

PROCEEDINGS

OF THE XVIII INTERNATIONAL CONFERENCE OF THE OPEN AND UNDERWATER MINING OF MINERALS



**8 – 12 September 2025
Varna, Bulgaria**

NATIONAL EDITORIAL COUNCIL

**Prof. Dr. Eng. Andrey Totsev, MSc Eng. Vladimir Etov,
Prof. Dr. Eng. Georgi Konstantinov, MSc Eng. Georgi Lisev,
Prof. Dr. Eng. Georgi Mihaylov, MSc Eng. Georgi Petrov,
Assoc. Prof. Dr. Eng. Evgeniya Aleksandrova, MSc Eng. Ivan Andreev,
Assoc. Prof. Dr. Eng. Kremena Dedelyanova,
MSc Eng. Shteryo Shterev**

**SCIENTIFIC AND TECHNICAL UNION OF MINING, GEOLOGY AND METALLURGY
ISSN 2535-0854**

2025, Bulgaria

GENERAL SPONSOR



SILVER SPONSORS



BRONZE SPONSOR



SPONSOR





***Dear Ladies and Gentlemen,
Dear Colleagues,***

On behalf of the Organizing Committee, I have the pleasure to greet all of you for participation in the **XVIII International Conference of the Open and Underwater Mining of Minerals**, 8 – 12 September 2025, Astor Garden Hotel, Sts. Constantine and Helena Resort, Varna, Bulgaria.

First held in 1986 as a conference on open mining and slope stability in the town of Panagyurishte with the initiator and doyen Prof. DSc Eng. Stoyan Hristov, the topic of underwater mining was later added to it. With the participation of a significant number of colleagues from the Balkan region and Europe, in 2017 the conference became as international.

This year the conference is dedicated to the 140th anniversary of the Federation of the Scientific Engineering Unions in Bulgaria and the 60th anniversary of the Scientific and Technical Union of Mining, Geology and Metallurgy.

The high activity of scientists and specialists and the interest in the conference are proof of its authority over the years. This forum has become a platform for discussions related to the latest technological developments and production practices in the mining industry. Thematic topics cover all issues related to exploitation, technology, economic efficiency, information technology, ecology, training and legislation in the field of open and underwater mining and construction. This year, the topic of artificial intelligence applications, which is so relevant today, has been added to the topics.

I would like to express my sincere gratitude to all Conference sponsors – Geotechmin Group, Ellatzite-Med AD, Geostroy AD, Geotrading AD, Assarel-Medet AD, Dundee Precious Metals, Maptek and Tabov engineering Ltd.

I would like to congratulate you and to wish you good health and professional success. Thank you for your participation which contributes to the success of the conference!

**Assoc. Prof. Dr. Eng. Kremena Dedelyanova
Chairperson of the Organizing Committee**



YEARS
35 **GEOTECHMIN**

SMALL STEPS. BIG TRACES.

2020

ГЕОСТРОЙ

ГРУПА ГЕОТЕХМИН

ПРОЕКТИРАНЕ И СТРОИТЕЛСТВО НА ИНФРАСТРУКТУРНИ ОБЕКТИ

ПРОЕКТИРАНЕ И СТРОИТЕЛСТВО НА ПРОМИШЛЕНИ ОБЕКТИ

ПРОЕКТИРАНЕ И СТРОИТЕЛСТВО НА ГРАЖДАНСКИ ОБЕКТИ

ГЕОДЕЗИЧЕСКИ УСЛУГИ

WWW.GEOSTROY.COM





THE
PARTNER
YOU
CAN **RELY ON**



geotrading.bg



АСАРЕЛ МЕДЕТ - АД

МИННО-ОБОГАТИТЕЛЕН КОМПЛЕКС - ГР. ПАНАГЮРИЦЕ



МИННО-ОБОГАТИТЕЛЕН КОМПЛЕКС
„Асарел-Медет“ АД
4500 Панагюрище, България
e-mail: pbox@asarel.com
www.asarel.com





ИНВЕСТИРАМЕ В БЪДЕЩЕТО



dundeeprecious.com

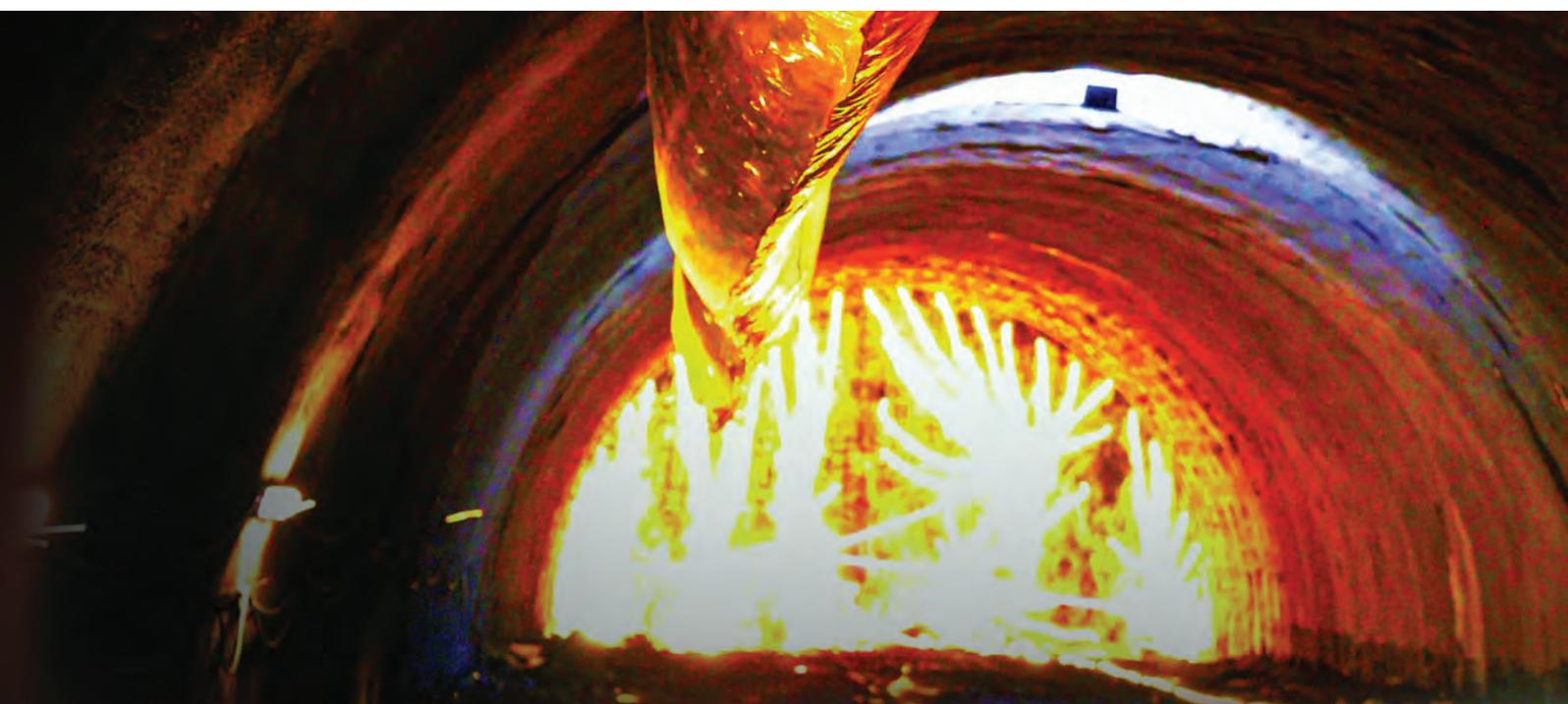


Enabling miners to make better decisions

Solutions for every mining stage, from exploration to operations, to help you optimise your mine site.

- ▲ Exploration & Geology
- ✂ Planning & Design
- 🚛 Operations & Production

www.maptek.com | info@maptek.co.uk | +44 131 225 8447



TABOV ENGINEERING

Табов Инженеринг ООД е българско дружество основано през 2009г., специализирано в областта на минното проектиране и планиране, консултации в минното дело, взривни дейности, обследване и почистване на сухоземни и водни площи от боеприпаси и взривни военни остатъци (UXO).

www.tabov.bg

phone: +359 884 430 971

e-mail: tabov@tabov.bg



• МИНИ МАРИЦА-ИЗТОК • ЕАД

ЕНЕРГИЙНА НЕЗАВИСИМОСТ И НАЦИОНАЛНА СИГУРНОСТ



„Мини Марица-изток“ ЕАД, гр. Раднево е най-голямото открито въгледобивно предприятие в Република България. Неговата дейност е с определяща значимост, както за националния енергиен баланс, така и за икономическия просперитет на региона и страната. Основната мисия и цел на дружеството е: енергийна независимост и национална сигурност чрез ритмичната доставка на въглища за термичните централи в региона. Дружеството има три открити рудника в експлоатация: рудник „Трояново-1“, рудник „Трояново-север“ и рудник „Трояново-3“. Те доставят лигнитни въглища на термичните електроцентрали в комплекса „Марица-изток“: „ТЕЦ Марица изток 2“ ЕАД, „ТЕЦ Контур Глобал Марица Изток 3“ АД, ТЕЦ „Ей И Ес-Гълъбово“ и „Брикел“ ЕАД.

Седемдесет години историята на „Мини Марица-изток“ е историята на съвременния открит въгледобив в България. Най-голямото българско въгледобивно дружество работи за енергийната независимост и сигурността за развитието националната икономика. „Мини Марица-изток“ ЕАД (ММИ) е 100% държавно предприятие, което експлоатира най-големите лигнитни мини в България, разположени в югоизточната част на района на Горнотракийската низина с обща площ на лигнитното находище около 240 кв.км.

Добиваната електроенергия от лигнитните въглища е с относително най-ниска себестойност и висока конкурентоспособност, което предопределя изключително важното значение на добива от Източномаришкото находище за енергийния баланс и енергийната независимост на страната.

Цяло седемдесетилетие лигнитните въглища, добивани в „Мини Марица-изток“ са единственият конкурентен местен енергиен ресурс в електроенергийния баланс на Република България сред останалите енергийни източници.

От началото на експлоатацията на „Мини Марица-изток“ ЕАД до юли 2022 г. вкл. в дружеството са добити 1 278 527 986 тона въглища и са разкрити, транспортирани и насипани 4 940 182 548 кубични метра земна маса.

„Мини Марица-изток“ ЕАД е живата история на откритият въгледобив в България. развитието на дружеството е цел и мисия на няколко поколения българи. От основаването си досега, комплексът е част от енергийната независимост на страната ни. Той е най-големият на Балканския полуостров и стратегически обект от националната сигурност.



140
ГОДИНИ

ФЕДЕРАЦИЯ
НА НАУЧНО-ТЕХНИЧЕСКИТЕ
СЪЮЗИ В БЪЛГАРИЯ





By courtesy of

FEDERATION OF THE SCIENTIFIC ENGINEERING UNIONS IN BULGARIA

WITH COOPERATION

- Ministry of Energy in Bulgaria
- Ministry of Economy and Industry in Bulgaria
- Ministry of Environment and Water in Bulgaria

CO-ORGANIZERS

- University of mining and geology "St. Ivan Rilski"
- University of chemical technology and metallurgy
- Bulgarian chamber of mining and geology
- University of architecture, civil engineering and geodesy
- Higher school of civil engineering "Lyuben Karavelov"
- University of transport "Todor Kableshkov"
- Bulgarian construction chamber
- Association "Bulgarian coal mining"
- Bulgarian society for soil mechanics & geotechnical engineering

PARTNERS

- "Andezit" Ltd.
- "Andela" JSC
- "Assarel-Medet" JSC
- "Atlas Copco Bulgaria" Ltd
- "BT engineering" Ltd.
- "Vatiya Holding" JSC
- "Geostroy" JSC
- "Geotechmin" Ltd.
- "Geotrading" JSC
- "Dundee Precious Metals Krumovgrad" EAD
- "Dundee Precious Metals Chelopech" EAD
- "Ellatzite-Med" JSC
- "Eskana" JSC
- "Zlatna Panega Cement" JSC
- "Kaolin" JSC
- MDZ "Balsha" JSC
- "Minproekt" JSC
- "Minstroy Holding" JSC
- "Mini Maritsa-Iztok" EAD
- "Niproruda" JSC
- "Sanrock" Ltd.
- "Tabov engineering" Ltd.
- "Holcim Karierni Materiali" AD

WITH MEDIA PARTNERS

- Journal "Mining and geology"
- Journal "Geology and mineral resources"
- Newspaper "Rudnichar"
- Publishing house "Ore and metals"
- Newspaper "Science and society"

Organizing committee

Chairman:

Assoc. Prof. Dr. Eng. Kremena Dedelyanova Chairperson, Scientific and technical union of mining, geology and metallurgy

Honorary Chairman:

Prof. DSc Eng. Tzolo Voutov Honorary Chairman, Scientific and technical union of mining, geology and metallurgy

Deputy Chairmen:

Dr. Eng. Vladimir Vutov Deputy Chairman, Scientific and technical union of mining, geology and metallurgy

Assoc. Prof. Dr. Arch. Gichka Kutova-Kamenova Rector, University of architecture, civil engineering and geodesy

MSc Eng. Dragomir Draganov Chairman, Bulgarian chamber of mining and geology

Prof. DSc Eng. Nikolay Valkanov Honorary Chairman, Bulgarian chamber of mining and geology

MSc Eng. Nikolay Peltekov Executive director, "Assarel-Medet" JSC

Prof. Dr. Eng. Svetlana Bratkova Vice-Rector, University of mining and geology "St. Ivan Rilski"

MSc Eng. Shteryo Shterev Deputy Chairman, Scientific and technical union of mining, geology and metallurgy

Scientific secretaries:

Dr. Krassimira Arsova Scientific and technical union of mining, geology and metallurgy

Assoc. Prof. Dr. Eng. Nikolay Milev University of architecture, civil engineering and geodesy

Members:

Assoc. Prof. Dr. Eng. Anatolii Angelov Head of Department, University of mining and geology "St. Ivan Rilski"

MSc Eng. Andriyan Valchev Head of "Operational Activity" Department, "Kaolin" JSC

Dr. Eng. Botyo Tabakov Manager, "BT engineering" Ltd.

Prof. DSc Eng. Valeri Mitkov Dean, University of mining and geology "St. Ivan Rilski"

MSc Eng. Dancho Todorov Executive director, "NIPRORUDA" JSC

MSc Eng. Delcho Nikolov Chairman of the Management Board, "Assarel-Medet" JSC

MSc Eng. Dimitar Angelov Executive director, "Kaolin" JSC

Dimitar Tzotzorkov Chairman of the Supervisory Board, "Assarel-Medet" JSC

MSc Eng. Dimitar Tzotzorkov Manager, "Bulteh" Ltd.

MSc Eng. Ivan Bogdanov Executive director, MDZ "Balsha" JSC

Dr. Eng. Ivan Vutov Chairman of the Board, "Geotrading" JSC

Assoc. Prof. Dr. Eng. Ivan Mitev Executive director, Bulgarian chamber of mining and geology

MSc Eng. Ivan Tabov General Manager, "Tabov engineering" Ltd.

Prof. Dr. Eng. Iliya Garkov Executive Vice President and Chief Operating Officer, Dundee Precious Metals

Iliyan Rangelov Manager, "Belaz-Sofia" Ltd.

MSc Eng. Irena Tsakova Executive director, "Dundee Precious Metals Krumovgrad" EAD

MSc Eng. Kostadin Hristov Executive director, MINPROEKT" JSC

MSc Eng. Nedelcho Bonev Executive director, "Minstroy Holding" JSC

Assoc. Prof. Dr. Eng. Nikola Dobrev "Holding KCM 2000" JSC

MSc Eng. Rumen Bikov Ministry of Energy, R. Bulgaria

Prof. Dr. Eng. Stanislav Topalov Chairman, Association "Bulgarian coal mining"

MSc Eng. Stoil Dimitrov General director, "Ellatzite-Med" JSC

Todor Todorov Executive director, "Mini Maritsa-Iztok" EAD

Dr. Eng. Todor Tzonkov Head Engineer, "Andezit" Ltd.

MSc Eng. Yassen Chaushev Director of Production and Technical Matters, Maritza Iztok Mines JSC

International Scientific Committee

Prof. Dr. Jani Bakallbashi	- Albania
Acad. Viktor Prushak	- Belarus
Prof. Dr. Carsten Drebenstedt	- Germany
Prof. Dr. Zoran Panov	- North Macedonia
Prof. DSc Wojciech Sas	- Poland
Prof. DSc Marek Cala	- Poland
Prof. Dr. Loretta Batali	- Romania
Prof. DSc Victor Gordeev	- Russia
Prof. Dr. Bojan Dimitrijevic	- Serbia
Prof. Dr. Vladimir Pavlovich	- Serbia
Assoc. Prof. Dr. Tomislav Subaranovic	- Serbia
Prof. Dr. Jana Frankovska	- Slovakia
Assoc. Prof. Dr. Joze Kortnik	- Slovenia
Prof. Dr. Ozer Cinicioglu	- Turkey
Prof. Dr. Turgay Onargan	- Turkey
Acad. Gennadii Pivnyak	- Ukraine
Dr. Eng. Vladimir Karpishek	- Czech Republic
Prof. Dr. Lumir Mica	- Czech Republic

Thematic topics

- A. Construction and exploitation of opencast mines and quarries. Combination of open pit and underground mining.**
- B. Technologies and facilities in underwater mining of minerals and hydrocarbons.**
- C. Drilling and blasting activities and safety techniques for open mining of minerals and construction.**
- D. Geotechnical aspects in mining and construction - Drainage and stability and consolidation of the slopes. Process management and best practices.**
- E. Protection and reclamation of environment. Circular economy.**
- F. Information technologies in geological and mining activities and construction. Application of artificial intelligence.**
- G. Innovations in electrification, automation, mechanization and repair.**
- H. Risk estimation and safe working conditions in mining and construction. Education and qualification. Mining legislation.**

