



Bitcoin Mining Operation using Solar Power at Madurai Office

1. Executive Summary

This proposal outlines a strategic initiative to establish a sustainable and highly cost-effective Bitcoin mining operation at our Madurai office. This project aims to significantly minimize operational electricity costs, reduce environmental impact, and generate consistent, long-term revenue streams from cryptocurrency mining by integrating state-of-the-art, hydro-cooled ASIC mining rigs with a dedicated, high-capacity solar power system. Leveraging Madurai's abundant solar insolation, this venture presents a unique opportunity for profitable and environmentally responsible asset generation.

2. Project Objectives

The primary objectives of this project are:

- **Establish Profitability:** To implement a scalable and highly profitable Bitcoin mining setup.
- **Cost Optimization:** To drastically reduce electricity expenses by exclusively utilizing solar power.
- **Environmental Stewardship:** To minimize the carbon footprint associated with cryptocurrency mining, aligning with sustainability goals.
- **Resource Leverage:** To capitalize on Madurai's favorable climatic conditions for optimal solar energy generation.
- **Long-Term Value Creation:** To secure a consistent source of passive income and potential capital appreciation through Bitcoin accumulation.

3. Infrastructure Requirements

The successful deployment of this mining operation necessitates robust infrastructure across hardware, energy, network, cooling, and system management.

3.1. Hardware: ASIC Miners

The core of this operation will be the **Antminer S19 XP Hydro**, a leading-edge ASIC (Application-Specific Integrated Circuit) miner from Bitmain. This model is specifically engineered for SHA-256 algorithm cryptocurrencies (e.g., Bitcoin, Bitcoin Cash) and features an advanced hydro-cooling system, enabling superior thermal management and sustained 24/7 high-performance operation with reduced noise levels.

Key Specifications: Antminer S19 XP Hydro

Feature	Specifications
Model	Antminer S19 XP Hydro
Algorithm	SHA-256
Hashrate	~255 TH/s (Terahashes per second)
Power Consumption	~5304 watts (5.3 kW)
Efficiency	~20.8 J/TH
Cooling System	Hydro Cooling (Water-Cooled System)
Network Interface	Ethernet (RJ-45)
Noise Level	Low (compared to air-cooled models)
Operating Temp.	0°C–40°C
Mineable Coins	Bitcoin (BTC), Bitcoin Cash (BCH), Bitcoin SV (BSV), Peercoin (PPC), Digibyte - SHA-256 (DGB)
Power Supply	Requires compatible PSU (e.g., Bitmain APW11)

Estimated Daily Mining Income (per miner):

Based on a hashrate of 255 TH/s:

- **Gross Daily BTC Mined:** Approximately 0.0004 BTC/day (subject to network difficulty fluctuations).
- **Equivalent Daily INR Income:** $0.0004 \text{ BTC} \times ₹56,95,000$ (current approximate BTC/INR rate) = **~₹2,278/day**.

3.2. Solar Panel Systems

To achieve energy independence and cost efficiency, a dedicated solar power system is critical.

Miner Power Requirements:

- **Power Consumption (per miner):** ~5.3 kW
- **Operating Hours:** 24 hours/day
- **Daily Energy Consumption (per miner):** 5.3 kW × 24 hours = 127.2 kWh/day
- **Monthly Energy Consumption (per miner):** 127.2 kWh × 30 days = ~3816 kWh/month

Required Solar Capacity:

Given Madurai's average of 5.5 to 6 hours of peak sunlight per day, the required solar capacity to generate 127.2 kWh/day is:

- $127.2 \text{ kWh} \div 6 \text{ hours} = \sim 21.2 \text{ kW}$.
- **Recommended System Size:** A 22kW solar panel system is advised to account for efficiency losses and ensure a consistent supply.

Quotation for 10+10kw Hybrid Solar Power Generation System Option

SI no	Description	Kw	Rate Per kw	GST per kw	GST %	Value + GST
1	Supply and Installation 10+10kw of 590wX 40 Nos PANEL, 10kw Hybrid Inverter(2 set), 200AH Lead-Acid Battery 20 Nos , HYBRID Solar System(ND)	20	₹ 65,465.73	₹ 13,09,314.60	13.8	₹ 14,90,000.01
Roundoff:						-₹ 0.01
Total Cost:	₹ 13,09,314.600	Total Gst :	₹ 1,80,685	Total Amount in Rs:	₹ 14,90,000.00	
Amount in Words:	Fourteen lacs Ninety Thousand only					

➤ **Warranty Details:**

Physical Damages will not be Covered

1. Solar (PV)Panel Modules (30 Years)

- 10 Years Manufacturing defect Warranty
- 20 Years performance Warranty
- 90% Performance Warranty till the end of 10 years
- 80% Performance Warranty till the end of 20 years.

2. Solar Hybrid Inverter (5 Years)

- Warranty for 5 Years

3. Solar Battery (6 Years)

- Replacement Warranty for 3 Years
- Service Warranty for 3 years

3.3. Network Requirements

For optimal performance, your network should meet the following specifications:

- **Internet Speed:** A minimum of **10 Mbps** for both upload and download is required.
- **Latency:** Aim for latency under **100 ms**, with an ideal target of **< 50 ms** to your mining pool for the best results.
- **Network Type:** **Wired Ethernet (LAN)** is strongly recommended over Wi-Fi for stability and speed.
- **IP Addressing:** While DHCP works, using a **Static IP** is recommended for consistent connectivity.
- **Ping Stability:** A consistent ping of **< 50 ms** is ideal.
- **Internet Line:** A **wired broadband** connection is essential, with fiber optic being the preferred choice.
- **Speed Plan:** Choose an internet plan with at least **10 Mbps**, ensuring it's sufficient for all devices on your network.
- **Backup Line:** Consider a **4G dongle** or a secondary ISP to maintain connectivity during outages.

Hardware Requirements

The right hardware is crucial for a reliable mining operation:

- **Router:** A **Gigabit dual-band router** with multiple LAN ports is necessary to provide robust network connectivity.
- **Switch (Optional):** If you're connecting multiple miners, a network switch will allow you to expand your wired connections.
- **Ethernet Cables:** Use **Cat 6 Ethernet cables** for reliable, high-speed wired connections.
- **UPS for Router/Switch:** An **Uninterruptible Power Supply (UPS)** for your router and switch will ensure continuous connectivity during power fluctuations or outages.

General Recommendations

Here are some best practices for your Antminer setup:

- **Connection Type:** Always use a **Wired Ethernet (LAN)** connection.
- **IP Address:** Configure a **Static IP** for your miner.
- **Uptime Goal:** Aim for **24/7 operation**, supported by a UPS and a stable internet connection.
- **Multiple Miners:** If you have multiple miners, use a **network switch** and assign **individual IP addresses** to each miner.

Internet Service Provider (ISP) Options in India

Here's a comparison of some internet plans suitable for mining in India (prices are approximate and can vary):

Provider	Bandwidth	Monthly Cost	Installation Fees
Leased Line	1 Gbps	₹80,000+	Custom/Negotiable
Airtel	1 Gbps	₹4,000	₹0
Jio	1 Gbps	₹4,000	Custom/Negotiable

3.4. Hydro Cooling System

Optimizing the performance and longevity of each Antminer S19 XP Hydro unit necessitates a dedicated Water Circulation Cooling System. This section details the essential components and estimated costs for implementing such a system.

Key Components of the Water Circulation Cooling System

The table below outlines the critical components required for an effective hydro cooling setup, along with their descriptions and approximate costs:

Component	Description	Approx. Cost (INR)
Water Cooling Tower or Chiller Unit	Industrial-grade unit with 20–30 kW cooling capacity	₹2,50,000 – ₹4,00,000
Water Pump + Flow Meter	High-flow pump with integrated flow monitoring	₹25,000 – ₹40,000
Heat Exchanger (Optional)	Plate-type or shell-type heat exchanger for enhanced efficiency	₹20,000 – ₹35,000
Insulated Piping + Installation	Durable piping designed to manage pressure and temperature	₹15,000 – ₹25,000
Water Storage Tank (250–500L)	Tank for coolant storage and circulation	₹10,000 – ₹15,000

Estimated Total Cooling System Costs

The total cost for the hydro cooling system will vary depending on the scale of the operation:

Cooling Setup Type	Estimated Cost (INR)
Basic Setup (1–2 miners)	₹3 – ₹4 lakhs
Commercial Setup (5+ miners)	₹10 – ₹15 lakhs

3.5. System Configurations

Efficiently managing **ASIC miners**, such as the Antminer S19 XP Hydro, does not require a high-end computing system. Instead, the focus should be on a **reliable and stable system** capable of handling critical tasks, including:

- **Accessing miner dashboards** via a web browser.
- **Monitoring performance metrics** and operational data.
- **Managing firmware updates** to ensure optimal miner functionality and security.
- **Running mining management tools** (e.g., HiveOS, Awesome Miner) for centralized control and optimization.
- **Performing basic networking and configuration tasks.**

Recommended PC Specifications (2025)

The following specifications are recommended for a dedicated system to manage your ASIC mining operations:

Component	Recommended Configuration
CPU	Intel i5 12th Gen or AMD Ryzen 5
RAM	16 GB (for seamless multitasking)
Storage	512 GB SSD or above
OS	Ubuntu (preferred for stability)
Network	Dual LAN (optional for redundancy)
Display	Optional (can use HDMI to monitor)
UPS	Essential to prevent miner shutdowns

Suggested System Options

Here are some example systems that meet the recommended specifications, with approximate pricing as of June 2025:

S. No	System Name	Type	Processor	RAM	Storage	Price (INR)
1	HP 15s	Laptop	Intel Core i5 12th Gen	16 GB	512 GB SSD	₹49,990
2	HP Ryzen 5 Laptop (15.6")	Laptop	AMD Ryzen 5	16 GB	512 GB SSD	₹45,499
3	Asus Vivobook 16	Laptop	Intel Core i5-12500H	16 GB	512 GB SSD	₹53,990
4	Acer Aspire Lite	Laptop	Intel Core i5-1235U	16 GB	512 GB SSD	₹41,890

5	Lenovo IdeaPad i5 12th Gen	Laptop	Intel Core i5-1235U	16 GB	512 GB SSD	₹42,990
6	ASUS Consumer Desktop (Dual LAN)	Desktop	Intel Core i5	16 GB	512 GB SSD	₹47,990

Most Profitable ASIC Miners (as of 2025)

For context, the following provides an overview of the profitability of leading ASIC miners in 2025:

Specs	Details
Algorithm	SHA-256
Coins	BTC, BCH, BSV
Hashrate	~255 TH/s
Power Consumption	~5300W
Approximate Daily Income	~₹2,278/day
Current Price (India)	₹7 lakhs

4. ROI Scenarios

This section outlines two distinct Return on Investment (ROI) scenarios for your ASIC mining venture, offering a comprehensive financial perspective based on energy sourcing:

- Solar Power Integration:** Analysis assuming zero electricity costs due to a dedicated solar energy system.
- Grid Electricity Utilization:** Analysis based on an average grid electricity cost of ₹8 per unit.

ROI Scenario 1: Solar Power Integration (Zero Electricity Cost)

This scenario assumes a complete reliance on solar power, eliminating electricity costs and significantly enhancing profitability.

Metric	Calculation/Value
Cost of Miner	₹4,00,000 (average market price per unit)
Daily Income	~₹2,278
Daily Profit	₹2,278 (as electricity cost is ₹0)
Monthly Profit	₹68,340 (₹2,278 x 30 days)
Yearly Profit	₹8,20,080 (₹68,340 x 12 months)
ROI in Days	~1287 days (Total estimated investment ÷ Daily Profit = ₹29,30,000 ÷ ₹2,278)

ROI Period	~42.3 months (approximately 3 years and 6 months)
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Key Benefits of Solar Integration:

- **Pure Profit Generation:** After approximately 43 months, the operation transitions to generating pure profit.
- **Long-Term Gain Potential:** Significant long-term profit potential, especially with potential increases in Bitcoin (BTC) price.
- **Sustainable and Cost-Effective:** A solar power setup combined with an inverter is a highly recommended and sustainable option for maximizing profitability.

ROI Scenario 2: Grid Electricity Utilization

This scenario models the ROI when using grid electricity with an assumed average cost of ₹8 per unit.

Metric	Calculation/Value
Electricity Consumption/Day	127.2 units/day (5.3 kW × 24 hours)
Daily Electricity Cost	₹1,017 (127.2 units × ₹8/unit)
Net Daily Profit	₹1,261 (Daily Income - Daily Electricity Cost = ₹2,278 – ₹1,017)
ROI in Days	~2,324 days (Total estimated investment ÷ Net Daily Profit = ₹29,30,000 ÷ ₹1,261)
ROI Period	~6.36 years

Considerations for Grid Electricity:

- **Extended ROI:** The ROI period is significantly longer when relying on grid electricity due to recurring power costs.
- **Solar Recommendation:** For serious profitability and a more accelerated ROI, a dedicated solar power setup is strongly recommended.

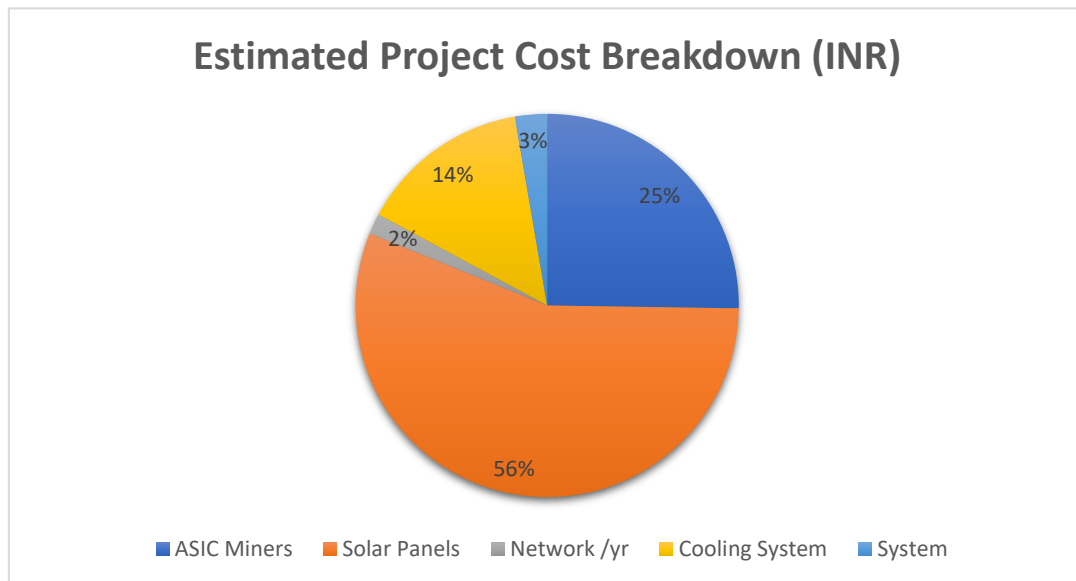
Summary of ROI Scenarios

The table below provides a concise comparison of the ROI timelines for both energy sourcing scenarios:

Scenario	ROI Time	Net Profit Commencement
With Solar Power	~43 Months	After ~1287 days
With Grid Electricity	~6.36 Years	After ~2,324 days

5. Total Estimated Project Investment

The following table outlines the total estimated costs for establishing a complete ASIC mining operation, factoring in all necessary components:



Requirement	Estimated Cost (INR)
Hardware	₹7,00,000
Solar Panels	₹14,00,000 – ₹17,00,000
Network (Broadband)	₹48,000/year
Cooling System	₹4,00,000
System Configurations	₹75,000
TOTAL ESTIMATION	₹29,23,000

Note:

Network Cost : 4000/month

Quotation for Solar panel : [Click Here](#)

Mining Hardwares :

- <https://minerskartindia.com/shop/asic-mining/bitmain-antminer/antminer-s19-xp-hydro-250th-s-asic-mining-machine-5200w-power-on-wall-sha256-crypto-algorithm-20-8-j-th-power-efficiency-200-240-power-supply-input-voltage-s19-xp-hydro-250t/?srsltid=AfmBOoriwtXUL0UmnrqLsqEqeQjHnJaqPax-DGS0pwqa0TZKgDedUJTEf&v=13b5bfe96f3e>
- <https://www.etherbit.in/products/bitmain-antminer-s19-xp-with-hydro-cooling?srsltid=AfmBOooZV8Z5csjwKdlVEufBbs1OV9QsPqi7ytT5seSIfGXJRieAsGFz>