



BIP-O₂ Breaker®

REGISTERED TRADEMARK · MINISTRY OF LAW RI

● COMPANY PROFILE · 2026

O₂ ROCK SPLITTER · GAS-ENERGY ROCK-BREAKING SYSTEM

Break hard rock, without conventional explosives.

Liquid-oxygen energy breaks rock from inside the borehole — controlled hole by hole, precise, and environmentally friendly.

01

**33–80%
savings**

BLASTING COST

02

**Faster
permits**

PERMITTING PROCESS

03

Near-zero risk

WORKPLACE ACCIDENTS



PRESENTED BY

PT. Bangun Ibu Pertiwi

Licensed drilling & blasting contractor · since 2018.



SUBSIDIARY · ROCK-BREAKING SERVICES

PT. Bangkit Putra Pertiwi

Field operator of O₂ Rock Splitter rock-breaking services — from mobilization and supervision through fragmentation review.



— CONTENTS

Inside this booklet.

A complete profile of O₂ Rock Splitter by PT Bangun Ibu Pertiwi — technology, advantages, field evidence, and the path to partnership, all in one document.

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COMPANY PROFILE

Licensed explosives experts — now offering a **non-explosive alternative.**

PT. Bangun Ibu Pertiwi is a **commercial explosives** services company — procurement, blasting services, drilling & blasting, storage, and permit handling for general mining. On that foundation of expertise, we introduce **O₂ Rock Splitter**, a more controlled alternative for breaking rock.

2018 YEAR FOUNDED	2019 INDONESIAN BLASTING- SERVICES LICENSE	450_{Ton} AN STORAGE CAPACITY	P1·P2·P3 OFFICIAL NATIONAL POLICE PERMITS
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AREAS OF WORK

01 ·
CONTRACTOR**Drilling & Blasting**

Drilling & blasting contractor for general mining.

02 ·
PROCUREMENT**Mining Explosives**

Procurement of explosives for specific mining needs.

03 · STORAGE

Explosives Warehouses

Construction & management of explosives warehouses to official standards.

04 · EXPERTS

Blasting Specialists

Provider of experienced shot-firers & blasting specialists.

“BIP is not only a supplier — we are a solution partner.”

CORE VALUES

INTEGRITY · COMMITMENT
VISIONARY · RATIONAL



— VISION & MISSION

Company direction & the O₂ Rock Splitter line.

01 PT BIP · CORPORATE

VISION

To become the **best and most trusted** company in the explosives industry, with an integrated line of business.

MISSION

- Support government programs & national development.
- Create jobs & a skilled, competitive workforce.
- A healthy work climate in harmony with people and the environment.

02 O₂ ROCK SPLITTER LINE

VISION

A more **controlled, safe & adaptive** rock-breaking solution for the mines & infrastructure of the future.

MISSION

Delivering O₂ Rock Splitter not merely as a product but as a **field-application solution** — helping clients understand, trial & adopt an alternative method safely, realistically & measurably.

APPROACH

O₂ ROCK SPLITTER LINE

01 Understand > **02** Trial

> **03** Adopt



— LEGALITY & PERMITS

Fully licensed — official National Police permits.

Every aspect of BIP's business — management, storage, purchase, and use of explosives — runs on complete, verified official permits.

P1

Surplus-Use Permit

Field use of surplus explosives.

P2

Purchase & Use Permit

Purchase and use of commercial explosives.

P3

Ownership & Storage

Ownership, control & storage of explosives.

+ PERMIT

Explosives Warehouse Permit

NATIONAL POLICE HQ

+ RECOMMENDATION

Explosives Management Services

BUSINESS ENTITY · NATIONAL POLICE HQ

+ RECOMMENDATION

Commercial Storage Services

BUSINESS ENTITY · NATIONAL POLICE HQ



REGISTERED TRADEMARK

BIP-O₂ Breaker®

The “BIP-O₂ Breaker” brand name and logo are registered with the **Directorate General of Intellectual Property (DJKI), Ministry of Law of the Republic of Indonesia** — protecting the mark and the O₂ Rock Splitter product line from unauthorized use.

AMMONIUM NITRATE WAREHOUSE

450_{Ton}

Storage capacity in **Benangin I Village**, Teweh Timur District, Barito Utara Regency, Central Kalimantan.

STORAGE CLIENT

Trusted by **PT Bharinto Ekatama** for leasing a licensed explosives warehouse (No. 042/2023).



— CHALLENGES

Breaking rock at Indonesian mines today is **not simple**.

Four key barriers every mine operator faces when using conventional blasting methods.

01 REGULATION & PERMITS

Complex permits, long queues.

- IUP, annual RKAB, reclamation & post-mining obligations
- Explosives permits mean **months** of waiting

02 OCCUPATIONAL SAFETY

Physical risk & high insurance cost.

- Rock fragments, blast vibration, toxic gases (SO₂, CO)
- High insurance premiums & **strict compliance**

03 ENVIRONMENT & SOCIAL

ESG pressure & community resistance.

- ESG & decarbonization demands from global investors
- Community opposition **near settlements**

04 OPERATIONS & SUPPLY

Fragile supply chain, limited workforce.

- Cost swings & supply disruptions for imported explosives
- Limited infrastructure & **skilled labor** at remote sites



— WHAT IS O₂ ROCK SPLITTER?

Splitting rock from **within.**

A rock-breaking technology that harnesses the expansion of **liquid oxygen (LOX)** inside the borehole — not a conventional explosive reaction.

800×

LOX-TO-GAS VOLUME EXPANSION

-183°C

LIQUID-OXYGEN TEMPERATURE

■ MYTH VS FACT

FIELD DATA & TECHNICAL SPECS

× MYTH Gas expansion isn't strong enough for hard rock.

✓ FACT Breaks hard rock through **static expansion pressure**, not impact.

TESTED ON ROCK UP TO 250 MPA UCS

× MYTH Just as dangerous as explosives.

✓ FACT Gas energy is released **slowly & directionally**, not an instant blast.

DEFLAGRATION, NOT DETONATION

× MYTH Its permitting is as complex as explosives.

✓ FACT BIP runs a **separate O₂ Rock Splitter warehouse from its ANFO warehouse** — both licensed by the National Police.

WAREHOUSE PERMIT · NATIONAL POLICE



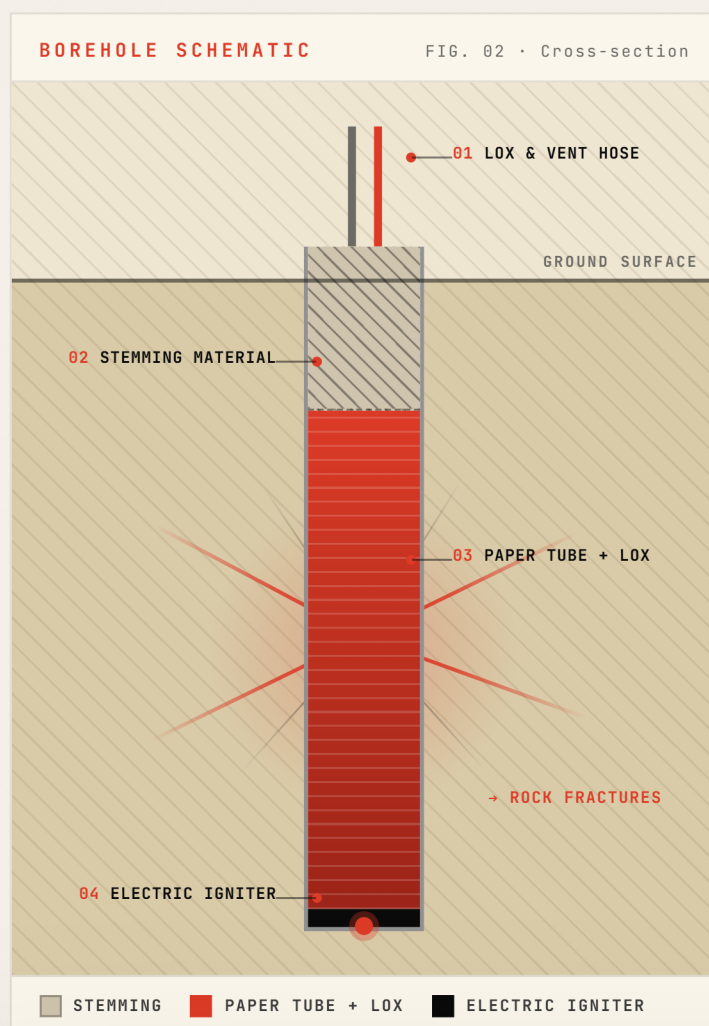
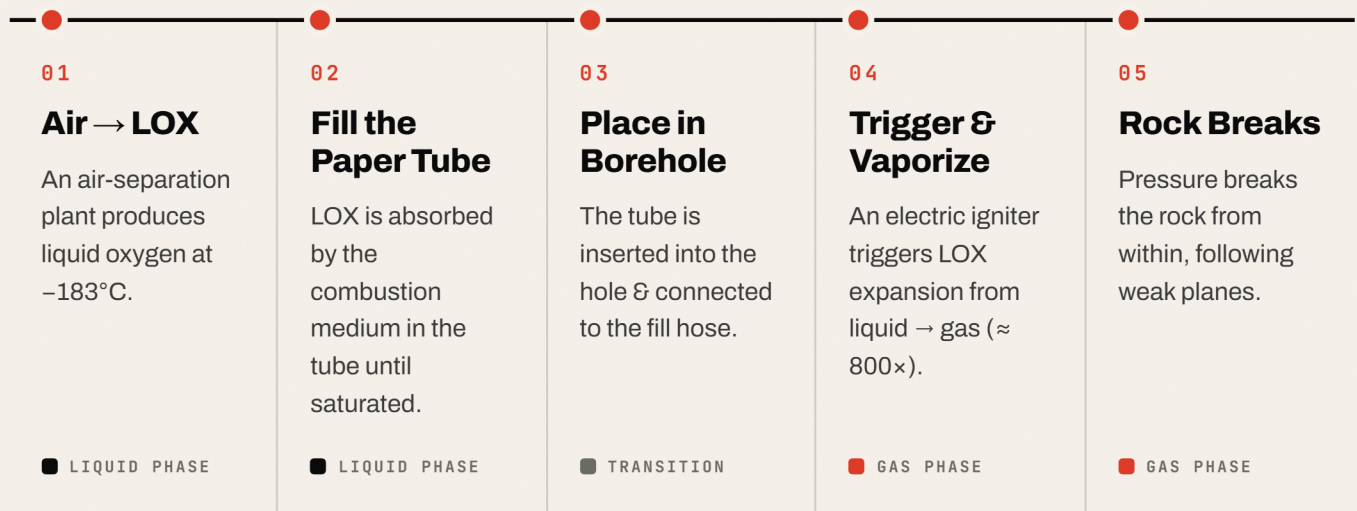
FIG. 01 · ROCK-BREAKING OPERATION SITE



— TECHNICAL PRINCIPLE

How it works, in **five steps.**

From compressed air to controlled rock breaking inside a sealed borehole — via liquid oxygen (LOX) expanding into gas up to **800×** its original volume.



S

SolidFrozen oxygen · reference -218°C

L

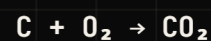
Liquid · LOXStored & filled into the tube · -183°C

G

GasExpands $\sim 800\times$ → breaking pressure

— COMBUSTION REACTION

PRIMARY

**+94** kcal/g

SECONDARY

**+58** kcal/mol

HEAT FROM BOTH REACTIONS **VAPORIZES THE LOX** → GAS EXPANSION → PRESSURE BREAKS THE ROCK FROM WITHIN.



EQUIPMENT COMPONENTS

Two core components. One reusable, one consumable.

The tank fills liquid oxygen into the paper tube; the tube is then inserted into the borehole. One unit is used **repeatedly**, the other is **spent every hole**.

COMPONENT 01

∞ REUSABLE

Gas Filling Tank 500 kg



LOX FILLING UNIT

DIMENSIONS
820×2100
mm

PRESSURE
334 psi

PROTECTION
Dual

FUNCTION

Storage & supply of liquid oxygen (LOX); the primary source fed to all distribution components.

COMPONENT 02

1× CONSUMABLE

Paper Tube combustion medium



READY-TO-USE BUNDLE

LINER
Waterproof

CONTENTS
Combustion medium

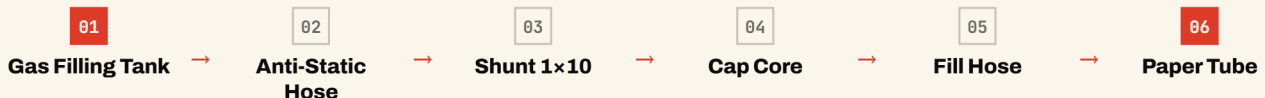
USAGE
1× / hole

FUNCTION

Holds LOX, inserted into each borehole; burns in a controlled way to break rock from within.

ROCK-BREAKING SYSTEM FLOW

TANK → DISTRIBUTION → BOREHOLE



BIP O₂ ROCK SPLITTER EQUIPMENT SYSTEM

12 components, one **LOX** distribution line.

One LOX distribution line, from source tank to paper tube. Each component is grouped by function — and the entire delivery line is designed **anti-static** for liquid-oxygen safety.

01

**Gas Filling Tank**

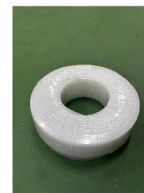
500 kg LOX tank & supply

02

**Special Tools Launcher**

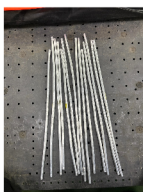
Electric activation trigger

03

**Gas Delivery Pipe**

LOX fill hose to tube

04

**Metal Hose**

Aluminum pipe ±40 cm

05

**Anti-Static Hose**

LOX line, tank to shunt

06

**Welding Connector**

Joins tee & braided hose

07

**Anti-Static Connector**

Joins braided hoses

08

**Anti-Static Tee**

Splits flow to fill hoses

09

**Anti-Static Pass-Through**

Joins cap cores

10

**Shunt 1x10**

Splitter pipe, LOX to each tube

11

**Special Tools Reamer**

Flares aluminum pipe ends

12

**Cap Core**

Aluminum pipe to shunt

— WHY O₂ ROCK SPLITTER

More economical, safer, greener — proven head-to-head.

Rp16 K/m ³ 33-80% COST SAVINGS	1/5 VIBRATION VS CONVENTIONAL	H₂O+CO₂ ZERO TOXIC GAS	Regular cargo NO CONVENTIONAL EXPLOSIVE PERMIT
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ASPECT	✗ CONVENTIONAL EXPLOSIVES	✓ O ₂ ROCK SPLITTER SYSTEM
Cost per m ³	✗ Rp24,000 – Rp48,000	✓ Rp16.000
Safe Distance	✗ Evacuation zone of hundreds of meters	✓ Just 100 meters
Vibration & Shock Wave	✗ Strong — risky to surroundings	✓ Just 1/5 — minimal
Toxic Gas	✗ SO ₂ , CO & hazardous gases	✓ Only H₂O + CO₂
Rock Fragments (Fly- rock)	✗ Thrown far	✓ ZERO with proper stemming
Permits & Transport	✗ Complex, police-permitted transport	✓ REGULAR CARGO



— SAFETY & ENVIRONMENTAL COMPLIANCE

Safe for workers. Safe for the environment.

01 SAFETY FEATURES

ZERO

explosives · civil
detonants — no
risk of accidental
detonation

- LOX is filled via **in-hole** technology — no direct operator contact
- Independently **third-party tested**

02 ENVIRONMENTAL BENEFITS

H₂O

+

CO₂

the only
by-products

- Green method — **no toxic by-products**
- Low vibration — suited to **sensitive areas**

THIRD-PARTY TESTING

Changjiang Academy of Sciences · China

Water shock waves from O₂ drilling measured against standard emulsion explosives.

-86% SHOCK WAVE
VS EMULSION
EXPLOSIVE





— DESIGNED FOR INDONESIA

Built for the terrain, climate & regulations of **Indonesia**.

Operating across more than **17,000 islands** demands an adaptive method. O₂ Rock Splitter is built for tropical field realities — not a forced-fit imported technology.

01

Tropical Climate

The paper-tube liner **enables operation in water-filled holes**. No rainy-season downtime. Temperature -40°C to +40°C.

02

Dense Communities

Many mines sit near villages & rainforest. **Vibration 1/5 of explosives** protects nearby structures, schools & communities.

03

Simplified Permitting

Explosive permits can take **months**. The O₂ system = regular cargo, no explosive permit — simple reporting.

04

Archipelago Logistics

Shipped **by container via sea freight**. No hazardous-goods complexity. Normal port customs.

05

Workforce & Training

Local operators can be **trained in 1–2 weeks**. Protocols follow Indonesian mining OHS standards.

06

Standards Compliance

Meets **pressure-vessel standards**. Documentation per police requirements. Standard operational reporting.

One system that fits Indonesia's field realities — from rainy season to mines near settlements.

TROPICAL-CLIMATE READY
1-2 WEEK TRAINING
NO CONVENTIONAL EXPLOSIVE
PERMIT



CASE STUDIES & REFERENCES

Proven in the field, **in Indonesia.**

01

COAL · RIAU

PT Manunggal Inti
Artamas



ACTIVE PROJECT

HOLE DIAMETER **90 mm · 5"**

PERMIT TIME **2 weeks**

COMMUNITY COMPLAINTS **Zero**

OUTCOME

Approved quickly and ran smoothly with no complaints from nearby residents.

02

ANDESITE · UNGARAN

CV Jati Kencana
Beton



SUCCESSFUL TRIAL

HOLE DIAMETER **90 mm · 4"**

TRIAL STATUS **Passed**

INTEREST FROM OTHER MINES **High**

OUTCOME

Became a local reference that drew interest from other mines to adopt it.

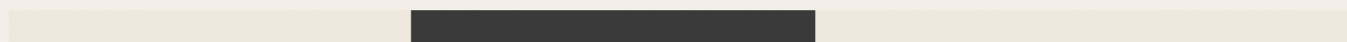


— COST ANALYSIS & ROI

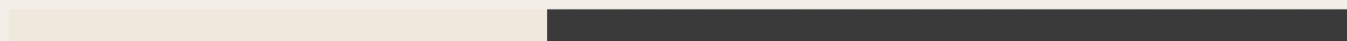
Save **33–80%** in cost per m³ vs conventional methods.

COST PER M³ • METHOD BENCHMARK**Conventional Explosives** ●●●

Rp24–48K

**Mechanical Breaking** ○●○

Rp32–80K

**O₂ Rock Blasting** ○○○ **MOST ECONOMICAL****Rp16K**

RP0

↓ MORE ECONOMICAL

RP80K

PERMIT • OHS • ENVIRONMENTAL IMPACT: ● HIGH ● MEDIUM ○ LOW

[A] COST

Rp16K/m³Demolition O₂ vs
Rp19,000–48,000/m³
conventional.

[B] BREAKING POWER

+50–150%Higher — better
fragmentation of hard
rock.[C] FLY-ROCK &
VIBRATION**ZERO.**Safe for areas near
settlements.

ROI SUMMARY

40%

LOWER CAPEX

12–18_{mo}

PAYBACK PERIOD

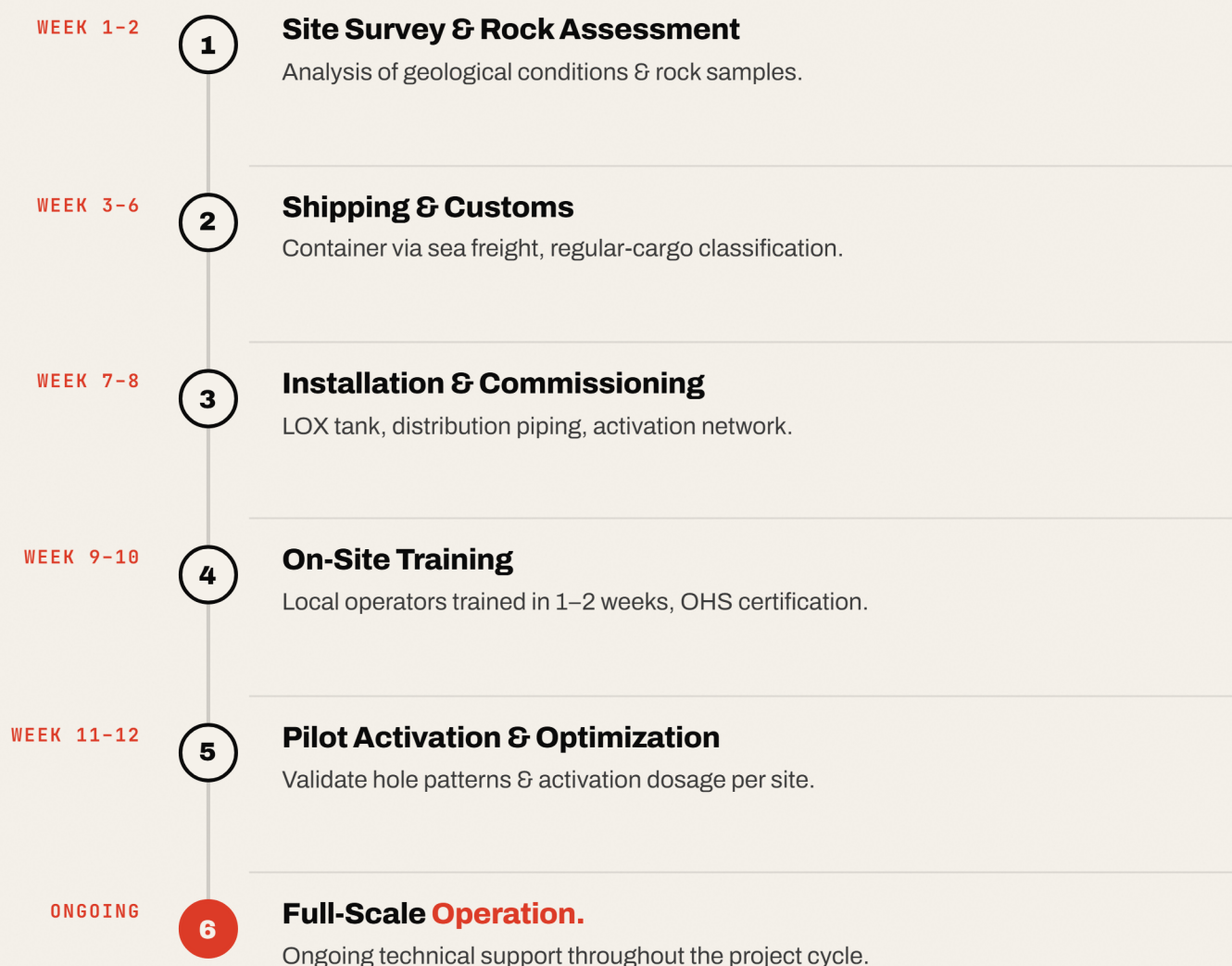
Simpler permitting — stemming paperwork is far
lighter than for a conventional blasting-rig fleet.



— IMPLEMENTATION ROADMAP

From survey to full operation in **12 weeks.**

Six phases, one point of contact. Manufacturer technicians are available for training, commissioning & technical support throughout the project cycle.



— FIELD NOTE

One point of contact, from survey to full operation.

Technicians from **PT Bangkit Putra Pertiwi (BPP)** — BIP's rock-breaking services subsidiary — are available for training, commissioning & technical support across the project life cycle. The next page details the full service scope.



— BIP SERVICE SCOPE

End-to-end solution, **one point of contact.**

BIP provides a complete solution from materials and briefing through results evaluation — not just equipment supply.

01

MATERIAL

O₂ Rock Splitter Materials

Supply of LOX tank, paper tube, shunt, anti-static hose & all breaking components — ready to operate on site.

02

BRIEFING

Technical Application Briefing

A thorough explanation of working principles, operating procedures, and application parameters before mobilization.

03

FIELD

On-Site Support

Hands-on technical support during operation — ensuring the site team is confident using the system.

04

SUPERVISION

Installation Supervision

The BIP team oversees unit installation, paper-tube assembly, & LOX filling until every connection is secure.

05

COORDINATION

Coordination with the Site Team

Syncing schedules, OHS, and field communication with mine engineers, blasters, & HSE.

06

EVALUATION

Application Results Review

Post-activation review: fragmentation, vibration, breaking results — input for optimizing the next cycle.

SCOPE OF RESPONSIBILITY

Drilling patterns and area work plans remain subject to the standards and technical direction of **the mine**. BIP acts as the technical application partner for O₂ Rock Splitter, not as the mine operator.



— HOW TO GET IT & ROCK-BREAKING SERVICES

Three ways to partner.

Use O₂ Rock Splitter directly from us, hand the breaking work to our subsidiary, or obtain it through our official distributor network — all coordinated through a single point of contact at PT BIP.

01

DIRECT

Product Line & Support

Supply of the complete O₂ Rock Splitter unit with **briefing, installation supervision, and field support** directly from PT Bangun Ibu Pertiwi.

- MATERIALS & DIRECT SUPPORT

02

BREAKING SERVICES

Full Breaking by BPP

Prefer not to operate it yourself? The breaking work is carried out by our subsidiary, **PT Bangkit Putra Pertiwi (BPP)** — coordination stays **single-point through PT BIP**.

- DELIVERED BY BPP, ONE POINT AT BIP

FULL SERVICE

03

BUY

Official Distributor Network

O₂ Rock Splitter is also available through our **official distributor partners** across operating regions.

- 5 REGIONAL DISTRIBUTORS

■ OFFICIAL DISTRIBUTOR NETWORK

5 PARTNERS

CV	CV	PT	PT	PT
				
Plantamor	Jati Kencana Beton	Cakra Tatalintas Buana	Indosukses Sarana Utama	Power Drilindo

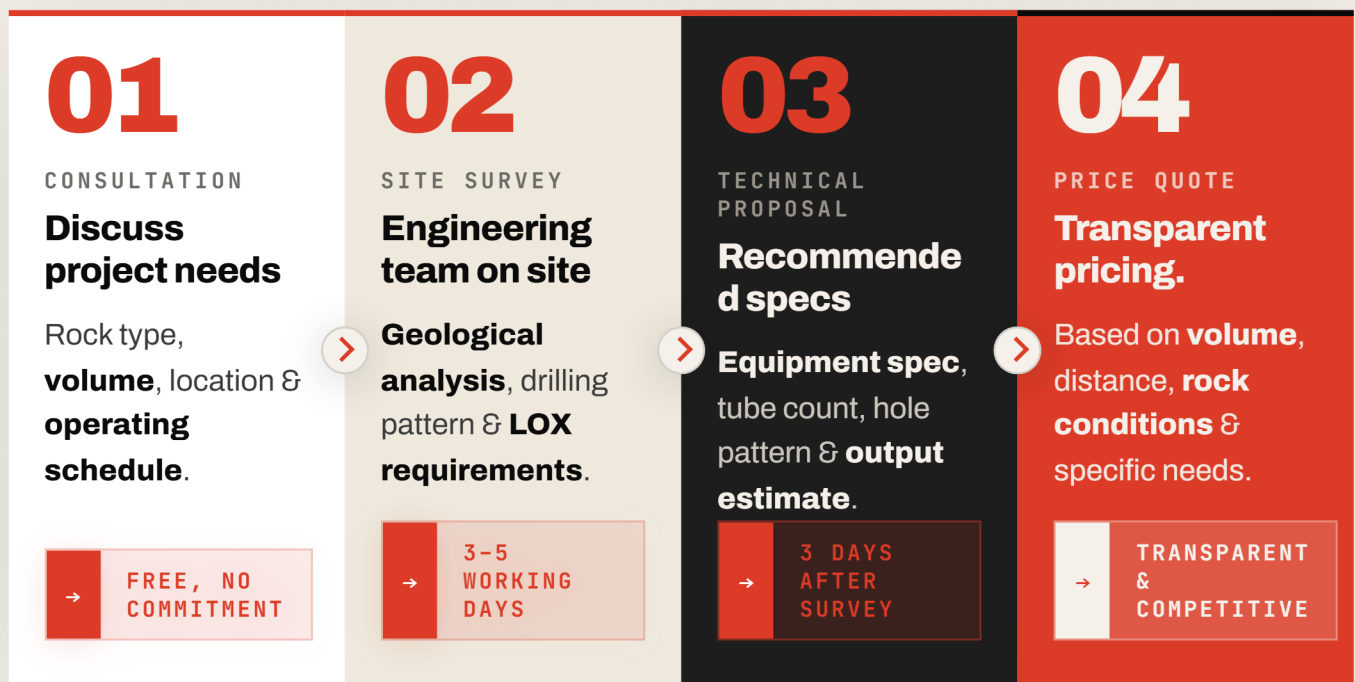
- We also **supply O₂ Rock Splitter materials for our distributors' projects** — one shared supply chain across all operating regions.



— QUOTATION PROCESS

Four steps from discussion to a price quote.

Every quote is tailored to specific needs. We analyze site conditions first, before setting a price.



GET STARTED

Contact info@pt-bip.co.idWHATSAPP +62 821-2553-3378
FREE CONSULTATION & SURVEY.



— APPENDIX A — TECHNICAL SPECIFICATIONS

Operating parameters for **open-pit mining.**

Designed for flexibility — granite, basalt, quartz through gold, iron & nickel ore.

SAFE DISTANCE

100_m

Minimum evacuation radius during activation.

BLASTING COST

Rp 16,000

Per cubic meter of rock (m³).

LOX PURITY

99,5%+

For optimal breaking performance.

OPERATING PARAMETERS

OPEN-PIT • 5 CORE PARAMETERS

Hole Diameter

90 mm - 115 mm • 89 mm most economical

Drilling Depth

6 m+ optimal • adjustable

Hole Spacing

2.5 m • typical pattern

Operating Temperature

-40°C to +40°C

Rock Types

GRANITE

BASALT

QUARTZ

GOLD ORE

IRON

NICKEL



APPENDIX B – TECHNICAL SIMULATION

Hole diameter drives **power & cost.**

The larger the hole diameter, the greater the power — but liquid-oxygen (LOX) consumption rises too. By **our and our principal's** calculations, Ø90 & Ø115 mm are the most cost-effective.

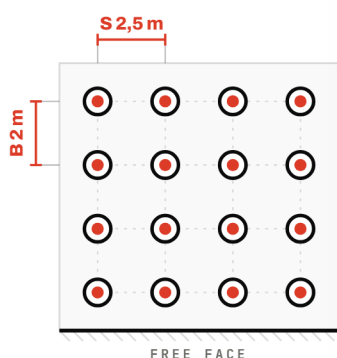
SLEEVE RULE

Ø Sleeve $\approx$ Ø Hole –
20 mm

For the same bench area — larger diameter = fewer holes
& wider spacing.

Ø90_{mm}

COST-EFFECTIVE



BURDEN × SPACING

2–2,5 m

SLEEVE

75 mm

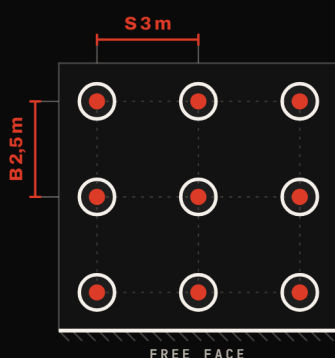
BREAKING POWER

MEDIUM

● ± **16** HOLES • DENSE
PATTERN • LOW LOX

Ø115_{mm}

RECOMMENDED



BURDEN × SPACING

2,5–3 m

SLEEVE

95 mm

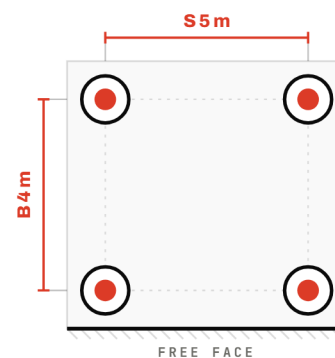
BREAKING POWER

HIGH

● ± **9** HOLES • MEDIUM
PATTERN • MEDIUM LOX

Ø127_{mm}

MAX POWER



BURDEN × SPACING

4–5 m

SLEEVE

≈107 mm

BREAKING POWER

VERY HIGH

● ± **4** HOLES • SPARSE
PATTERN • HIGH LOX

HOLE + SLEEVE

BURDEN

SPACING

FREE FACE

● SPACING ALSO DEPENDS ON

01 Rock plane orientation**02** Rock hardness**03** Fragment size



CLOSING · SEE YOU IN THE FIELD

Thank you.

We look forward to partnering with you on your mining project — from the first site survey to full-scale operation.

— THE PT BANGUN IBU PERTIWI & PT BANGKIT PUTRA PERTIWI TEAM

CONTACT US

CONSULTATION & SITE SURVEY — FREE

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