Another serious effect can be found in better accuracy of power prediction and thus better prediction of conditions in the grid. This becomes more important because of more strict conditions defining proper operation of power sources including RES.

Key problem of this method is correct and accurate mathematic description of key components. This problem was for now solved only for monocrystalline Si panels as demonstrated in Table IV. The accuracy of this method is better than 2 % in horizon of 10 years.

These results entitled further analysis. Remaining components should be described in similar way and entire system can be modelled with sufficient accuracy. Final model can be used for monitoring of commercial PV plants and for power generation prediction. This issue becomes more important in close future, when guaranteed power generation of particular RES will be required.

References

[1] IRENA, "Global Energy Transformation: A roadmap to 2050," International Renewable Energy Agency, Abu Dhabi 2018,

[2] P. Moriarty and D. Honnery, "Global renewable energy resources and use in 2050," 2018, pp. 221-235.

[3] Installed capacity of the IPS of Ukraine values as of 02/2021.

[4] O. Rubanenko and V. Yanovych, "Analysis of instability generation of Photovoltaic power station," in *2020 IEEE 7th International Conference on Energy Smart Systems, ESS 2020 - Proceedings*, 2020, pp. 128-133

[5] https://www.energo.ua/en/assets/pysarivska_pv_plant_3_stage

[6] C. Cepisca and A. Florin, ANCUTA,F, CEPISCA,C , Failure Analysis Capabilities for PV Systems. 2011.

[7] M. Belik, "Evaluation of long term degradation process of monocrystalline Si photovoltaic panels," Renewable Energy and Power Quality Journal, vol. 18, pp. 551-555, 06/01 2020.

[8] Rubanenko O., Kazmiruk O., Bandura V., Matvichuk V., Determination of optimal transformation ratios of power system transformers in conditions of incomplete information regarding the values of diagnostic parameters. *Eastern European Journal of Enterprise Technologies*. 2017. № 4. Issue 3-88. P. 66-79