



Sino-Russian Symposium on Materials Science and Processing Technology



Results of the Application of Simulated Acrylonitrile Butadiene Styrene as a Regenerating Heat-Exchange Element for Breathing Air Heating

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The purpose of this work is a computational and experimental study of heat and mass transfer processes in industrial and household regenerative heat exchangers of small size manufactured by the method of additive technologies, followed by the development of an engineering methodology for evaluating the effectiveness of such devices during their verification calculation. The results presented in the article allow evaluating the applicability of various materials for the serial production of stationary regenerative channel heat exchangers, including those for means of individual respiratory protection at low ambient temperatures in the conditions of anti-virus security.



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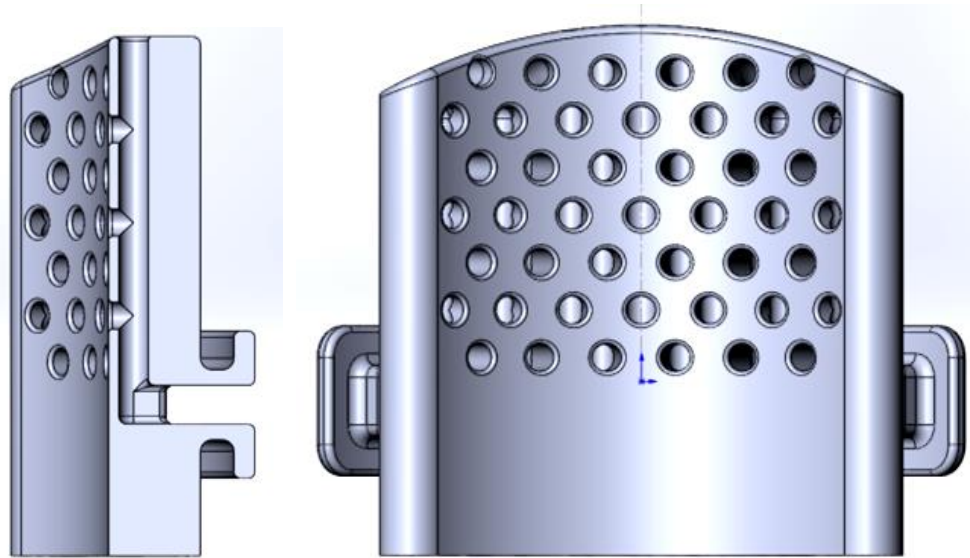


Fig. 1. Digital 3D model of SRCHE made in SolidWorks

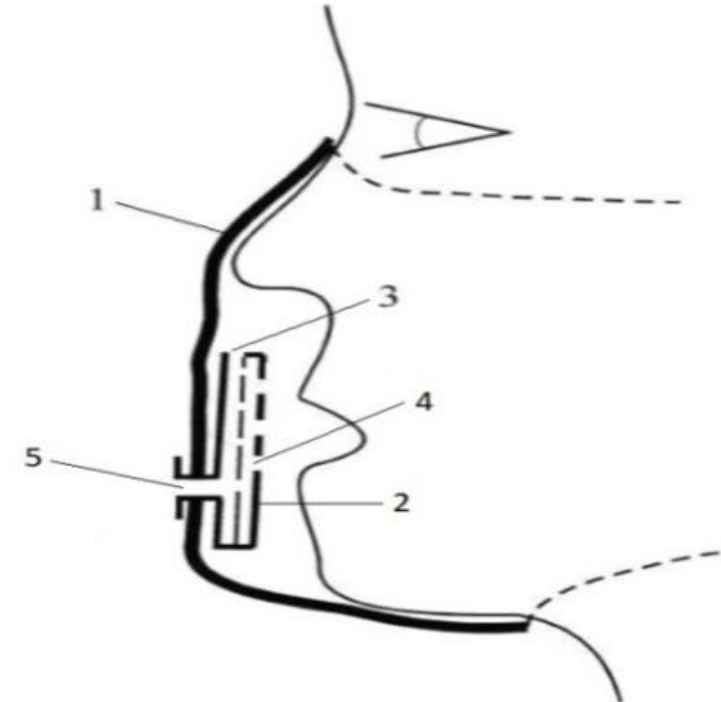


Fig. 2. The operating principle of the facial protective device with SRCHE



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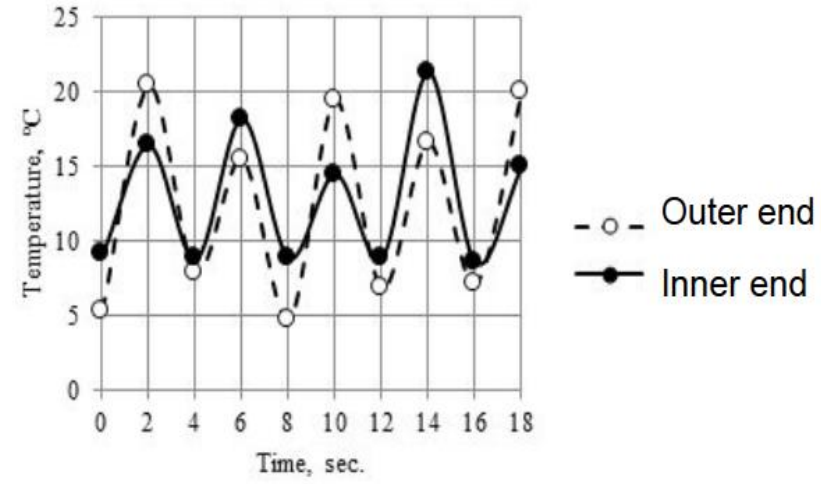
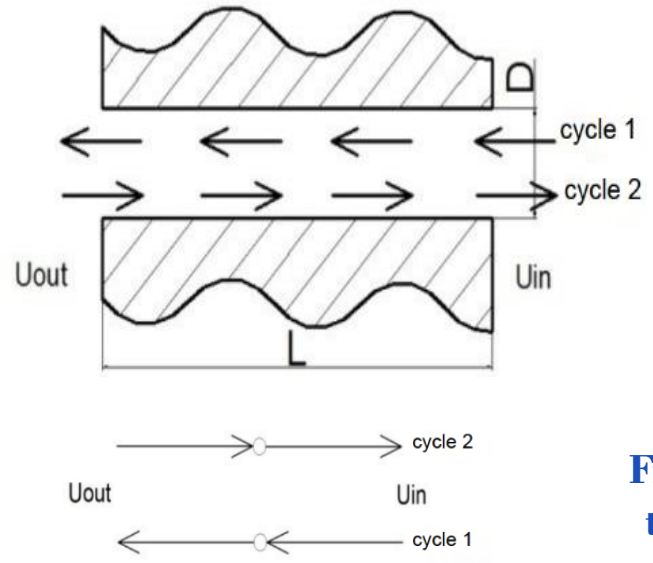


Fig. 4. Graph of the experimental dependence of air temperature change from the outside and inside of SRCHE over time

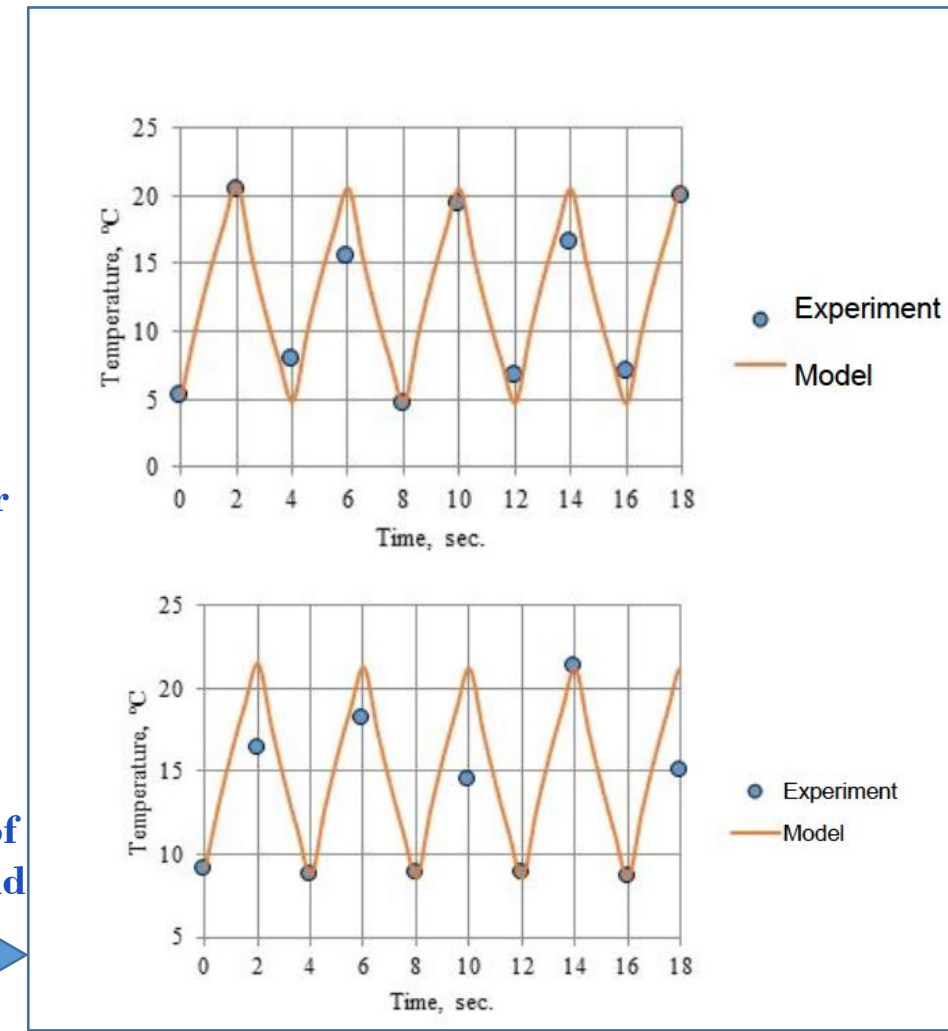


Fig. 5. Graph of the dependence of air temperature change from the outside (upper) and inside (lower) of SRCHE over time with a comparison of calculated and experimental data

Fig. 3. Physical model of SRCHE



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Thank you!

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