



Pro²Future

Obtaining SUSTAINABILITY through Energy Peak Optimization in NC Machines

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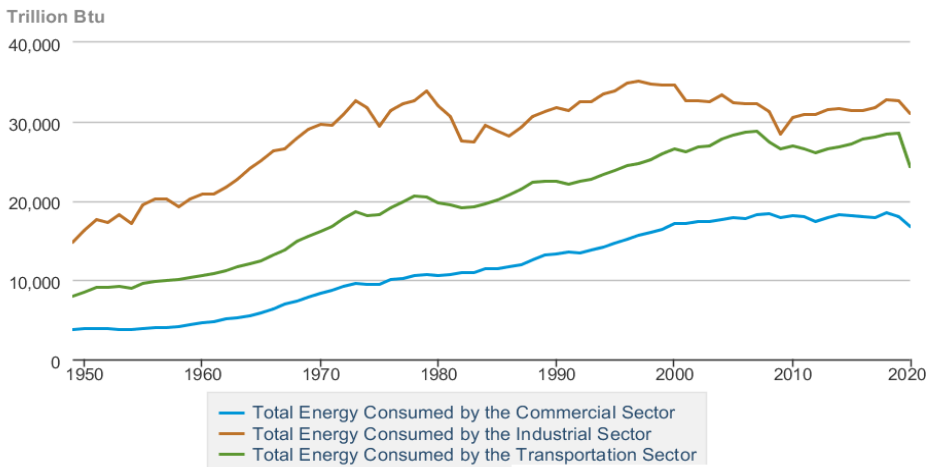


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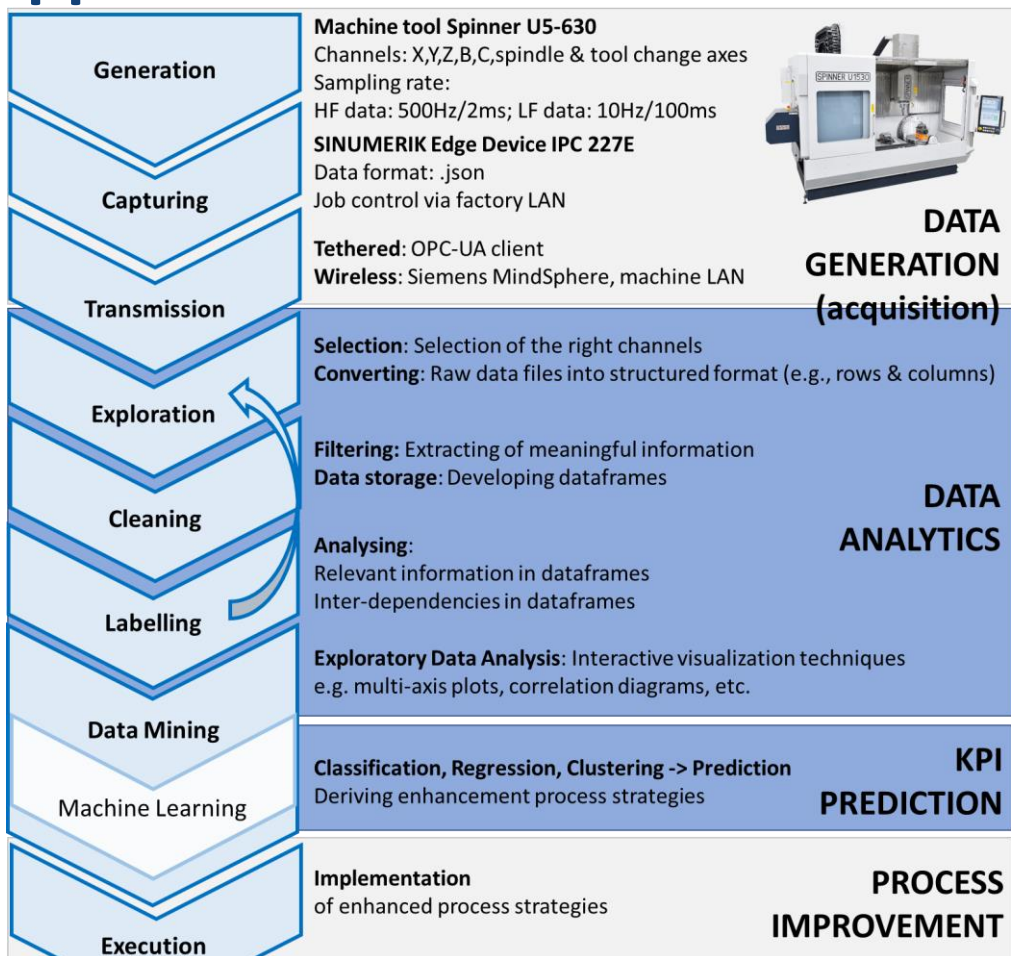
Challenges

Energy Consumption by Sector



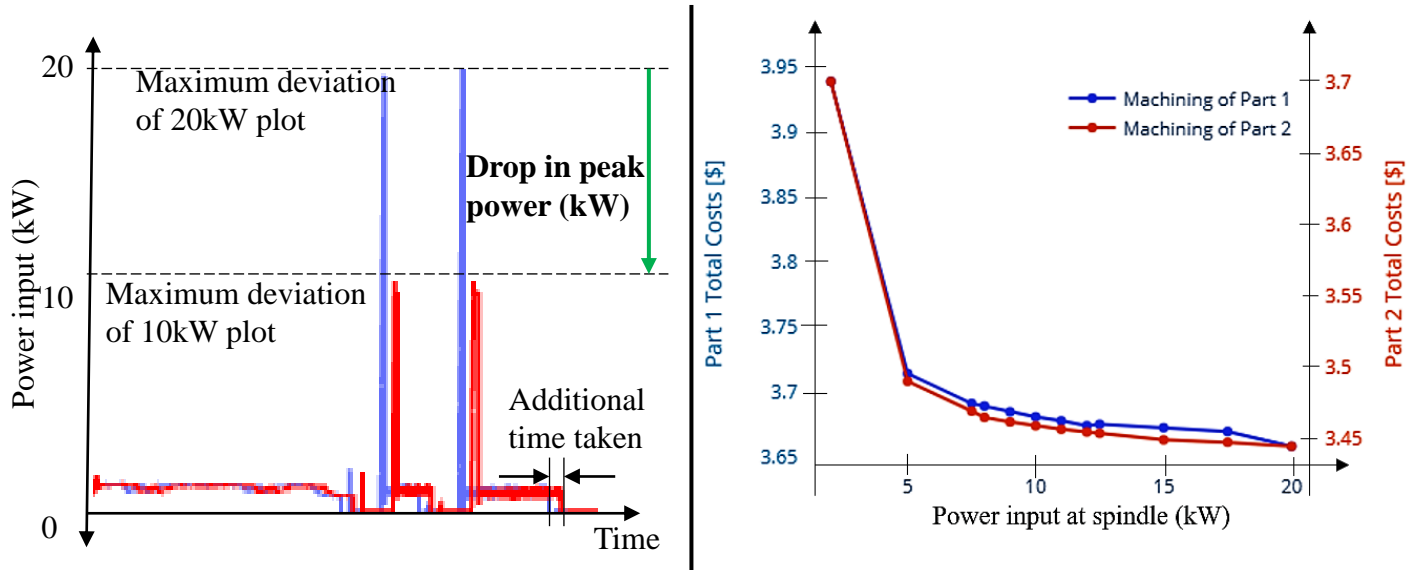
- ❖ Energy consumption in the sector of industrialisation is increasing rapidly; approx., one-third of world's energy consumption
- ❖ Thus, the need for sustainable energy consumption models have gained importance

Approach

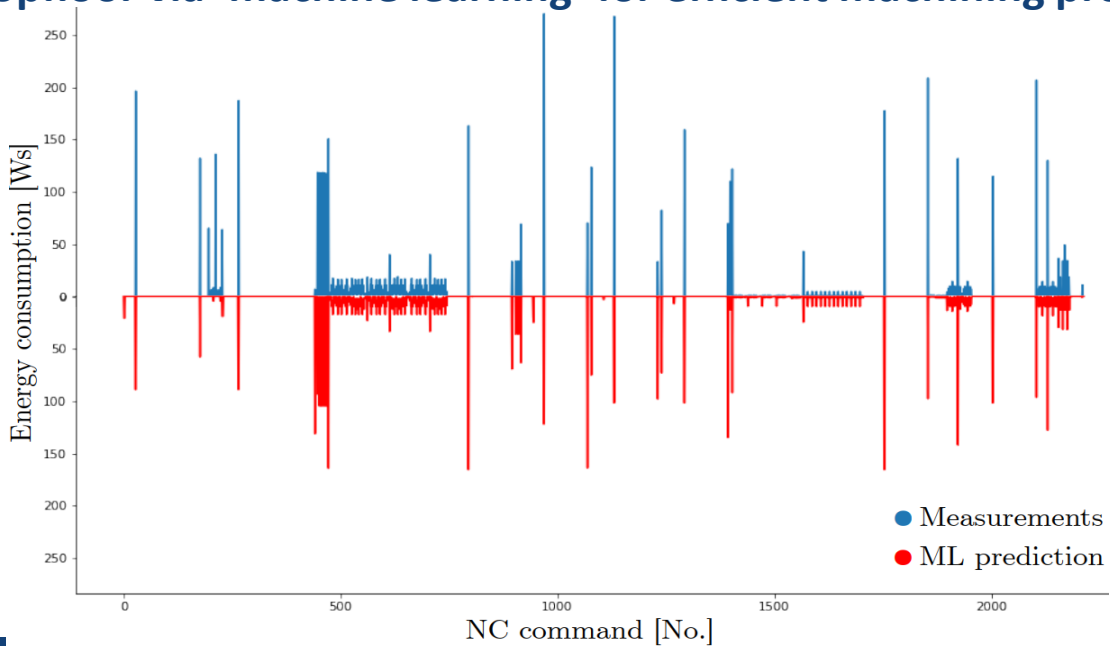


Results

- ❖ Spindle operation consumes the maximum power input
- ❖ Analysing the energy consumption using HF-Data of the machine



- ❖ Prediction of energy consumption and power peaks/spikes on shopfloor via 'machine learning' for efficient machining processes



Conclusion

- ❖ Prediction and reduction of power peaks and energy consumption
- ❖ Therefore, reduced costs of operating and efficient scheduling

1. Abdul Hadi, M., Brillinger, M., Wuwer, M., Schmid, J., Trabesinger, S., Jäger, M., Haas, F., 2021. *Sustainable peak power smoothing and energy-efficient machining process thorough analysis of high-frequency data.* *Journal of Cleaner Production, In-Process.*
2. Brillinger, M., Wuwer, M., Abdul Hadi, M., Haas, F., 2021. *Energy prediction for CNC machining with Machine Learning.* *CIRP Journal of Manufacturing Science and Technology, In-Process.*

Contact

We support:

- ✓ Collaboration
- ✓ Consulting
- ✓ Future Projects

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