THE AUSTIN ADVANTAGE

OPTIMIZING UNDERGROUND BLASTING AT AN AUSTRIAN GYPSUM MINE

GENERAL **INFORMATION**

Location: Austin Powder Austria

Industry: Gypsum Mine

Products Used: Emulex 1 & Emulex 2

Project Lead & Author: Pierre Lossau, Head of Blasting Servcies

THE **HISTORY**

Austin Powder has been supporting mining and quarrying operations in Austria and across Europe with safe, innovative blasting solutions for decades. In the vicinity of Salzburg, an underground gypsum operation—producing more than 100,000 tonnes annually, with 5,000–10,000 tonnes sourced underground—sought to optimize its blasting practices. Historically, this mine relied heavily on dynamite and worked with multiple suppliers to meet production demands.

In 2011, initial open-pit trials with Austin Powder did not deliver conclusive results. However, by 2023, renewed testing - first using different dynamite products and later using Emulex 2 demonstrated the potential of Austin's technology to overcome geological challenges and improve blasting outcomes. This success laid the groundwork for an underground transition in 2024.

THE **GOALS**

1. Supplier Transition: Move blasting services to Austin Powder with consistent and reliable results.
2. Product Transition: Replace dynamite with emulsion products to reduce fumes while maintaining or improving performance.
3. Optimization: Achieve similar or improved advance per round while reducing explosive consumption (previously ~145 kg/round).

CUSTOMER **CHALLENGE**

The gypsum mine faced several operational difficulties:

- Variable Geology: The presence of both gypsum and anhydrite layers demanded flexibility in product selection and blast design.
- Dynamite Dependence: Dynamite created fume issues underground, leading to operational inefficiencies and safety concerns.
- Inconsistent Results: Past trials with alternative products had failed to deliver repeatable performance.
- Production Pressure: Management required reliable rounds with consistent depth, minimal overbreak, and optimized powder factors to sustain annual output targets.

The mine's leadership needed a partner who could methodically test, adapt, and implement new solutions without disrupting production.

THE **AUSTIN** SOLUTION

Austin Powder Austria deployed a step-by-step, collaborative approach led by Pierre Lossau and the Blasting Service team:

1. Baseline Assessment: Existing blast parameters were recorded (planned vs. real) to establish a benchmark.
2. Controlled Transition:
   - Step 1: Substitution of dynamite products to confirm comparability. Result: same performance with both products.
   - Step 2: Introduced Emulex series emulsions (C 25/1000, 1 35/700, 2+ 35/700) and validated with Paradigm blast simulation before field trials.
3. Iterative Optimization:
   - Initial Emulex C rounds achieved only 60% round depth.
   - Switching to Emulex 2 and Emulex 1 delivered 78–95% depth consistency.
   - Product choice was matched to geology: Emulex 2 for gypsum, Emulex 1 for anhydrite.
4. Customer Involvement: All changes were made with customer input, ensuring trust and transparency in the process.

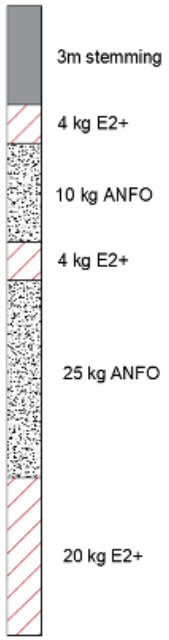

Fig. 1: surface blast: new Column for gypsum/anhydrite geology

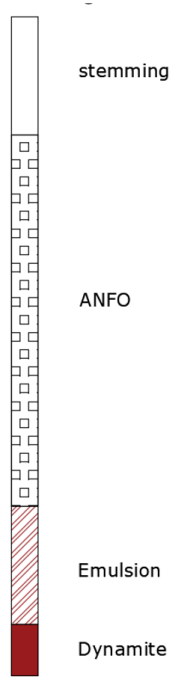

Fig. 2: surface blast: old Column

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THE **OUTCOME**

Through a collaborative, data-driven approach, Austin Powder Austria assisted the Salzburg-area gypsum mine in transitioning from dynamite to modern emulsion explosives. By leveraging Paradigm simulation, stepwise testing, and tailored product application, Austin ensured reliable production, reduced environmental impact, and strengthened its partnership with the customer.•

Successful Transition: The mine achieved consistent blasting results after switching from dynamite to Austin emulsions.

- Geology-Specific Optimization: Performance improved by tailoring Emulex types to rock conditions, delivering +3% efficiency with Emulex 1 and 2 in the respective rock types.
- Reduced Fumes: The switch to emulsions significantly improved underground air quality and working conditions.
- Customer Satisfaction: The mine expressed strong satisfaction with results and ultimately halted further optimization, as goals had been met.
- Future Potential: Although drill pattern and ignition plan optimization were postponed, Austin Powder established itself as a trusted partner, with room to further refine blasting efficiency in the future.

This case exemplifies Austin Powder's commitment to safe, efficient, and customer-focused blasting solutions.

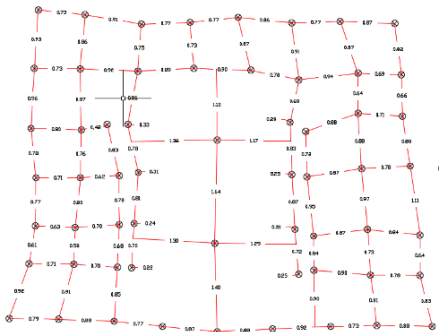

Fig. 3: Pattern underground: collar positions with IMAGE TRACER and AUTOCAD based on Fig.5

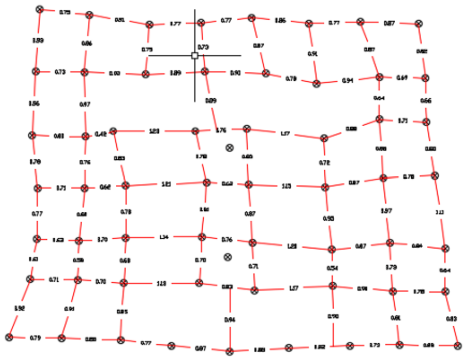

Fig. 4: Pattern underground: bottom positions with IMAGE TRACER and AUTOCAD based on Fig.5

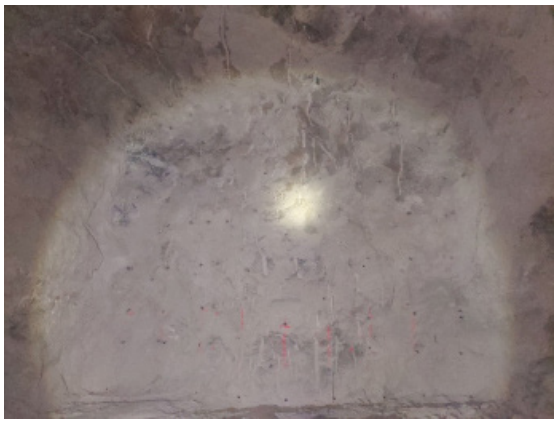

Fig. 5: Pattern underground: drilled face as basis for IMAGE TRACER and AUTOCAD

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Fig. 7: Loading column underground: Top – dynamite with stemming, Bottom – packed emulsion without stemming

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