Article: "**Digital Twin-driven tool condition monitoring for the Milling process**"

The need for tool condition monitoring (TCM) which has been clearly visible for many years, recently, in the era of forth industrial revolution became particularly urgent (https://doi.org/10.1117/12.812090;). Numerous papers have been published recently on different aspects of TCM as various sensing methods, including machine vision, signal processing signal integration methods including deep learning or online force and wear modelling. The primary purpose of tool condition monitoring systems is to detect tool failure and catastrophic tool failure (CTF). The former occurs when the tool no longer performs the desired function while the latter is defined as the complete removal of the cutting edge, i.e. significant loss of cutting wedge or even corner breaking. In a cutting tool wear curves three distinctive regions that can be observed. After short, first region of initial wear there is the region of steady-state wear. In the third zone tool wear rate increases, leading to tool failure due to gradual tool wear (GTW) or to catastrophic tool failure (CTF). These phenomena differ substantially in the time scale – the former usually counts in minutes and may be diagnosed after completing subsequent passes or every few minutes, while the latter counts in milliseconds and must be detected immediately.

Notes to the article:

1. Why was a 1-axis acceleration sensor used in the research? In which direction was the acceleration measured and why?

2. I suggest changing the word "Fresh" in figure 1 to the word "new".

3. I propose to remove figure 3. Nothing new.

4. Please show the waveforms of the registered signals: acceleration and noise on the drawing.

5. What was the sampling frequency of the signal? Was the signal filtered?

6. What are the natural vibrations of the machine tool (cutting tool)? Please show the waveforms.

7. Why were constant cutting parameters used in the research? Especially the rotational speed.

8. Please write how the signal of acceleration and noise was analyzed. In the time domain? In the frequency domain?

9. The topic of the article does not correspond to the conducted research. CTF (catastrophic tool failur) was analyzed in the study. What about Gradual Tool Wear (GTW)?