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1E9. Creation and research of an intelligent measuring system for measuring and controlling the turning force of bearing taps



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GOAL :



The creation of an intelligent measuring system for control and measurement of the turning force.

TASKS :



1. *Specification of the measuring system for measuring turning force;*
2. *Measurement system design and design validation;*
3. *Build the hardware to a validated specification;*
4. *Preparation and validation of the software according to the requirements in the specification;*
5. *Selection of a component for validation of the measurement system and creation of a calibration procedure;*
6. *Conclusions on the use and improvement of the smart measuring system.*

1. To determine and manage the maximum measuring force;
2. To determine and control the angle of rotation;
3. To change the measurement time;
4. To determine the measurement step;
5. To be able to save the results;
6. To process the results and present convenient forms for use;
7. To be able to generate analyses;
8. To be easy and safe to use;
9. To be able to calibrate with a secure procedure;
10. To work with the necessary accuracy under industrial conditions of use;
11. To be able to manage external influences – management of various flowing fluids, maintenance of critical parameters and others.

INTELLIGENT MEASUREMENT SYSTEM



The system shown consists of:

- measuring module (on the left);
- control of the measuring module (the middle module);
- a computer for managing and processing the received information (the right module).

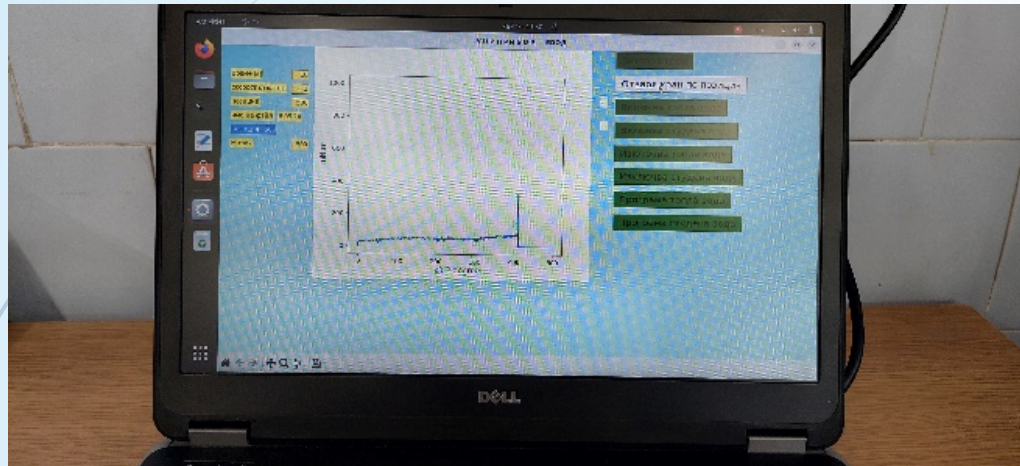


A component for commissioning and validating the measurement system

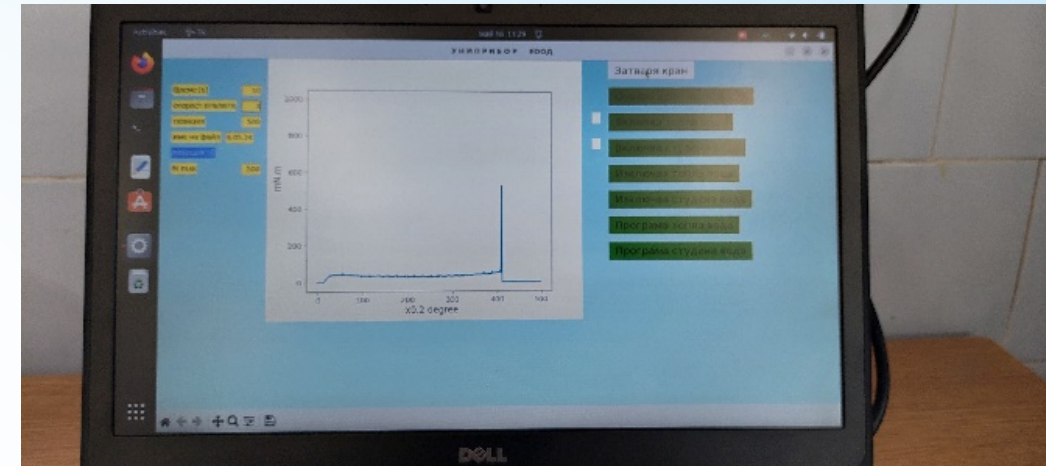


Faucet with ceramic bearings

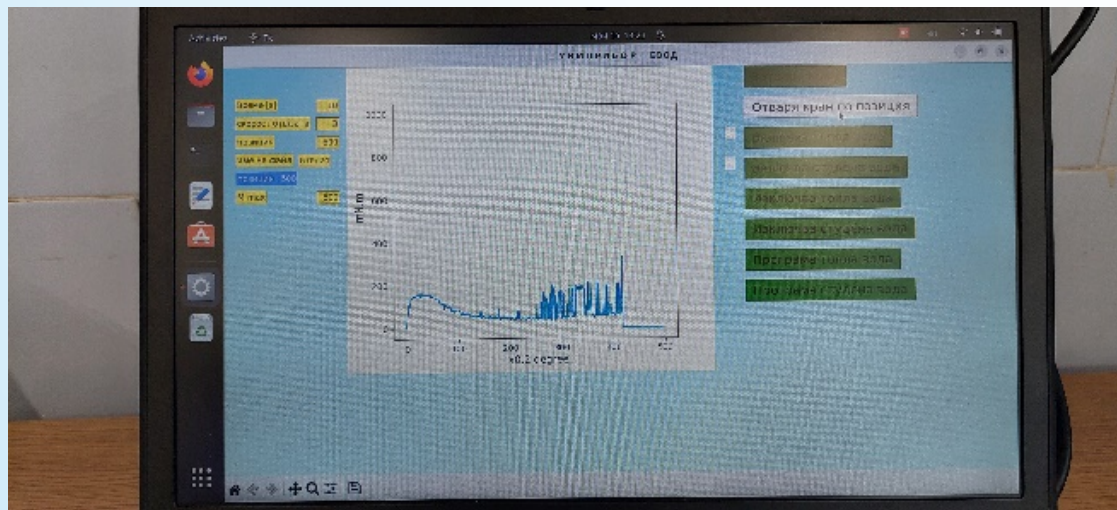
EXPERIMENT and Results



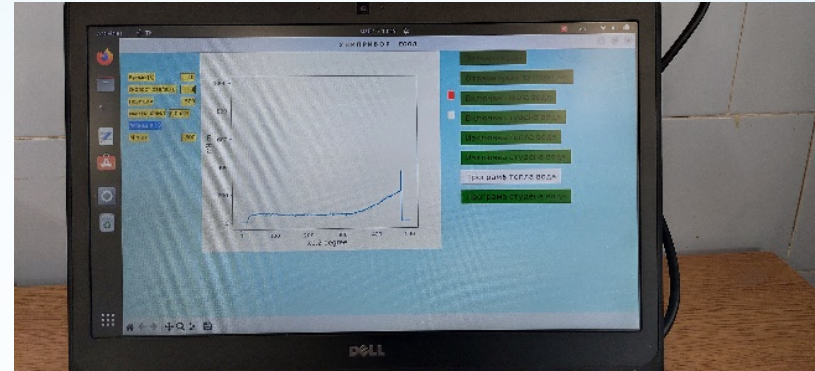
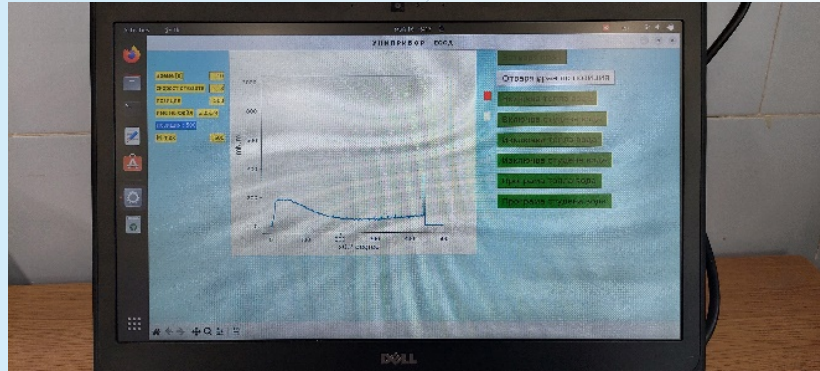
Results when opening the faucet



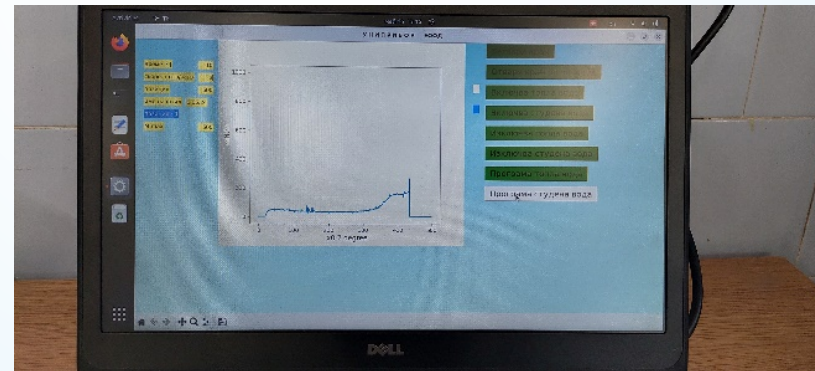
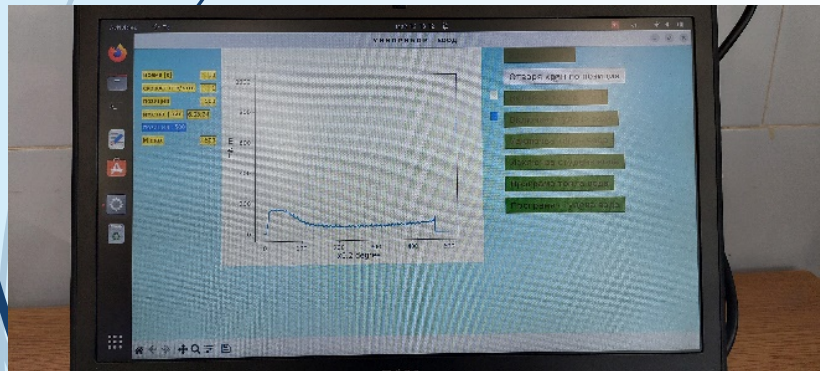
Results when the faucet is closed



Faucet measurement results after 30 days



Hot water – opening and closing



Cold water – opening and closing

It was observed that the measured turning force of the fauset depends on the pressure of the flowing fluid.

Conclusions

THE DESIGNED AND MANUFACTURED INTELLIGENT MEASURING SYSTEM WORKED CORRECTLY AND ALLOWED TO MAKE ANALYZES THAT ENABLED THE OPTIMIZATION OF THE PRODUCTION OF CERAMIC BEARINGS, AS WELL AS TO CONTROL THE QUALITY DURING THEIR PRODUCTION.

AN OPTION WAS ADDED TO CONTROL A SYSTEM TO MAINTAIN THE SAME PRESSURE OF THE FLOWING FLUID THROUGH THE MEASURING FAUSET.

Thank you for your attention!

An African proverb: *"He who looks well will finally see."*

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