent a further step forward, as they raise the standard possibilities with regard to forming capacity and specific strength to a previously unknown level. This fact is illustrated by the so-called "banana diagram" (Fig. 1).

While conventional aluminium alloys and forming processes demonstrate the compromise between strength and elongation familiar from other material classes, the

new AMAG TopForm® SPF and AMAG TopForm® UHS represent a quantum leap in this regard.

AMAG TopForm® SPF is a 5xxx alloy with a high Mg content, which was developed for superplastic forming processes by means of a special alloy composition and production route. The industrial-scale production of this superplastic alloy in AMAG's rolling mills facilitates previously unattained cost efficiency and stability with regard to the customer process.

Superplastic forming takes place using high temperatures (typically 450 – 500°C) and low forming speeds and thus allows the creation of far more complex geometries than standard forming methods. One of the most spectacular references for this alloy development, is the wing door of the new Mercedes AMG SLS.

AMAG TopForm® UHS is a high-alloy material from the 7xxx series and has been specially developed for the semi-hot forming of high-strength components with considerable energy absorption capacity. As a rule, forming in a highly stable condition takes place in a temperature range of 200°C at speeds similar to those employed in conventional processes, whereby the high strength level of the original temper is retained. The special strength and energy absorption capacity thus attained is only emulated by a few highly exotic and thus correspondingly expensive materials.

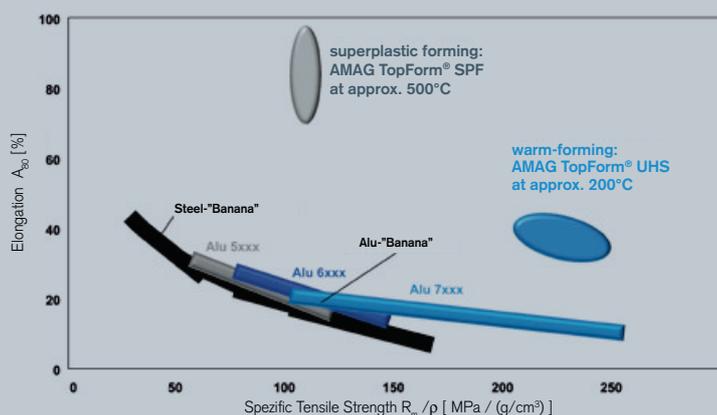


Fig. 1: Banana-graph

