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## DEAR READERS

This time we would like to present you an issue of our journal «Engineering Education» dedicated to cooperation opportunities between universities and industry for developing competences of future engineers within the training process.

Level of training of today's graduates with higher education in engineering and technology depends on many factors, ranging from the quality of university entrants to interior of university classrooms. Without pretending to make completely full list of such factors, it should be noted that this list should obviously include level of ongoing research at the departments, current state of laboratory equipment for scientific and educational needs, quality of ongoing educational programs, quality of teaching materials, selected educational technologies and, of course, the level and quality of the teaching staff. All these (and other) factors influence the development of general, professional and personal competencies of graduates. In the foreword to the last issue of our journal «Engineering education» (№ 7) it was noted that the state of engineering education in Russia, according to majority of experts of the Association for Engineering Education of Russia, cannot be considered as satisfactory. At the same time, assessing the level of training of engineers in Russia, most of almost the same experts estimated this level as satisfactory. One reason for this apparent contradiction is the difference in views about the objectives, content and forms of engineering training of those who train engineers and those who use the results of their work (employers, society, state). The main goal of those who are engaged in training of students for engineering is still (in informal terms) to a greater degree just «filling of a vessel» and to a lesser degree - «kindling of a flame». In other words, they think students need to be given more knowledge by using as usual mostly passive teaching methods, and, of course, then test the level of acquired knowledge. We do this faithfully they say; therefore, the level of training of engineers can be estimated at least as satisfactory. Moreover, employers also used to acknowledge satisfactory level, despite the fact that the university graduates in the field of engineering had to be retrained for one or two years. Sometimes, and it is a well-known fact, many university graduates could hear «Forget everything you've been taught, we will teach you here how to work.» Those who today require the results of engineers work look forward to getting trained professionals, coming to industry and into real life, and able to solve

real technological, operational and managerial problems. They also expect from them new engineering solutions ensuring a strong competitiveness position in global markets. And such goals could be reached only by those who were trained by «kindling of a flame» and not just «filling of a vessel». Training at such quality level is possible when a university does not focus only on developing competencies of future specialists (knowledge, skills and abilities, allowing them to apply well-known algorithms), but also provide conditions for development and at least a pilot test of competence. Competence in this case means an ability of trained professionals to apply their competencies to solve real problems and above all for creativity and innovations. Probably creation of such or similar conditions at universities could be realized by interaction between university and industry. Moreover, the term «industry» is used here in a broad sense and refers to a place of employment of future specialist including an engineering company, a plant, research institution or a small enterprise. There are different possible forms of such cooperation: inviting an experienced expert to give a lecture or an industry representative for discussion on one of the industrial problems with students, establishing industry-based departments and arranging practical training at world's leading enterprises. One of the important aspects in this kind of partnership on is using modern industry facilities for training. It especially refers to cumbersome, expensive and unique equipment. Today, different forms of interaction are used by industry and Russian universities that train specialists in the field of engineering, which significantly expand the ways and possibilities of development necessary skills and competence.

While reading this issue of «Engineering Education» you can find out our authors' opinions on modern requirements to the level of training of engineers, the forms of interaction between universities and industry, ways to develop competencies and competence of future engineers within the training process with industry assistance. The authors of proposed articles are not only academy representatives, but industry representatives as well, who have a successful experience in cooperation between universities and industry for developing necessary competencies of future professionals, therefore, sharing good practices could be interesting and be useful for the development of engineering education in Russia.

Sincerely,  
Editor-in-Chief,  
Prof. Yury Pokholkov

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