

From the Guest Editor

This issue is again dedicated to the research in the field of procedures and consequences of thermal processes of internal combustion engines. As in the previous special issue of this journal devoted to IC engines, also this time, according to the opinions of our reviewers (whose list is given at the next page) we have chosen 25 papers from a large number (about 80) of submitted manuscripts on internal combustion engine problems. Unfortunately, a couple of accepted papers could not get into this issue, but it had to be left for a later release. Too, a number of papers have not been accepted for publication not because of their lack of scientific level, but because we wanted to cover as many as possible areas of research on engine problems and not to repeat similar subjects or papers.

Presented papers in this issue suggest that, despite the global crisis in the field of manufacturing industries and vehicle production, research in the area of internal combustion engines are still very actual and intense. Of course, the current world energetic situation, global warming and air pollution give the main boost for this research. The current research trends in the field of internal combustion engines continue to be the improvement of thermal efficiency of engine processes and the achievement of a lower emission of toxic components. Therefore these problems are also represented in the papers of this issue.

The papers in this issue range from fundamental experimental research of real engines parameters up to the theoretical analysis of the thermodynamic cycles (primarily using modern methods of finite time thermodynamics) with the aim to study and optimize their parameters. Between these two extremes are, on the one side, experimental studies of engine flow processes, injection system behaviors and the effects of different interventions on exhaust emissions, and, on the other hand, computational methods of engine process simulation using CFD and phenomenological models. A section of this issue is also devoted to modern methods of prediction and optimization of engine parameters using artificial neural networks and other similar methods, while the second part is devoted to the utilization of various alternative fuels. In addition, special emphasis is given to the application of biofuels with the trend of inedible oil use. This is in line with the intentions of the EU that, from specified mandatory 10% biofuels in engine fuels in 2020, a maximum of 5% can be from the edible oil, which should prevent the conversion of land for food production in polygons to create engine fuel. In any case, the problems of energy efficiency and engine emissions dominate this issue.

Finally, I would like to express my gratitude to all the authors (originating from all around the world) on their desire and interest to publish their research results in our journal. Owing to them the quality of our magazine is growing, which is reflected in a steady increase in its SCI factor. Also, in my own name and on behalf of all authors, I have to pay special appreciation to the reviewers (from eminent international institutions) for their cordial and serious qualitative comments and opinions, which strongly improve the level of this issue, but also essentially help authors to improve the quality of their papers.

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