GREENZO ENERGY PVT. LTD.

About Greenzo Energy India Limited Unlisted Shares

A) How would you introduce GreenZo India? GreenZo has established itself as a leading player in the renewable energy sector and has made remarkable strides with significant milestones. The company's development demonstrates its commitment to sustainable energy solutions and expertise in using various renewable energy sources.

Here is a summary of GreenZo's journey:

2020: Hydropower Consulting

GreenZo began by providing consulting services for hydropower projects. This initial step laid the foundation for the company's expertise in renewable energy consulting, focused on harnessing water resources to generate clean energy.

2021: Commissioning of Nepal's first solar power project

In 2021, GreenZo achieved a significant milestone by commissioning Nepal's first solar power project with a generating capacity of 12.25 MW. The project marked the company's foray into solar energy and demonstrated the company's ability to work on large-scale renewable energy projects and contribute to regional energy sustainability.

2022: Expansion of solar energy consulting

In the following year, GreenZo expanded its portfolio by installing various solar power projects and providing consulting services to over 200 MW of renewable energy projects. This expansion highlighted GreenZo's growing influence and expertise in the solar energy sector and established the company as a major player in the renewable energy market.

2022: Electrolyzer production facility

GreenZo diversified its technological capabilities by commissioning a manufacturing facility for electrolyzers. The venture highlights the company's commitment to advancing hydrogen production technologies, which are critical for the hydrogen economy and the transition to sustainable energy sources.

2023: Green Hydrogen Project

GreenZo will launch a green hydrogen project in 2023 to leverage its hydrogen production expertise to contribute to the global transition to green hydrogen. These projects are critical to reducing carbon emissions and accelerating the use of hydrogen as a clean energy source.

B) Services offered by GreenZo India

1. Manufacturing of electrolyzers and their BOP

Electrolysis is a promising option for producing carbon-free hydrogen from renewable and nuclear sources. Electrolysis uses electricity to split water into hydrogen and oxygen.

The reaction takes place in devices called electrolyzers. Electrolysers range in size from small, appliance-sized devices suitable for small-scale, decentralized hydrogen production to large, centralized production facilities that can be directly connected to renewable or other forms of power generation without greenhouse gas emissions.

Greenzo is a technology company that promotes, develops, finances, designs, integrates, builds, operates, and maintains hydrogen production systems based on water electrolysis, and provides complete solutions for the production, compression, storage, marketing, refueling, and all other applications of green hydrogen.

Greenzo Energy has secured land in Gujarat to manufacture electrolyzers for hydrogen production, although production has not yet commenced.
Location: Sanand
Groundbreaking date: 24th October
Phase 1
Investment: 100 cr
Capacity: 250MW

Electrolyser Services offered by GreenZo India

- The Indigenous developed technology of PEM electrolyzers to be one of the few companies in the world with MW stacks.
- We not only manufacture electrolyzers but also provide customized solutions as per your needs.
- Obtaining permits and licenses for large-scale projects and facilities as well as seeking capital raising and project financing.
- Development of hydrogen production plants using electrolyzers for thousands of kg/day.
- Operation and maintenance of the plant and on-site support to manage it.
- Ensuring the daily hydrogen production at the facility in terms of quality and quantity.
- Integration with renewable energy production plants, optimizing hydrogen compression and storage solutions, or integrating methanation units, just to name a few.

2. Greenzo provides end-to-end energy services for solar, wind, and hydropower, including providing system design, system procurement details, and installation.
3. GreenZo offers comprehensive consulting services for plants producing green hydrogen and ammonia. The consultations include a thorough analysis of the demand and supply of hydrogen and ammonia in each state or country, including neighboring regions. The expertise also extends to the assessment of existing infrastructure for the export of green hydrogen and ammonia, as well as the required raw materials.

The research report provides detailed insights into the feasibility of developing the required infrastructure, including storage tanks, pipelines, logistics warehouses, and port facilities. GreenZo also assesses the potential for export to other countries through a detailed desk study, showing how much green hydrogen and green ammonia can replace traditional uses.
4. Providing energy solutions using fuel cell technology

C) Projects completed by GreenZo Energy

1. API Power Company Limited 4MW AC/4.8MW DC
2. Eco Power Development Company -Dhalkebar-12.25 MW
3. API Power -Dhalkebar Phase II
4. Chandranigahapur-5 MW
5. Dhalkevar Phase I – 1.25 MW

D) Understand terms like "Green Hydrogen", "Ammonia", "Electrolyser" and "Fuel Cell".

1. Green Hydrogen: Definition:

Green hydrogen is hydrogen produced using renewable energy sources like wind, solar, and hydropower through a process called electrolysis. This method is environmentally friendly as it does not produce greenhouse gases.

Production Process:

Electrolysis: This process uses electricity to split water (H2O) into hydrogen (H2) and oxygen (O2). If the electricity used is renewable, the hydrogen produced is called "green hydrogen".

Sustainability: Green hydrogen is considered a key element in the transition to a sustainable energy system because it can be used for a variety of purposes without emitting CO2.

Applications: Energy storage: It can store surplus renewable energy and be used when production is low.

Transportation: It is used as a clean fuel for vehicles, especially fuel cells.

Industrial processes: It is used in industries such as steel production and ammonia synthesis to reduce carbon emissions.

2. Ammonia:

Meaning:

Ammonia (NH3) is a compound of nitrogen and hydrogen. It is a colorless gas with a pungent odor and is commonly used in fertilizers, industrial processes, and as a potential energy source.

Production and Use:

- **Traditional Production:** Today, ammonia is primarily produced using the Haber-Bosch process, which combines nitrogen from the air with hydrogen (usually from natural gas) under high pressure and temperature.
- **Green Ammonia:** When produced using green hydrogen, ammonia acts as a carbon-free fuel and energy store.
- **Fertilizer:** Due to ammonia's high nitrogen content, a significant portion is used as fertilizer in agriculture.
- **Energy source:** Ammonia allows hydrogen to be transported more efficiently and can be burned directly in power plants or used in fuel cells.

3. Electrolyzers:
Definition: An electrolyzer is a device that uses electricity to split water into hydrogen and oxygen. It is central to green hydrogen production.

Types of electrolyzers:
Alkaline electrolyzers: Use a liquid alkaline electrolyte solution (e.g. potassium hydroxide).
Proton exchange membrane electrolyzers (PEM): Use a solid polymer electrolyte and operate at higher current densities, allowing greater flexibility for renewable energy sources.
Solid oxide electrolyzers: Operate at higher temperatures and are more efficient, but are still being developed for large-scale use. Function and meaning:
Hydrogen production: A key technology for producing green hydrogen from renewable energy sources.
Decarbonization: By enabling the production of clean hydrogen, it plays a key role in reducing carbon emissions in various sectors.

4. Fuel cells
Definition: A fuel cell is a device that converts the chemical energy of a fuel (usually hydrogen) and an oxidant (usually oxygen) into electricity through a chemical reaction.
Types of fuel cells:

- **Proton exchange membrane fuel cell (PEM):** Commonly used in automobiles. Operates at relatively low temperatures and has a short start-up time.
- **Solid Oxide Fuel Cells (SOFC):** Operate at high temperatures and are used for stationary power generation.
- **Alkaline Fuel Cells:** Used in aerospace and some specialty industries.

Functions and Applications:
- **Power Generation:** Produces electricity through electrochemical reactions, producing water and heat as by-products, making it environmentally friendly.
- **Transportation**: Used in Battery Electric Vehicles (BEVs) and Fuel Cell Electric Vehicles (FCEVS) as an alternative to internal combustion engines.
- **Emergency Power:** Due to their reliability and efficiency, they are used in emergency power systems in critical infrastructure.

Advantages:
- **Efficiency:** Fuel cells are more efficient than internal combustion engines and have less impact on the environment.
- **Versatility:** They can be used in a variety of applications, from small portable devices to large-scale power plants.

E) Company Management:

- M-TECH Founder and Managing Director Sandeep Agarwal is a visionary leader in sustainable energy solutions committed to driving advancements in green technologies and innovations in renewable energy.
- Raj Kumar Agarwal, former Senior Vice President, of AGM-NTPC, brings extensive experience and expertise in power generation and energy management to drive strategic initiatives for sustainable growth and operational excellence.

F) Company Valuation

Number of Ordinary Shares: 1,185,2331 shares (as of 31 May 2024)
CMP: Rs.750
Market Cap: 885 Cr.
PAT Projection (FY2025): 42.94 Cr
Expected PER: 20x

G) Company Outlook (Cr)

Particulars	FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28	FY 2028-29
Turnover	255.60	496.60	2482.32	3181.09	4200.78
PAT	42.94	82.22	397.34	518.31	686.51

Note: *Above Projection are taken from Valuation Report done by Independent Valuer.*

H) Conclusion

Founded in 2021, Greenzo is in the early stages of its efforts in the green hydrogen market. The company initially completed several solar EPC projects successfully and is now expanding its expertise to include electrolyzer technology to produce green hydrogen. The production unit was set up in October 2023 but is yet to commence operations. In addition, Greenzo also offers consulting services for setting up green hydrogen and ammonia plants. The company recently raised capital, increasing its market capitalization to approximately 418 Cr as of February 2024. The green hydrogen market, like the solar power industry in 2010, is still in its infancy and significant technological advancements are yet to be made. Currently, producing green hydrogen through electrolysis is only economical at large scale. Larger players like Reliance are also entering the market and have plans to set up an electrolyser manufacturing plant in Gujarat.

Given the nascent stage of the market and expected technological changes, the risks are significant. However, Greenzo's proactive approach and strategic initiatives position the company to capitalize on future opportunities in this evolving market.

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Fundamentals

Fundamentals			
GreenZo Energy	680 Per Equity Price	Market Cap (in cr.)	800
Unlisted Shares Price		P/E Ratio	**
Lot Size	1000 Shares	P/B Ratio	0
52 Week High	750	Debt to Equity	**
52 Week Low	675	ROE (%)	**
Depository	NSDL & CDSL	Book Value	**
PAN Number	AAKCG1555H	Face Value	10
ISIN Number	INE0OA401013		
CIN Number	U29309DL2022PLC407203		
RTA	N/A		