

Project title: NRE-ElectRA. Electric, Remote control, Automatic Narrow Reef mining Equipment



**Duration of the project:** 30.09.2023. – 31.12.2025.

**Project leader:** University of Zagreb – Faculty of Mining, Geology and Petroleum Engineering (UNIZG-RGNF)

**Consortium:**

DOK-ING d.o.o., Croatia  
Probotica d.o.o., Croatia  
Zavod za gradbenistvo Slovenije, ZAG, Slovenia

**Web page:** : Not yet available

**Contact person at UNIZG-RGNF:** Professor Sibila Borojević Šoštarić, PhD

**E-mail:** Not yet available

### Project description

NRE ElectRA project will develop and commercialize innovative, remote-controlled, electric-powered equipment that has the main function of mechanized production of strategic metals from Ultra-Low mining profiles ranging from 0.9 to 1.7 meters. In 27 months of project duration, NRE ElectRA consortia will bring 3 machines (NRE Dozer and NRE Drill Rig, TRL7 (Technological Readiness Level), and NRE Support Rig, TRL6) that together complete the mechanized process of Drilling, Excavating, and Supporting to TRL8 by conducting minimum 90 days continuous on-site machines testing. Received data will be used for: (1) development of the specific machine components; (2) creating complete machine risk assessment for underground applications, and (3) customer support (maintenance, serviceability, operators training, after sales support, user manual etc) by the end of the project. Probotica will support development of NRE sensors, while ZAG will conduct Life Cycle Analysis (LCA).

Commercialization of the NRE fleet will be led by DOK-ING, supported by UNIZG-RGNF (GoToMarket strategy), and focused to three circles of potential customers: (1) Anglo American narrow reef platinum mines; (2) narrow reef platinum mines worldwide hosted in layered mafic intrusions (58 underground mines) and (3) similar type of thin, subhorizontal layered deposits European Cu- kupferschiefer.

### Project objectives and scopes

Overall objective

To develop, test and commercialize innovative, remote-controlled, electric-powered equipment serving for mechanized production of precious metals from Ultra-low mining profiles (0.9-1.7m).

#### Specific objectives

1. Parallel testing of the two NRE fleet prototypes at South African Republic and Zimbabwe Pt-reef mines, followed by data analysing
2. Development of the commercial ready NRE Equipment
3. Implementation of efficient GTM Strategy including
  - a. Primary and secondary market analysis
  - b. Development of IP data protection strategy
  - c. Development of ERMA investment case and ensuring funding for new production line in Zagreb
4. LCA comparing NRE extraction method to conventional mining methods
5. Promotion and popularization of the NRE fleet via participation at world-class exhibition of the mining equipment and scientific and professional conferences, publication of open access manuscripts, delivering thematic on-line workshop
6. Development of Customer support (training programmes, virtual-reality training programme, maintenance technicians etc)
7. Development of production Quality Assurance procedures (Production phase quality checkpoints procedures for each individual machine; Standard warranty claim procedures)

#### **The role of UNIZG-RGNF – promotion of the NRE mining**

UNIZG-RGNF is project coordinator, leader of the WP1 Project management and WP5 Dissemination and communication, member of the Steering Committee. Participating in WPO Development of efficient GoToMarket strategy for NRE fleet. The role of UNIZG is to popularise on-reef scattered breast mining amongst professional and scientific mining community, especially in the countries where targeted ore deposits exist, and to include these methods into the international literature, impacting the scholars and academicians, that will subsequently introduce this method to the industrial community in those countries. Following activities will be conducted:

1. Participation in world-class scientific/professional conferences with scientific presentations/posters on the practical usage of NRE during mine planning and development phase.
2. Submission of 3 international scientific peer-review open access manuscripts on the topic of practical usage of NRE fleet.
3. Organization of the on-line workshop “Practical usage of the NRE fleet for thin, sub-horizontal orebodies” for minimum 20 attendees from professional and scientific community.