

UKRAINIAN SCHOOL OF MINING ENGINEERING

Berdiansk, Ukraine
September 7–11, 2020

2020

XIV INTERNATIONAL RESEARCH
AND PRACTICE CONFERENCE



Dear friends!

We are honored to welcome you at the XIV International Research and Practice Conference “Ukrainian School of Mining Engineering”.

The experience of civilization development shows that science and production play an essential role in ensuring sustainable development of society, belong to the key factors of economic reform and are guarantors of the national security. At the same time, this experience shows that preservation and care of scientific and production potential is a matter for every country. Awareness of this, provision of priority state support to science and production, increasing the prestige of work of mining specialists is very important in modern days. The mining community is hopefully expecting not only new steps of the country in this direction, but also, of course, implementation of previous decisions.

Our conference has always been attended by numerous representatives of young scientists and industrialists, who carry and increase the glory and greatness of mining, as well as being the driving force behind the strengthening and development of the country.

We have high expectations that despite the difficult and harsh realities of our time, the mining industry will still be enriched with innovative solutions. Implementation of these solutions will contribute to the improvement of the state of coal mining and enrich the state treasury with new achievements, which is the key to the prosperity of the country.

We wish all participants of the School good health, creative achievements and inspiration for new original ideas and implementation of your plans!

Sincerely,

Organizing Committee of USME

V. Bondarenko, I. Kovalevska, F. Cawood, M. Hardygora, O. Malova, & R. Lysenko



Dear colleagues!

I am especially pleased to welcome the participants of the XIV International Research and Practice Conference "Ukrainian School of Mining Engineering"!

This event was prepared by the Department of Mining Engineering and Education of the Dnipro University of Technology in the year of its 120th anniversary.

Of course, the basis of the economy of any country in the world are people, and above all – highly qualified personnel. The personnel, which are capable to generate ideas and create innovations, are the engine of sustainable growth. Now Dnipro University of Technology is one of the leading institutions of higher technical education in Ukraine. We form the main component of successful development of our region – scientific potential.

I am convinced that fruitful dialogue and exchange of experience between the participants of the conference will contribute to the creation of new ideas, discoveries, technologies that will find application in the educational process and in research laboratories, will be deeply disclosed initially in term papers and master's theses, and later – in scientific articles, monographs and dissertations. And the most important thing is that it will be used in practice and applied in production.

The formation of a new generation of scientists and manufacturers takes place today, so this prestigious forum is an important means of creating a new intellectual environment. It will contribute to the establishment of effective contacts between representatives of different scientific schools and directions and to the acquisition by young researchers of invaluable experience and practice.

I wish the conference participants good health, fruitful work and creative atmosphere!

Sincerely,

Rector of Dnipro University of Technology,
Academician of the National Academy of Sciences of Ukraine
Hennadii Pivniak



Dear conference participants!

I would like to welcome you at the International Research and Practice Conference "Ukrainian School of Mining Engineering – 2020" and express my gratitude for your participation. I sincerely hope that the experience of using the opportunities provided by this meeting will be useful to all participants in the process of their professional work.

In the course of the conference, a wide range of problems will be discussed: theoretical aspects of mining; domestic and foreign experience; personnel training in modern realities; problems of mineral deposits development; fundamental concepts of labor safety.

It is a pleasure that the conference of this format has good scientific traditions and is held for the fourteenth time already by the Department of Mining Engineering and Education.

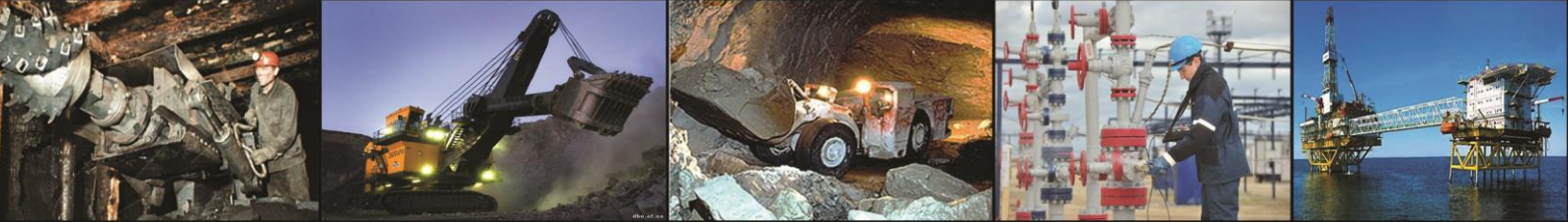
DTEK always holds a leading position in the work of the conference, shares its unique developments in the coal mining industry and draws new sources of inspiration from the reports of scientists and colleagues in the production.

I wish all conference participants a constructive dialogue and fruitful work!

Sincerely,

Director the Department of Coal Mining of LLC "DTEK Energy"
Mykhailo Barabash





Dear participants and guests of the conference!

Outside of all the controversial and rapid modern trends in the energy industry in general, and coal in particular, for Ukraine is quite obvious the need for a balanced approach to strengthening its own energy security and the consideration of national interests, primarily.

It is very important that such issues are brought for study and discussion in the framework of the XIV International Research and Practice Conference "Ukrainian School of Mining Engineering", annually providing an impulse and basis for a sober assessment of the current situation and the formation of strategic directions.

The main criterion in forming the development directions of the domestic coal industry should be the objective reality regarding the economic and resource opportunities of the state, and, consequently, the implementation of national energy interests in the course of inevitable globalization processes.

Today it is obvious that rather high volatility of price indices for energy carriers, including alternative ones, leaves coal as the most reliable and cheapest source of energy not only for our state.

For this reason, our common mission is to find the most optimal ways for the further development of the coal industry in the context of a combination of national interests and global trends of the energy industry development.

I wish the conference participants fruitful discussions, concerted decisions and creative inspiration.

Sincerely,

**General Director of PJSC "Donetsksteel"
Ildar Saliev**



Dear colleagues!

I would like to greet the organizers and of the XIV International Research and Practice Conference "Ukrainian School of Mining Engineering"

I am glad that despite all the difficulties and challenges faced by Ukraine and the whole world, the progress is going on and the issues of mining industry are on the agenda.

Corum Group is the permanent member of the USME. We are always waiting with a great interest for cooperation and experience exchange with our colleagues. In turn, we have many things to share, and we are happy to offer our findings in mining engineering and mine construction. Since the previous conference, Corum has implemented large projects for both Ukrainian and foreign partners. We have new projects and an ambitious strategy in place.

Our goal is to make the mining and construction as efficient and safe as possible and to provide each of our clients with the best solutions for their tasks. Maximal automation and digitalization are key priorities. All the power of intelligent potential and skill of designers, manufacturers and the entire Corum team is aimed at this.

I believe in the potential of Ukrainian mining industry and mining machinery manufacturing. I wish all conference participants fruitful communication, experience exchange, new ideas and energy for their realization.

Sincerely,

**General Director of Corum Group
Mykhailo Potapov**





Dear Conference Organisers, Dear Participants!



In 2020, the world changed: the distant risk of climate change has been replaced in our minds by the imminent risks associated with a pandemic that has swept across the world. Our responses to both these crises have had a big impact on the coal industry. Already unloved in many countries, because of its close links to carbon emissions and the industrial revolution, the coal industry is also facing tough market competition in a smaller power market. Imported fossil gas is cheap for now and government support for renewable electricity means it floods the market at certain times. Operating at the margin, demand for coal power has fallen precipitously in the European Union, leading to calls for further restructuring of the coal industry.

Change brings opportunities. With a good, solid education, anything is possible for those with ambition and vision. Coal energy is the product of an industrial leviathan employing hundreds of thousands of people who perform a myriad of tasks. Making use of these skills and repurposing the assets and infrastructure associated with coal are the new challenges. Those who successfully navigate the coming years will do well.

In the EU, the European Green Deal promises to facilitate this change with enormous sums of public money. New ideas to spend this money are being floated. For example, imagine an energy system where the electricity that powers our cars came from the solar panels on our roofs, while our buildings are kept warm with heat from a nearby factory, and the factory is fuelled by clean hydrogen produced from wind turbines. With the European Commission's new hydrogen strategy (COM(2020)301), this vision of an hydrogen ecosystem can be reality. In the strategy, Ukraine is envisaged to be a partner in the supply of renewable electricity and hydrogen.

Over the last two years, EURACOAL has been working with our members in Poland and Greece, as well as with the International Energy Agency's Clean Coal Centre, on the CoalTech2051 project which sets a new strategic research agenda for the coal industry. We have completed that work, and I am pleased to report that the European Commission published, at the end of last month, a modernisation package for the Research Fund for Coal and Steel. Beginning 2021, funds will be available to support new technologies that help the coal industry during the energy transition.

In conclusion, technicians, engineers and scientists will need to work hard over the coming years to facilitate the changes taking place in the energy system. A political vision is only meaningful if it can be delivered within the laws of nature. Your role will be to execute projects on the ground that, in aggregate, deliver the clean energy system of the future. Given that no one knows exactly what shape that system will take, you need to be adaptable to new approaches, but always holding on to the basics of science and engineering so that money is invested wisely in projects that really do move us forward to a brighter future. Good luck!

Yours sincerely,

Secretary General of the European Association for Coal and Lignite – EURACOAL
Brian Ricketts



Od pierwszego spotkania w ramach I naukowo-praktycznej konferencji "Szkoła eksploatacji podziemnej" minęło już wiele lat, organizowaliśmy ją jeszcze na początku lat 90. ubiegłego tysiąclecia. Przez ten długi okres Nasza współpraca mogła rozwijać się i osiągać coraz lepsze wyniki. Efektem wspólnych działań były między innymi Ukraińsko-Polskie i Polsko-Ukraińskie Górnicze Fora.

W tym roku odbędzie się XXIV Ukraińska Szkoła Inżynierii Górniczej. Brałszy udział w pracy poprzednich Szkół i za każdym razem byliśmy pod ogromnym wrażeniem tego, jak wiele energii i poświęcenia Organizatorzy wkładali w przygotowanie tych wyjątkowych wydarzeń.

Bardzo cieszymy się, że każdego roku grono uczestników powiększa się o coraz większą ilość uznanych naukowców i przedstawicieli górnictwa Ukrainy oraz ekspertów z zagranicy, a sama Szkoła otrzymuje coraz większe uznanie.

W przyszłości chcielibyśmy podtrzymywać tradycję wspólnych, międzynarodowych konferencji oraz umacniać Naszą współpracę. Chciałbym serdecznie życzyć wszystkim uczestnikom konferencji nowych naukowych osiągnięć i wielu sukcesów we wszelkich przedsięwzięciach.

Z wyrazami szacunku,

Przewodniczący Komitetu Organizacyjnego "Szkoły Eksploatacji Podziemnej" (Polska)
dr inż. Jerzy Kicki



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