Prof. Dr. Helmut Antrekowitsch

Resource conservation through recycling and process optimisation

AluReport recently conducted an interview concerning the importance of recycling and energy savings during the manufacture of high-quality aluminium products with Prof. Helmut Antrekowitsch, who has headed the Institute for Nonferrous Metallurgy at the University of Leoben since 2003 and in 2008, became a member of AMAG's scientific advisory committee.

What role does the recycling of aluminium play in Europe and especially in Austria?

In recent years, the metal production and processing companies in Europe have continually increased the energy efficiency of their production processes and have seized every opportunity to reduce their consumption of electricity, natural gas and other energy carriers. Metal recycling makes an important contribution in this regard and, as in the case of aluminium, can save up to 95 per cent of the energy required for primary production. Austria no longer possesses any primary aluminium production capacity and therefore the use of scrap, which in the meantime represents an important raw material source throughout Europe, is of major importance. AMAG's ongoing endeavours and successes in this regard, which are linked to the concisely formulated environmental claim, "Green Alu Products", constitute a necessity, in order to meet the demands of both legislators and customers.

What recycling technology optimisation measures are of importance to the production of aluminium materials?

A holistic approach to the complete process chain from scrap to the finished item is of major significance in this connection. Attention must focus on the correct sorting and classification of the material used, improvements to the melting process and alloying technology, the suitable casting technology, optimised heat treatment and processing procedures. In the case of new material developments, which involve the input of large amounts of alloying elements into the production cycle, passive recycling capacity is required.

What advantages can be achieved with regard to energy savings?

Improved recycling technologies facilitate energy savings, providing a significant reduction in both CO_2 emissions and the tangible impact on the atmosphere and water reserves. Energy savings furnish companies with production process cost optimisation and at the same time, improved process technology can result in enhanced product quality and minimised reject rates. Therefore, it is logical that national and international legislation attempts to provide additional incentives and impulses for an increase in the share of recycling in metal production.

What role does the research provided by your institute for AMAG play in the area of resource conservation?

Our joint research projects with AMAG relate mainly to the optimisation of alloying and melting technology, as well as questions relating to material and process development in the casting and rolling fields, and have the constant aim of raising the share of recycling material employed. Reference should be made to the article from Dr. Prillhofer in "AluReport 2/2009" as in the course of his doctorate thesis at the University of Leoben, he optimised the melt treatment of 7xxx alloys along the entire process chain from melting to continuous casting. As a result, AMAG was able to improve its high-quality aluminium alloy yield and perfect the individual process phases, which in the final analysis led to enhanced end products and reduced energy consumption. In addition, further research is currently continuing in the field of alloy development and heat treatment in close cooperation with Prof. Uggowitzer and his team from the ETH Zurich [1, 2].

Thank you for the interview. ■

Bibliography

[1] AluReport 1/2009, Alloy composition and Al alloy characteristics profile

[2] P.Pucher, J. Knaack, H. Böttcher, H. Kaufmann, H. Antrekowitsch, P.J.Uggowitzer, Einfluss der Legierungszusammensetzung auf die mechanischen Eigenschaften und das Fließvermögen der Sekundärgusslegierung A226 (AlSi9Cu3), Gießerei-Praxis, Edition 3 (2009), p. 71 – 78