

CERTIFICATION FOR THE PEER REVIEW PROCESS &  
EVALUATION OF THE PEER REVIEW PROCESS &  
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I declare, I confirm, I certify and I sign that I received substantial, important, line by line peer review with several and substantial comments, important remarks and hints from, at least, 3 Reviewers and the Assistant Editor for my paper: Mathematical Modeling of the Mixing and Heat Transfer in Turbulent Two-Phase Jets of Mutually Immiscible Liquids with Authors: IVAN V. KAZACHKOV.

I would like to thank all the reviewers for their thoughtful comments and efforts towards improving our manuscript. We revised the manuscript with special attention to the comments that we received from, at least, 3 reviewers that they were experts, specialist in the area of my paper.

I declare, I confirm, I certify and I sign that also that no Associate-Editor, no Editor-in-Chief, no member of the WSEAS Secretariat forced me in this Journal to add references (citations) to any previous publications of this journal. I declare, I confirm, I certify and I sign that that I have made all the changes, modifications, additions, studies, corrections asked by the reviewers and I have fully complied with their instructions. I also understand that before the publication the 3 (or more than 3) reviewers will check my paper to see if all the changes, modifications, additions, studies, corrections etc have been done and I authorize the WSEAS to publish my paper or to reject my paper even in the 2nd round of peer review or to continue with an additional round of peer review.

Please, write additional comments below (take ideas from: <http://wseas.org/main/author-testimonials.html> )

Many thanks to the 3 reviewers for their scrupulous work with reading my papers and advices for changes, which require from me a lot to do for the improvement of my two papers but I really see it is going to be much better when I will do. Despite additional time and efforts needed for this my work on my papers, I appreciate it very much because it helps me to master myself as an expert in heat and fluid flow and as scientific paper writer. It helps to produce papers at higher standard than I can do myself, without such good references.

Below I place detail answers to all the stated critical comments of the 3 reviewers:

## Reviewer1:

- The references have been renewed
  - There are no analogues of the Nakorchevskii method by the turbulent heterogeneous jets, where the critical point is to study the detail phase distribution in case of close density ration like a water and oil. This was a kea point in development of the jet steel making machine proposed by Nakorchevskii, therefore he developed that method and I was the first who was performing modeling and computer simulation. A number of papers by turbulent jets, e.g. like the ones mentioned below do not cover this aspect.
- Ram Sinha. Turbulent transport coefficients for compressible heterogeneous mixing// International Journal of Heat and Mass Transfer, Volume 16, Issue 5, May 1973, Pages 1048-1052.
- Crowe, C., Sommerfeld, M., Tsuji, Y.: Multiphase Flows with Droplets and Particles, CRC, Boca Raton (1998).
- Deich, M.E., Filippov, G.A.: Gazodinamika dvukhfaznykh sred (The Gas Dynamics of Two-Phase Media). Energoizdat, Moscow (1981).
- Baranovskii, S.I.: Characteristic features of high-velocity two-phase gas–liquid flows. Turbulentnye dvukhfaznye techeniya i tekhnika eksperimenta (Turbulent Two-Phase Flows and Experimental Techniques), Tallinn, p. 60 (1985).
- Elghobashi, S.: Particle-Laden turbulent flows: Direct simulation and closure models. Appl. Sci. Res. 48, 301 (1991).
- Gore, R.A., Crowe, C.T.: Modulation of turbulence by a dispersed phase. Trans. ASME J. Fluids Eng. 113(2), 304 (1991).
- Ahmed, A.M., Elghobashi, S.: On the mechanisms of modifying the structure of turbulent homogeneous shear flows by dispersed particles. Phys. Fluid. 12, 2906 (2000).
- Lepeshinskii, I.A., Sovetov, V.A., Chabanov, V.A.: A model of turbulent interaction of the phases of a multiphase multicomponent nonisothermal nonequilibrium jet. In: Turbulentnye dvukhfaznye techeniya i tekhnika eksperimenta (Turbulent Two-Phase Flows and Experimental Techniques), Tallinn, Part 2, p. 42. (1985).
- Modarress, D., Tan, H., Elghobashi, S.: Two-component LDA measurement in a two-phase turbulent jet. AIAA J. 22(5), 624 (1984).
- Hetsroni, G., Sokolov, M.: Distribution of mass, velocity and intensity of turbulence in a two-phase turbulent jet. Trans. ASME J. Appl. Mech. 38(2), 315 (1971).
- Angela Hilgers. Control and optimization of turbulent jet mixing. Center for Turbulence Research Annual Research Briefs 2000.
- Khodadadi J.M. and Vlachost N.S. Experimental and Numerical Study of Confined Coaxial Turbulent Jets// AIAA Journal, 1989, VOL. 27, NO. 5.

- the functions B1, B2. More details have been added for clarification of the method originality.
- A discussion section was added. The main points of study were summarized in a separate section.
- A comparison of the results in this manuscript is done in the second paper presented for publication together with this first one.

**Reviewer2:**

a) The presentation of the section 3.3.1 (Calculation of parameters in the model) was improved.

b) The tables 1-4 have been presented better and more details done inside the text.

c) The contribution of our study in comparison with the corresponding studies of other researchers is explained in the Introduction section added to the paper and in the conclusions.

d) A reference was added in figures 1 and 2.

e) The manuscript is relying and citing more on recent literatures about heat transfer including the followings:

- Manuel A. Falconi, Enrique T. Tamayo, Hector L. Laurencio, Jorge P. Vega, Elvis P. Gualotu?a, Edwin R. Grijalva, Lu?s Grijalva Campana, Model of pressure losses in pipes during the transport of heavy oil with 11 API gravity, International Journal of Mechanics, pp. 8-13, Volume 12, 2018.

- M. M. Klazly, and G. Bogn?r, CFD Study for the Flow Behaviour of Nanofluid Flow over Flat Plate, International Journal of Mechanics, pp. 49-57, Volume 14, 2020.

**Reviewer3:**

- More justification about the ground part of a jet is done in the second paper, which is presented together with this one.
- More justification was furnished on this issue in the second paper presented for publication together with this one.
- The section 2.4: "Calculation of the profiles" is rewritten more in detail.
- In the conclusion section, the limitations of this study and suggested improvements of this work are highlighted.
- In addition, more conclusions are done, and the directions of future research in this area are discussed.

Signature (insert an image file with scanned signature or print out the whole page, sign and scan)

Date: 7.09.2020

