Creating safe and sustainable future in the mining sector
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Max. 2, 985 words
EXECUTIVE SUMMARY
Executive Summary

Eurasian Resources Group (ERG) – is one of the world's leading and most diversified companies in the mining and metals sector, originated from Kazakhstan. The Group includes mining, processing, energy, logistics and marketing operations in Asia, Europe, Africa and Brazil.

The Company continuously advances its efforts to apply international best practice with respect to business management, environmental safety, provision of safe work conditions, and people development.

The establishment of ERG Corporate University is aimed to support these principles:

- Ecosystem where a unique learning environment for blended learning is created: campuses in all regions of presence, soft and hard-skills training;
- Practice-oriented content for all management levels;
- Expertise essential for business transformation: people, processes, and technologies;
- Partner network: Kazakhstani and international companies and communities.

In all spheres of work, the Group seeks for the opportunities to decrease the effect of unfavorable factors on the environment.

Taking into account the business, environmental, and social challenges, the Corporate University has commissioned a training program for heavy-duty transport drivers with specified and expected outcomes from the training, such as reduction in fuel and tire consumption with a corresponding decrease in greenhouse gas emissions.

Due to comprehensive expertise and high-quality project delivery, involving all Group’s Enterprises, the training program on the train simulator was successfully launched, fully replicating real work conditions:

- identical control system – instrument panel and control panel made from original components;
- recreated visual environment – accurate replicas of all quarries and movement routes, and weather conditions;
- the system includes 100% of all operations performed by drivers;
- ensuring maximum safety for employees during training and driving.

The specialized training infrastructure and qualified instructors allow training to be conducted 24/7 and to monitor learning progress, with the generation of detailed and summary reports including specific recommendations. More than 1000 drivers go through training each quarter.

Internal clients, represented by the Group Enterprises, are fully satisfied with learning outcomes, which were identified during initialization stage:

- Growth in knowledge and skills levels constitutes 60% and higher;
- 95% of training participants demonstrate score results of 95% after training compared to that of 35% before training;
- Fuel consumption, subject to work season, decreases by up to 30% or $100,000 per month due to improved driving skills;
- Tire consumption also sees a significant reduction of up to 75%;
- As key effect the ability to track greenhouse gas emissions levels, which are reduced by up to 30%.

This experience serves as a successful example where training had a significant impact on both business and environmental challenges and led to the launch of new and complex projects.

See our story here
Eurasian Resources Group (ERG) is one of the world’s leading companies in the mining and metals industry

Global cost competitive industry leader of high-carbon ferrochrome production
- enjoys its highly-competitive first-quartile position on the global aluminum cost curve; one of the world’s most cost-efficient copper and cobalt producers

Diversified and balanced product portfolio
- with the most diversified and balanced product portfolio in ferrous, non-ferrous and energy with integrated mining, processing, energy, logistics, and marketing operations

Operating in 16 countries in Asia, Europe, Africa and Latin America
- one of the biggest employers in the mining industry on a global scale, with more than 80,000 people employed by the Group

Supplying products to over 40 countries
Introduction (2/3)

**ERG Corporate University** is a unified training & development system covering all ERG employees, which promotes leadership in the mining and industry sector and facilitates the Group's transformation tasks:

- **Corporate training**
  - functional academies
  - leadership training & development
  - sessions and conferences
  - Leaders Teach Leaders concept

- **Professional training**
  - Reskilling & Upskilling

- **Mandatory training**
  - HSE
  - Training sites

- **Train simulators**
  - VR / AR
Climate change is a pressing issue of our time and the Group joins the world consensus on the importance and urgency of the decarburization of the global economy. The Group fully supports the global climate change objectives set out in the UNFCCC and the Paris Agreement to keep global average temperature increases well below 2°C above pre-industrial levels.

Our Decarbonization Think Tank in Kazakhstan, which we established in 2021, acts as a decarbonization center of excellence, guides efforts to reduce our carbon intensity and carries out external stakeholder engagement on this crucial issue. Development of a new Climate Change Impact and Adaptation Management Policy fosters a coherent Group-wide approach to sustainability.

Amongst other things, this sets out our commitment to set medium and long-term GHG emission reduction targets, with the aim of achieving net zero emissions in regions with open-pit mining and appliance of heavy-duty dump trucks.

«Ecology is above profit. By developing our own eco strategy, we prioritize maximum decarbonization efforts and the reduction of GHG emissions.»
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THE CHALLENGE
The Challenge

Business Challenge
The current fleet at ERG is equipped with modern heavy mining dump trucks. However, the competency level of the drivers does not always meet the required standards.

ERG Corporate University was involved in the development of the comprehensive program for dump truck drivers aimed at enhancing their skills in high quality and safe operation.

At the development stage, the following expected outcomes of the training strategy were identified:

- Increased competency level of drivers
- Reduced level of fuel consumption
- Reduced level of tire wear

The impact of these factors significantly contributes to the reduction of greenhouse gas emissions and overall environmental pollution during tire disposal.

Environmental Challenge
Transportation is one of the largest sources of greenhouse gas emissions on the planet (16% approx.). The majority of these emissions come from automobiles (11.9%), with airplanes and ships generating 1.9% and 1.7% respectively, and trains contributing 0.4%. Reducing emissions from transportation plays a crucial role in combating global climate change.

Social Challenge
Safety being one of the key values of the Group, a significant attention is given to the professional training of employees who work in hazardous production conditions.

The Project Owner is Sokolov Sarbai Mining Production Association (Rudny city).
THE COMMITMENT
The Commitment

It was necessary to create the environment with minimum difference between real experience and simulator practice.

ERG Corporate University, in collaboration with internal experts conducted a thorough analysis of driver actions and operations, studied the characteristics of dump trucks, researched for common mistakes and issues among drivers, and developed requirements for simulators.

A complex approach to training was developed in the walls of ERG Corporate University, including instructor preparation among experienced drivers of the Group's Enterprises.

Operex participated in the task implementation as part of the partnership.

All Enterprises with quarries actively contribute to shaping requirements and other stages of the process.

Funding was provided by the Project Owner, Sokolov Sarbai Mining Production Association, with the simulator being subsequently transferred to the Corporate University’s balance sheet.

Overall, the project was implemented within 1 year, with 70% of the time dedicated to the development of detailed business requirements.

Due to a high-level analysis and accuracy of requirements, landscapes and visuals have been created that fully replicate the mines and quarries of the Group Enterprises. A distinctive feature of the simulator is the modeling of weather conditions corresponding to the latitudes of the regions it operates in. All levers, control panels, and even the driver’s seat are identical to those of a real dump truck.

“ERG Corporate University is designed to address the Group’s business challenges within the framework of practical work, external challenges, and modern processes, technologies, and methods.”

Valentina Satarova
Director of ERG Corporate University
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THE L&D INITIATIVE
The L&D Initiative (1/6)

Eligibility

Employees with diplomas as heavy-duty quarry dump truck drivers are eligible for the training program.

Training Structure

The dump truck driver training program at the ERG Corporate University has a mandatory component and is part of the main vocational education. The program focuses on acquiring knowledge and developing skills in operating modern quarry dump trucks involved in production, such as HITACHI and Caterpillar.

Training Method and Learning Environment

The training course is conducted in a specifically designated comfortable training room at the ERG Corporate University in Rudny city, with all-day sessions running 7 days a week in 2 shifts.

Training Frequency and Capacity

- Once in a quarter, starting from 2024
- Up to 2 individuals can undergo training simultaneously, rotating every 20-30 minutes.

Training Facilitation

Two experienced instructors involved in the training process:

1 – controls for the correct operation of the equipment and sets up the necessary training scenarios and modes
2 – conducts training and provides guidance to the trainees
## The L&D Initiative (2/6)

### Module 1. Theoretical training at ERG Corporate University, 56 hours

2. General Information about the Quarry and its Modifications
3. Structure of Quarry Dump Trucks and their Modifications
4. Operation of Quarry Dump Trucks and their Modifications
5. Technical Maintenance of Quarry Dump Trucks and their Modifications
7. Theory Exam

### Module 2. Practice on the train simulator at ERG Corporate University, 12 hours

1. Entrance Test on 6 scenarios (practice-based)
2. Training within the following 6 scenarios:
   - Startup and muting
   - General driving
   - Brake system check
   - Under excavator loading
   - Unloading into bunker
   - Full cycle
3. Final test on 6 scenarios (practice-based)

### Module 3. On-the-job training, 2-14 working days

1. Assignment to an experienced driver as a mentor
2. Practice-based exam
3. Issue of the permission to work independently
The train simulators feature a modular design consisting of two main components: the base unit and the simulated equipment module. The modular construction principle allows for easy and quick (within 3 minutes) switching of the train simulator from one machine model to another, enabling drivers to navigate the specific model of a dump truck they are to operate.

**Modular Architecture**

**Original Control Elements**

The standardized modules accurately replicate the original operator's workstation of the simulated equipment, including the instrument panel and control elements made from original components.
The train simulator is equipped with a virtual replica of the actual operating site where dump trucks are operating. The trainer recreates the work environment encompassing all technological operations in accordance with current safety requirements. Such virtual copies have been created for all major quarries of the Group. This enables drivers to adapt more quickly to real work environment as they can practice all necessary routes on the simulator.

“Training on the simulator closely resembles all transportation tasks at the workplace – same cabin view, same routes, same challenging sections of the route”

Marat Seilkhanov
A truck driver

Figure 5. Virtual ERG Quarries
The L&D Initiative (5/6)

Training Progress Indicators

From 2021 to 2023, a total number of 1200 heavy-duty dump truck drivers went through training, with more than 3200 training courses conducted. Starting from 2024, the training frequency has been switched to a quarterly basis, reaching over 1000 participants.

Knowledge & Skills Assessment

To evaluate the learning outcomes, testing is conducted before and after the training session covering 188 types of operations. The system tracks actions of each driver and the quality of its’ execution.
After each training session using 5DT simulator, a detailed and comprehensive report is generated for all 188 performed operations in both short and full versions, including:

- Record on the trainee and instructor
- Exact start and end times of the assessment and training
- List of errors made

Overall assessment of the driver’s preparation level, his/her strengths and areas for development, as well as response reaction to simulated emergencies and abnormal situations

Key indicators of safe and efficient operation, fuel consumption, cycle time, and any other parameters that can be recorded by the simulator
The Impact

The implementation of the project has reached the following effect and results:

Increase in readiness level

60%

Growth in knowledge and skills with test scores of 90-100% increased by 60% in 2023 (pre-training score test – 35%, post-training score test – 95%). In addition, 25% of participants showed results at the 0-50% level before training, whereas after training, all results demonstrated improvement.

Decrease in fuel consumption

30%

Drivers who went through training can potentially save up to 16 liters of diesel fuel per ore delivery transport cycle, and up to 96 liters of diesel fuel per shift. In total, this translates into fuel savings of up to 30% or $100,000 USD per month, depending on the work season.

Reduction in tire consumption

70%

As a result of improved training skills, there was significant saving in consumption of dump truck's tires:

• 5% of training participants achieved testing results of 70-90% across 188 operations;
• 95% of training participants achieved results of 90-100%.

The impact of these factors has significantly reduced greenhouse gas and other emissions during tire disposal in dump truck operation.

Vitaliy Gupalov
Head of Auto column №3 “SSGPRO” JSC

“The assessment methodology of the training effect fully meets our expectations. We not only see the specific effect of driver actions but also can track fuel consumption in real-time, thereby controlling the volume of exhaust gas emissions. We see a direct link between staff competency level, which impacts our business and the environment”.

Increase in readiness level

60%

Decrease in fuel consumption

30%

Reduction in tire consumption

70%
Reflections

Initially, the project addressed one of the business challenges, the solution method of which was not entirely obvious.

However, the achieved effects have demonstrated the real impact of the quality, methods, and approaches to training not only on the Enterprises’ economy but also on the environmental agenda, which is critical for the global community.

The following project has become a successful example of interaction between business and the Corporate University, where every aspect matters:

- Business objectives and participant roles have been clarified
- Approaches and expected effects have been determined
- A clear project design has been formulated including its’ stages, timeline, checkpoints, and solutions
- Comprehensive expert work has been conducted, and full participation of stakeholders has been ensured
- The implementation of the solution has been thoroughly planned and prepared

Furthermore, the project results have spurred the business to initiate and participate in the implementation of new projects related to staff training, increasing engagement in creating initiatives in this area.

To support this, the Corporate University significantly strengthened its educational infrastructure, implemented the project's experience into the training methodology, and substantially updated the system and approach to training and preparation of instructors.

Currently, ERG serves as a benchmark for progressive training methods in the mining sector in Kazakhstan.
The Teams

Project Owners and Experts

Sergei Napolskih
CEO, SSGPO JSC

Nurlan Sarinzhipov
Director, Kachary Ruda JSC

Manarbek Nurmagan
Director, Krasno-Oktaybrskoye bauxite mining unit (Aluminium Smelter)

Yuriy Lichman
Director, Vostochny open pit coal mine (Eurasian Energy Corporation)

Sergei Kim
CEO, Shubarkol Komir JSC

Akmaral Naizabekova
Chief Human Resources Officer, Eurasian Resources Group

Timur Taigambayev
HR Director, SSGPO JSC

Nikolay Mikhailov
Head of Transport Unit, SSGPO JSC

Alexander Bondarenko
Head of Occupational Health and Safety, SSGPO JSC

Sergei Kuzmenko
Head of Production, SSGPO JSC

Corporate University

Valentina Satarova
Director, ERG Corporate University

Ruslan Ismukhabetov
Director of Regional Infrastructure and worker training

Irina Tsenner
Expert-coordinator

Nurlan Mukhamedzhanov
Training instructor

Aibol Khazhanov
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