



Transform Your Mining Operation From Surviving to Thriving With TerraHash Stack

⚡ From 18.5 J/TH to 12.5 J/TH

The Retrofit Imperative for Bitcoin Mining Survival

TL;DR: Post-halving, miners are surrendering **67% of rewards** to energy. TerraHash Stack retrofit cuts J/TH **35%** and hits **99% uptime**. ROI in **15-24 months**. Fixed pricing with **20% efficiency guarantee**.



Before/After Comparison - Shows the dramatic efficiency improvements from 18.5 to 12.5 J/TH, uptime gains, and payback period

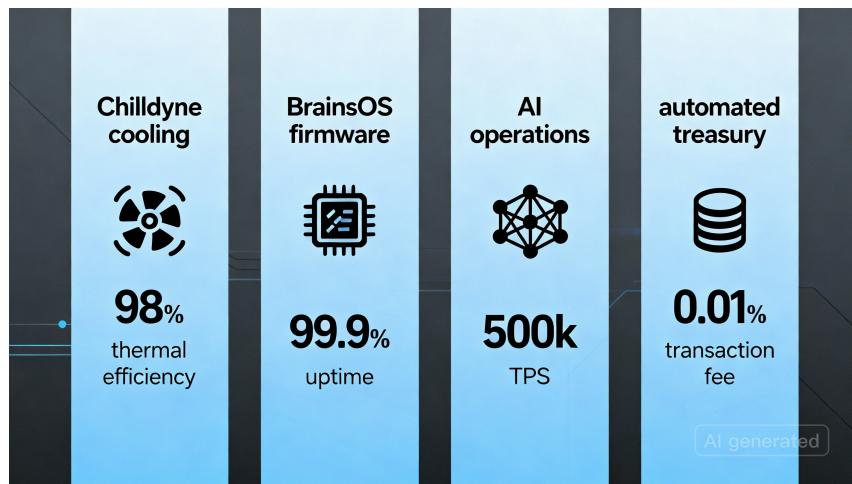
Your Miner Isn't Inefficient. It's Air Cooled.

The Red Queen Race for Bitcoin miners is accelerating. Post-halving reality: energy costs consume **67% of block rewards**. Running air-cooled infrastructure? You're looking at **88-92% uptime** and **5-15% thermal throttling**. That's barely profitable—or losing money—as network difficulty surges.

Who this is for: 5-50 MW sites battling thermal throttling and inconsistent uptime.

Ryno Crypto Mining Services (RCMS) built the answer: **TerraHash Stack (THS)**—an integrated retrofitting platform delivering a proven **35% efficiency improvement** over traditional air-cooled operations. Built on open source stewardship and autonomous operations.

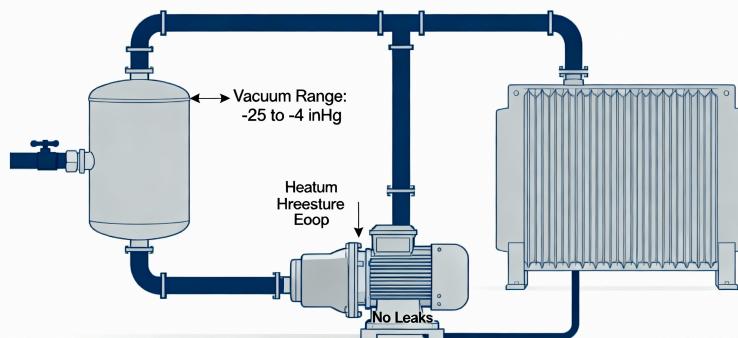
The Four Pillars That Flip the Script



1 Chilldyne: Vacuum Cooling, Leak Risk Near-Zero

- Direct-to-chip liquid cooling at **25 to ~4 inHg vacuum**—virtually eliminates coolant leak risk
- **+20-25% safe overclocking** with thermal headroom
- **50+ month ASIC lifespan** (vs. 30-36 months air-cooled)
- **November 2025:** Chilldyne acquired by **Daikin Applied**—manufacturing scalability secured for multi-GW growth

Negative Pressure Liquid Cooling Loop



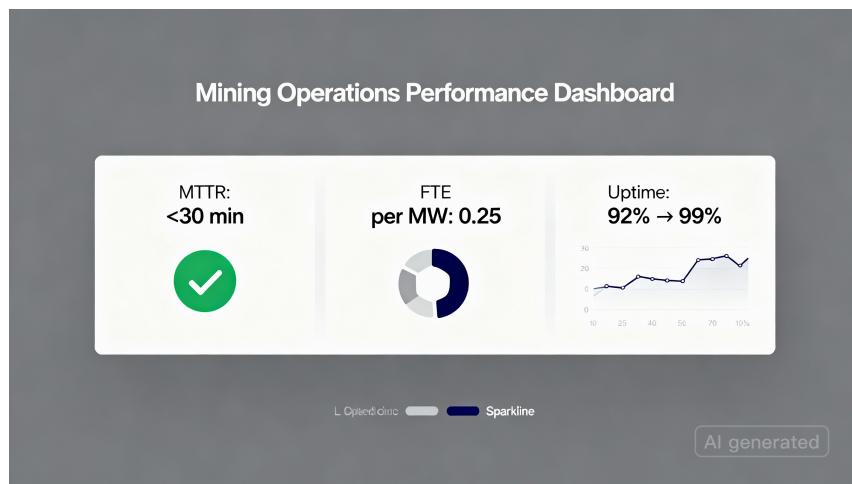
2 BraiinsOS+: Per-Chip Autotune for 8-15% Better J/TH

- Open-source firmware with **per-chip autotuning**
- **8-15% J/TH efficiency gain** over stock firmware
- RCMS actively contributes to BraiinsOS foundational projects
- Full control, no vendor lock-in



3 AI Ops: 95% Automated Actions. MTTR <30m

- AI agents + edge computing = **95% automated decision-making**
- **80-85% predictive maintenance accuracy**—most fixes happen **before** trouble starts
- **MTTR <30 minutes** for critical incidents
- Labor: **0.25 FTE/MW** vs. **0.5-1.0 FTE** industry standard

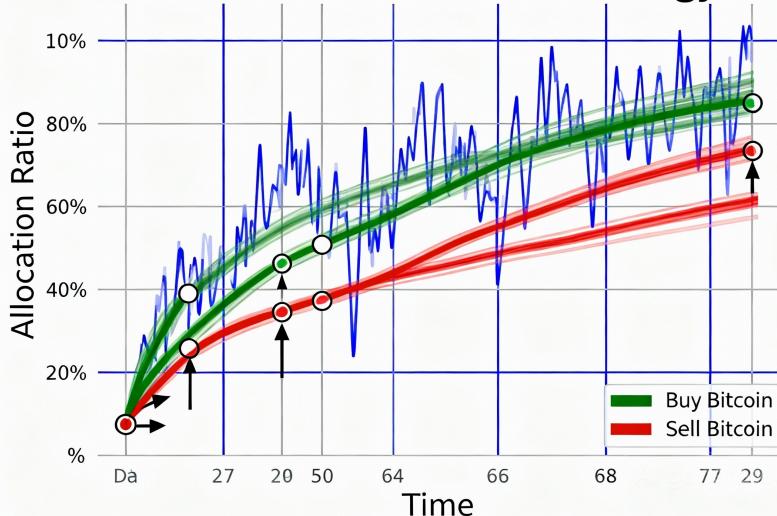


TerraHash Stack AI operations dashboard showing autonomous monitoring metrics

4 Treasury: Turn Volatility Into a Feature, Not a Bug

- **Non-custodial** automated treasury management
- Uses on-chain indicators (Hash Ribbons) to time BTC accumulation vs. stablecoin allocation
- **30-60% higher long-term profitability** vs. 100% immediate liquidation strategy
- Survive bear markets, capitalize on bull runs

Automated Treasury Timing: Bitcoin to Stablecoin Allocation Strategy



Hash Ribbons indicator driving automated treasury management decisions

What Retrofitting Actually Delivers

Metric	Before (Air-Cooled)	After (TerraHash Stack)
Efficiency	18.5 J/TH	12.0-15.0 J/TH
Uptime	88-92%	99%+
Cost/BTC	Baseline	-30-45%
ASIC Lifespan	30-36 months	50+ months
Labor	0.5-1.0 FTE/MW	0.25 FTE/MW
Payback	—	15-24 months

Retrofitting-as-a-Service: Fixed Price, Performance Guarantee

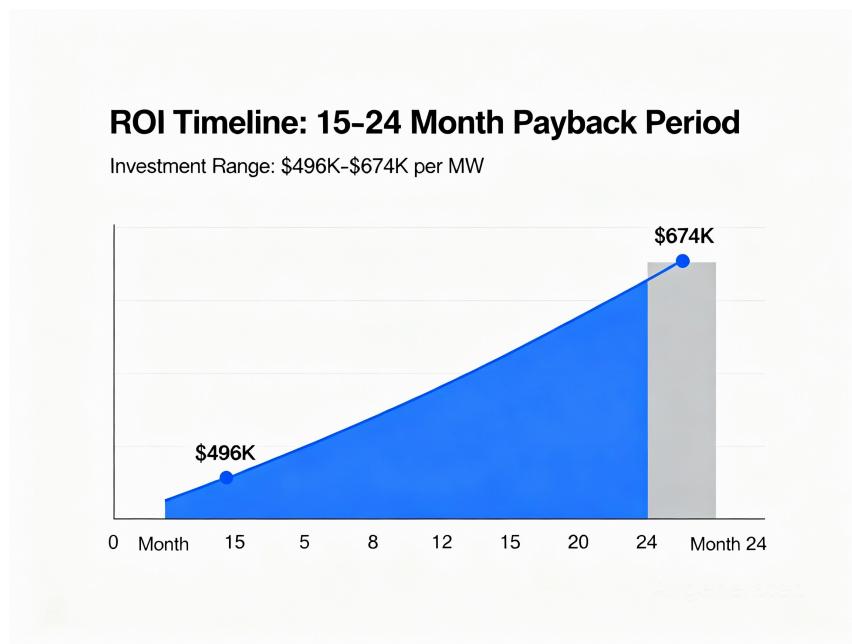
Ryno Crypto Mining Services transforms underperforming air-cooled facilities into **institutional-grade, AI-managed operations** through our **Retrofitting-as-a-Service** offering.

Our Targets:

- **Efficiency:** Legacy **18.5 J/TH** → **12.0-15.0 J/TH**
- **Cost:** **30-45% reduction** in total cost per BTC mined
- **Reliability:** **99%+ uptime** within 90 days of completion
- **ROI:** **15-24 month payback** on investment

Investment Range:

\$496K - \$674K per MW, depending on baseline infrastructure.



Performance Guarantee:

Minimum **20% J/TH efficiency improvement** or we make it right.

Who Needs This Right Now

- 5 MW container facility** suffering from seasonal throttling
- Multi-site institutional portfolio** needing fleet standardization
- Distressed asset acquirers** transforming inherited operations
- Energy producers** using mining as demand response

Whether you're a regional operator or institutional mining company, our **fixed-price transformation** includes:

- Comprehensive facility assessment (7-10 business days)
- Complete retrofit design with CAD layouts and BOMs
- Phased deployment maintaining **70-85% uptime** during transition
- 24/7 NOC support with tiered SLAs (Platinum: **99.5%**, Gold: **99%**, Silver: **98%**)

The Market Window Is Closing

Survival = Efficiency. Modernize your operations now to position for profitability in all market cycles.

Stop donating block rewards to heat.

Upgrade. Automate. Thrive.

TerraHash Stack stands with miners who build for the long term.

Next Steps

Reply "RETROFIT" for the 9-point site-readiness checklist.

Comment "MODEL" to get the ROI spreadsheet (15-24 mo payback).

DM for consultation: Initial assessment in 7-10 business days.

#TerraHashStack #BitcoinMining #LiquidCooling #JTH #OpenSource #Efficiency #Retrofit #BraiinsOS+ #AutonomousMining

Sources

- [Ryno Crypto Mining Services](#)
 - [TerraHash Stack Whitepaper v1.0](#)
 - [Braiins OS+](#)
 - [Chilldyne Negative Pressure Technology](#)
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Assumptions & Methodology:

Efficiency improvements based on performance averaging S19/S21 Pro hardware at 0.06-0.08 \$/kWh, ambient 15-25°C. Heat recovery and treasury returns vary by market conditions. Performance guarantees subject to baseline assessment and contractual SLA.