

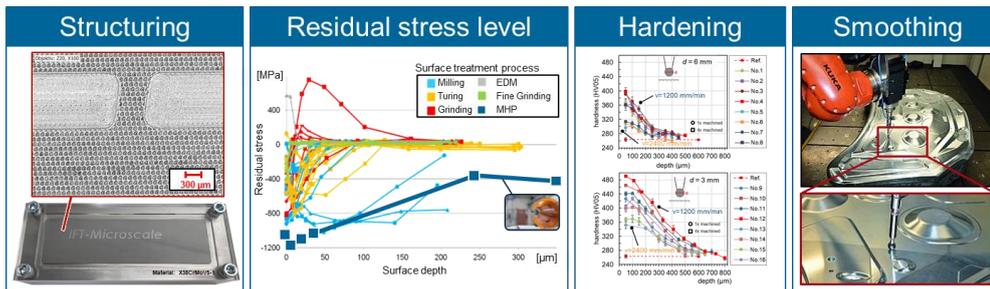
DMHP – Deterministic Machine Hammer Peening

Machine Hammer Peening (MHP), as a cold forging process, is gaining more and more importance in industrial applications, especially in the automotive industry. The aim is to influence the surface integrity of a metal workpiece, by smoothing or reducing wear of dies, as well as increasing the fatigue strength.

The new actuator system with a highly dynamic short-stroke linear reluctance motor allows for the first time to control and monitor the entire mechanical surface treatment process in order to achieve the desired material characteristics.

BACKGROUND

Many components in industrial practice need to be finished by surface modification processes in order to assure certain properties such as fatigue and corrosion resistance or specific tribological characteristics. These goals can be achieved by Machine Hammer Peening, a mechanical surface treatment technology, where a spherical tool tip periodically hits against the workpiece surface. This process introduces plastic deformations in the surface zone. Traditional application areas of MHP range from inducing compressive residual stresses as well as increasing surface hardness, to a focused manipulation of the material structure of metals in near-surface layers. In addition, smoothing and structuring of surfaces is also feasible.



TECHNOLOGY

In contrast to conventional Systems, the **Deterministic Machine Hammer Peening (DMHP)** actuator convinces by its novel system design, which enables outstanding flexibility and efficiency. The highly dynamic reluctance motor, combined with a specialized power control unit, provides unique system performance characteristics, which outperform known machine hammer peening systems. The actuator can be easily implemented in a standard machine center or an industrial robot.



ADVANTAGES

- Single-Stroke-Controlled deterministic machining hammering process for eg. polishing, structuring
- Easy implementation in an existing production process
- Traceability and ongoing quality control of every single hammer stroke
- Protects components of the machine tool from unwanted kickback forces
- Optimized processing time due to a high frequency range

REFERENCE:

M008/17
M061/17
M022/20

APPLICATIONS:

Smoothing
Structuring
Induction of compressive residual stresses
Increase of surface hardness
Change in crystal lattice

DEVELOPMENT STATUS:

Prototype

KEYWORDS:

Machine hammer peening
Linear reluctance motor

IPR:

Patent pending

OPTIONS:

R&D co-operation
License agreement

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