

New 4.0 ram extruder for innovative carbide products



Over the last three years, Boehlerit has invested a great deal of resources in carbide pressing technology in all three manufacturing sites (Austria, Germany and Turkey).

In addition to several ground-breaking pressing cells for the manufacture of indexable inserts and modern mono-presses for the manufacturing of semi-finished goods, the company has recently purchased one of the most developed ram extruders in the world for the carbide manufacture of complex profiles and rods.

The purchase was the result of a request from a key account as well as the market requirement to abstain from a pricing battle with Chinese low-price providers of carbide rods and to provide innovative carbide products of the finest quality and precision instead, manufactured in a resource-friendly manner.

Our engineers passed on these requirements to Austrian machine and plant manufacturer Hagingler. In close cooperation and over a period of two years, a sophisticated plant concept was developed, which forms the basis of an effective production basis with high repeat accuracy, using innovative and yet tried-and-tested components.

The 4.0 ram extruder uses high-performance, digitally controlled drive systems with servo motors. The highly precise regulation of the

ram extruder is unique. The press cylinder is moved with a constant press speed of ± 0.001 mm/s, which ensures that even very small rods are pressed out at constant speed. This is crucial, for instance when it comes to achieving a constant lead for carbide drills with twisted cooling channels. In order to influence the viscosity of the rod extrusion mass, the recipient which houses the feedstock material is tempered.

The handling system is mounted directly to the ram extruder, ensuring optimal orientation and stability during pressing. For service and repair works, the discharge table may be moved to the side.

Another outstanding feature is the resource-friendly handling system for cutting set lengths. In addition to producing less waste (return material), the machine also requires less manpower. Another huge benefit for our employees in the extrusion press division is the fact that the unit produces practically no noise.

The ram extruder has a positive effect on the upstream process when it comes to preparing the feedstock as well as on the downstream sequence of sintering, with reduced scattering and even better dimensional accuracy for our products.

While the previous extruders with discharge tables made a product length of 500 mm possible, the new machine

can cope with lengths of up to 1100 mm - and the output is not just longer, but more precise.

All parameters are presented in a compact overview on the operating console and may be stored and evaluated for quality assurance. The machine fulfils all the criteria of Industry 4.0: it is network-compatible, programmable, and fitted with a tool management system which makes it possible to monitor the extrusion tools throughout their lifespan.

Sustainability and energy efficiency have long been Boehlerit priorities, and investments such as these have really come into their own during the energy crisis. While our previous extruders required 20 KW, the new unit needs just 2 KW, paving the way towards a 90% reduction of CO₂. Our extrusion division manufactures rods, paper and planer knives, harrow tines for the agricultural sector, tool components for the brick industry, and scraper bars for conveyor belts. The new extruder 4.0 will be used to manufacture innovative, complex carbide products with diameters from ≥ 2 mm to 32 mm. ■