Konet Limited (UK)

...A Concept Engineered to Perfection

Konet Limited / Konet FZE the confluence of concepts, knowledge... technologies are **Konet Group of Companies** driven by passion, fueled by knowledge, powered by intellect and engineered by emerging technologies.
An expert in delivering time-critical, cost-effective yet exhaustive solutions to its clients spread across the planet-
An organization having a huge client database in almost every continent.

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Objective:

- To promote the renewable energy based transport solution for the smart city.
- Proposed the smart transport solution with improved end to end connectivity.
- To modified the Electric Rickshaw with solar PV as an additional source.
- The design concept of Solar assisted hybrid electric rickshaw with overall benefits.
- Estimation of financial benefit and carbon emission reduction.
- Concept of Battery life enhancing system.

But if we could reduce certain problems we could manage to earn more from the operation of e-rickshaw/Toto/TukTuk...

- Single charge (60-75 km) on the way of battery-led E-rickshaw/Toto/TukTuk.
- Expense and time of another charge during afternoon or in between.
- Lesser speed during night time.
- Expense and time of the charging of battery per day.
- Changing the Battery exactly on Warranty period or just after the same.
- Top of it earnings could have been more than now...

In order to solve/sort out these problems/issues M/S Ashoka Energy has brought 48 volt highly effective rooftop solar system SunRun^{+} for batteries for battery-led E-rickshaw/Toto/TukTuk.

Advantage:

- **More millage** with SunRun+: Additional 25-40KM per day basis over 75-90 KM.
- **More Earning:** With extra millage more Trip with more income approx 1.2-1.5 times.
- **Return on Investment (ROI):** Within 3-4 months.
- Saving on **Charging Electricity bill** to charge the battery.
- Enhancing the battery life 1.5 to 2.0 times means better optimization of Working Capital.
- As SunRun^{+} generate **48V directly from SPV**, therefore no need of any Converter, MPPT Charge controller and other accessories unit; therefore SunRun^{+} will be utilized as "Fit and Forget Model" on E-Rickshaw/ Toto/ TukTuk.
- This model shall be fitted very easily in old & new E-Rickshaw within 20-30 min.
- As **SunRun^{+}** has been designed with partial-shade tolerance, therefore will charge the battery in partial shaded condition also.
- Maintenance charge almost nil with regular cleaning of SPV with Water only.
- Generate Much High Income at Less Expenditure.
- A step towards Carbon Positive vehicle and much more..

A Step towards Green Transport System

A new initiative towards
Non-Conventional & Green Energy
by Ashoka Energy

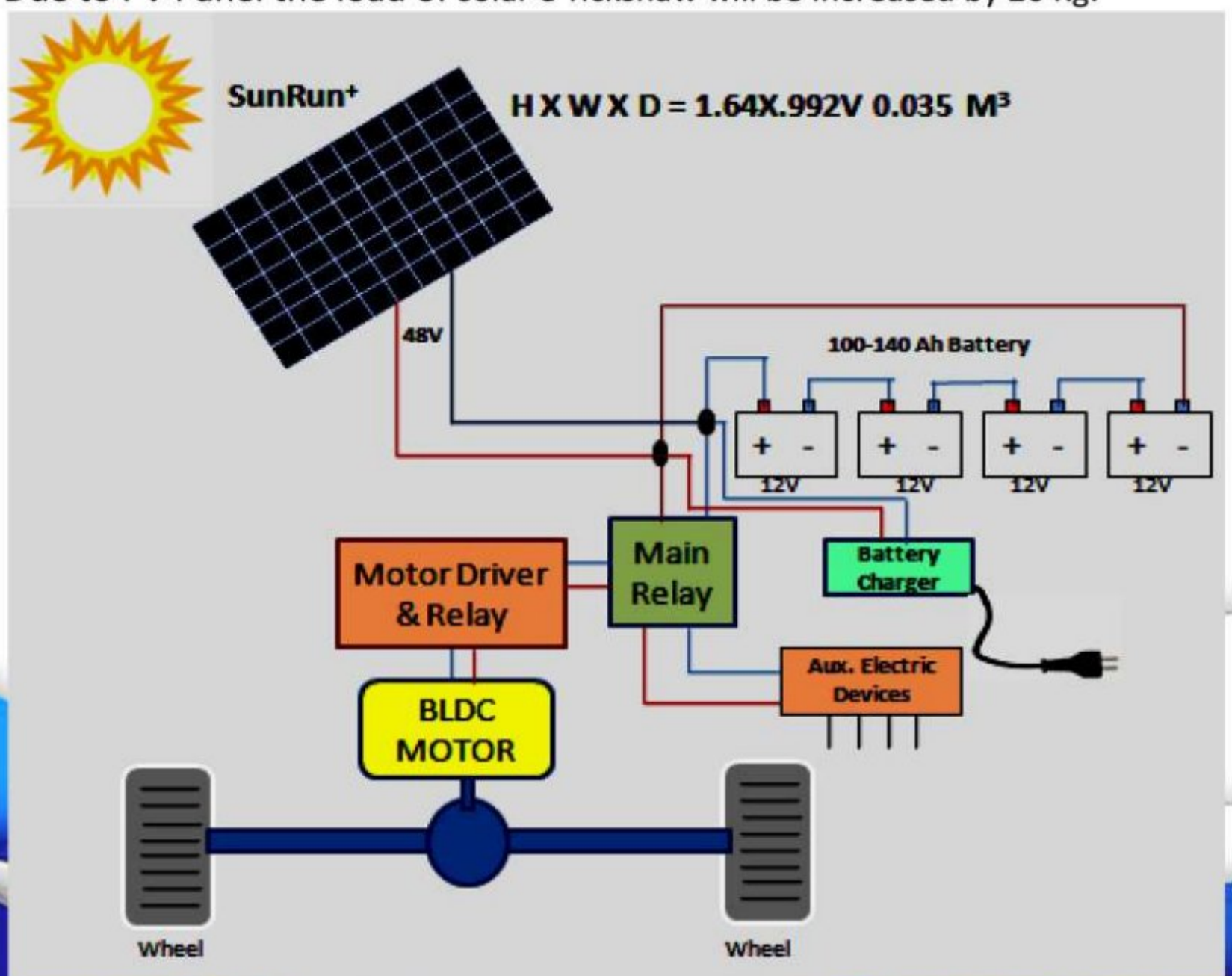
More Millage
More Speed → **with SunRun+**
More Income

- **More Millage**
- **More Income**
- **More Battery Life**
- **ROI within few months.**
- **Saving Electricity**
- **Minimum maintenance**

We are standing at the threshold of another green revolution...
Cleaner and greener transportation in the form of battery-led E-rickshaw/Toto/TukTuk has come into operation in our life plying from narrow lanes to broader highway...
This system has provided an easy means of earnings to a large section of people/public of the world.

Solar Electric Rickshaw:

- The Solar PV panel at the roof of electric rickshaw can be used to boost the capacity of battery (new/old battery).
- The solar PV panel without changing the original design of the e-rickshaw is considered.
- The approximate area of 1.65 Sq Mtr. On the roof has been considered for installation of SunRun⁺.
- The PV panels above the roof of e-rickshaw are prone to partial shading and therefore SunRun⁺ has been designed with better partial-shade tolerance.
- High Efficiency PV Panel has been considered for SunRun⁺.
- Due to PV Panel the load of solar e-rickshaw will be increased by 20 Kg.



Calculation and Analysis:

Consideration

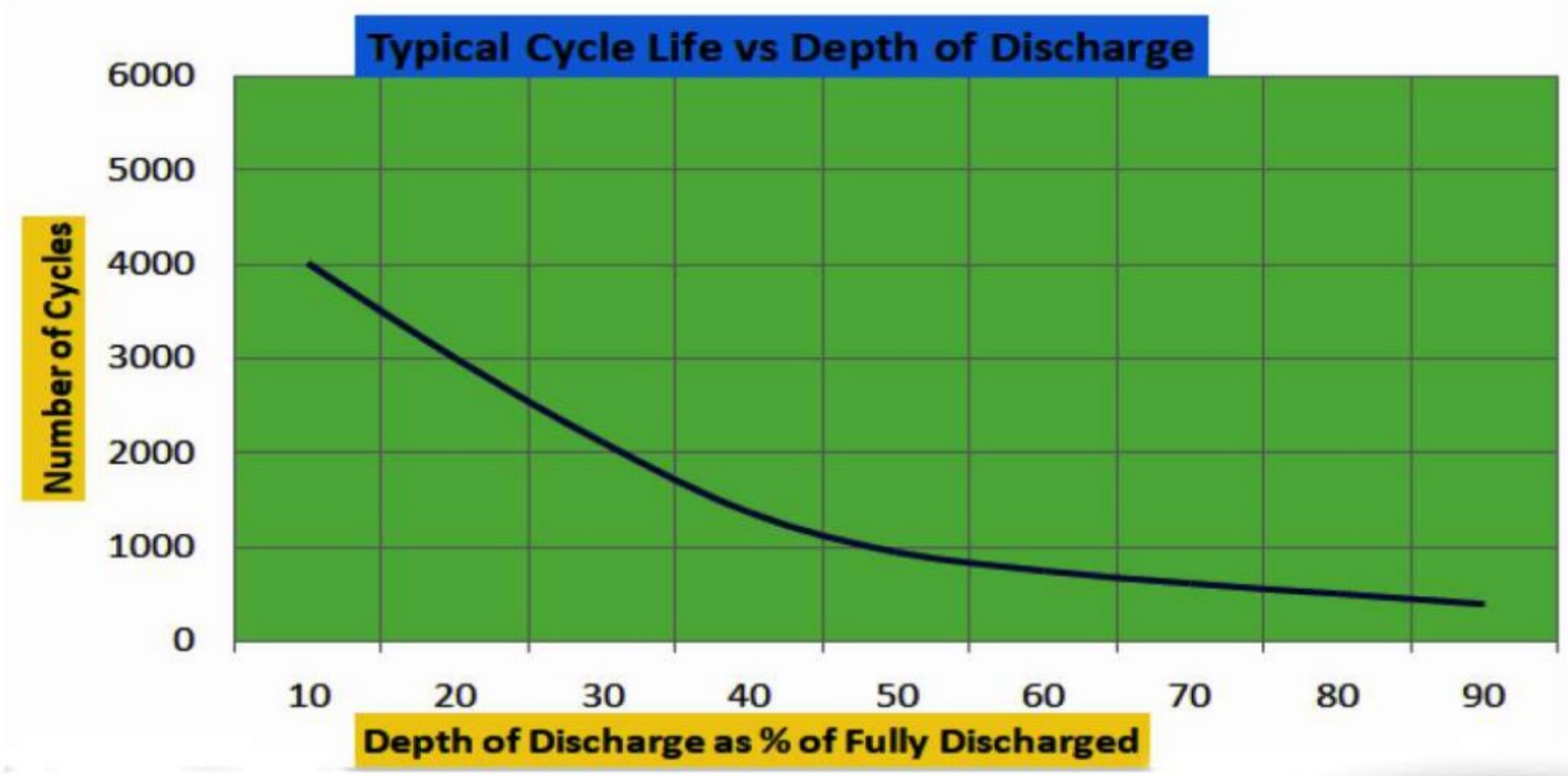
(i) With fully charge battery (consider 100 Ah), average distance covered by e-rickshaw = 75 KM.

(ii) Depth of Discharge of the Battery (DOD) = 80%; Solar system conversion efficiency =80%.

(iii) Solar Average Radiation considered from 4.5 KW/m^2/Day to 7.0 KW/m^2/Day considering different country's data

Radiation/day (KW/m2)	4.50	4.75	5.00	5.25	5.50	5.75	6.00	6.25	6.50	7.00
Energy Feed by **SunRun**+ SPV (KWh)	875	924	972	1021	1069	1118	1167	1215	1264	1361
Battery Capacity (Wh) (48VX100 Ah)	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800
80% Energy Discharge/day (DOD)	3840	3840	3840	3840	3840	3840	3840	3840	3840	3840
with SPV Energy required (KWh)	2965	2916	2868	2819	2771	2722	2673	2625	2576	2479
Remaining Energy in battery after Discharge/ Day	1835	1884	1932	1981	2029	2078	2127	2175	2224	2321
With SPV Battery DOD (%)	62 %	61 %	60 %	59 %	58 %	57 %	56 %	55 %	54 %	52 %

Now considering the Typical Cycle Life of a Battery with Depth of discharge, it is found that the Number of cycle of the Battery will be increased 1.5 to 2.0 times; means a battery with 12 months operating life will easily work for 18 to 24 month. Also with the remaining energy the E-Rickshaw will run additional millage on per day basis.



CURRENT CHALLENGES AD DIFFICULTIES FACED IN THE OPERATION OF E-RICKSHAW/TOTO/TUKTUK ARE -

- Single charge of Battery restricts and limit the distance travelled to 60-75 km.
- Additional time and cost incurred to charge battery during afternoon, or in between Trips.
- Speed lag during late evening hours.
- Expense and time of the charging of battery per day.
- Daily battery charging is time consuming results to additional cost.
- Changing the Battery exactly on Warranty period or just after the same.
- Top of it earnings could have been more than now...

Incorporating certain changes will help in optimizing the earning opportunity from operation of E-rickshaw/Toto/TukTuk.

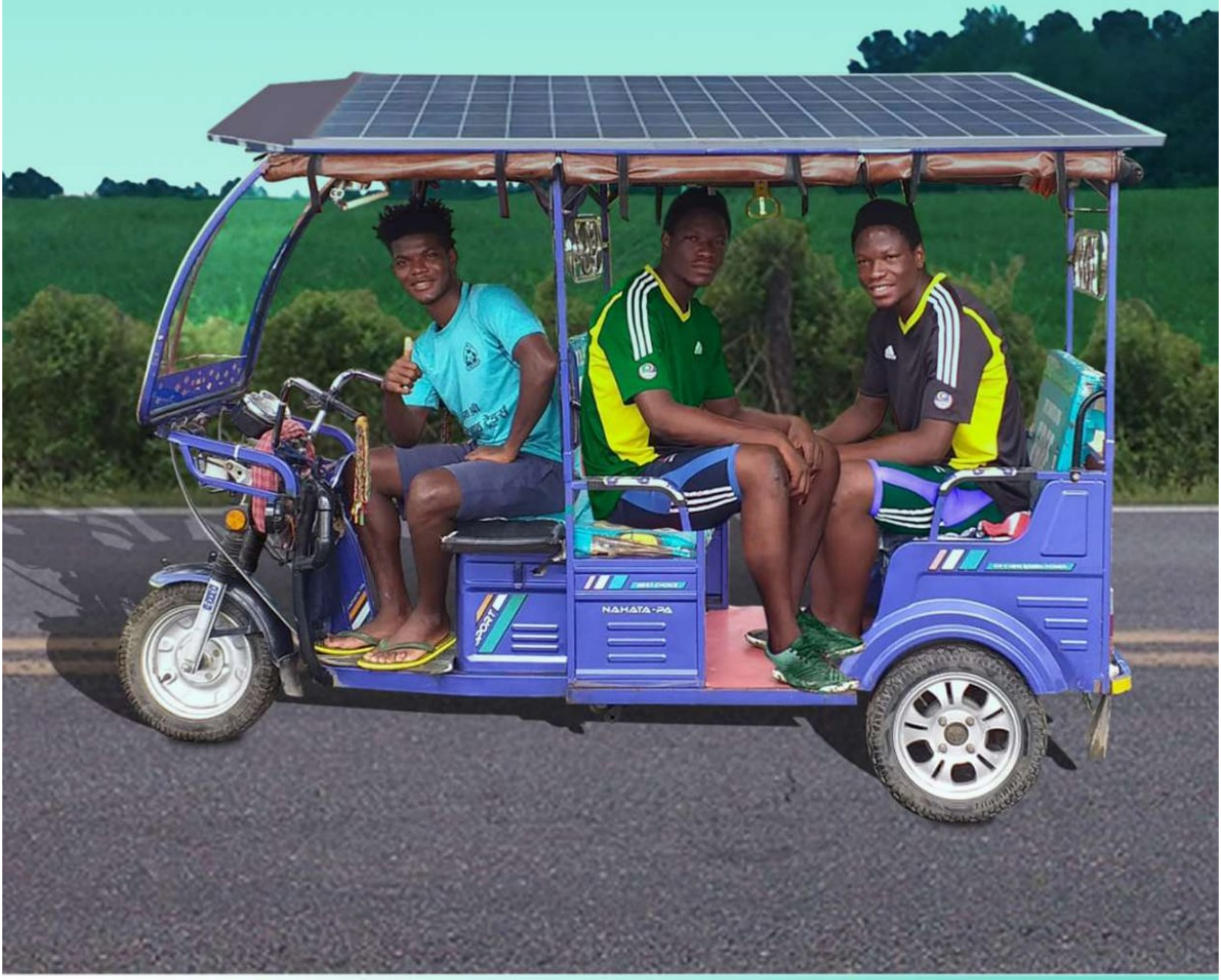
To eliminate the above trouble shooting areas *konet limited(UK)* has brought 48 volt highly effective rooftop solar system SunRun+ for battery-led E-rickshaw/Toto/TukTuk.

SunRun Xpress

A STEP TOWARDS GREEN TRANSPORT SYSTEM

A NEW INITIATIVE TOWARDS
NON - CONVENTIONAL & GREEN ENERGY
BY -

MORE SPEED
MORE MILLAGE
MORE INCOME



SUNRUN XPRESS