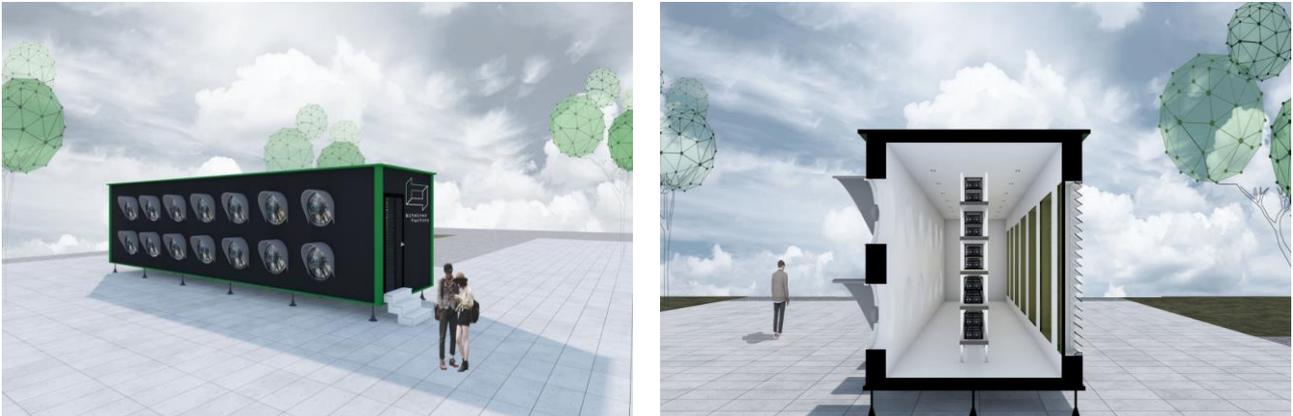


## Blockchain + PV

July 2018

## **ABSTRACT**

The project intends to make the Blockchain sustainable by using renewable energy for mining purpose, through a collaboration agreement between Bitminer Factory - Angeli Group ([www.bitminerfactory.com](http://www.bitminerfactory.com) - [www.bitminerfactoryico.io/en/](http://www.bitminerfactoryico.io/en/) - [www.angelicostruzioni.it/-l=eng.htm](http://www.angelicostruzioni.it/-l=eng.htm)), the largest bitmining company in Italy, and an investor in the photovoltaic sector.



The 100% clean and renewable energy outcome will be used to directly power the mining equipment (net metering). Each containerized mining unit will be installed next to a 200 kWp solar PV plants (“Unit”). Developing PV plants with a Renewable Energy Investor will allow Bitminer Factory to achieve lower electricity cost for their operations, cutting out all the intermediaries between energy production and utilization; at the same time the Renewable Energy Partner will achieve higher profits by selling the electrical production at a much higher price compared to nowadays PPAs prices.

At each identified site 5\*200 kWp Units will be developed, remaining within the 1 MWp limit of installed PV capacity (“Cluster”) and thus authorizing each single Unit with a simple PAS (simplified authorizing procedure) and avoiding the V.I.A. (Environmental) procedure. The whole process, once obtained the grid connection permit by Enel, will take between one and two months.

The electricity produced will then be totally sold to the bitminer partner at a price to be agreed (hypothesis: sale of energy at 0,14 €/kWh for the first 3 years and at 0,07 €/kWh for the following years).

## **TARGET**

30 MWp of total PV installed capacity

PHASE 1: 5 Clusters for a total of 5 MWp of PV installed capacity by Feb. 2019

PHASE 2: 25 Clusters for a total of 25 MWp of PV installed capacity by Dec. 2019

## **TECHNOLOGY**

Each 200 kWp Unit:

- **Bitmining:**

18 GPUs



2 FPGAs (each made of 20 units)



- **PV:**

- Monocrystalline modules
- Single axis trackers

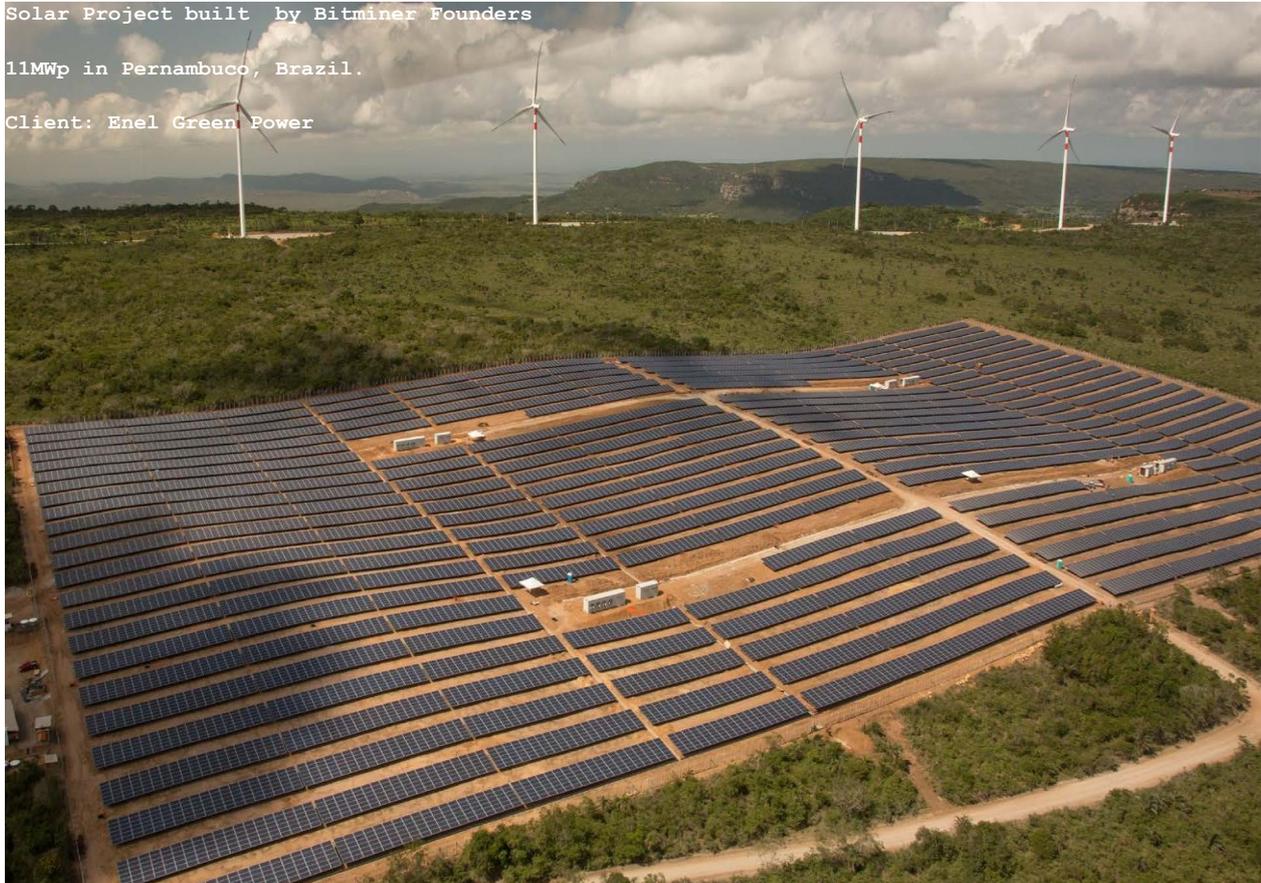


- String inverters

**EPC AND O&M**

ERA Energie – Angeli Group

<http://www.eraenergie.com/>



## **FINANCIALS**

The cost of each Unit is expected to be € 590,000 (€ 400.000 bitmining, € 190.000 PV).

### **Leverage - Assumptions:**

#### **- Bitmining**

CAPEX: 400.000 €

OPEX: 93.000 €

Debt/equity ratio: 80:20

Interest rate: 3%

Tenor: 5 years

#### **- PV**

CAPEX: 190.000 €

OPEX: 45.000 €

Debt/equity ratio: 80:20

Interest rate: 3%

Tenor: 15 years

PROJECT IRR	Bitmining: 78%	PV: 15%
EQUITY IRR	Bitmining: 244%	PV: 103%

## BITMINING (200 kWp Unit)

Conto Economico								
EUR al giorno medio		13,0 P14			22,5 FPG			
Anno	1	2	3	4	5			
Ricavi	€ 413.910	€ 405.632	€ 397.519	€ 389.569	€ 381.777			
Perdita Performance		2%	2%	2%	2%			
Costi								
Opex	€ 75.759	€ 75.759	€ 75.759	€ 75.759	€ 75.759			
EBITDA	€ 338.151	€ 329.873	€ 321.760	€ 313.810	€ 306.018			
Interessi	€ 12.000	€ 10.264	€ 8.476	€ 6.634	€ 4.736			
Ammortamenti	€ 80.000	€ 80.000	€ 80.000	€ 80.000	€ 80.000			
Profit Before Taxes	€ 246.151	€ 239.609	€ 233.285	€ 227.176	€ 221.282			
Tasse	€ 69.907	€ 68.049	€ 66.253	€ 64.518	€ 62.844			
Utile Netto	€ 176.244	€ 171.560	€ 167.032	€ 162.658	€ 158.438			
Utile Netto Cumulato	€ 176.244	€ 347.804	€ 514.836	€ 677.494	€ 835.932			

Cash Flow Statement (IVA: assume IVA compensata)								
EBITDA	€ 338.151	€ 329.873	€ 321.760	€ 313.810	€ 306.018			
Rata Mutuo	€ 69.873	€ 69.873	€ 69.873	€ 69.873	€ 69.873			
Tasse	€ 69.907	€ 68.049	€ 66.253	€ 64.518	€ 62.844			
FREE CASH FLOW	€ 198.371	€ 191.950	€ 185.634	€ 179.418	€ 173.301			

Calcolo Mutuo								
Capitale Residuo - YS	€ 400.000	€ 342.127	€ 282.517	€ 221.119	€ 157.879			
Interessi Mutuo	€ 12.000	€ 10.264	€ 8.476	€ 6.634	€ 4.736			
Capitale Mutuo	€ 57.873	€ 59.610	€ 61.398	€ 63.240	€ 65.137			
Capitale Residuo - YE	€ 342.127	€ 282.517	€ 221.119	€ 157.879	€ 92.742			

## Analisi Investimento

Full Equity - Analysis								
-€	400.000	€ 338.151	€ 329.873	€ 321.760	€ 313.810	€ 306.018		

78% IRR

Leveraged - Analysis								
-€	80.000	€ 198.371	€ 191.950	€ 185.634	€ 179.418	€ 173.301		

244% IRR

## PV (1 MWp Cluster – Summary)

SUMMARY 1MWp Industrial Site BLOCKCHAIN		TECHNICAL DATA		PROJECT TIMING		LEVELIZED COST OF ELECTRICITY	
<b>PROJECT INFORMATION</b>		<b>TECHNICAL DATA</b>		<b>PROJECT TIMING</b>		<b>LEVELIZED COST OF ELECTRICITY</b>	
Project name	1MWp Industrial Site BLOCKCHAIN	Capacity (MWp)	1,00	Financial Close	31/01/2019	CapEx	1.036.516
Technology	Solar Photovoltaic w/trackers	Net full load hours (KWh/KWp) at P50	2140,62	NTP	28/02/2019	OpEx	1.655.370
Country	Italy	Performance ratio	79,40%	COD	31/05/2019	FinEx	195.307
Revenue model	PPA - 3	Power generation (GWh)	59	Length of Project (Years)	30	TaxEx	562.919
Electricity Sale to Blockchain €/MWh first 3 years	140,00	Capacity factor	24,44%	Length of sale to Blockchain at higher price (Years)	3	Total project expenditures	3.450.112
Electricity Sale to Blockchain €/MWh after 3+ year	70,00	Annual degradation	0,50%	Sale to Blockchain/Project duration	10,00%	Total Generation (MWh)	58.975
						LCOE	58,50
<b>CAPEX</b>		<b>CAPEX PER UNIT</b>		<b>USES OF FUNDS</b>		<b>SOURCES OF FUNDS</b>	
	Cost		Cost/MW	Construction costs	950.000 94,95%	Shareholders Equity	200.103 20,00%
Modules	330.000	Modules	330.000 34,74%	Financing costs	12.690 1,27%	Shareholders Loan	0 0,00%
Mounting structures	150.000	Mounting structures	150.000 15,79%	Reserves	37.826 3,78%	Senior Loan	800.413 80,00%
Inverters	160.000	Inverters	160.000 16,84%	Other costs	0 0,00%	Subordinated Debt	0 0,00%
Cabling	33.000	Cabling	33.000 3,47%	Cost Overruns	0 0,00%		
Grid Interconnection	30.000	Grid Interconnection	30.000 3,16%	TOTAL USES	1.000.516	TOTAL FUNDS	1.000.516
Civil works	150.000	Civil works	150.000 15,79%				
Project Management	20.000	Project Management	20.000 2,11%	<b>DEBT FACILITY</b>		<b>DEBT RATIOS AND COVENANTS</b>	
Development fees	50.000	Development fees	50.000 5,26%	Facility type	Senior Loan	Debt/Equity ratio	80,00%
Working capital funding	0	Working capital funding	0 0,00%	Currency	EUR	Min Hist./Prop. DSCR	1,39 1,42
Transaction costs	0	Transaction costs	0 0,00%	Total facility	800.413	Avg. Hist./Prop. DSCR	1,72 1,83
Performance bonds	0	Performance bonds	0 0,00%	Tenor (Years)	15	Max Hist./Prop. DSCR	3,04 3,33
Insurance Premium	0	Insurance Premium	0 0,00%	Interest rate	3,00%	Required Hist./Prop. DSCR	1,15 1,15
Land 30 years	0	Land 30 years	0 0,00%				
Contingency	27.000	Contingency	27.000 2,84%	<b>IRR ANALYSIS</b>		<b>FINANCIAL PROJECTIONS</b>	
Total investment cost	950.000	Total investment cost	950.000 100,00%	Project IRR	15,01%	Total Revenues	5.044.864
				Equity IRR	102,76%	Total Net Profit	1.632.578
				Dividend IRR	102,76%	Net Profit Margin	32,36%
						Total Dividends	1.828.681
<b>OPEX</b>		<b>OPEX PER UNIT</b>		<b>NPV ANALYSIS</b>		<b>LEGEND</b>	
	Cost		Cost/MW	Discount rate (target PIIRR)	5,00%	Inputs	
O&M	15.000	O&M	15.000 33,33%	NPV	809.374	Outputs	
Asset Management	5.000	Asset Management	5.000 11,11%	<b>CONTENTS</b>			
Land Lease	13.000	Land Lease	13.000 28,89%	1. Summary	2. Inputs		
Property/Land tax IMU	2.000	Property/Land tax IMU	2.000 4,44%	3. Calculations	4. Statements		
Stamp tax on revenues	0	Stamp tax on revenues	0 0,00%	5. Cash Waterfall	6. Financial Indicators		
Auxiliary electrical consumption	1.000	Auxiliary electrical consumpti	1.000 2,22%				
Surveillance	4.000	Surveillance	4.000 8,89%				
Transmission/Dispatching/Balancing fees	0	Transmission/Dispatching/Bal	0 0,00%				
Energy licenses/Market fees	0	Energy licenses/Market fees	0 0,00%				
Royalties	0	Royalties	0 0,00%				
Traders fees	0	Traders fees	0 0,00%				
Insurance	5.000	Insurance	5.000 11,11%				
Others 1	0	Others 1	0 0,00%				
Others 2	0	Others 2	0 0,00%				
Total operating costs	45.000	Total operating costs	45.000 100,00%				
<b>MODEL AUDIT</b>		<b>KEY INPUTS REFERENCES AND NOTES</b>					
D/E ratio	OK	General inputs					
Historical DSCR Breach - Senior Debt	OK	Time inputs					
Prospective DSCR Breach - Senior Debt	OK	Construction CapEx					
Total Uses = Total Sources	OK	Power capacity					
Positive Cash	OK	Revenues assumptions					
Total Debt Fully Repaid	OK	Operating costs					
Debt Amortization Schedule	OK	Taxes					
Balance Sheet	OK	Funding structure					
Cash Waterfall	OK	Balance Sheet assumptions					
MODEL CHECK	OK						

## NEXT STEPS

The Collaboration agreement has to be reached. First sites have already been identified, mainly in Puglia and Campania Regions. PHASE 1 will be completed within February 2019; PHASE 2 will be completed within December 2019.

## UPSIDES (BITMINING & PV)

- 45% tax holiday for investments in Southern Italy
- 130% super depreciation
- Possibility to access straight grants and/or obtain a leasing with 0% interest rate (only for investments in Southern Italy)

**CONTACTS**

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