

Press release no.: 2017-10-16

Date: 16.10.2017

From 10 to 700 – mixed machining at an unprecedented level

The lightweight construction and downsizing of the motor with ever-increasing requirements for power affect the material used. A few years ago, many automotive manufacturers produced the top half shell of the crankshaft bearing out of aluminium instead of out of cast iron that was used before – this was due to the lightweight construction. For this purpose, MAPAL had developed ISO indexable inserts for boring the aluminium cast combination that was successfully in use. Today the development has moved a step further due to downsizing. Together with the top half shell made of aluminium, today manufacturers increasingly rely on sintered steel instead of cast iron for the bottom half shell. This steel features a higher strength than cast iron and is therefore more suited for the increased mechanical loads.

Here the challenges for machining are changing. With the advent of sintered steel in engine production, no ISO indexable inserts were available on the market that met the high demands for machining the aluminium/sintered steel combination.

This is mainly due to the chemical reaction that takes place between the iron alloy and the cast aluminium. Tool manufacturers had to deal with a completely new form of wear. During machining, a solid phase was applied on the insert and caused it to break after a few applications. To counteract this wear and to prevent the chemical reaction, MAPAL developed a completely new cutting material. Using this, mixed machining – for the aluminium/cast iron combination as well as the aluminium/sintered steel combination – is reliably performed. The ISO indexable inserts reliably work in the cast iron or steel part of the crankshaft bearings as well as in the aluminium part.

On the one hand, this leap in development was achieved with modified carbide substrates and optimised micro-and macro-geometries of the insert with adjusted rake angles. On the other hand, it was achieved with a newly developed PVD

MAPAL Präzisionswerkzeuge
Dr. Kress KG
Postfach 1520 | D-73405 Aalen

Contact:
Andreas Enzenbach

Phone: +49 7361 585-3683
Fax: +49 7361 585-1019
E-mail: presse@de.mapal.com



Press release no.: 2017-10-16

Date: 16.10.2017

coating. This is based on a TiAlN alloy with a special dopant. As a result, not only the formation of a built-up edge in the aluminium is prevented, but the cutting material is so resistant to wear and heat that high quality machining of the cast iron/steel part can be achieved.

Depending on the application, customers can choose between ISO indexable inserts available as standard. MAPAL offers four geometries each for the aluminium/cast iron and aluminium/sintered steel combination. In addition, special indexing inserts are available with the new cutting material. The results using the new cutting material are impressive in practice. Previously only ten bearing journal bores were machined from the combination of sintered steel and aluminium with one insert. Now an impressive 700 bores are machined with the new cutting material.

MAPAL Präzisionswerkzeuge
Dr. Kress KG
Postfach 1520 | D-73405 Aalen

Contact:
Andreas Enzenbach

Phone: +49 7361 585-3683
Fax: +49 7361 585-1019
E-mail: presse@de.mapal.com

Captions:

MAPAL has developed a completely new cutting material for mixed machining.

Words:	443
Characters:	2,353
Characters with spaces:	2,796

If published, please send a voucher copy
by mail to Patricia Hubert
or by e-mail to patricia.hubert@de.mapal.com.

Short profile MAPAL Dr. Kress KG

MAPAL – tooling the customer's success

MAPAL Präzisionswerkzeuge Dr. Kress KG is one of the leading international suppliers of precision tools for the machining of practically all materials. The company founded in 1950

PRESS RELEASE



Press release no.: 2017-10-16

Date: 16.10.2017

supplies leading customers from the automotive and aerospace industries and from machine and plant engineering. With its innovations the family-owned company sets trends and standards in production and machining technology. MAPAL sees itself as a technology partner, supporting its customers with the development of efficient and resource-conserving machining processes using individual tool concepts. The company is represented with production facilities, sales subsidiaries and representatives in 44 countries worldwide. In 2016 the MAPAL Group had 5,000 employees, generating sales of EUR 575 million.

MAPAL Präzisionswerkzeuge
Dr. Kress KG
Postfach 1520 | D-73405 Aalen

Contact:
Andreas Enzenbach

Phone: +49 7361 585-3683
Fax: +49 7361 585-1019
E-mail: presse@de.mapal.com