



DECARBUST: Reducing Emissions from Quarry Blasting



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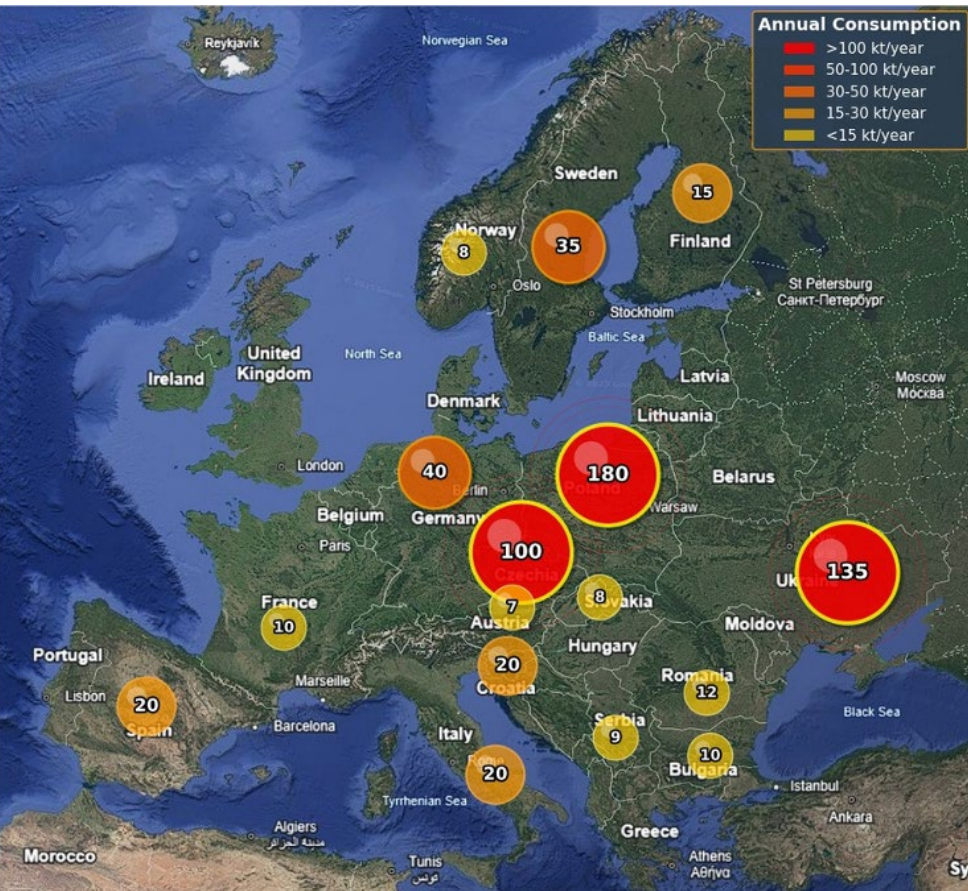
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THE INVISIBLE THREAT: HOW MINING OF EUROPE POISONS 500 MILLION PEOPLE EVERY DAY



USE OF THOUSANDS OF TONS OF EXPLOSIVES IN 2024:

- ▶ World consumption **11200**
- ▶ Europe, excluding Ukraine **630**

CONSEQUENCES FOR EUROPE:

477 677 tons of toxic dust into the air

26 279 tons of carbon monoxide

1,6 trillion - losses from air pollution in Europe

But what if there was a solution that could reduce these emissions by 60-70 % and save €345 million annually?




“A Ukrainian innovation that could change European mining”






FAILURE OF TRADITIONAL SOLUTIONS

Why don't modern technologies work?

Standard methods

-  Water Hydrokillers
-  Pre-wetting
-  European Reagents

Results

-  Maximum 45% dust reduction
-  0% impact on gas emissions
-  Increasing environmental fines

Consequences

- €24.5M annual CO₂ fines
- Growing regulatory pressure
- Threat of quarry closures

Europe needs a new generation of solutions



FAILURE OF TRADITIONAL SOLUTIONS



DURING MASS EXPLOSIONS IN QUARRIES:





- ▶ From 0.027 to 0.170 kg of dust per 1 m³ of rock mass

- ▶ Annual volume of mining in the quarry is 13,000 thousand m³

- ▶ The average iron ore quarry in Kryvyi Rih (Ukraine) generates 5-10 percent of CO emissions

**Humate reagent:
Technology from the front for Europe**

UKRAINIAN SOLUTION

-  Biodegradable product
-  European Green Deal
-  Complete solution: dust+gases
-  Scalable beyond quarries:
volcanoes, dust storms, wildfires

- ✓ 9 contracts with mining giants
- ✓ 5 years of successful use
- ✓ 3 patents + 7 Scopus publications
- ✓ The only manufacturer in the world



A technology born out of necessity is poised to change Europe

LABORATORY EXPERIMENT



EXPLANATION OF THE EXPERIMENT

This video shows the process of water interacting with car exhaust gases and the Humate reagent we developed. As we can see on the gas analyzer, gas emissions have decreased significantly

CONFIRMATION OF A SCIENTIFIC HYPOTHESIS

Alkaline solutions of humates are capable of absorbing carbon monoxide by chemisorption, as confirmed by a significant exothermic effect

HOW IT WORKS

Three steps to a clean explosion



Step 1: Preparation

Compacted soil
with humate reagent

Pre-moistening
of the block

Result: -30% emission



Step 2: Explosion

External + internal hydraulic
fracturing Humate reagent
in polyethylene sleeves

Result: -53% dust,
-63% Carbon Monoxide (CO),
-55% Nitrogen Oxides (NO₂)



Step 3: Chemisorption

Alkaline humate solutions
absorb CO

Exothermic reaction

Result: Clean air

EXPERIMENTAL EXPLOSION IN A QUARRY



This is a video from an experimental explosion in the Rudomine LLC quarry, where the polyethylene sleeves of the left part of the block are filled with a European dust suppression reagent, and the right part of the blocks implemented according to the technology we developed with filling the sleeves with a Humate reagent

1200kg of explosives = 138 kg of dust →
65 kg of dust

The result is visible to the naked eye

OUR PARTNERS SINCE 2019



PJSC “Northern Gok”; PJSC “Inguletsky Gok”;
PJSC “Central Gok”



ArcelorMittal

The company`s quarries in Kryvyi Rih No. 3 and 2-bis



“Southern” and “Northern” quarries in Kryvyi Rih



ECONOMIC IMPACT:

€345.7 million in annual savings for Europe

AT THE ENTERPRISE LEVEL:

ROI: 1.5% cost reduction,
€833 savings per ton of explosives,
Fast payback- 2-3 years

ECONOMIC ASPECTS:

Healthcare: €200.4 M (58%), CO₂
payments: €155.2 thousand (0.05%),
Operating expenses: €145.1 M (42%)



TOP 5 BENEFICIARY COUNTRIES:

-  Poland €86.9 M/year,
-  Czech Republic: €48.3 M/year,
-  Germany €19.3 M/year,
-  Sweden €16.9 M/year,
-  Italy €9.7 M/year

EVERY TON OF EXPLOSIVES =
€833 PROFIT FOR THE ECONOMY:

Not an environmental expense,
but an investment in profitability



SCALING PLAN

From Ukraine to Europe: Roadmap for 3 years
€2,5 million investment → €15 million ARR by 2028

▶ **2026 - Phase 1: Validation**

Pilot projects in Poland and Czech Republic, EU certification,
Target market: 50,000 tons of explosives

▶ **2027 - Phase 2: Expansion**

Production facilities in the EU,
Partnership with local distributors,
Target market: 200,000 tons of explosives

▶ **2028 - Phase 3: Domination**

30% of the European market, IPO-ready company,
Target market: 500,000 tons of explosives

**Key
partners**

METINVEST - Strategic Partner,
ArcelorMittal - Reference customer,
EU Green Deal - Regulatory Support

Goal:

Scale from **TRL 7** → **TRL 9**

Expand to EU mining

GLOBAL IMPACT

Changing the world starts with one technology

Global potential:

11.2 million tons of explosives annually,
Potential savings: €9.3 billion/yea

Environmental impact:

1Lives saved: 50.000+ annually,
Cleaner air: for 2 billion people,
CO₂ reduction: 2.8 million tons/year

Top features:



USA: €2.8 billion potential



China: €1.8 billion potential



Brazil: €800 million potential

*Ukrainian technology could become
the new standard in global mining*



JOIN THE ECOLOGICAL REVOLUTION

What we offer:

- ▶ Investment opportunity:
 - €5 million to scale
 - 5x ROI in 3 years
 - Exit via IPO or M&A
- ▶ Partnership:
 - Technology Licensing
 - Joint Ventures
 - EU Distribution
- ▶ Social mission:
 - Supporting Ukrainian innovation
 - Contributing to the EU Green Deal
 - League for future generations



PROJECT TEAM



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Location

Kryvyi Rih, Ukraine

*Time to act. The planet cannot wait
Together we can make mining clean*

