

FORCE MEASUREMENT IN STANDARD PUNCH HOLDERS

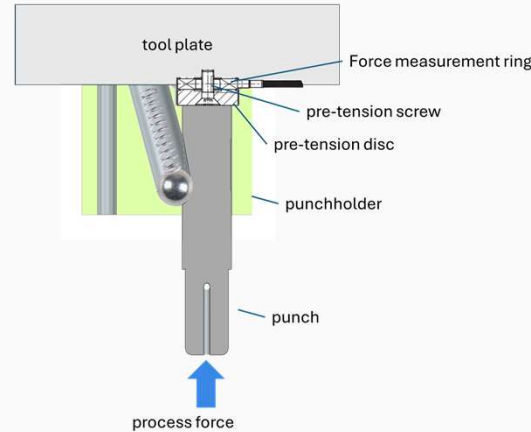
Direct force measurement in forming processes without additional construction volume

STATUS QUO

In sheet metal forming technology, process forces are usually measured indirectly or with external force sensors, which require additional installation height or space. This often makes integration into existing tools with standard punch holders impossible. Process-oriented force measurement directly on the punch is therefore lacking in many applications, even though such data is becoming increasingly important for process monitoring and Industry 4.0 approaches.

OUR TECHNOLOGY

The technology enables the integration of a force sensor directly into the assembly of a standard punch holder. This allows the process force to be measured directly in the force flow above the punch without requiring additional installation height or space. The solution remains fully compatible with existing quick-change systems and can be used in new tools as well as retrofitted into existing systems.



BENEFITS

- ▶ No additional installation space requirements
- ▶ Process-oriented force measurement
- ▶ Retrofit-capable and compatible

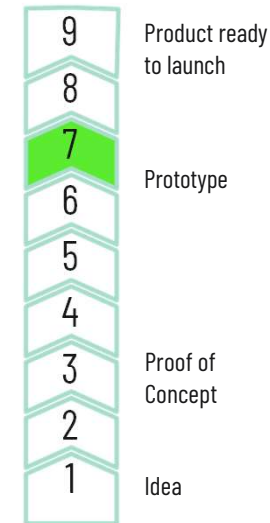
APPLICATION POSSIBILITIES

The technology can be used in punching and forming processes for process-oriented force measurement and enables applications in process monitoring, tool wear analysis, and data-driven Industry 4.0 and AI-based production systems.

COMMERCIALIZATION OPPORTUNITIES

There are various possibilities for cooperation between the industrial partner and TU Darmstadt: from an exchange with the know-how carriers of the technology up to a close cooperation in case of further development needs. The technology is protected by intellectual property rights and can be used by the industry partner after a sale or licensing agreement.

CURRENT STAGE OF DEVELOPMENT TECHNOLOGY READINESS LEVEL (TRL)



The technology development is at Level 7: We have built a prototype and successfully used it in initial test series.

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