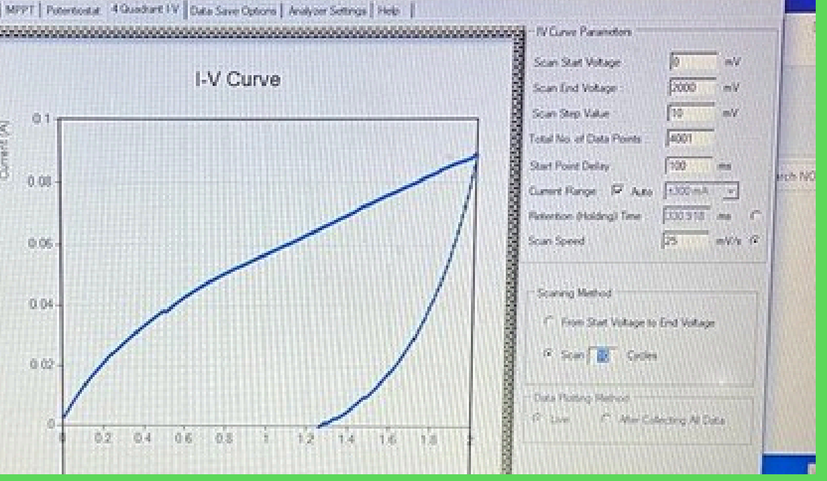
VOLFPACK

Energy

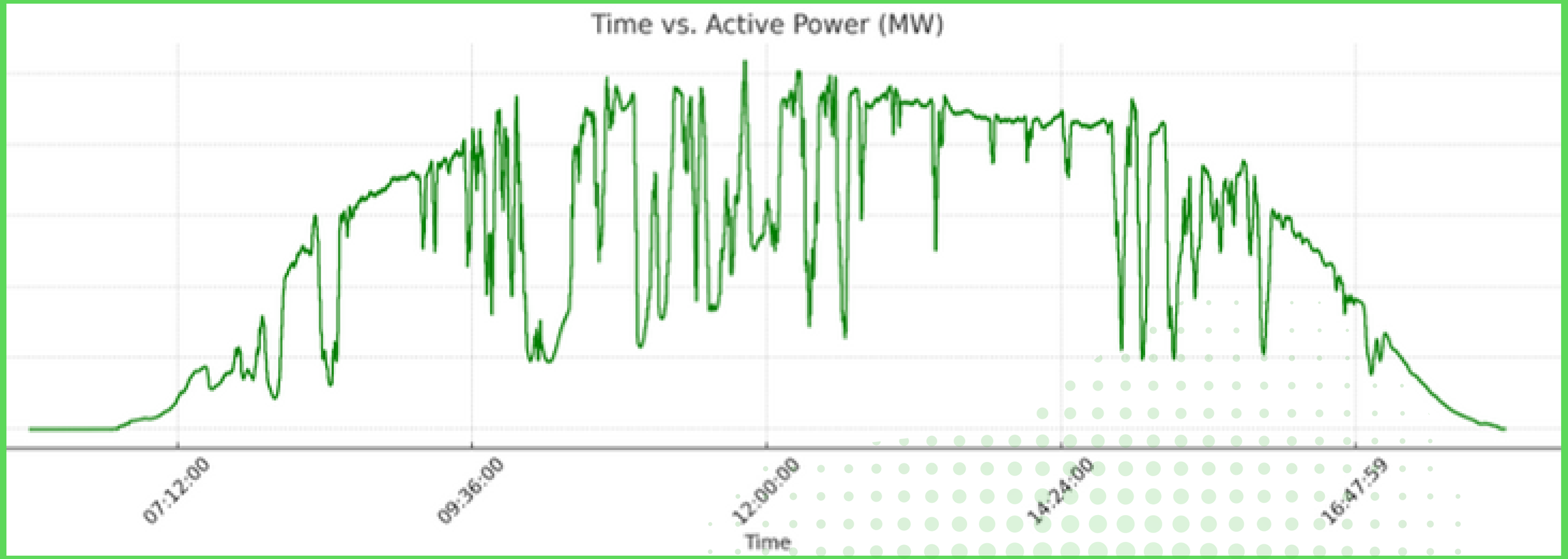
CHEAPER CLEANER ENERGY FOR ALL

Volfpack Energy Pvt Ltd


MPPT
Potentiostat
4 Quadrant I-V
Data Save Options
Analyzer Settings
Help
I-V Curve
Current (A)
IV Curve Parameters
Scan Start Voltage
Scan End Voltage
Scan Step Value
Total No. of Data Points
Start Point Delay
Current Range
Auto
Retention (Holding) Time
Scan Speed
Scanning Method
From Start Voltage to End Voltage
Scan
Cycles
Data Posting Method
Live
After Collecting All Data

The Problem

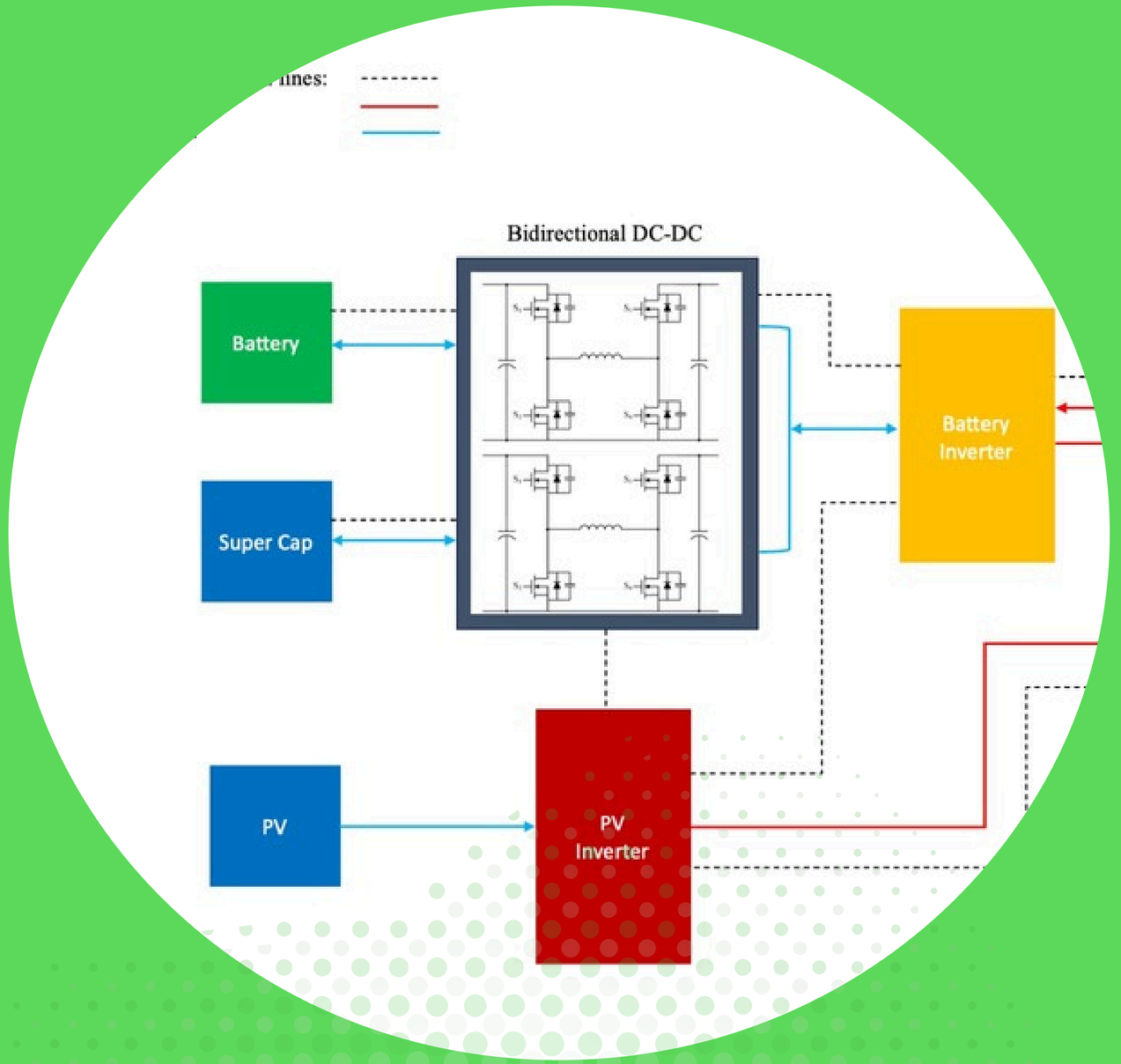
Renewable power is unpredictable
This makes solar adoption a challenge for grid operators



One day power output 10MW solar power plant

The Solution

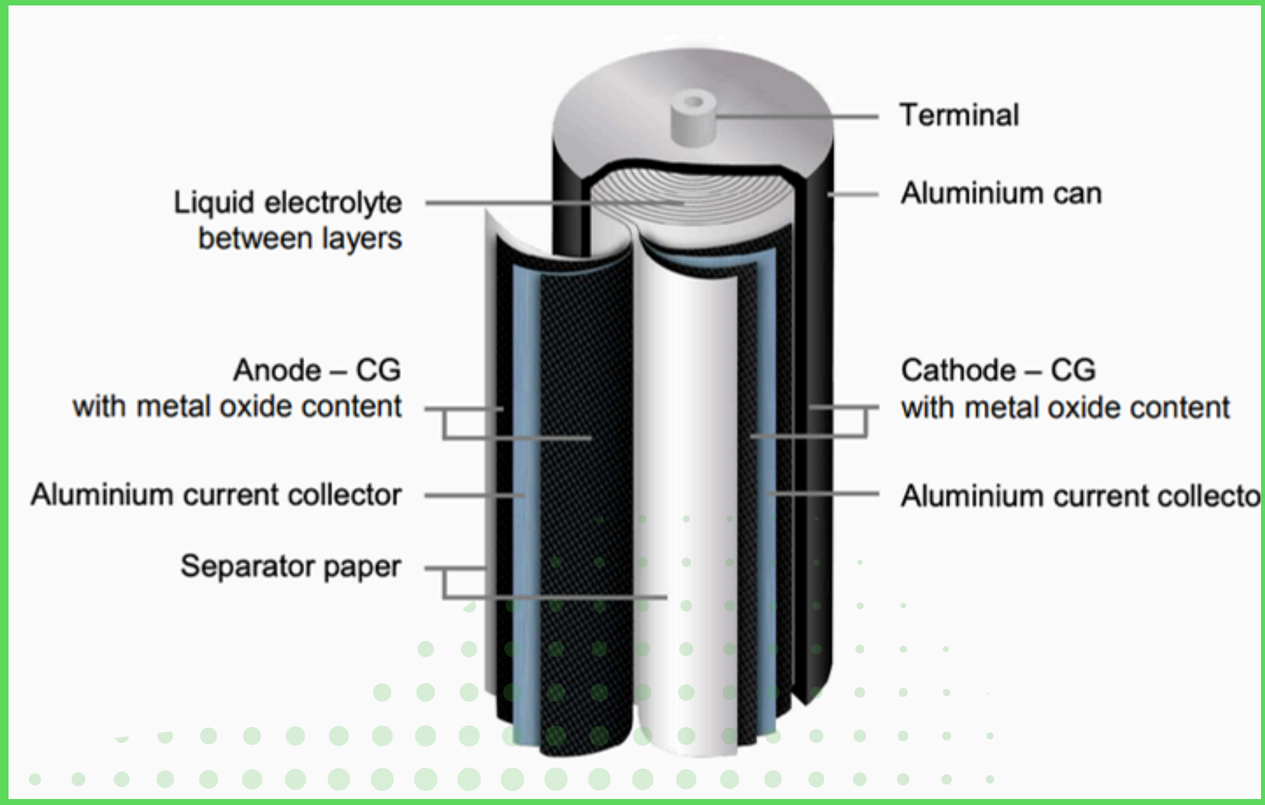
Hybrid battery systems
using supercapacitors
Software for predicatability



Hybrid supercapacitors

They blend the technologies of traditional supercapacitors and lithium-ion batteries for exceptional performance.

Higher energy density than traditional supercapacitors.
Higher power density than typical lithium-ion batteries.
Longer cycle life than many batteries.
Rapid charge and discharge capabilities.



Reduced cost

50% savings for battery only solution

Fast response

to changes ensuring grid stability

Stable and Predictable

power output to the grid

Safety

Reducing the high power demand removes risk of fire

The Benefits

A hybrid system with predictable software has significant advantages

Timeline

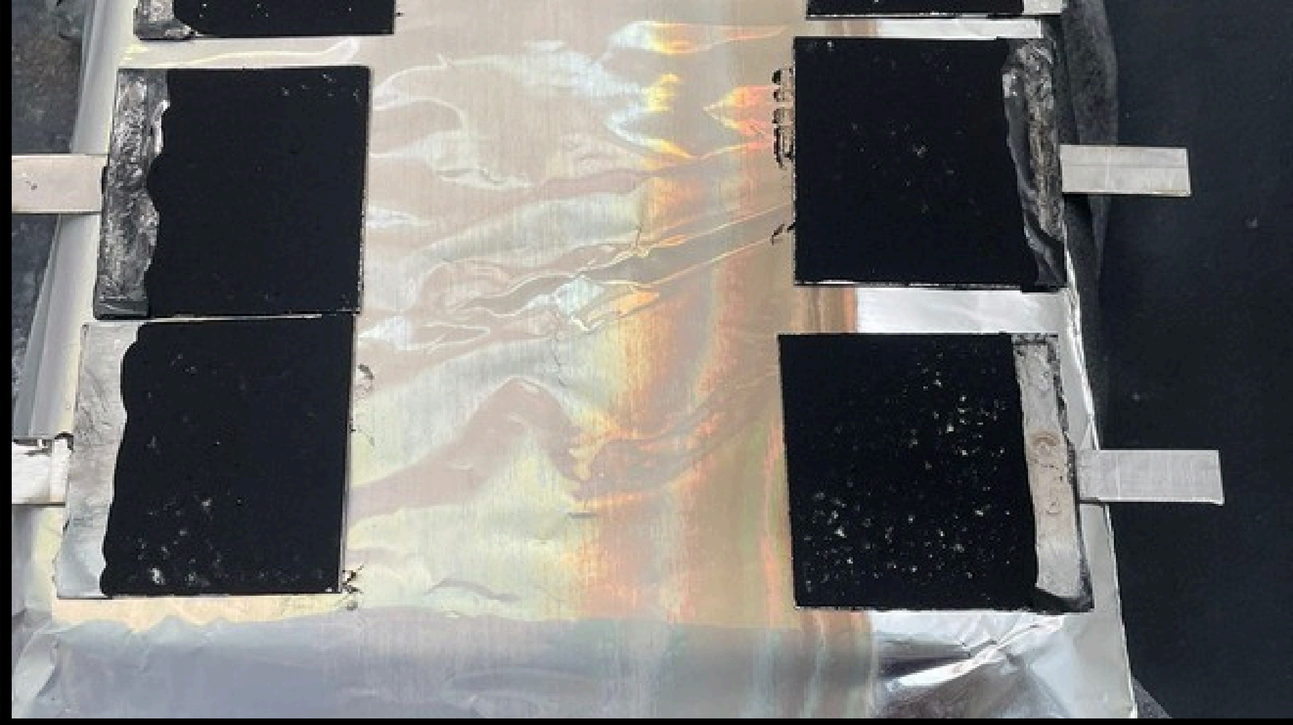
Stage 1
Chemistry optimization
4 Months
Ongoing
Based on LFP
chemistery

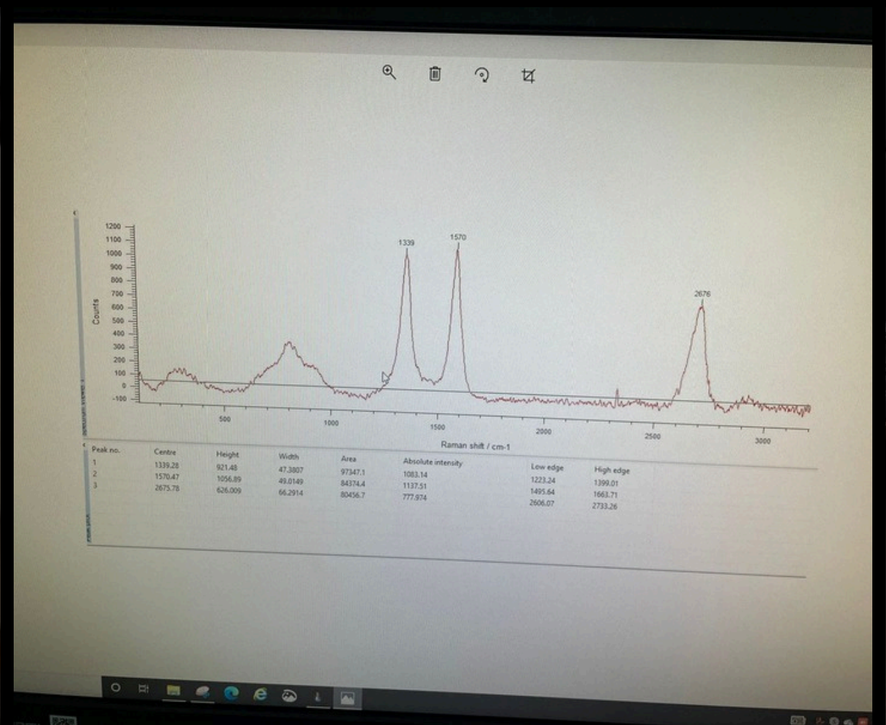
Stage 2
Pouch Cell Production
8 Months
($ 50,000)
A pouch cell factory.
50 units per day

Stage 3
Transition to Renewable
18 Months
$ 350,000
Scale up to large cells.
50 units per day

Stage 4
Pilot Production
18 Months
$3,000,000
I1000 units/day.

Stage 5
24 Months
Full-Scale Production
($10,000,000)
10,000 units/day.




1339
1570
2676
Counts
Raman shift / cm-1
Peak no. Centre Height Width Area Absolute intensity Low edge High edge
1 1339.20 921.48 47.3807 97347.1 1083.14 1223.24 1399.01
2 1570.47 1056.89 49.0149 84374.4 1137.51 1485.64 1663.71
3 2675.78 626.009 66.2914 80456.7 777.974 2606.07 2733.26

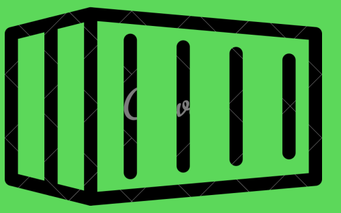

μA
LED
TEST

Revenue Streams

Stage 3 onwards

Cells

$20- $30
per supercap cell



Units

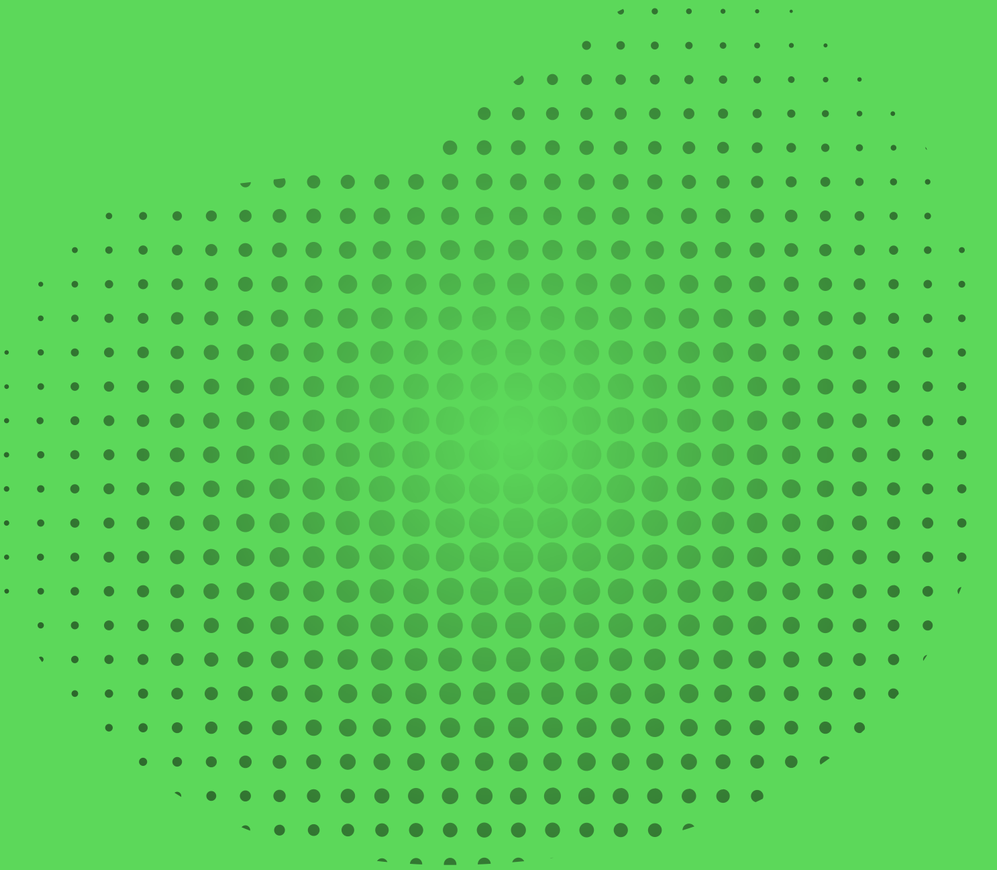
$100,000 - $500,000
per unit

Engineering Implemenation Team

$100,000 - $500,000
implementation

The global energy storage market was worth USD 211 billion in 2021 and will increase to USD 436 billion by 2030 at a CAGR of 8.45%.

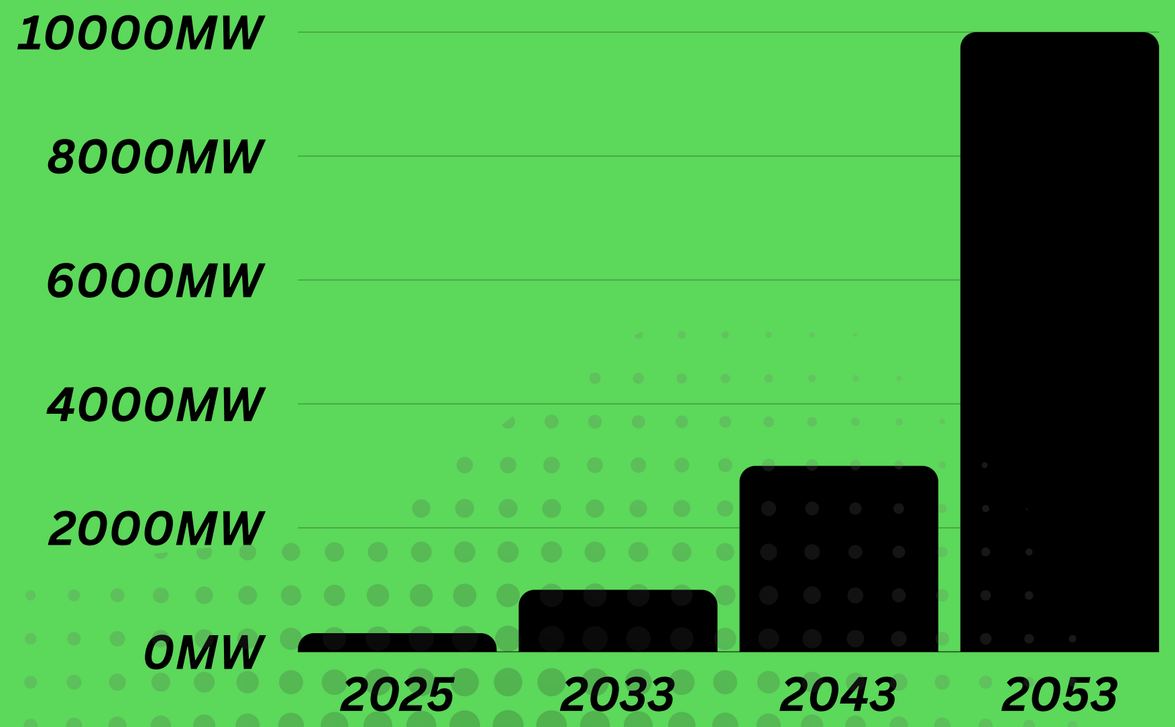
Global Energy Storage Markets, Facts and Factors



Market Size

About 1.6 billion has to be spent on transmission, about 1.5 billion dollars on energy storage to boost renewable share to 70% by 2030

Minister for Power and Energy Hon. Kanchana Wijesekra



Competition

KYOCERA AVX

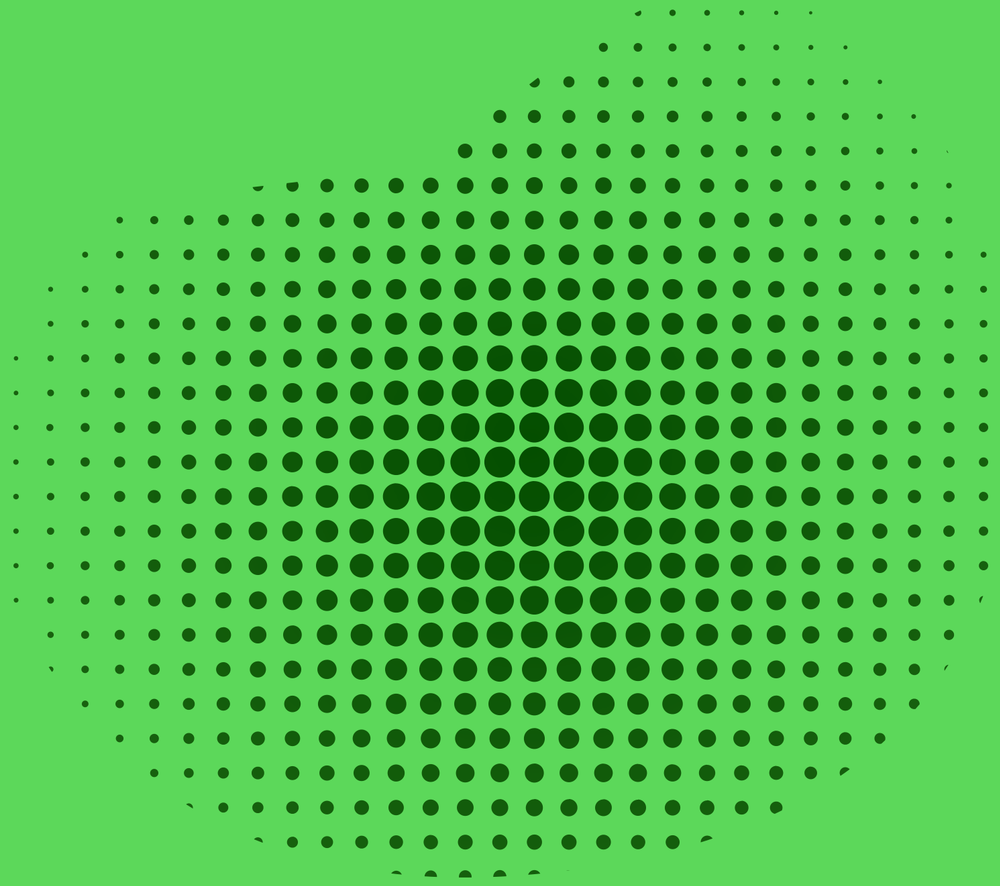
SKELETON TECHNOLOGIES

Panasonic

CAP-XX

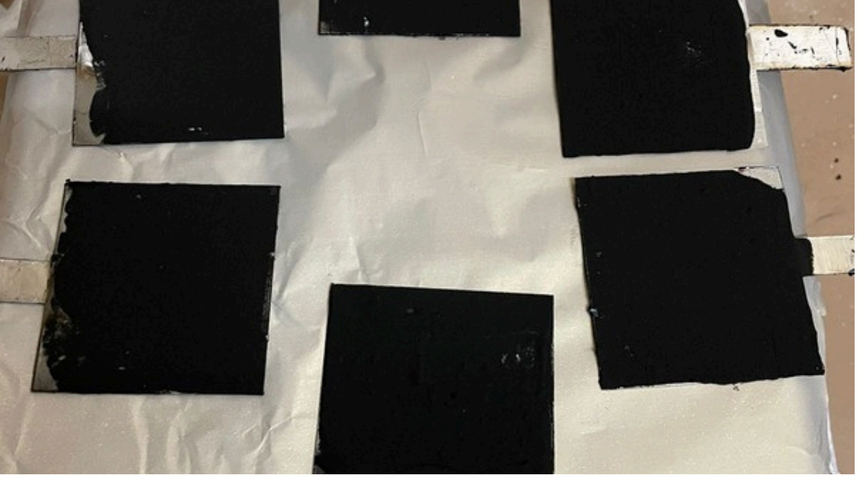
IOXUS

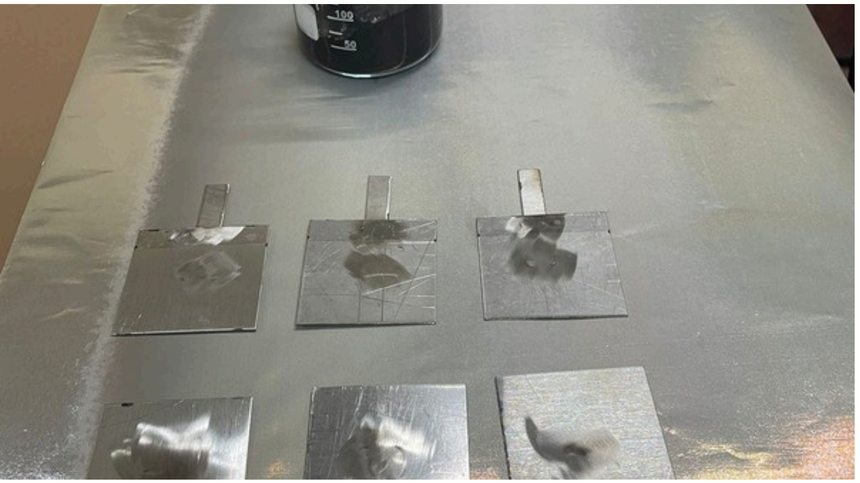
Maxwell TECHNOLOGIES

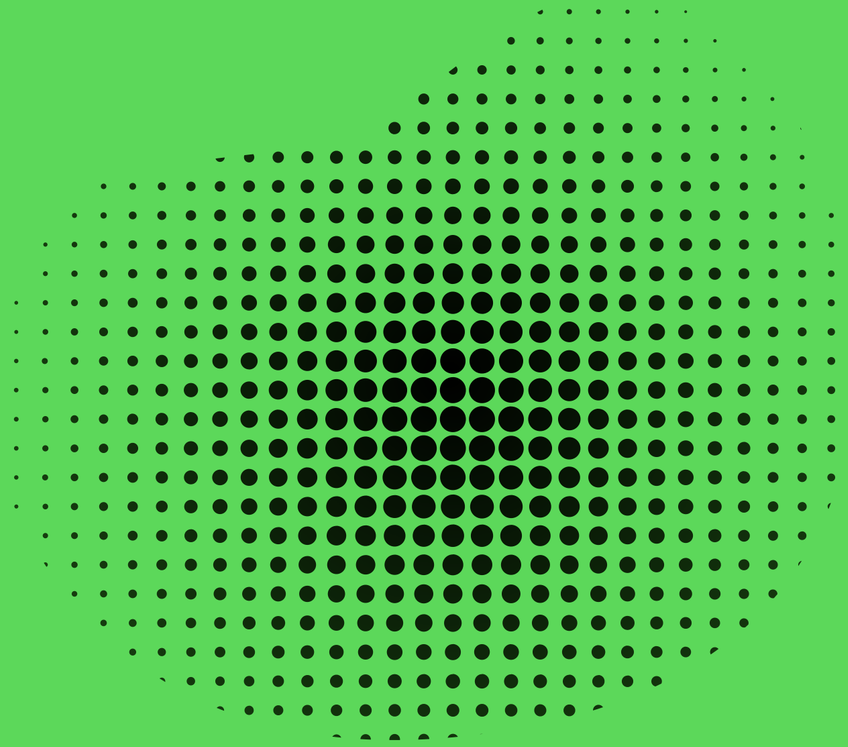


Hardware Is Hard

but so much FUN







Stage 2
Pouch Cell Production & Rapid Feedback

Pouch Cell Production

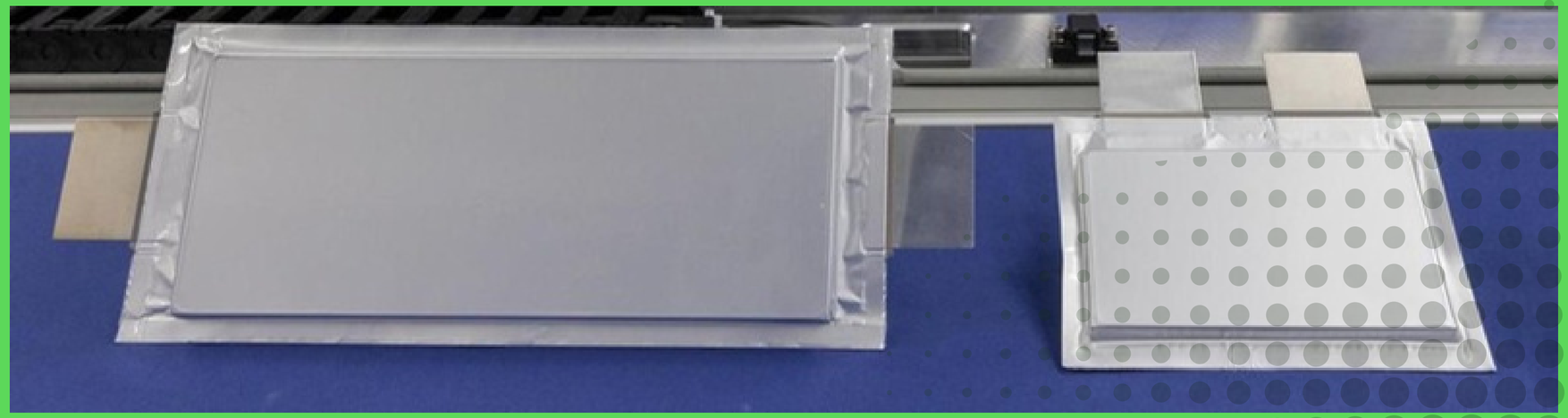
Distribution Partner with electricians, universities and entrepreneurs to test on various use cases
Emphasize a tight feedback loop for continuous product refinement

Investment details

Time Line - 8 Months
Investment - USD 50,000
Battery Max Size: 130*120mm
For lab scale pouch cell equipment
10,000F 3

Potential Use Cases

Digital Cameras	**Electronic Components**
Handheld Devices	**Memory backup**
Medical Equipment	**Real-time Clocks**
Gaming Devices	**Wearable Tech Prototypes**
Power drills	**Automatic door locks**



Core Team

We have a very strong collaborative culture and our focus will always be on finding the truth

Maithri Dissanayake
Material Science & Cell Development

MSc in nanoscience & Nano Technology
University of Peradeniya

Research assistant at the Institute of Fundamental Studies Kandy (IFS) since 2015

Passionate about bringing lab products to the market

Charlie Karunaratne
CEO

Electrical engineering
University of Technology Sydney

Software product development in Australia and the UK

Solving complex problems for significant impact

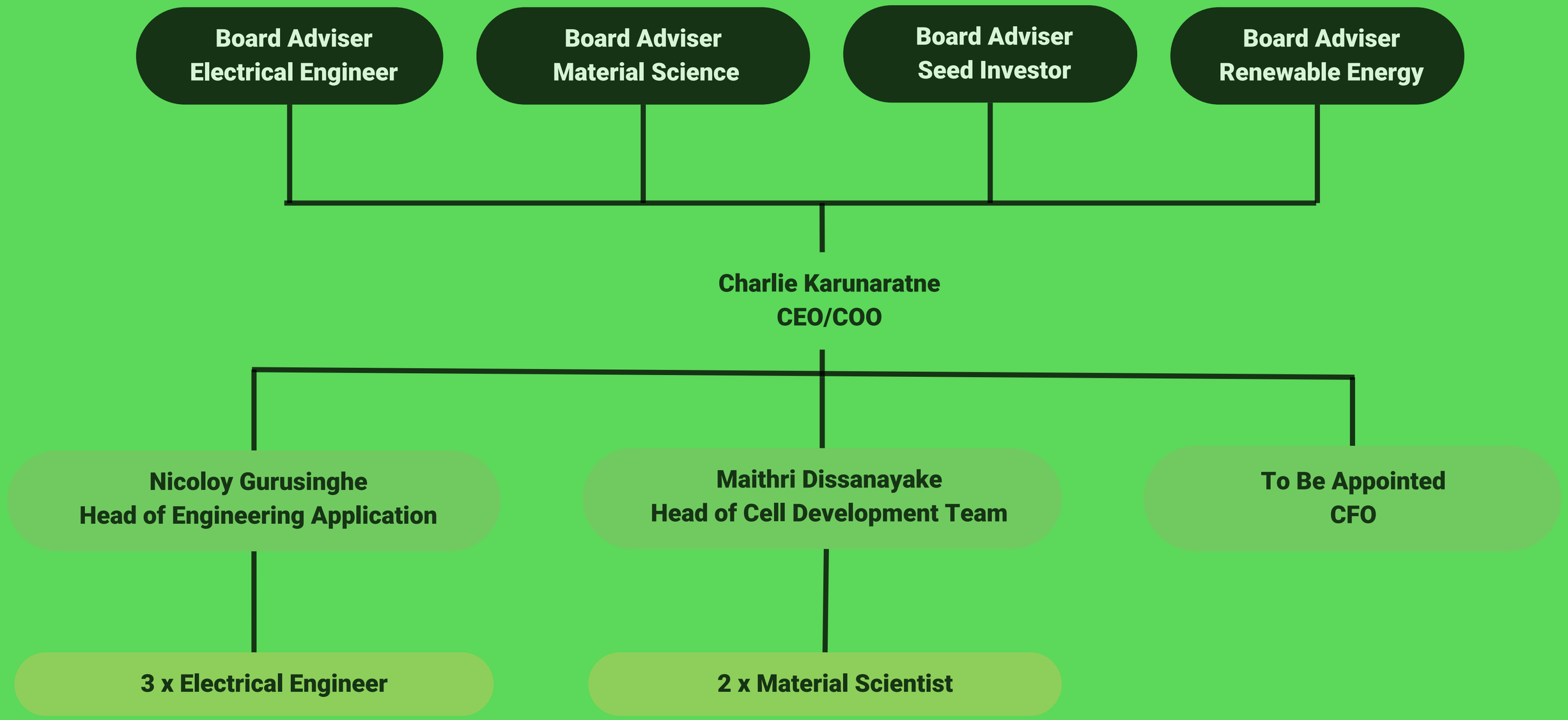
Dr Nicoloy Gurusinghe
Power Electronics & Integration

PhD in power electronics
University of Waikato, New Zealand

Senior lecturer in electrical and electronics engineering, SLTC

Interested in supercapacitors, energy storage and renewable energy

Organisation Structure

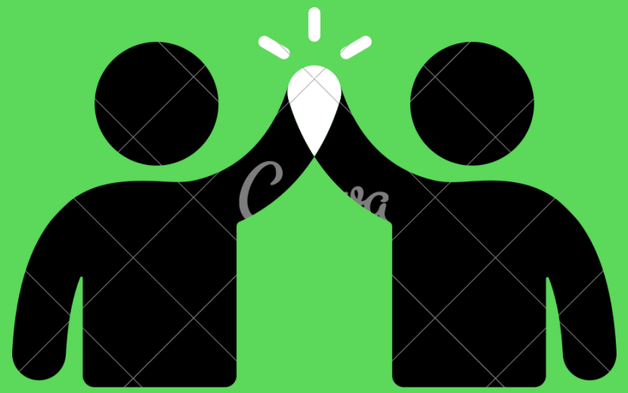


Our Supercapcitor Mix

Material mix (IP)

- **4x performance increase**
- Uses Hydrograph, Canada's graphene
- Tested over 30 materials
- Article published in Canada
- Patent application pending

Partnership



Volfpack
Energy

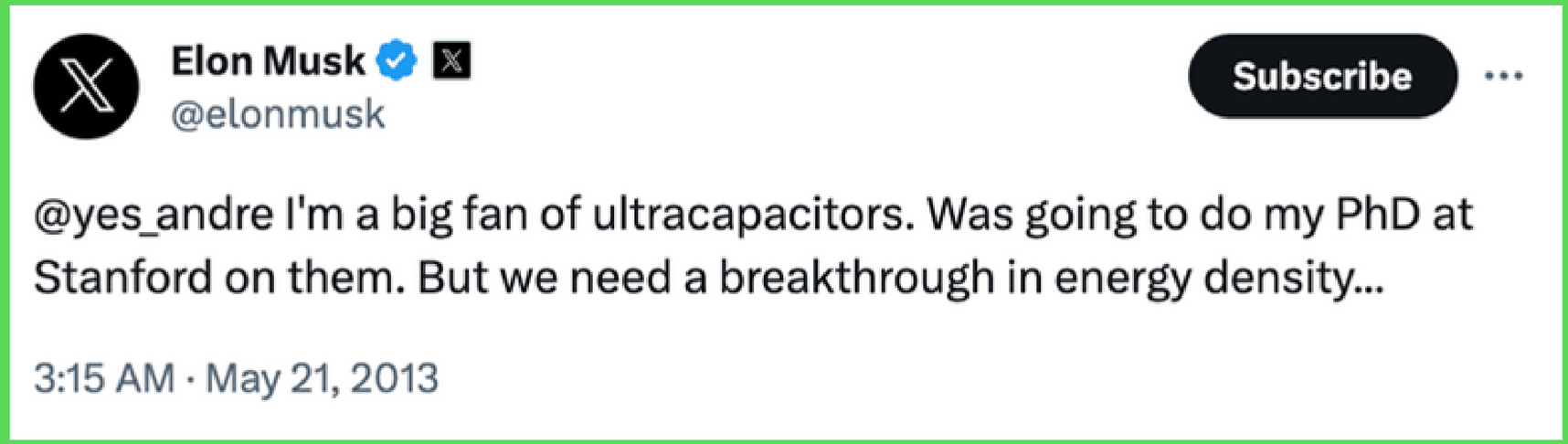
Volfpack Energy Pvt Ltd

Volfpack’s mission is to make the grid renewable ready

SLTC
Research University

SLTC Research University

Sri Lanka's first non-state engineering university.
Founded in 2015

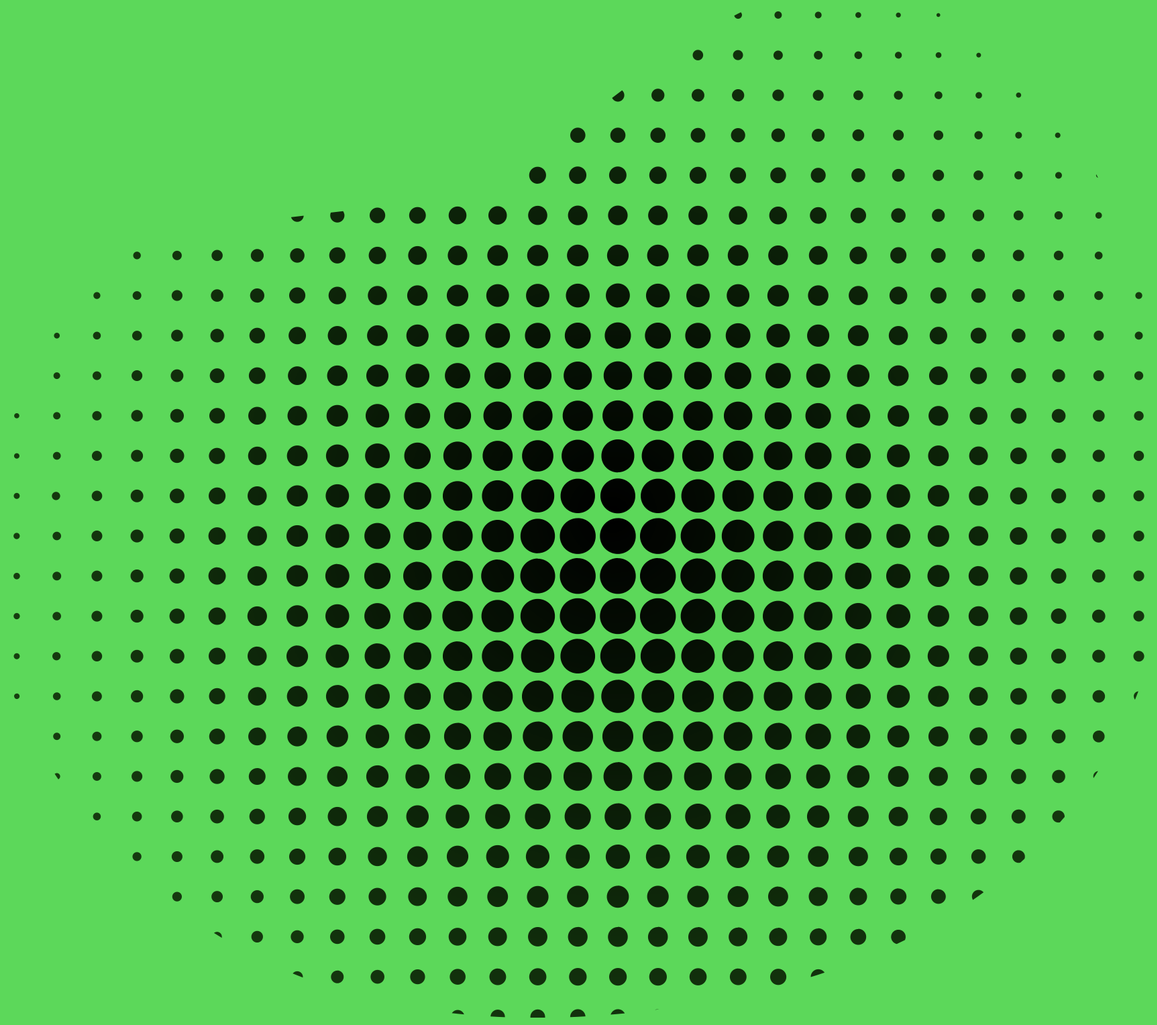


Thank you

Contact

Charlie Karunaratne +94 719 751 003

charliekaru@volfpackenergy.com



Appendix

Why Now

COP28

Consensus, which calls on all Parties to transition away from fossil fuels and establishes targets to triple renewables and double energy efficiency by 2030

Paris convention

Agreement among countries to limit global warming and reduce greenhouse gas emissions

Affordability

Renewable energy is becoming more affordable and accessible, making it more viable for large-scale deployment

Timeline

Lab scale factory (1 Year Timeline)
Production facility 7 year plan

M0
Preparation
Secure machinery, factory space, product design, chemical

M1
Design
Develop factory layout and lab-scale production process

M2
Build
Construct and set up the lab-scale factory process with the acquired machinery

M3
Test
Validate product performance in real-life situations.

M4
Approvals
Acquire necessary certifications and approvals for super capacitor production.

M5-M12
Operate/Optimize
Initiate lab-scale operations, optimize processes, and collaborate with customers

Y0
Lab Plant
Develop process and validate product at the lab scale.

Y1
Pilot Plant
Invest in a larger facility to increase production capacity.

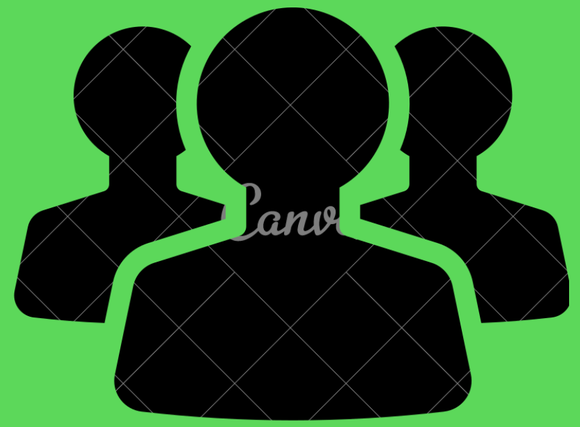
Y2
Production Plant P1
Design and initiate construction of the full-scale factory.

Y3
Production Plant P2
Continue development of the production plant.

Y4
Operation & Optimization
Streamline and fine-tune the production plant processes.

Y5-Y7
Pre-IPO Planning
Begin strategizing for an IPO to fund international expansion.

WHY SRI LANKA



Cost-effective production
Sri Lankan operations lower overall manufacturing expenses

Ideal test market
Sri Lanka's transition to renewable energy offers a fitting platform for product validation.

Skilled workforce
Abundant science and engineering graduates ensure top-quality human resources.

Potential Markets

Telecom

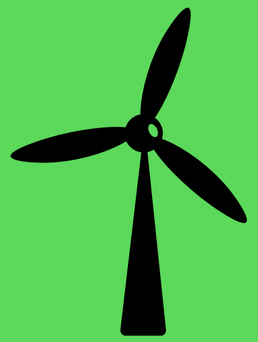
Rising fuel costs and energy demands drive the need for cost-effective, efficient backup power solutions for 5G telecom towers.

Market Size - over 10,000 towers in Sri Lanka and 200,000 in South Asia

Grid Support

Power loss and fluctuations during transmission hinder grid effectiveness.

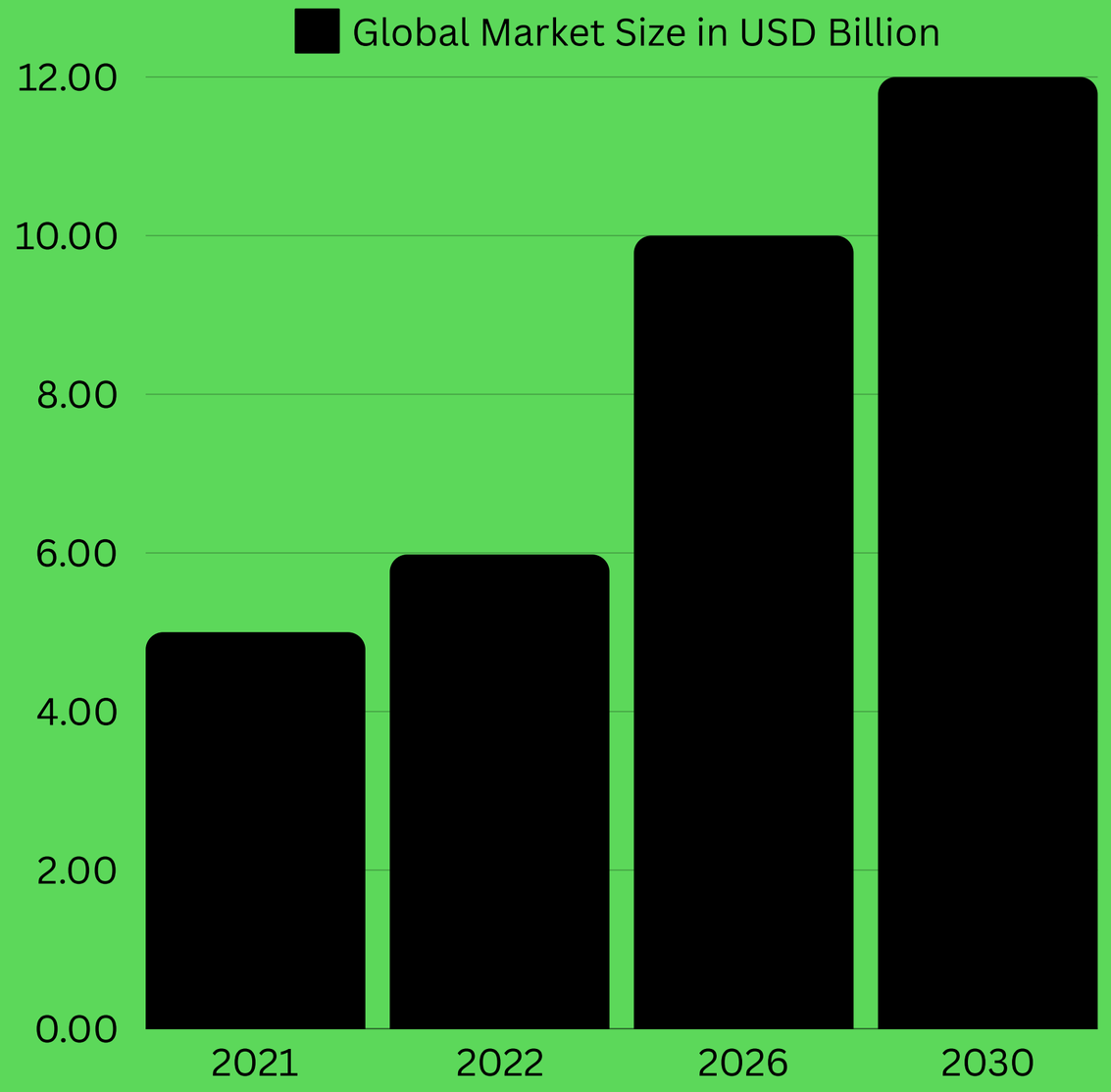
Market size - 20 plus of grid stations in Sri Lanka



Wind Mills:

Pitching issues reduce wind turbine efficiency and elevate maintenance expenses.

Market Size: Currently at 150MW. Exponential growth anticipated



Work Streams

Material Science & Cell Development

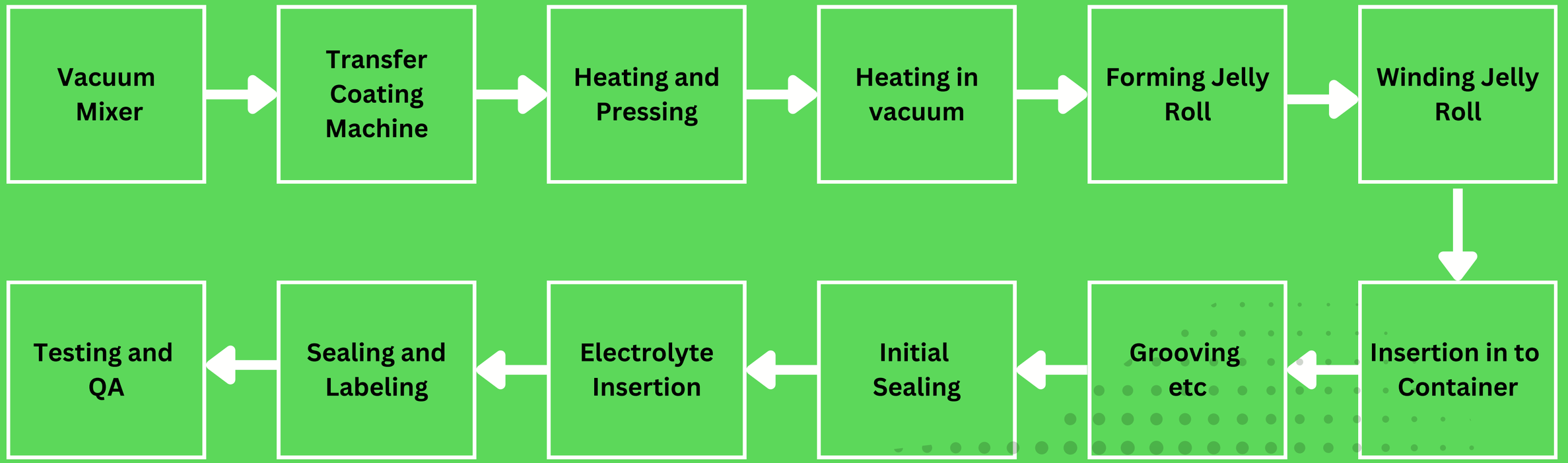
Led by
Maithri Dissanayake
Goal
Using lab scale factory to develop a scalable process to develop high quality super capacitors
Roles
Material scientist, process engineers and quality assurance

Power Electronics & Integration

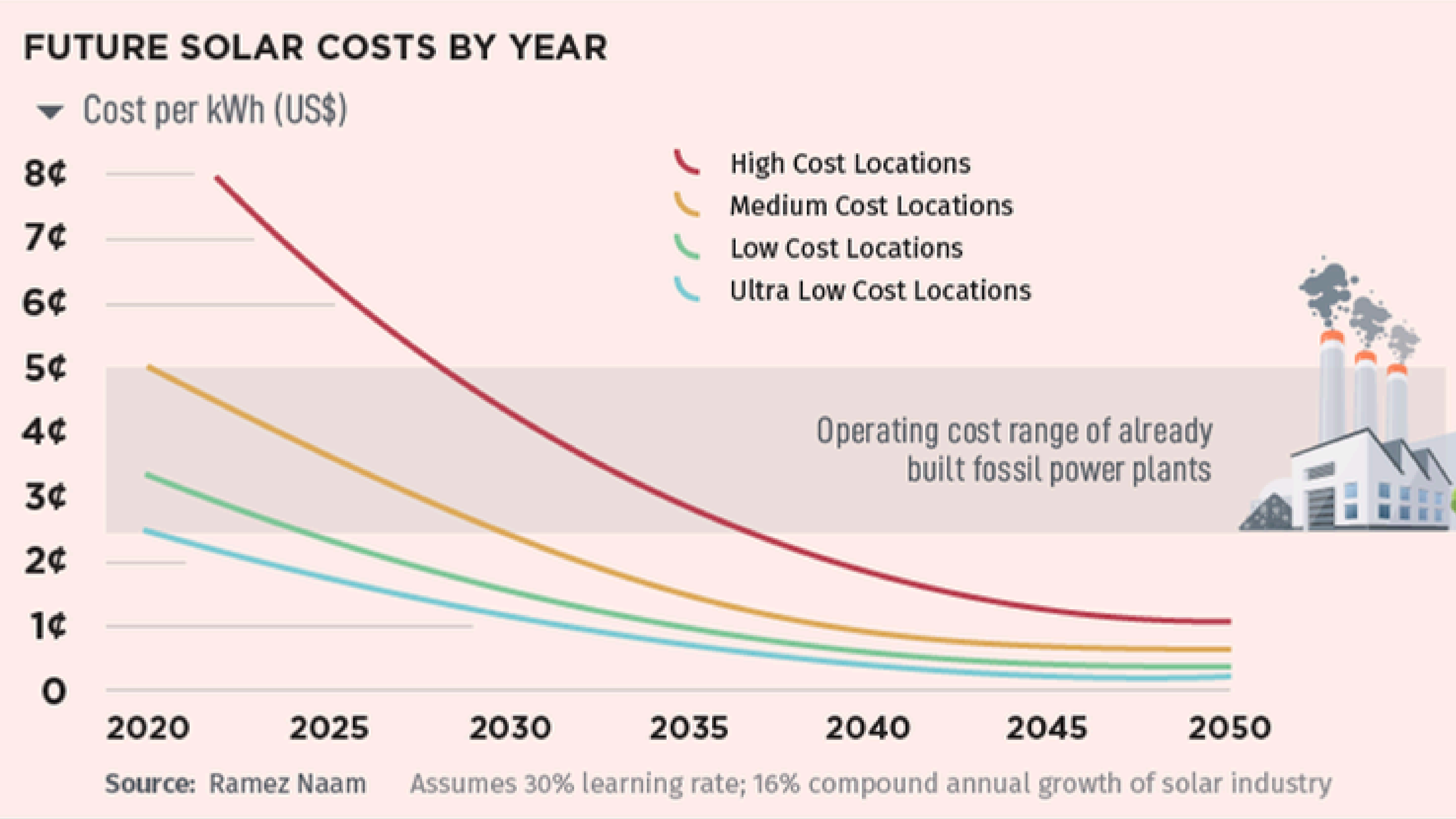
Led by
Dr Nicoloy Gurusinghe
Responsibility
Use super capacitors to develop a system that solve fast frequency response for solar panels at grid scale
Roles
Electrical engineers, power engineers and testing

Manufacturing

Simple block diagram of super capacitor manufacturing process



FUTURE SOLAR COSTS BY YEAR



Source: Ramez Naam Assumes 30% learning rate; 16% compound annual growth of solar industry