Organization of Production at Auxiliary Sites of Pulp and Paper Enterprises

A.A. Berezina¹, FSAEI HE St. Petersburg State University of Aerospace Instrumentation (FSAEI HE SUAI), anybaranova299751@yandex.ru

N.A. Zhil'nikova², FSAEI HE SUAI, Prof. Dr. (Tech.), n.zhilnikova@guap.ru

E.A. Minkinen³, FSAEI HE SUAI, elizaveta_minkinen@mail.ru

- ¹ Graduate Student, Senior Lecturer, St. Petersburg, Russia
- ² Professor, St. Petersburg, Russia
- ³ Graduate Student, Assistant, St. Petersburg, Russia

Citation: Berezina A.A., Zhil'nikova N.A., Minkinen E.A. Organization of Production at Auxiliary Sites of Pulp and Paper Enterprises, Kompetentnost' / Competency (Russia), 2025, no. 7, pp. 19–28. DOI: 10.24412/1993-8780-2025-7-19-28

key words

industrial safety, environmental safety, pulp and paper industry, optimization, water disposal, water consumption

The article analyzes the existing methods of production process management, industrial and environmental safety in auxiliary and service industries of the pulp and paper industry. The main criteria that allow us to determine the structure and boundaries of complex water resource systems management and serve as a basis for assessing the efficiency of production process management are identified. Based on the results obtained, a methodology for organizing production in auxiliary and service areas of pulp and paper enterprises has been developed to solve environmental and industrial safety problems. The application of the proposed methodology significantly improves the operation of pulp and paper enterprises due to an integrated approach to water resources management based on system integration, specially adapted for auxiliary industries of the pulp and paper industry. This approach considers water resources as a key element for process optimization based on clearly defined management criteria.

References

- 1. Information and technical reference book ITR 1-2023. Pulp and paper production (acc.: 1.04.2025).
- 2. Shukurlaev Sh.A., Aktual'nye issledovaniya, 2024, no. 14(196), pp. 21-35.
- 3. Artem'ev V.B., Rudenko Yu.F., Levin S.E., Kurpatov O.V., Senatorov M.Yu., Ugol', 2024, no. 12; https://cyberleninka.ru/article/n/ kompleksnyy-monitoring-i-upravlenie-proizvodstvennymi-protsessami-i-kontrol-promyshlennoy-i-ekologicheskoy-bezopasnosti-opasnyh-1 (acc.: 1.04.2025).
- 4. Plotnikova L.V., Kalinina M.V., Van'kov Yu.V. Systematic approach to improving the efficiency of the energy complex of pulp and paper production, St. Petersburg, Naukoemkie tekhnologii, 2025, 201 P.
- 5. Safonova O.M. Improving risk management methods of industrial enterprises based on the integration of risk factor monitoring tools: diss. ... PhD (Tech.), Irkutsk, Irkutskiy NITU, 2025, 161 P.
- 6. Zhil'nikova N.A., Shishkin I.A., Baranova A.A., Klimochkina L.A., Kompetentnost', 2023, no. 9-10, pp. 38-45.
- 7. Hoekstra A. Y., Water Resources Management, 2017, pp. 3061–3081.
- 8. Karaseva T.S., Zhurnal ustoychivogo razvitiya, 2023, no. 12(3), pp. 45-62.
- 9. GOST R ISO 14046-2017 Environmental management. Water footprint. Principles, requirements and guidelines; https://docs.cntd.ru/ document/1200146886 (acc.: 10.04.2025).
- 10. Zhil'nikova N.A., Baranova A.A. Methods for assessing water footprint to improve water use efficiency of industrial productions,
- 3rd All-Russian sc. conf.: Modeling and situational quality management of complex systems, St. Petersburg, GUAP, 2022, pp. 138–143.
- 11. GOST R ISO 46001-2023 Water use efficiency management systems; https://docs.cntd.ru/document/1200195371 (acc.: 12.04.2025).
- 12. Zhil'nikova N.A., Baranova A.A., Nauka i biznes: puti razvitiya, 2021, no. 12(126), pp. 70-74.
- 13. Stafeeva I.A., Shironina E.M., Vestnik universiteta, 2021, no. 3, pp. 19-24.
- 14. Fan Y., Bai B., Qiao Q., Kang P., Zhang Y. & Guo J., Journal of Environmental Management, 2017, vol. 192, pp. 107-115.