

A technological comparison between roll and cast cladding

Raw material quality prior to rolling is of major significance with regard to the production of high-quality, multi-layer composite sheets.

Two variations: rolled and cast cladding

Today, a choice is available between two basic types of cladding. The first involves the creation of an ingot with layers of differing alloys during continuous casting (cast cladding), while the second involves the production of the multilayer composite in a solid condition by means of bonding (roll cladding, Fig. 1). Initial development work on cast cladding commenced during the middle of last century with the first patents dating from 1957. AMAG began to take an interest in this topic during the 1990s and registered its own patents in 1995. At this point, the second variation, roll cladding, was deliberately allocated priority and a high level of related competence developed.

Advantages of AMAG cladding technology

As opposed to cast cladding, AMAG roll cladding technology provides the advantage that the dimensions of the cladding layers can be established with great precision. Each layer receives the ideal metallurgical pre-treatment for its subsequent function and complete freedom is available with regard to the choice of alloy. Using the AMAG process, cladding layers with less than 2 per cent of the composite sheet thickness can be produced in uniform quality. Moreover, casting defects, segregation zones and undefined oxide scaling from the cast cladding process can be avoided. In the cast cladding process, brazing materials with 3xxx material cores and AlSi brazing layers cannot be homogenised prior to rolling because the brazing layer melts. By contrast, during roll cladding the core material is homogenised in an optimum manner and is only subsequently joined to the braz-



Fig. 2: Cladding robot

ing material layers (Fig.2).

In addition to these advantages, customers also profit from roll cladding due to the possibility for the production of special products and small batches, while from a cost-efficiency standpoint, the cast cladding process is limited to large batches using the same material combination. This means that multilayer composites such as the previously described AMAG MultiClad 7020 with layers cannot be realised with cast cladding. ■



Fig. 1: Bright wing leading edges for the Dassault Aviation Falcon jet (multilayer composite comprised of high-strength Al alloy and an alloy suitable for brightening).

