



**RYNO**  
CRYPTO MINING  
SOLUTIONS

EXCLUSIVE PROVIDER OF:



TerraHash  
STACK

# TERRAHASH RETROFITTING GUIDE

The Future of Bitcoin Mining is Here

Transform your underperforming mining operation into a high-efficiency, AI-powered profit center. Our comprehensive retrofitting service delivers industry-leading performance improvements with rapid ROI and guaranteed uptime.

**25-40%**

EFFICIENCY  
IMPROVEMENT

**99%**

**+**

OPERATIONAL  
UPTIME

**16-24**

MONTHS  
PAYBACK  
PERIOD

**65%**

OPEX  
COST  
REDUCTION

# WHY RETROFIT? THE COST OF INACTION

**Is your mining operation struggling with razor-thin margins, crippling downtime, and soaring energy costs?**  
Traditional air-cooled mining operations face a cascade of challenges that erode profitability and threaten long-term viability.

## THE CRITICAL CHALLENGES FACING TRADITIONAL MINING OPERATIONS



### Thermal Throttling

Air cooling delivers poor thermal management, resulting in 67-70% capacity utilization, 5-15% hashrate reduction during peak temperatures, and 15-20% seasonal revenue loss in hot climates.



### Crippling Costs

Inefficient cooling and outdated firmware result in 25-40% more energy consumed per terahash. Unplanned downtime costs \$50,000-\$200,000 per megawatt per incident.



### Shortened Lifespan

Constant thermal stress shortens ASIC lifespan from 50+ months to just 30-36 months, forcing premature and costly hardware replacement cycles.



### Reactive Management

Manual monitoring, lack of predictive maintenance, and immediate asset liquidation reduce long-term profitability by 30-60% compared to data-driven strategies.

## THE TERRAHASH STACK ADVANTAGE

Our retrofitting service is built on the proven TerraHash Stack, a synergistic integration of cutting-edge technologies that deliver unparalleled performance and reliability. We transform legacy infrastructure into next-generation mining operations through four core technology pillars:

- **Chillydyne Negative-Pressure Liquid Cooling:** Revolutionary patented technology that eliminates catastrophic coolant leak risks, enables 20% hashrate increases through safe overclocking, and extends equipment lifespan by 40%.
- **BraiinsOS+ Open-Source Firmware:** Per-chip autotuning delivers 8-15% improvement in J/TH efficiency and unlocks the full potential of your hardware without vendor lock-in.
- **AI-Powered Autonomous Operations:** Handles 95% of operational decisions, from real-time optimization to predictive maintenance, resulting in 95%+ reduction in manual interventions and 60% decrease in maintenance costs.
- **Automated Treasury Management:** Non-custodial system strategically allocates assets between Bitcoin and stablecoins, boosting long-term profitability by 30-60%.

# TRADITIONAL VS TERRAHASH: A PARADIGM SHIFT

FEATURE	TRADITIONAL SETUP	TERRAHASH STACK RETROFIT
Cooling Technology	Inefficient Air Cooling	Direct-to-Chip Liquid Cooling
Energy Efficiency	Standard PUE 1.8-2.0	Optimized PUE 1.05-1.15
Equipment Lifespan	2-3 Years	4-5 Years (40% Extension)
Operational Uptime	85-90% Typical	98-99% with Predictive Maintenance
Firmware	Proprietary & Locked	Open-Source (BrainsOS+)
Management	Manual & Reactive	24/7 AI-Powered Autonomous
Cost Reduction	Baseline	65% Operational Cost Savings

## PROVEN RESULTS: REAL-WORLD PERFORMANCE METRICS

### Efficiency Gains

**18.5 J/TH → 14.2 J/TH**  
23% reduction in energy consumption per terahash through liquid cooling and firmware optimization.

### Hashrate Increase

**+20% Performance**  
Safe overclocking enabled by superior thermal management unlocks hidden capacity.

### Uptime Guarantee

**99%+ Availability**  
Predictive maintenance and autonomous operations eliminate costly downtime.

### Maintenance Savings

**-60% Costs**  
AI-powered diagnostics and proactive interventions drastically reduce maintenance overhead.

## FLEXIBLE DELIVERY MODELS TAILORED TO YOUR NEEDS

We understand that every mining operation is unique. Our standardized assessment methodology allows us to evaluate your facility and provide a comprehensive proposal in just **7-10 business days**, a fraction of the 4-6 week industry standard.

- **Container-Based Retrofits:** Ideal for modular deployments (5 MW typical), 12-14 week timeline, \$1.8-2.2M investment, 16-20 month payback.
- **Warehouse Conversions:** Comprehensive overhauls for large-scale facilities (25 MW typical), 20-24 week timeline, \$9-11M investment, 18-24 month payback.
- **Partial Immersion & Legacy Fleet Upgrades:** Targeted solutions to address your most pressing operational bottlenecks with custom timelines and pricing.

# YOUR PARTNER FOR A PROFITABLE FUTURE

Ryno Crypto is more than a technology provider; we are your strategic partner in navigating the future of Bitcoin mining. We are committed to open-source principles, sustainability, and the long-term health of the Bitcoin network.

## WHY CHOOSE RYNO CRYPTO?



### Open-Source Commitment

We believe in transparency and community-driven innovation. No vendor lock-in, just proven technology you can trust.



### Sustainability Focus

Our solutions prioritize energy efficiency, heat recovery, and renewable energy integration for responsible mining.



### AI-Native Operations

Autonomous management handles 95% of decisions, freeing your team to focus on strategic growth initiatives.



### Guaranteed Performance

Fixed-price contracts with performance guarantees and comprehensive SLA support ensure your success.

## THE CRYPTO WINTER IS OVER. IS YOUR INFRASTRUCTURE READY?

The next Bitcoin bull run is approaching, and the window of opportunity to optimize your operations is closing. Facilities that retrofit now will capture maximum upside during the next cycle, while those that delay will struggle to compete.

**Don't let outdated infrastructure hold you back.** Our retrofitting service transforms your mining operation from a liability into a high-performance asset. With a typical payback period of just 16-24 months, the question isn't whether you can afford to retrofit—it's whether you can afford not to.

## SEAMLESS IMPLEMENTATION PROCESS

- **Step 1: Rapid Assessment** - Comprehensive facility evaluation completed in 7-10 business days with detailed ROI projections.
- **Step 2: Custom Design** - Tailored retrofit plan addressing your specific infrastructure, budget, and timeline requirements.
- **Step 3: Phased Implementation** - Modular deployment approach maintains operational continuity throughout the transition.
- **Step 4: Ongoing Optimization** - 24/7 NOC support, continuous performance monitoring, and proactive maintenance ensure sustained excellence.

## READY TO UNLOCK YOUR MINING OPERATION'S TRUE POTENTIAL?

Schedule a complimentary consultation with our retrofitting specialists today.

Contact us at: [info@rynocrypto.com](mailto:info@rynocrypto.com) | [rynocrypto.com](https://rynocrypto.com)