Energy War Room

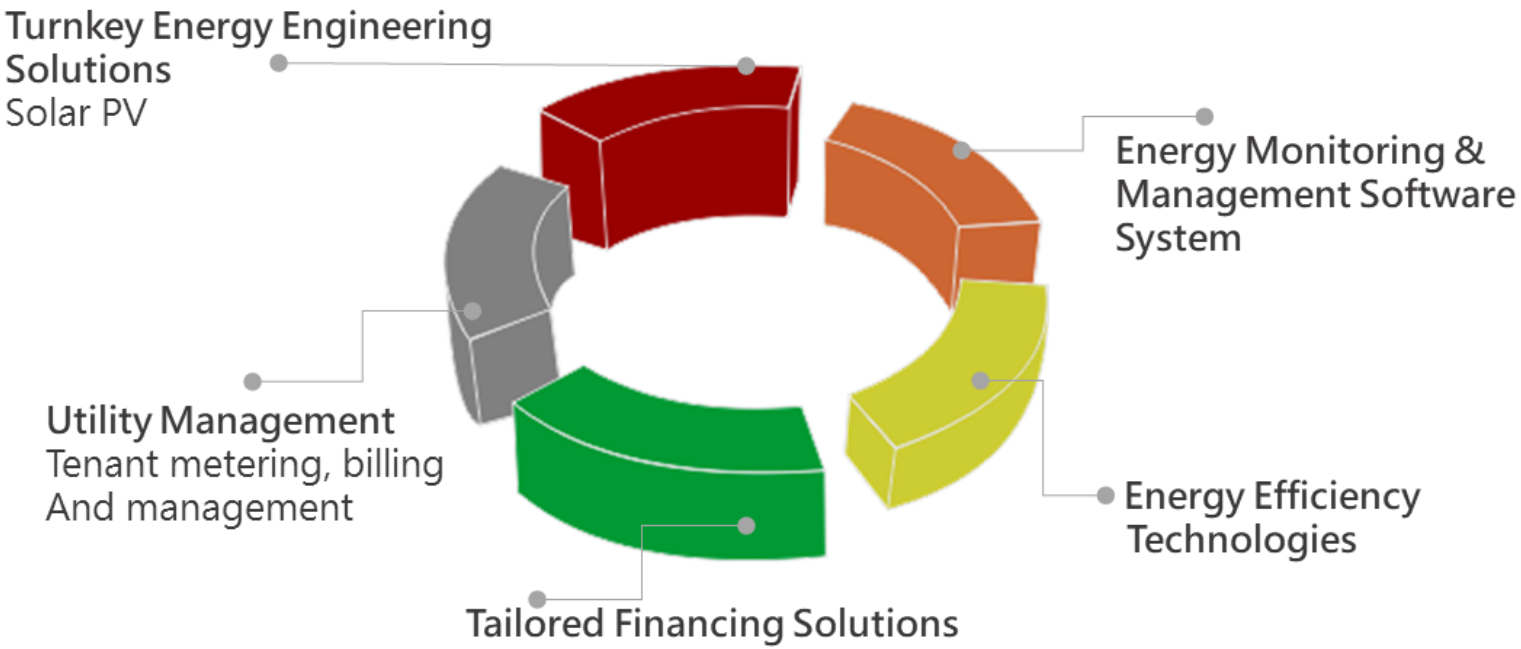
Solar Solutions – Embedded Generation

TERRA FIRMA SOLUTIONS

EFFICIENCY. CARBON. ENERGY. WATER. TRAINING.

Introduction

Terra Firma Solutions is a market leader in providing, end–to-end, energy engineering solutions.



History

2012

Terra Firma Solutions (Pty) Ltd was founded in Cape Town

2020

Reunert Limited takes 89% of the shares in Terra Firma Solutions, with Terra Firma becoming a BBBEE Level 2 company

2021

In 2021 Reunert and A.P. Møller Capital, announced the establishment of a new joint venture, Lumika Renewables which is now Terra Firma Solutions' sister company

Shareholders

REUNERT
REUNERT LIMITED

JSE: RLO
Mkt cap 8B ZAR

LUMIKA RENEWABLES

A·P·MØLLER CAPITAL

A.P. Møller – Mærsk A/S(AMKBY)
Mkt cap 357B USD

Lumika is a joint venture platform between Denmark's AP Møller Capital's Africa Infrastructure Fund (AIF) 1 and South Africa's Reunert

Achievements to date

270 MW Solar systems installed

1,417,500 m2 Solar installed

864 GWh saved by our clients

R4.84 Bn saved by our clients

3,496 sites under energy management

TERRA FIRMA SOLUTIONS
EFFICIENCY. CARBON. ENERGY. WATER. TRAINING.

Financial Offerings

Power Purchase Agreement (PPA)

- Zero capital layout is required
- Offers greater stability and predictable annual price increases
- Terra Firma Solutions offers a 95% bankable output guarantee
- Operations and Maintenance of the solar system at no additional costs

Roof Rental Agreement (RRA)

- Monetize previously under-utilized roof space
- Operations & Maintenance of the solar system at no additional costs
- No risk associated with the volume of solar energy produced and consumed
- Property value is increased from the benefit of on-site renewable energy generation

Outright Purchase (EPC)

- The return on investment is substantial
- Unlocks tax benefits
- Long term NPV is substantial
- The on-sold power to tenants can be an additional revenue source

Top mistakes businesses make when installing embedded solar, and how to avoid them.

1.

Putting off deploying solar to see if the price drops

- System payback could be as soon as 2 years, especially with new tax incentives.
- Life expectancy of the solar plant is more than 25 years.
- Solar ROI outstrips almost any other business investment.
- How much would you have saved already if had you had acted then?

Don’t wait. Do it now !

2.

PV Solar will provide power during loadshedding

- The solar plant will shut down with grid outages.
- This is a legal requirement, for safety.
- A backup solution can be integrated with the solar plant.

Integrate BESS (Battery Energy Storage System) for grid security and/or a generator for diesel savings.

3.

Purchasing decision is made purely on cheapest price

- PV solar should be installed to last 25 years or more.
- In order to cut costs an installer must cut quality.
- Is there any assurance of legal compliance?
- Will the installer be around for the life of the system?
- Faulty installations can lead to fires

Use a reputable installer, with references and a proven track record.

4.

The PV Solar plant is incorrectly sized

- The system should be designed around the best ROI.
- Sizing should be determined by base load and not peak demand.
- A solar provider may sell you the biggest plant they can.
- Additional costs, such as bifacial modules, tracking, etc. should be measured against added returns.

Find a provider who offers the same solution, whether on a PPA or outright purchase.

5.

Making an uninformed decision by not fully understanding the benefits of various financial options.

- Ownership unlocks tax benefits and offers the shortest payback.
- An outright purchase places more responsibility on the customer.
- A PPA offers savings, whilst entirely de-risking the decision.

Company objectives will determine which option is best. Use a provider who is willing to offer a performance guarantee.

6.

Solar power is too weak to drive my heavy machinery.

- The DC solar power is converted to AC and is the same as grid power.
- There is no issue running 3-phase equipment off solar power.
- If anything, the PV plant would provide cleaner power.
- It is extremely rare, that PV would affect equipment

There is absolutely no risk to equipment, even in overcast weather.

7.

Installing solar will damage my roof and cause leaks.

- In most cases there is no need to penetrate the roof sheeting at all.
- Mounting structure is used that will not void a roof guarantee.
- Roofs are thoroughly checked and repaired prior to installing PV.
- Millions of PV installations have been done globally, with no issues.

A reputable installer will offer a guarantee on the workmanship.

8.

We can install solar on our warehouse roof and supply the factories next door.

- Legally, solar power cannot be generated on one erf and consumed on another.
- In certain instances, power can be wheeled through the grid, at a fee.
- Where there is not enough roof space, ground mount options may work .

A good solar provider would be able to offer various solutions where space constraints are a problem.

9.

Make the PV plant as big as possible so that I can sell the extra power back to the grid.

- The feed-in tariff needs to be higher than the cost of the PV tariff.
- At this stage there are areas where you cannot export power at all.
- Eskom may allow banking on their grid, one-for-one, in the same TOU band.
- Municipalities are not yet ready to implement such systems effectively

Choose a service provider who understands this and can help with the necessary applications.

10.

I can save diesel by running my PV and generators together

- Technically feasible, generators and PV can work in concert to save diesel
- In practice generators must run at 30-40% of their rated capacity or risk premature failure or inefficient operation
- Generators are often sized to provide a peak, not base load, for a specific tenant
- PV system will typically be larger than generator capacity and therefore throttled significantly
- Cost to implement an interface can be very high depending on proximity of components
- Introduces a point of failure in an otherwise reliable system

There are some cases where cost and savings can be beneficial, but the design must be thoroughly investigated.

TERRA FIRMA SOLUTIONS

EFFICIENCY. CARBON. ENERGY. WATER. TRAINING.

Thank you!

Ben Snyman

ben@terrafirma-solutions.com

+27 82 695 0130