Me come Welcome Me come Welcome



Process Monitoring Integrated Thread Forming

15.04.2025 +++ Max Mustermann





Integrated Thread Forming FIBRO Increased process reliability in stamping and forming machines





- + Machine technologies have changed significantly in recent decades
- + Process reliability in production processes increased to the same extend
- + The requirements for process reliability are also increasing in periference, such as integrated thread forming.





Integrated thread forming



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- + The control unit is connected to the press for signal

Components of FETU-different thread sizes in each position







Formerhead Large



M14 - M20

Process Monitoring

- The Fibro Electronic Thread Unit (FETU) monitors the entire thread forming process in real time via the current consumption of the servo motor.
- If a fault occurs during the thread forming cycle, the machine stops immediately.
- The current consumption required by the servo motor to insert the thread is output in Nm
- The measured torques can be output as an evaluation to a server or to external files

Advantages & benefits:

No parts without or with damaged threads, thus guaranteed quality and cost reduction

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DU





MTK

A Thread Forming In stamping and forming process



Integrated Thread Forming

Time sequence of thread forming prozess



+ The feed is finished, the press is in top position

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III FIBRO



Integrated Thread Forming

Time sequence of thread forming prozess



+ Ready Signal and home position to machine, start signal from machine to FETU





Integrated Thread Forming

Time sequence of thread forming prozess



+ Ready Signal and home position to machine

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Process Monitoring In stamping and forming process

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Process Monitoring – Cause of errors



Other possible errors

- + The torque occuring at the thread former can also be used to monitor other work process in the punching tool
- + For example, stamp breakage or wear



Process Monitoring – Torque curve



*Values of the Y-axis in Ncm; **Values of the X-axis in degrees (Press flow diagram)

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FIBRO

Process Monitoring – Torque curve (scope)



+ Recording rate 1ms



- Speed curve
- Peak electric current (V)
- Torque
- Enveloping curve
- Tolerance window (δ / Sigma)

Influences on process monitoring

- The detection of the errors is only as good as the stability of the whole process when teaching!
- Existing errors in the process are also noted and used as the basis for creating the error limits. This can lead to very high or very low error detection.

Basics for correct process monitoring:

Dimensionally accurate core hole, intact thread forming tool, correct oiling

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Process Monitoring – Effect of core hole diameter



- when teaching.
- basis for creating the error limits.

Micrograph picture of a formed thread





+ The detection is only as good as the stability of the whole process

+ Existing errors in the process are also noted and used as the

Process monitoringsummary

- Process safety, no out of order parts, good bad selection, tool life optimization.
- No subsequent quality control
- Guaranteed quality & low costs compared to a downstream process or a mechanical thread unit
- A fault is detected in real time and leads to an immediate stop of the machine
- Proactive notification in the event of defined limit values being exceeded or undercut to avoid consequential damage to your punching tool.





hanks Merc Gracias Graze

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