



Review of Thesis

submitted in partial fulfilment of requirements for promotion to associate professorship

Specialization: Theory of Building Structures and Materials

Applicant: Ing. Tomas Krejci, Ph.D.

Reviewer: Prof. Carmelo Maiorana

Thesis title: Numerical Analysis of coupled problems in selected engineering applications

Importance of topic of thesis

Comments: The topic of the thesis chosen by the candidate is very important with reference to the multiple possible applications. Indeed he selected three of them in the fields of bridges, nuclear barriers and interaction experiments, including low and high temperature conditions.

Superior Good Average Poor Not applicable

Method of solution

Comments: The adopted method of solution is sound with respect to the state-of-art knowledge in the fields of thermo-hygro-mechanical analysis of concrete structures in the different loading conditions typical of bridges and nuclear barriers. Both phenomenological and mechanistic approaches have been adopted depending on what required by the single problem

Superior Good Average Poor Not applicable

Quality and correctness of results achieved

Comments: The open source generated code SIFEL allowed to the applicant to achieve correct and useful results in terms of temperature, relative humidity or pore pressures and displacement / stress fields for the timespan needed to the application..

Superior Good Average Poor Not applicable

Originality of results achieved

Comments: The results obtained are original, with reference to the three application fields chosen, that are: i) nuclear power plant , ii) Charles bridge, iii) Underground facility in Czech Republic.

Superior Good Average Poor Not applicable

Publication rate of results achieved

Comments: On the bases of the previous points, I believe that the obtained results can be published in specialized journal, with 100% rate.

Superior | Good | Average | Poor | Not applicable

Response to results and citation rate

Comments: The response to results is full and citation rate 100%.

Superior | Good | Average | Poor | Not applicable

Applicability of results to development in the field and for further research

Comments: The applicability of the results to the development in the field is full and the method of analysis and FEM code generated can generate new successful research.

Superior | Good | Average | Poor | Not applicable

Applicability of results to technical practice

Comments: The theoretical background, numerical analysis, results and code generated allow to continue to perform application in technical practice.

Superior | Good | Average | Poor | Not applicable

Compliance with requirements on thesis – quality of thesis

Comments: The required compliance with thesis requirements are fully obtained. The quality of the thesis is Superior.

Superior | Good | Average | Poor | Not applicable

Comments

Overall evaluation of thesis

On the basis of the comments given previously point by point, it can be established that the overall evaluation of the thesis is Superior in a scale where Superior is the maximum value allowable.

Additional comments on the thesis and the author:
In my opinion the author of the thesis demonstrates to possess the best quality to get the title for which he is doing this application. He participated actively in international projects in the subject giving a personal contribution to the field.

Promotion to associate professorship recommended yes no

Date: 18/7/2022