

# Preface: the role of T.F. Gorbachev State Technical University as the Flagship of Kemerovo Region Innovative Development

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**Abstract.** Currently the Kemerovo Region is one of the most concentrated industrial agglomerations in Russia finds itself at the stage of investment modernization. This is due to the technological renovation of industries that form the core of its economy - coal, chemical, machine-building and metallurgical. The development of its human capital plays a crucial role in creating conditions for the successful innovative transformation of the regional economy. The flagship of this process is T.F. Gorbachev Kuzbass State Technical University. Alma Mater has a unique team in which creativity and experience are combined with high quality staff training for the basic branches of the regional economy and innovative activities of scientific schools, dissertation councils and the university expert community. This allows to use the existing mechanisms effectively and to create new ones for attracting external financing in all areas of activity due to the Kuzbass State Technical University scientific sector which has a significant potential for ensuring innovative development of the regional industry.

## 1 Introduction

The Kemerovo Region is the most densely populated part of Siberia and the entire Asian part of the Russian Federation (with a population density of 28.2 people per square kilometer) and is one of the largest industrial agglomerations of the country. The regional industrial complex provides more than a half of GRP (58.2%), it includes extracting and processing industries, mainly coal and iron ore constituting 35.1% of GRP in 2016, as well as processing industries, such as chemical and engineering, making up to 13.9% of GRP [1].

The Kemerovo region has the largest national coal cluster with an annual production volume of more than 210 million tons, which makes up 56% of coal mining in Russia (100% for especially valuable brands), while up to 75% of the coal produced pass through the first stage in coal enrichment. One of the largest regional power systems of Russia operates in the region with the installed capacity for generating electricity is 4800 MW and heat power is 7000 Gcal / hour. Its share in the energy balance of Siberia reaches 30%. In

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the Kemerovo region there is the largest chemical complex of Russia, concentrating up to 30% of the national plastics production [2].

The higher education of specialists in the region is carried out by 26 state higher professional educational institutions, including 10 independent and 16 branches according to the data of January 2017. There are about 57 thousand students at the state universities of the region. Twenty nine thousand students out of total sixty one are enrolled in full-time education, which corresponds to the average in Russia [3-4]. One of the largest in a number of students is T.F. Gorbachev Kuzbass State Technical University (KuzSTU). By January 2017 there are 54 small innovative enterprises created in the universities of the region, eleven of them affiliate with KuzSTU.

## **2 Materials and Methods**

At the present stage T.F. Gorbachev Kuzbass State Technical University is a key element of the educational, scientific and innovative system of the Kemerovo region, which trains future employees and generates technologies for leading industries of the regional economy. At the enterprises of mineral-resource and fuel-energy complex of the region more than 75% of managers are KuzSTU graduates. In engineering, construction, road transport, chemical industry of the region the share of the KuzSTU university graduates makes up to 35-50%.

The university has close integration relations with the regional business in personnel, scientific and technological support. The strongest in Russia school of minerals extraction technology has been developed on the basis of the university. The university trains employees of all main specializations for the mineral-resource complex of Kuzbass and Siberian macro-region: mining, construction, chemical and petrochemical, and machine building. According to employers poll the leaders are graduates from the Mining Institute, the Institute of Energy, Economics and Management Institute.

T.F. Gorbachev Kuzbass State Technical University is the only university in the region that carries out multi-level training of highly qualified personnel for enterprises and companies in the energy sector. Over 100 full-time bachelors and masters in six majors of KuzSTU graduates annually fully meeting the needs of the industry. Innovative development of the energy system of the region is provided by small innovative enterprises of KuzGTU.

T.F. Gorbachev Kuzbass State Technical University is the only university in the region that satisfies the need of regional engineering in high-skilled personnel. In KuzSTU more than a thousand students are trained in educational programs that provide engineering personnel for almost all production processes of machine building. The contribution of KuzSTU to the innovative development of the industry is ensured by the small innovative enterprises operating within its structure, as well as the research laboratory for quality control of machine parts and the student design bureau.

T.F. Gorbachev Kuzbass State Technical University has a unique base for training highly qualified personnel in accordance with the structure of chemical and coal-chemical industries in the region and the directions of its innovative development. More than 500 students are trained on educational programs that ensure the functioning and development of chemical industry enterprises with the subsequent almost 100% employment.

## **3 Results and Discussion**

For many decades KuzSTU has accumulated a unique experience of mining engineers training, the annual graduate number of which exceeds 200 people. A significant

contribution to the innovative development of mining industry is made by the research laboratory of mechanization tools for coal seam mining and a number of small innovative enterprises of KuzSTU. The special role of KuzSTU is in providing the personnel for mine safety.

KuzSTU actively cooperates with the academic institutes and scientific centers of the Siberian Branch of Russian Academy of Sciences, including the development of basic departments to improve the training efficiency of undergraduates and graduate students. Besides in the development of the basic departments of KuzSTU the industrial enterprises of both basic and manufacturing industries, telecommunication companies, commercial banks take part.

T.F. Gorbachev Kuzbass State Technical University has its own developed innovative infrastructure including small innovative enterprises, design centers, a center of industrial safety expertise, research laboratories, scientific and educational and resource centers, in which engineering projects are implemented, including those related to import substitution in machine building and chemical industry.

Thus, KuzSTU undoubtedly can be considered an integrator of the educational, scientific and innovative-entrepreneurial systems of the region, the core of modernization of the regional environment and advanced development through the development of practice-oriented training of competitive highly skilled personnel, consolidation of intellectual resources, consolidation of network interactions.

Further development prospects of KuzSTU are related to the formation of the flagship university complex being a provider of personnel and technologies for the positive structural shift of the regional economy and a center of commercialization and socialization of innovations, which realizes effective research, educational and innovative-entrepreneurial activity. This project could form a modern upward mobility in cooperation with the leaders of production and innovation, the scientific community, Russian and foreign partners.

The strategic tasks of the formation and development of the flagship university complex on the basis of KuzSTU are the following:

1. The formation of the regional higher school core, creating leaders of changes in the regional environment. The solution of this task will be carried out through the systematic identification, attraction and development of talents at all stages of education, the expansion of the educational portfolio in accordance with the requirements of stakeholders through the integration of project-oriented teaching and research as well as the development of the continuous education model and training of the regional elite.

2. The establishment of an innovative entrepreneurial university uniting scientific and research activity and training high-skilled personnel, successfully commercializing the intellectual property created within its walls and ensuring the modernization of the regional economy in the process of accelerating the technological breakthrough of its main clusters. The solution of this task will be carried out in the process of timely response to foresights of industrial innovative development and the formation of centers of excellence in the scientific research areas relevant to the Siberian macro-region, improving the economic efficiency of R&D, implementing the concept of the expert higher school "think tank" and the formation of a new format of university innovation ecosystem.

3. The building of a highly professional team with a global competence level and a highly effective management system that allows implementing a value approach to stimulating professional and social and cultural activity. The third task will be achieved through focusing on increasing the value of employees in the process of developing professional development programs, studying in magistracy, postgraduate and doctoral studies, introducing an incentive system for an effective contract, increasing the mobility

and prestige of scientific and pedagogical workers and implementing the electronic management system.

4. The development of modern infrastructure of talents' attraction, contributing to the concentration of potential change leaders in the Key University. This decision will be ensured by the development of a system for identifying and recruiting talented students, strengthening pre-university training, developing the university academic competition practice, developing networking with general education institutions.

5. The implementation of the concept of a modern open university which is a transparent subject of the media environment integrated into the international scientific, educational and innovative space and providing equal conditions for access to all of its systems for individuals with physical disabilities. The fifth task will be solved in the process of image breakthrough of the Key University, promotion of R&D results in the publishing environment and increase of citation index, modernization of the university campus and development of a universal barrier-free environment for inclusive continuous education and unhindered access for disabled students.

6. The emergence of a new quality of educational, research and innovative and entrepreneurial processes of the Key University in deploying its electronic platform. The solution of this task will be achieved through the development of an interactive digital image of the University, integrating processes and solutions in the field of online education and commercialization of innovation results, the attraction of talents and the development of scientific and pedagogical personnel as well as management of the University.

7. The increase of the expert role of the University in the development of local communities, urban and regional environment, in improving life safety and work. The solution of the seventh task will be reached in the process of implementing the function of the Key University as a strategic and system analyst of regional development, organization of expertise of technogenic objects safety and training of expert staff.

## 4 Conclusions

The transition to the target model within the framework of the University Development Program is the transformation of the educational institution into an educational and research complex that implements the prerequisites for the internationalization of Russian education, provides an attractive social environment contributing to knowledge for the regional economy in the process of systemic interaction with academic institutions, joint educational programs and scientific projects, the development of an innovative ecosystem of intellectual property commercialization.

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