SHOT TEMPERING

Shot Peening Integration in Tempering Processes of Steels for Enhanced Fatigue Performance

The poject goal is to enable the fabrication of improved components for electric vehicles (EVs) using new more eco-friendly shot peening manufacturing processes, helping reach the EU CO2 emissions targets.

Challenges

The considerably higher loads experienced by components in EVs compared to ICE-powered vehicles necessitate novel manufacturing approaches. To successfully tackle this challenge warm shot peening offers high potential to substantially enhance component performance:

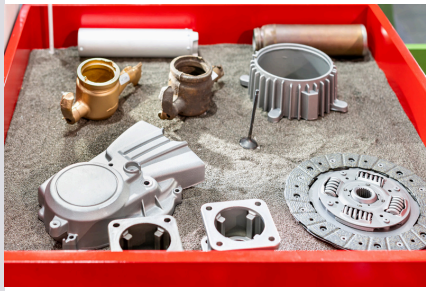
- to significantly enhance mechanical properties of parts, particularly fatigue resistance
- to boost overall efficiency of the process chain (energy consumption, resource utilization and time savings)

Unleash the full potenial of warm shot peening

- Development and optimization of a novel warm peening process (shot peening at temperatures of up to 500 ºC)
- Increasing max. compressive residual stress value by 20-25 %
- Assessment of possibility of integrating the shot peening and tempering operation in one single process, leading to a simplified production process and thus a process time reduction and a decrease of energy consumption
- Deep analysis of benefits that warm shot peening brings to the automotive industry.

Facts and Figures

Acronym: ShotTempering
Start date: 01.07.2024
Duration: 42 months
EC funding: EUR 1.18 million



Contact

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Impact at large

- Reach component performance required for today's & future EVs
- Enhanced competitiveness and cost savings enabled by novel smart manufacturing processes
- Increasing environmental sustainability of manufacturing processes
- Strengthening EU's global tech leadership & first mover advantages

Consortium

i2m creating business
KIT Karlsruher Institut für Technologie
sidenor R&D
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