LACH DIAMANT looks back on 95 years

The role of diamonds in modern industries, based on the example of dressing grinding wheels

Horst Lach, managing director and CEO of LACH DIAMANT agreed to write an ongoing series of articles about the development of diamond and CBN tools and grinding wheels in modern industries. The occasion: LACH DIAMANT's 95th anniversary in 2017.

Horst Lach is known as a true industry veteran, and it is a privilege to have this pioneer of technology share some insights from 55 years of professional experience in the diamond tool business.

We should start with a quote from LACH DIAMANT founder Jakob Lach (1894-1984): "When I touched my very first diamond in 1908, I would have never dreamed of the role diamonds would play in modern industry".

The start of the Industrial Revolution in the 18th and 19th century in England and Europe is directly connected to the use and development of diamonds, the hardest of all natural materials, in the tool industry. During this time, diamonds were developed into precision tools for wheel dressing in order to achieve consistent tolerances and qualities in machining metals.

The logical next step was to replicate the hardness of diamond in a synthetic product, and thereby offset the disadvantages of natural diamonds, such as their sensitivity to impact and shock.

The production of synthetic, so-called "man- made diamonds" in the 1950s proved to be a quantum leap in technology. The production of artificial diamonds is still an ongoing endeavour and it continues to impact new technologies and areas of daily life today.

The developments we have seen in automobiles, aviation manufacturing, space travel, in modern electronics and many other things have been made possible only by the precision and extremely small size of diamonds and diamond tools.

Rough diamonds, or industrial diamonds, for example fitting into steel holders, still play a major role in the dressing of grinding wheels.

Many different kinds of diamond dressing tools were designed, built and manufactured in the last century. The sole purpose of all these inventions was to vary the dependency on relatively expensive industrial diamonds. In the beginning, remnants of worn-off single diamonds were fitted into sintered metal and offered as so-called "multi-grain" or "multi-point" diamond dressers, at times "hedgehog" or "dust" diamonds, designed to replace the single diamonds. Designs such as small diamond cogs, branded "Roulette", dressing plates or the LACH DIAMANT "drebodress" were dressing tool studded with polycrystalline diamonds.

Use of spark erosion, and unleashing of new ideas:

Polished diamonds for profiling/copying of grinding wheel profiles, for example Fortuna, Hartex, Schaudt, Jung, Reishauer etc, or for the "diaform" copy system presented an even larger task for the diamond grinders.

The solution was found in dressing rolls and dressing blocks with a projected profile of the tool to be sharpened. At first, they were manufactured by sintering and with manually set natural diamonds. Later, demands for higher precision called for tolerances of diamond granulation with as fine as 1.0 µm accuracy in an electro-plated negative process.

In 1978, Horst Lach discovered spark erosion for machining and forming polycrystalline diamonds. From this moment on, soldered monoblock milling cutters

were used for the machining of wood and plastics. Moreover, the idea was born to use these new PCD milling cutters (introduced as "drebojet") for the mill dressing of grinding wheels, a world first. LACH DIAMANT then filed the appropriate patent applications and claims.

The innovative precision »drebojet-plus« dressing roll was first introduced at AMB in 2016. It allowed for path-controlled profiling of ceramic bond CBN and conventional grinding wheels and almost perfectly represents the original »drebojet« idea.

LACH DIAMANT is a family business, founded by Jakob Lach in 1922. Back then, 600 diamond grinders polished gem diamonds (brilliants). Natural diamonds as industrial diamonds, fitted into steel holders or geometrically and precisely cut by diamond grinders, have become an universal dressing tool and an intrinsic and indispensable part of the industry. Their efficiency is mainly reliant on a regrinding service of the diamond supplier.

During the last few years, efficient diamond dressing plates and dressing blocks have been especially successful in the market, for example LACH DIAMANT's »Dia-Fliese- perfect« and »drebobloc«.

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