



# KGHM CUPRUM

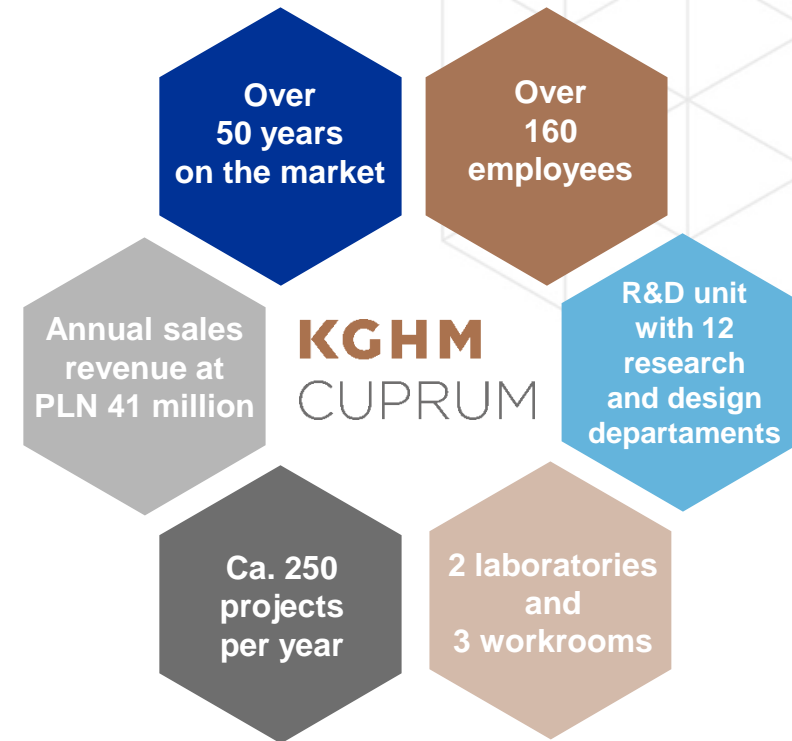
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Copper exploration and more

Marcin Paterek

# KGHM CUPRUM at a glance

- KGHM CUPRUM sp. z o.o. – Research and Development Centre is a company with 50 years of experience in conducting innovative research and development projects, designing, modernising and implementing technological solutions in the raw materials industry.
- We have the status of a research and development centre
- We have implemented an Integrated Quality and Environmental Management System in accordance with ISO 9001 and 14001:2015
- We are a member of the KGHM Polska Miedź S.A. Group.
- 100% of the Company is owned by KGHM Polska Miedź S.A.



# The Company's core business



KGHM CUPRUM is a unit responsible in the KGHM Group for research and development activities, but also a multi-discipline specialist industrial designer.

Since its inception, the company has supported the development of KGHM Polska Miedź S.A., which, being a global player on the raw materials market, faces many technical and technological challenges.

We have been developing and implementing technologies and products for many years in order to make effective, innovative and sustainable use of raw material resources, taking part in the transformation of the 'traditional' mining industry into a modern knowledge-driven industry.

Our Company carries out projects, research and development work, expert opinions and analyses for other national and international partners, carrying out both commercial work commissioned directly by industry and tasks as part of international research and development projects, including those funded by EU funds.

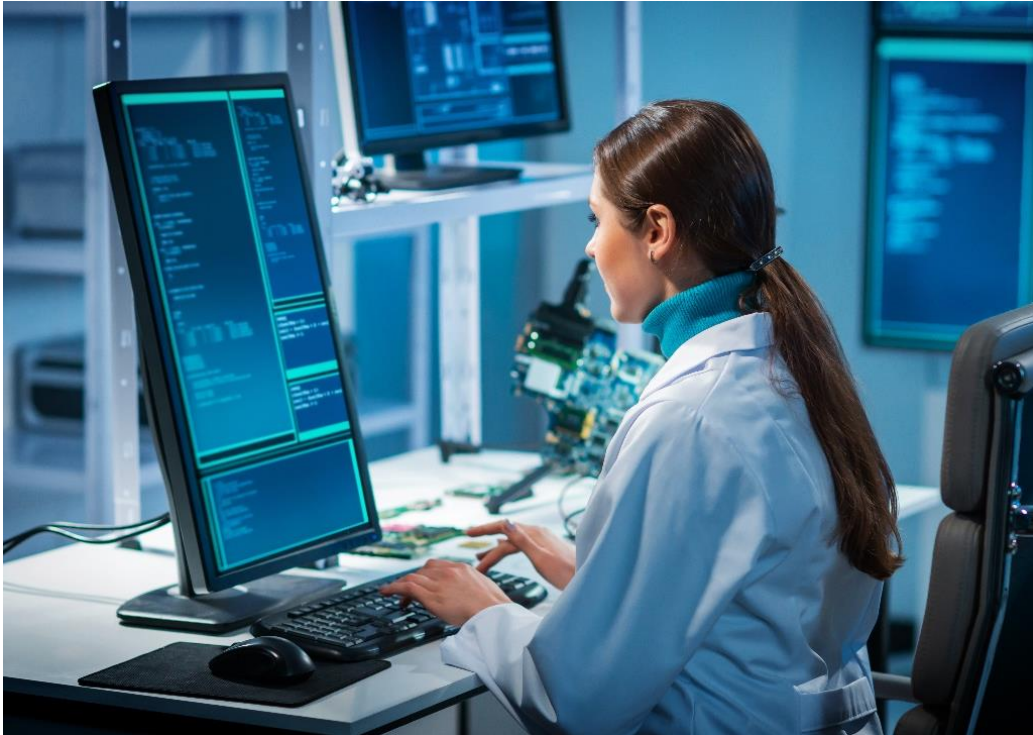
# Range of activity



Over the course of more than 50 years of our business activity we have been carrying out works and projects in many countries around the world, including:

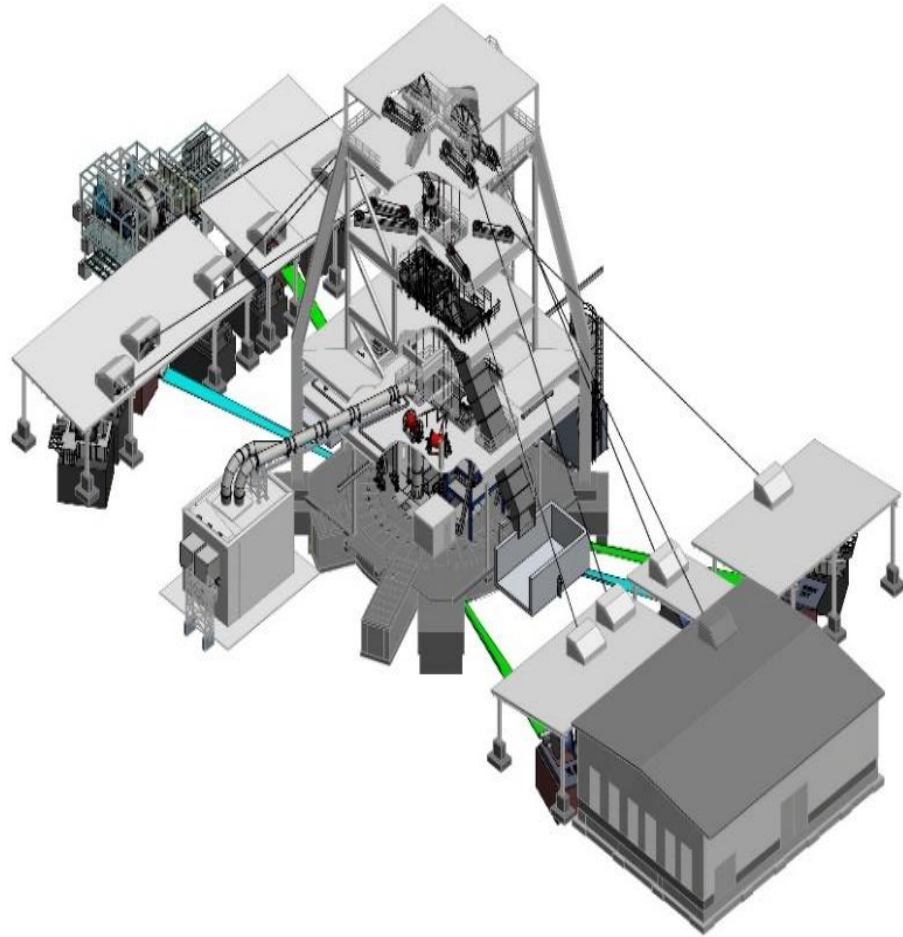
the USA, Canada, Peru, Brazil, Chile, Germany, Hungary, Poland, Ukraine, Romania, Serbia, Morocco, Algeria, Mauritania, Senegal, Congo, the Democratic Republic of the Congo, Angola, Zambia, Botswana, South Africa, Kazakhstan, Iran, India, China, South Korea, Laos, Australia and the United Kingdom.

# Fields of activity



- ◆ solutions to optimise and improve industrial processes
- ◆ renewable energy sources and conversion of energy resources
- ◆ innovative technologies for the extraction and processing of raw materials
- ◆ bio- i nanotechnologies
- ◆ industrial waste management technologies
- ◆ geotourism and the provision of underground and post-mining facilities
- ◆ technology scouting
- ◆ development of Big DATA analytics and machine learning techniques

# Fields of activity



- ◆ geology, hydrogeology, exploration works, analyses of geological projects, supervision of drilling
- ◆ 3D modelling and design
- ◆ surveying services for investments
- ◆ industrial infrastructure design
- ◆ environmental impact assessments for investments
- ◆ control measurements of engineering structures
- ◆ analysis and prevention methods of hazards in underground mining
- ◆ occupational safety and ergonomics in the raw materials industry

# Geology department



Our team is experienced in conducting full-scale exploration works:

- ◆ reconnaissance
- ◆ remote sensing - geophysics
- ◆ supervision of geological drillings

Deposits of our interest:

- ◆ Copper
- ◆ Gold
- ◆ Nickel
- ◆ Potassium-Magnesium Salts
- ◆ and many more

# Geology department

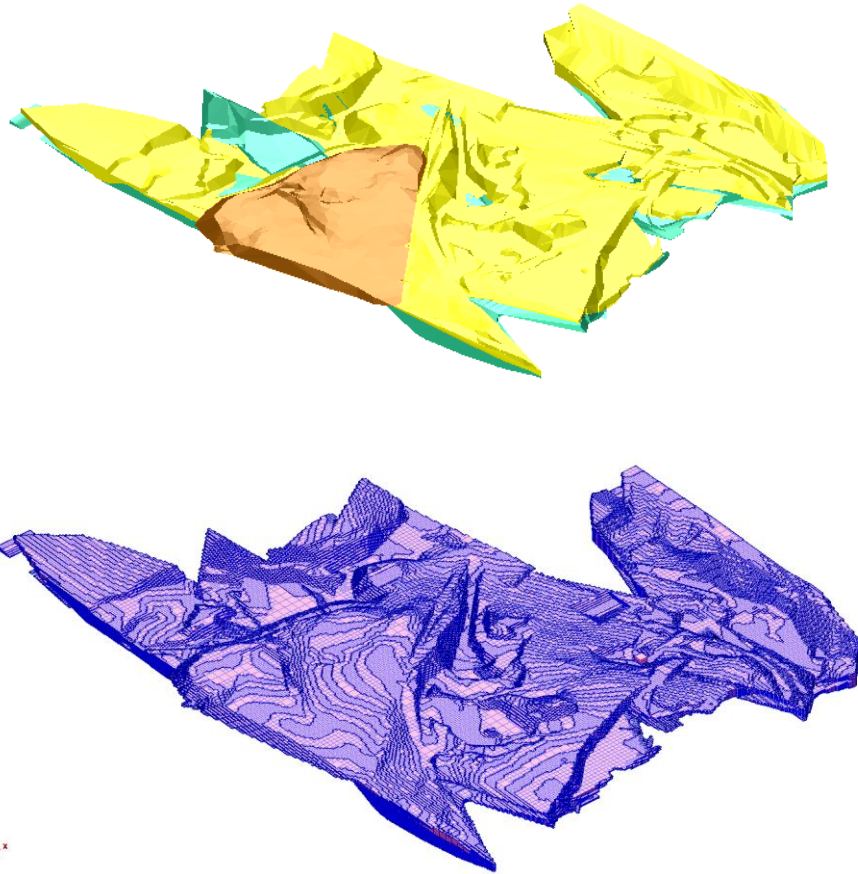


In addition to exploration work, our team also evaluates mining and exploration projects in different parts of the world:

- ◆ Canada
- ◆ United States of America
- ◆ Chile
- ◆ Peru
- ◆ Republic of Congo
- ◆ Laos
- ◆ Kazachstan
- ◆ Germany



# Geology department



Beside to field work, we also carry out a lot of office work related to documenting deposits:

- collection and analysis of drilling data
- 3D geological modeling
- resource estimation
- creating maps and cross-section
- preparation of geological reports

# Geology department



As part of the geology department, we have a microscope workroom and a rock cutting and polishing workroom, where we can conduct:

- ◆ Qualitative and quantitative analysis of rocks and minerals in transmitted and direct light
- ◆ High-resolution digital photographic documentation of microscope preparations with a computer analysis of image with the use of NIS-Elements BR software,
- ◆ 3D imaging with extended depth of field of fragments of rock samples with the use of stereoscope microscope integrated with Leica Application Suite (LAS) software.
- ◆ Making thin covered preparations with a coverslip
- ◆ Making polished microsection for observation of ore minerals
- ◆ Making polished microsections for the purpose of documentary photography,

# Examples of our projects and works

## Recent R&D projects:

- **ASMoW** - 'Automatic system for monitoring the influence of high-energy paraseismic tremors on the surface using GNSS/PSInSAR satellite observations and seismic measurements'. The project developed a measurement system consisting of geodetic platforms and seismic apparatus to visualise the impact of high-energy seismic shocks on the surface of a mining area (no. POIR.04.01.04-00-0056/17).
- **GLC-Connect** - 'Manufacturing of graphene layers on copper connections for electronic applications'. The aim of the project was to develop and construct a system for graphene coating of thin copper wires. Systems for high-temperature and low-temperature graphene synthesis were developed as part of the project (no. POIR.04.01.02-00-0103/17).



Republic  
of Poland

European Union  
European Regional  
Development Fund



## Examples of design work for industry:

- Comprehensive technical documentation for the construction of the target facilities located on the material and driving shaft site in the Głogów Głęboki - Industrial area.
- Design of a central air conditioning station in the Głogów Głęboki - Industrial area, working in a trigeneration system to produce cooling, heat and electricity from the combustion of gaseous fuel.
- Design of a fan station at the main shaft in the Sieroszowice area of the Legnica-Głogów Copper Belt (LGOM), operating in an unmanned system with the possibility of remote control of station operation from the mine's dispatcher and local control room.
- Programmatic and spatial concept for two new shafts (material and driving and ventilation shafts) in the Głogów Głęboki - Industrial area.

# EU projects conducted by KGHM CUPRUM

HORIZON  
europa



Funded by  
the European Union



We are a partner in the international scientific consortia, carrying out projects within the framework of the largest research and innovation funding programme in the world, *HORIZON EUROPE* and *HORIZON 2020*

- ◆ **AGEMERA** – Agile Exploration and Geo-modelling for European Critical Raw materials  
(duration: 2022.08.01. – 2025.07.31, total project value: € 7,494,65.00, including budget of KGHM CUPRUM: € 283,250.00)
- ◆ **NEXGEN-SIMS** – Next generation carbon neutral pilots for smart intelligent mining systems  
(duration: 2021.05.01. – 2024.04.30, total project value: € 16,259,972.50, including budget of KGHM CUPRUM: € 738,437.50)
- ◆ **illuMINEation** – Bright concepts for a safe and sustainable digital mining future  
(duration: 2020.09.01 – 2023.08.31, total project value: € 8,863,685.00, including budget of KGHM CUPRUM: € 400,500.00)
- ◆ **THING** – subTerraanean Haptic INvestiGator  
(duration: 2018.01.01 – 2020.03.31, total project value: € 4,071,685.00, including budget of KGHM CUPRUM: € 266,430.00)

# Projects carried out in KGHM CUPRUM



Co-funded by the  
European Union

The cooperation established within the Knowledge and Innovation Community of the European Institute of Innovation and Technology in the raw materials area (EIT RawMaterials) enables us to carry out other international projects

## **VOT3D** – Ventilation Optimizing Technology based on 3D-scanning

(duration: 07.2022-06.2025, total project value: € 2,161,804.00, including budget of KGHM CUPRUM: € 186,058.00)

## **TIMREX** – T-Shaped Master Programme for Innovative Mineral Resource Exploration

(duration: 01.2022-12.2024, total project value: € 1,052,073.00, including budget of KGHM CUPRUM: € 14,375.00)

## **BATTERFLAI** – Supply of BATTERY minerals using lignin nanoparticles as FLotAtlon collectors

(duration: 01.2020-12.2023, total project value: € 2,741,300.00, including budget of KGHM CUPRUM: € 121.621,00)

## **RMsManager** – Raw Materials Manager Course

(duration: 01.2020-10.2022, total project value: € 283,853.00, including budget of KGHM CUPRUM: € 34,216.00)



Thank you for your attention

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