

FRI-LCR-1-BFT(R)-03

ASSESSMENT OF ENERGY EXPENDITURE ON THE KNEADING WHEAT DOUGH PROCESS²

Prof. Volodymyr Telychkun, PhD

Department Machines and apparatus of food and pharmaceutical productions,
National University of Food Technology, Ukraine
E-mail: tvill@meta.ua

Prof. Stanka Damyanova, DSc

“Angel Kanchev” University of Ruse – branch Razgrad
E-mail: sdamianova@uni-ruse.bg

Andrii Anisimov

Assoc. prof. Yuliya Telychkun, PhD

Department Machines and apparatus of food and pharmaceutical productions,
National University of Food Technologies, Ukraine
E-mail: andreyanisimov0@gmail.com, tvill@meta.ua

Abstract: A quantitative assessment of the quality of the process of kneading the dough in the dough machines, of both periodic and continuous this is the total and specific energy expenditure. Determination of energy expenditure is necessary for the calculation of the dough machine as well as the energy analysis of specific stages of the process. Studies were conducted on a laboratory kneading machine of periodic action. To measure the energy expenditure used wattmeter. An analysis of the experimental data showed how energy expenditure varied throughout the experiment and confirmed three stages of the kneading wheat dough process. Comparing the calculated theoretical values with the obtained experimental values, they were found to be different. Studies of the process of kneading wheat dough prove the need for changes in the method of calculating energy expenditure for kneading, eliminating the formal approach to this process and taking into account the energy expenditure of structural transformations.

Keywords: dough, mixing machine, energy expenditure, kneading, qualities.

REFERENCES

- Haraszi R., Larroque O.R., B.J. Butow B.J., Gale K.R. , Bekes F. (2008) Differential mixing action effects on functional properties and polymeric protein size distribution of wheat dough. *Journal of Cereal Science*, 47, 41–51.
- Peighambardoust S.H., A.J. van der Goot, Boom R.M., Hamer R.J. (2006) *Mixing behaviour of a zero-developed dough compared to a flour–water mixture*. *Journal of Cereal Science*, 44, 12-20.
- Anisimov A., Ilchuk M., Rachok V., Telychkun Y. (2018). *Calculation of energy consumption in the process of kneading*. Paper presented at the 84th International Scientific Conference of Young Scientists, Graduate Students and Students “Scientific achievements of young people - solving the problems of nutrition of mankind in the 21st century”, 23th-24th April, 2018. Kyiv: NUFT press. Issue 2. 32.
- Tomoskozi S., Bekes F. (2016). *Bread: Dough Mixing and Testing Operations*. Encyclopedia of Food and Health. 1, 490–499.

² Reports Awarded with "Best Paper" Crystal Prize - 58th Science Conference of Ruse University, Bulgaria, 2019, ISBN 978-954-712-793-7