

OPINION

Concerning a competition for awarding the academic position of “Associate Professor” in professional field 5.4 **Energetics**; specialty **Industrial thermal techniques**, officially announced in State gazette, issue 54 from 25.06.2024

Candidate: chief assistant professor PhD Plamen Yordanov Penchev, TU-Gabrovo

A member of the scientific jury: Prof. PhD eng. Nina Yankova Penkova, UCTM, Sofia

1. Overview of the content and results in the presented works

A set of documents was submitted for the competition in full compliance with Point 57/ 1 of the Regulations for the acquisition of scientific degrees and holding academic positions at the Technical University - Gabrovo. The documents include diplomas for higher education and PHD, abstract of the dissertation work, lists of publications, citations, participation in projects, guide of graduates, taught disciplines and guide of extracurricular activities, implementations, references for expert activity of chief assistant professor Penchev in the field of the thermal engineering, copies of publications, textbooks and monographs on electronic media. An author's reference for the candidate's indicators, reflecting his above-described achievements, from which it is clear that they exceed the minimum requirements for occupying the academic position "Associate Professor" according to the Regulations for the acquisition of scientific degrees and the occupancy of academic positions at a Technical University – Gabrovo, was applied.

2. General characteristics of the research and applied research activities of the candidate

Chief assistant professor Plamen Penchev graduated in 2000 as a master's degree in mechanical engineering of Power Engineering at TU-Gabrovo. After graduation, he was enrolled as a full-time doctoral student and in 2006 defended his dissertation on the topic of Intensification of heat exchange in shell-and-tube heat exchangers.

Since 2004, the candidate has worked as a design engineer, expert and manager in companies in the field of heating technology. In 2011, he started working as a chief assistant at TU - Gabrovo, teaching subjects in the field of industrial thermal engineering. His experience in engineering is useful for both his teaching and research work. From the doctoral studies until now chief assistant professor Penchev has not stopped working on topics related to the intensification of processes in heat exchangers. He is involved in numerous research projects in this field. There are also implementations of intensifiers in heat exchangers in heat pump and solar installations. At the same time, it is expanding its research activities in the field of drying technology, heat pump, gas and solar systems for heating and heating water for domestic needs. This is evident from the publication activity of chief assistant professor Panchev, and from the subjects of the diploma theses, of which he is the supervisor. The

expert and research experience of Ch. Associate Professor Penchev fully correspond to the competition for associate professor in the specialty Industrial thermal engineering.

2.1. Assessment of the educational training and activities of the applicant

Chief assistant professor Penchev teaches the disciplines of Heat Exchangers, Heat and Gas Supply, Refrigeration Technology and Drying Technology for Bachelors, and Refrigeration Installations, Refrigeration and Freezing, and Gas Supply Systems for Master students. From the provided reference, it is clear that for the last three years he has been the supervisor of more than 20 graduates and participated in numerous meetings of committees for diploma defenses. He organizes visits of students to sites with heating and energy installations in the disciplines he teaches. He also organizes presentations of companies in the field of heating technology to students. The expert experience of the candidate is undoubtedly useful for the current topics of the diploma theses, for the listed extracurricular activities with the students and for his teaching activity.

The study guide on Heat Exchangers, which the candidate co-authored, is useful as the theory is demonstrated with understandable example calculations. The textbook on Gas Supply, in which chief assistant professor Penchev is the only author, contains current requirements and applications of gas installations.

2.2. Scientific and applied activities

The scientific and applied activities of the candidate are visible from his publications and his participation in research projects. Five publications in international publications and 13 in national publications are attached for the competition. Some of them are presented at conferences. Seven of the publications are self-contained. A monograph is also applied, in which chief assistant professor Penchev is the sole author. Publications with the participation of the candidate have been cited more than 100 times. This shows that the research topics are current, interesting and useful for the international scientific community.

2.3. Implementation activity

Results of the candidate's engineering and research activities have been realized in heat engineering installations in over 100 sites, evident from the attached lists of references for his engineering activities. The references are illustrated with photographic material of realized and implemented heat exchangers with devices for heat exchange intensification, invented by the team in which chief assistant professor Penchev participated. This is indisputable evidence of the scientific-applied nature of the candidate's activity.

3. Contributions (scientific, scientific-applied, applied). Significance of contributions to the science and practice

I agree with the categorization of the contributions from the research activity of chief assistant professor Penchev, made by him. I allow myself to disagree with some of the contributions: the creation of a generalized methodology for designing dryers with a fountain bed (applied contribution) and obtaining dependencies for the intensity of drying of specific textile materials (scientific-applied contribution). There are technical errors in some of the equations of the methodology for the design of drying devices with a fountain bed, which do not allow its application. The resulting dependences on drying kinetics are graphical and concrete. A further analysis would benefit their application.

4. Evaluation of the candidate's personal contribution

The candidate's personal contribution to the results of his scientific research activity is evident from the fact that he is the only or leading author of a large part of the publications, as well as from his contribution to the pioneering activity.

5. Critical notes and recommendations

I have no critical comments regarding the candidate's teaching and research activities. Some omissions and technical errors were found in units, formulas and concepts in the publications that I shared with him. They do not belittle the results of the activities of chief assistant professor Penchev as a teacher and researcher.

6. Personal impressions

I did not know chief assistant professor Plamen Penchev before this competition, but I am pleasantly impressed by the time allocated to work with the students and by the application of his expert activity in his teaching. This is important for the high quality of education of engineering students.

7. Conclusion

I confidently propose chief assistant professor Plamen Yordanov Penchev, PhD to be elected as an “Associate professor” in the field of higher education 5. Technical Sciences, professional field 5.4. Energetics, specialty Industrial thermal techniques.

04.11.2024.

Jury member:signature/.....

/Prof. PhD N. Penkova/