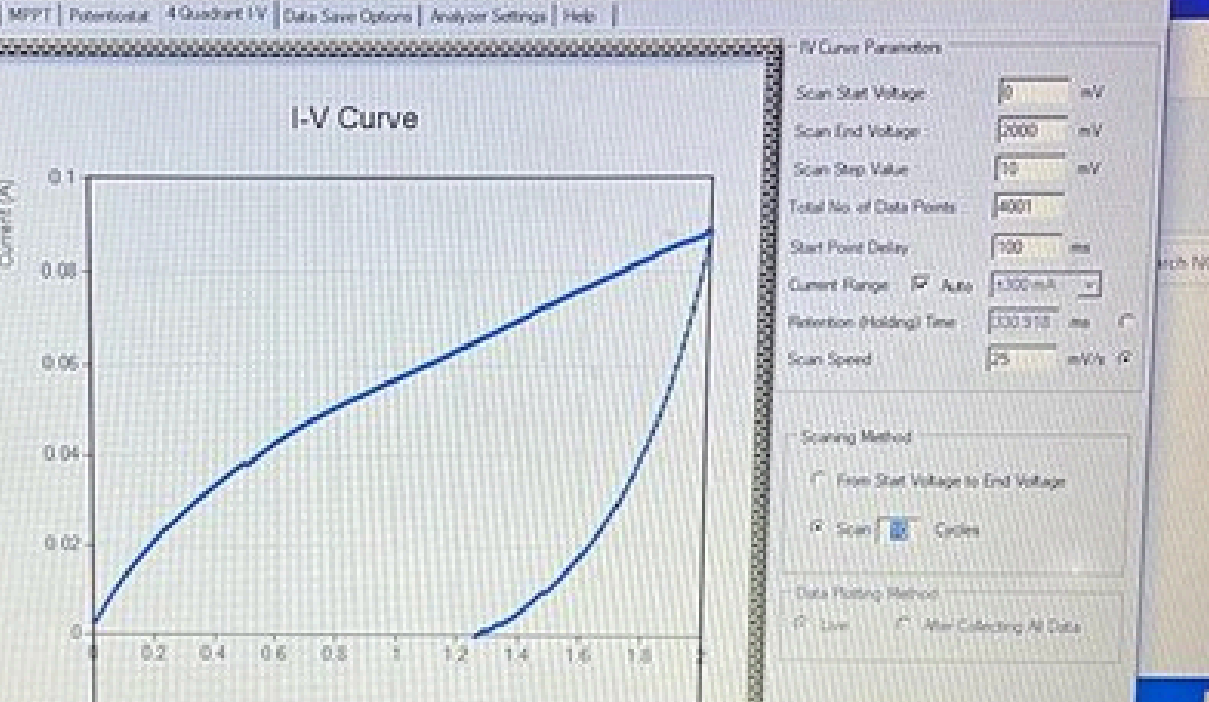


Cheaper Cleaner Energy for all

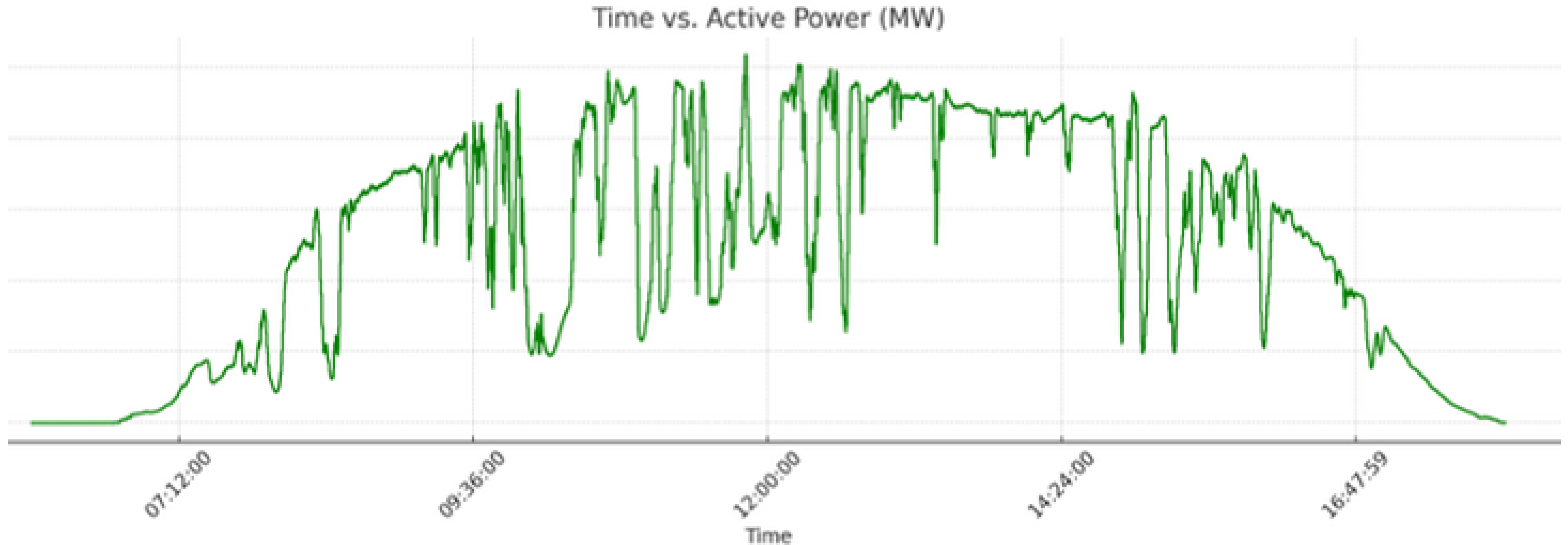


Volfpack Energy Pvt Ltd



The Problem

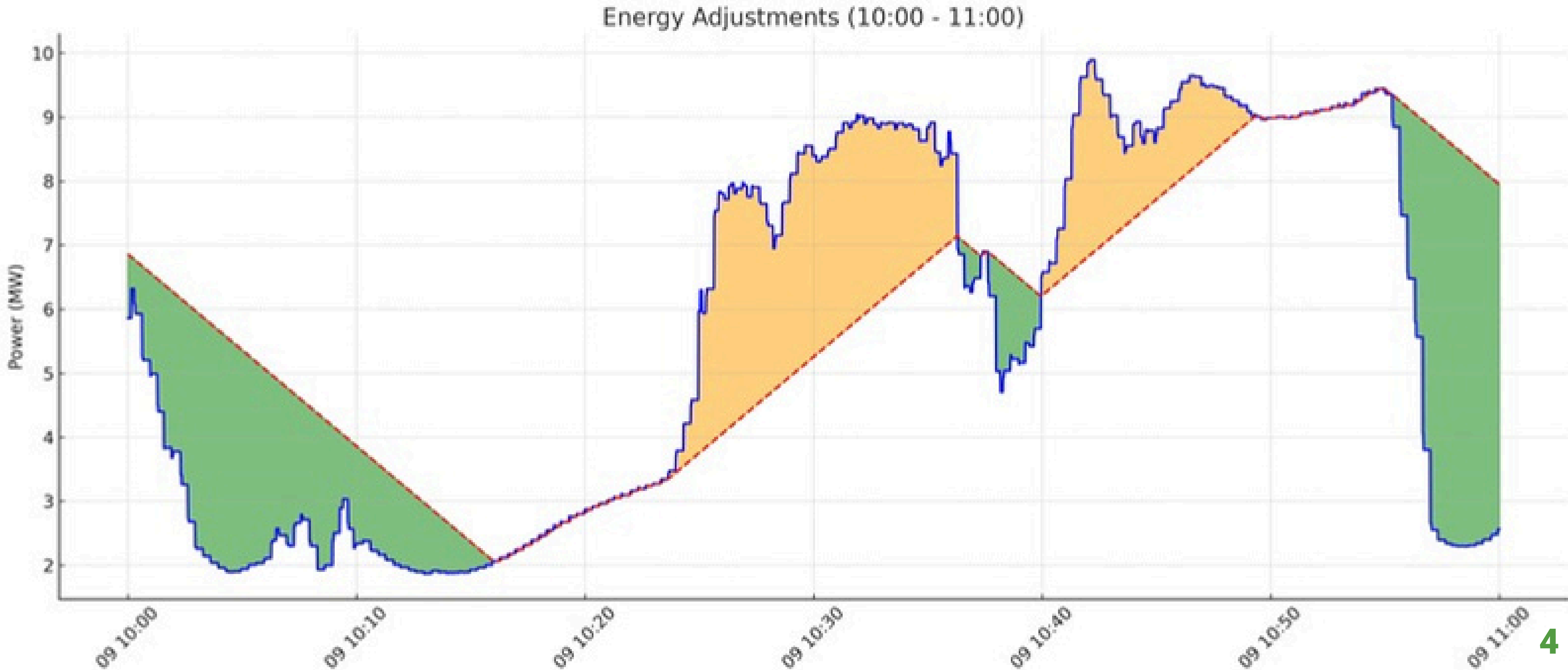
Renewable power is unpredictable
This makes solar adoption a challenge for
grid operators



One day power output 10MW solar power plant

Simulation

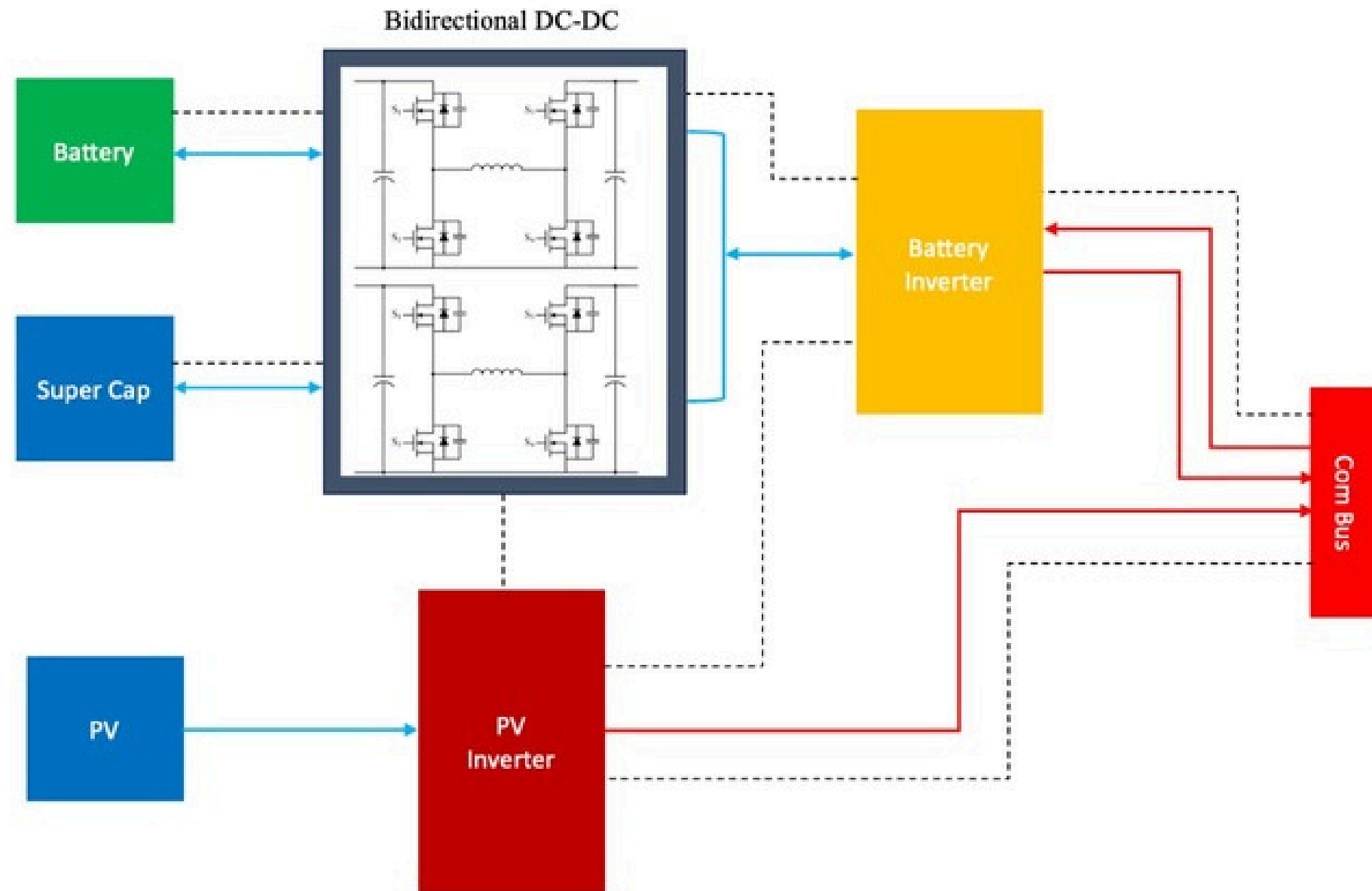
Power adjustment needed to maintain max
3% per minute ramp rate limit of CEB



The Solution

Hybrid battery systems using supercapacitors
Software for predicatability

Two-way communication lines: - - - - -
Power Lines AC: ————
Power Lines DC: ————



Weather
Prediction
Technology

The Benefits

A hybrid system with predictable software has significant advantages

Reduced cost

50% savings for battery only solution

Fast response

to changes ensuring grid stability

Stable and Predictable

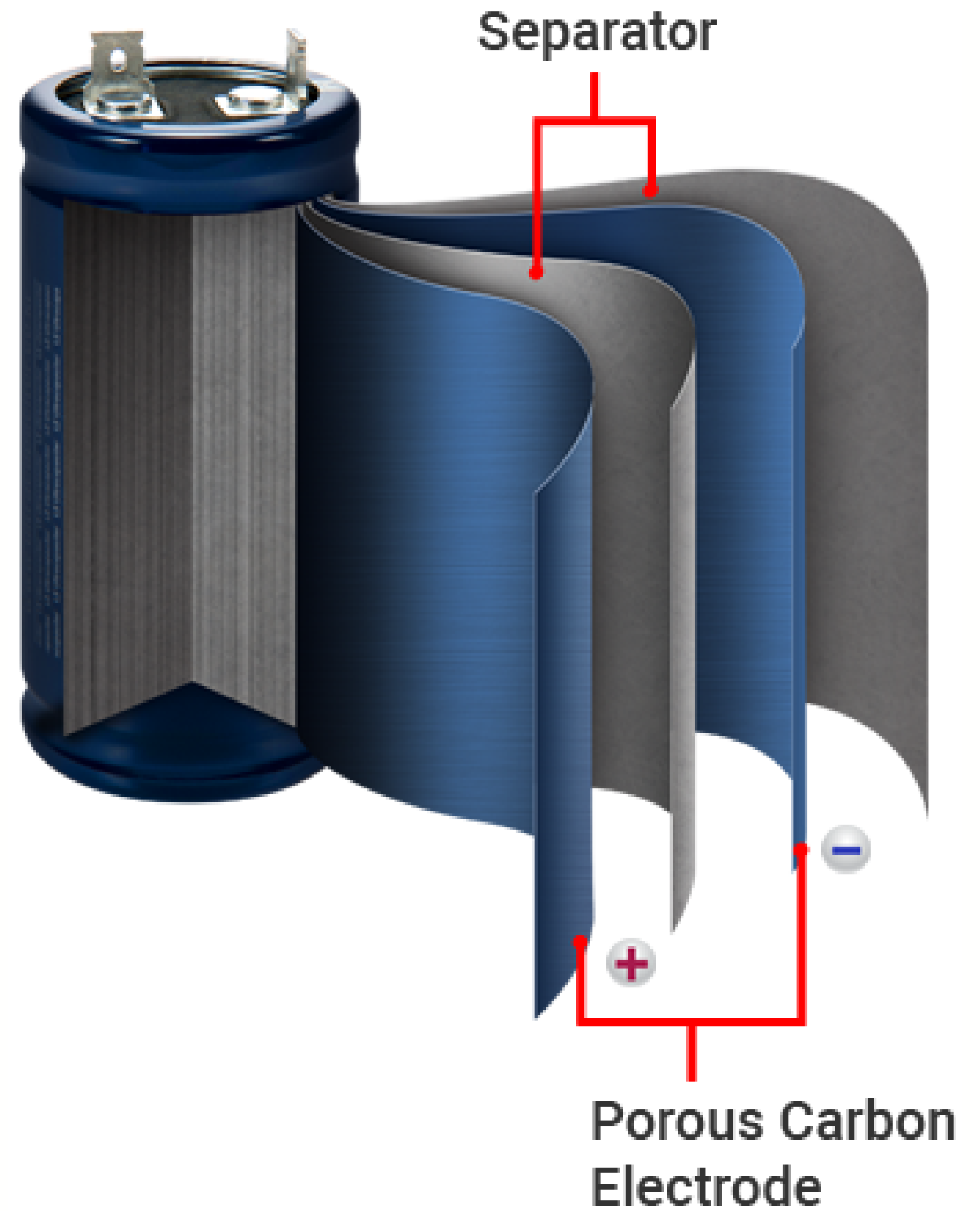
power output to the grid

Safety

Reducing the high power demand
removes risk of fire

Super Capacitors

- No precious metals
- Long life cycle
- Fastest response
- Environmentally friendly



Our Progress

Material mix (IP)

- **4x performance increase**
- Uses Hydrograph, Canada's graphene
- Tested over 30 materials

Implementation

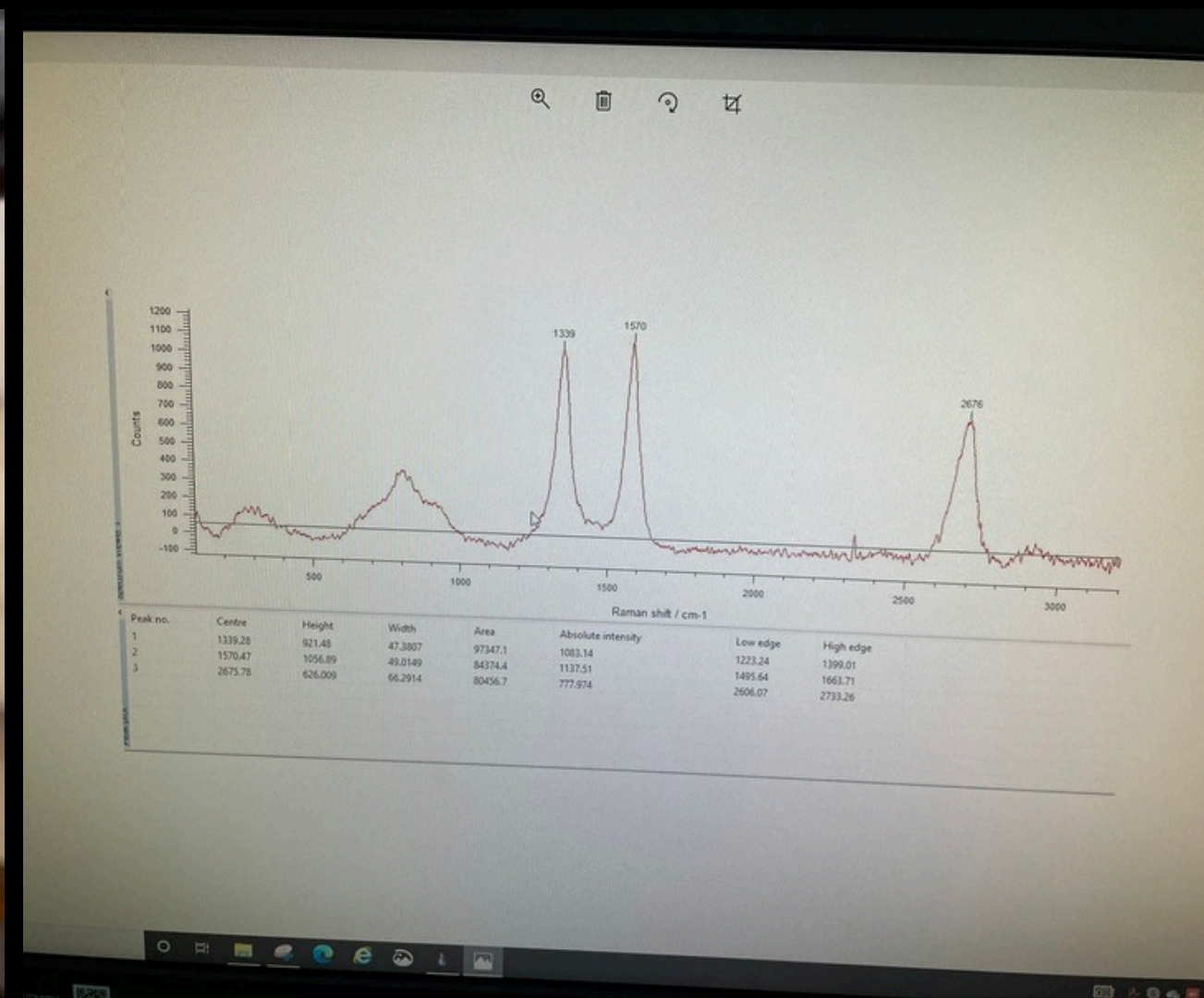
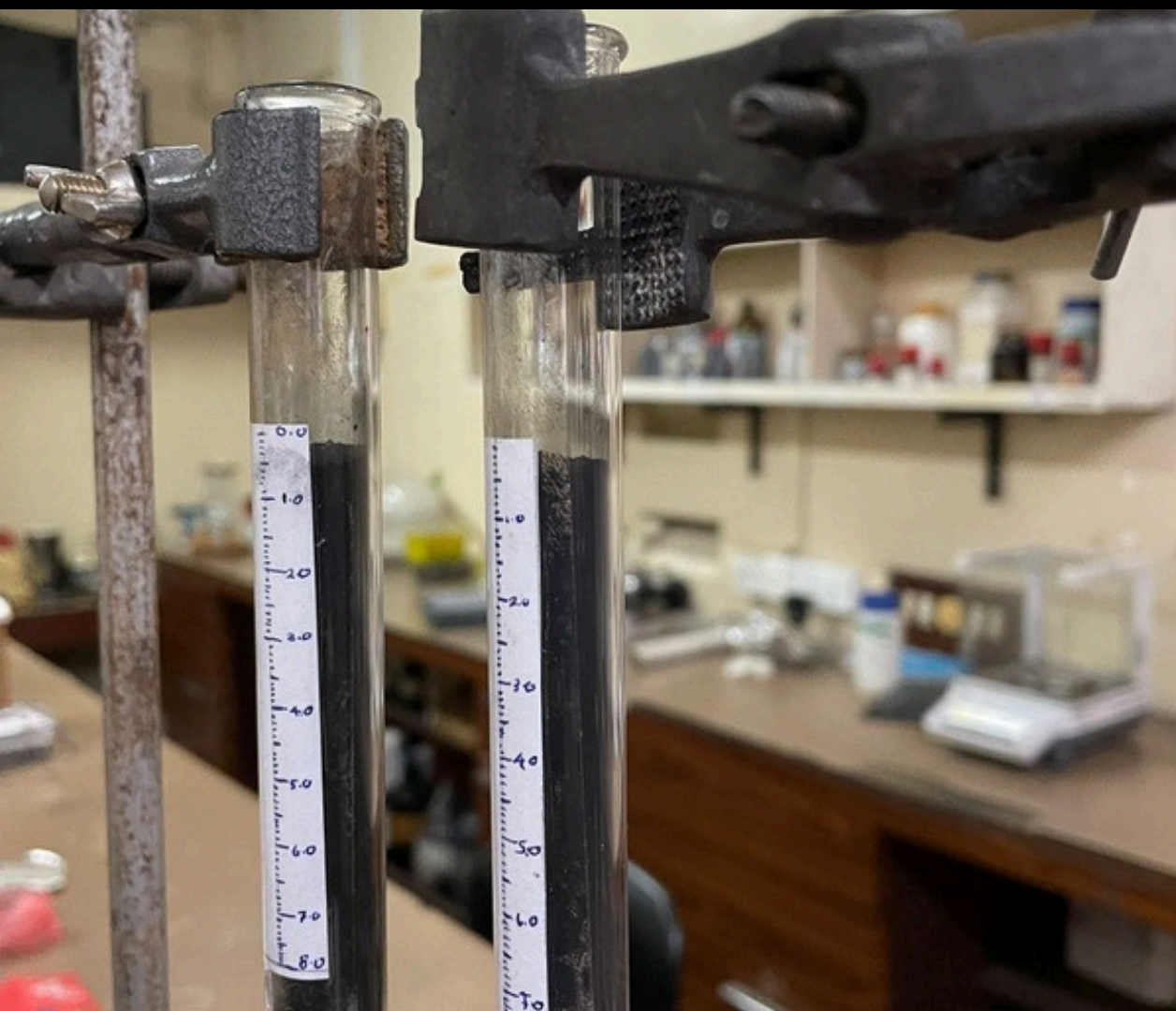
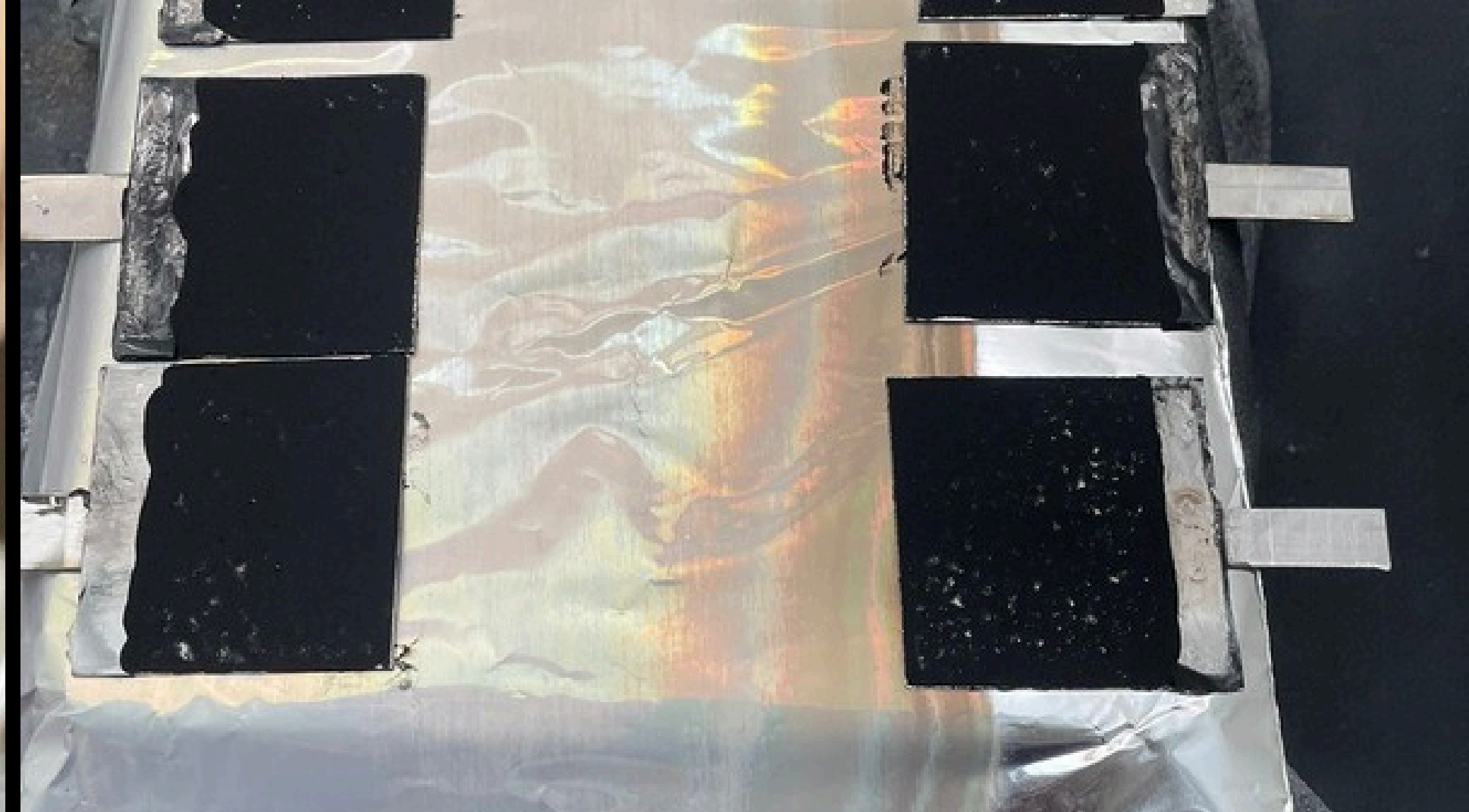
- Engineering design for power producers
- Mathematical model development
- Lab-scale prototype design underway

Production

- Factory design and cost analysis
- Material and supplier identification

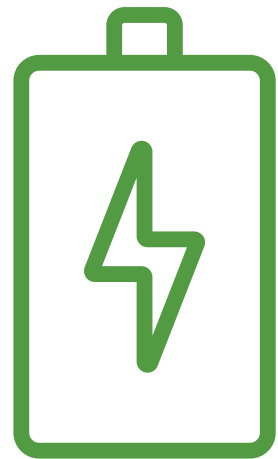
Weather Predictive Technology

- AI weather prediction model
- Enhanced performance



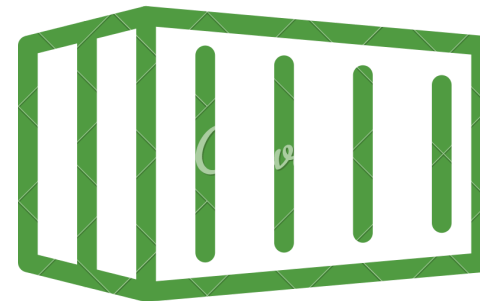
Revenue Streams

Multiple revenue streams throughout the value chain



**Super Capacitor
Cells**

\$20- \$30
per supercap cell



**Super Capacitors
Units**

\$100,000 - \$500,000
per unit



**Engineering
Implementation Team**

\$100,000 - \$500,000
implementation

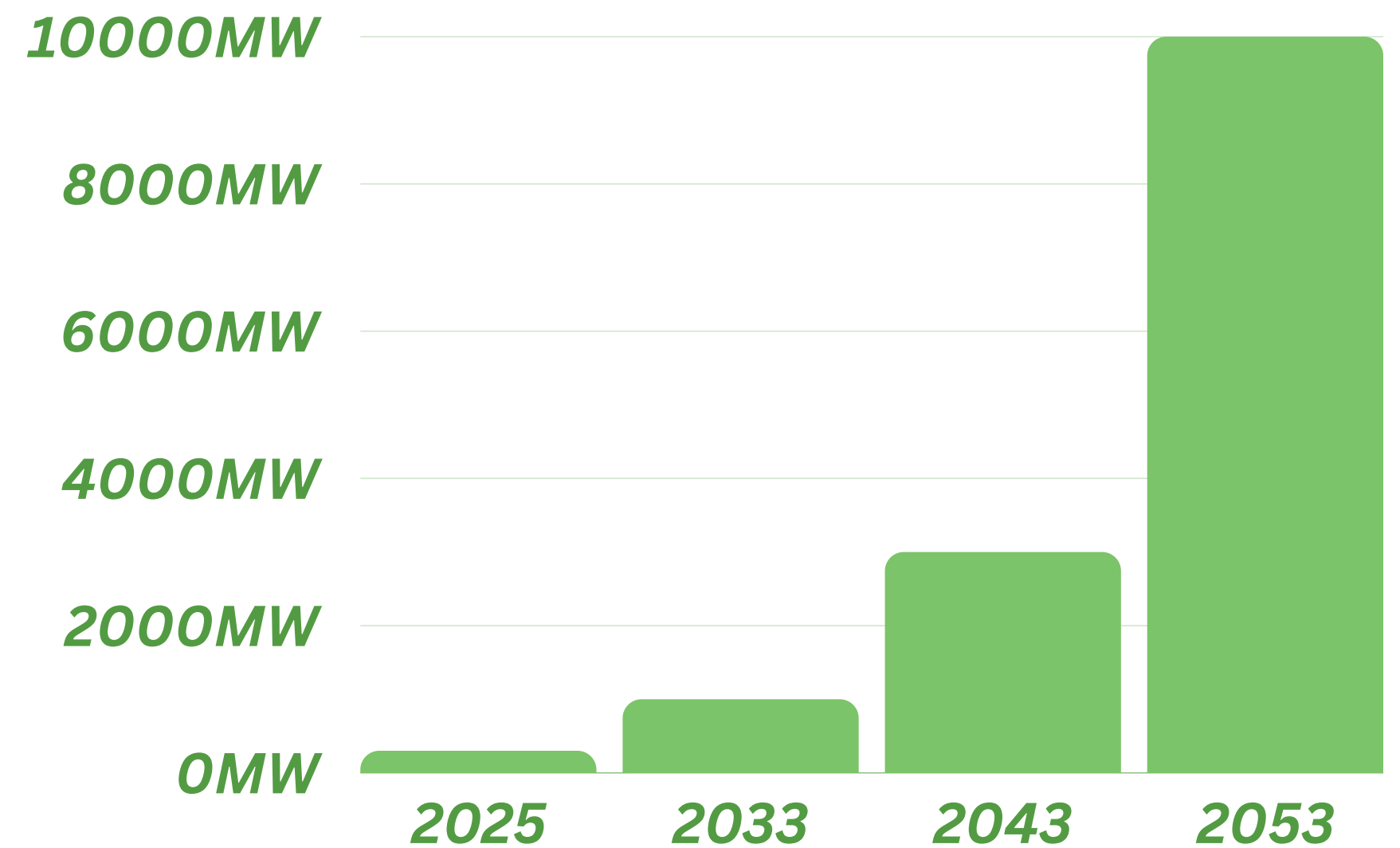
The global energy storage market was worth USD 211 billion in 2021 and will increase to USD 436 billion by 2030 at a CAGR of 8.45%.

**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



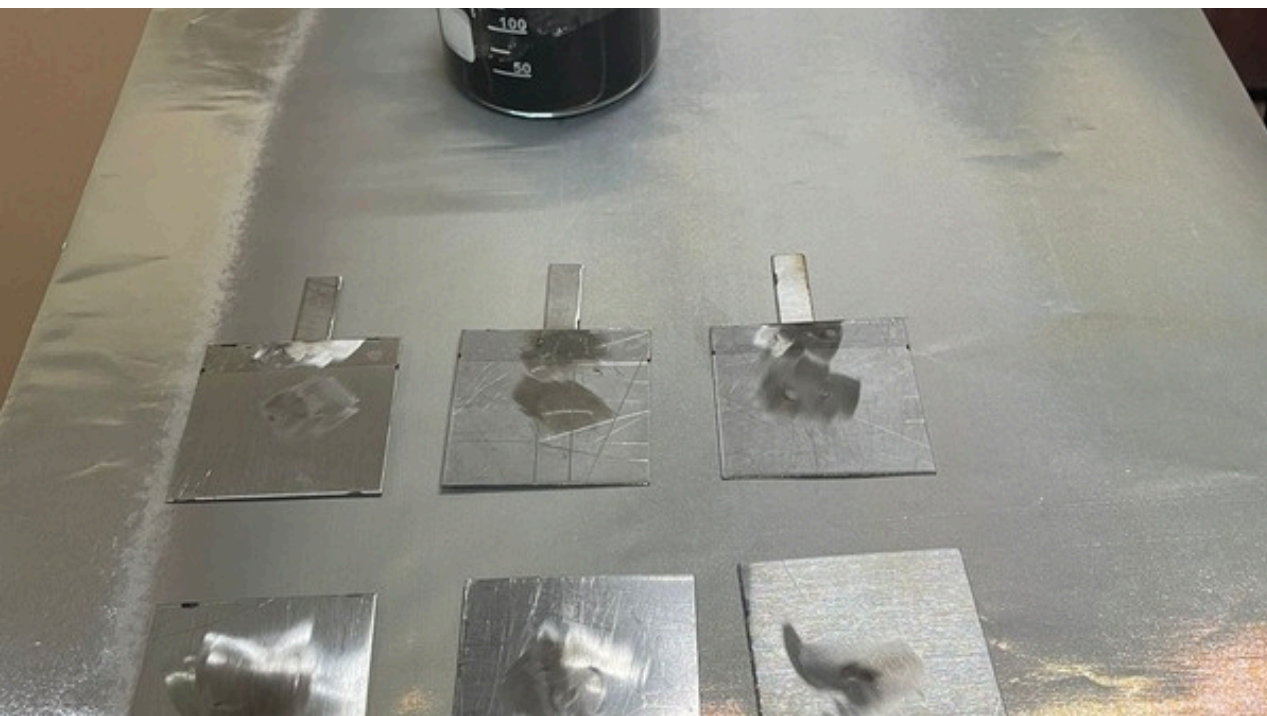
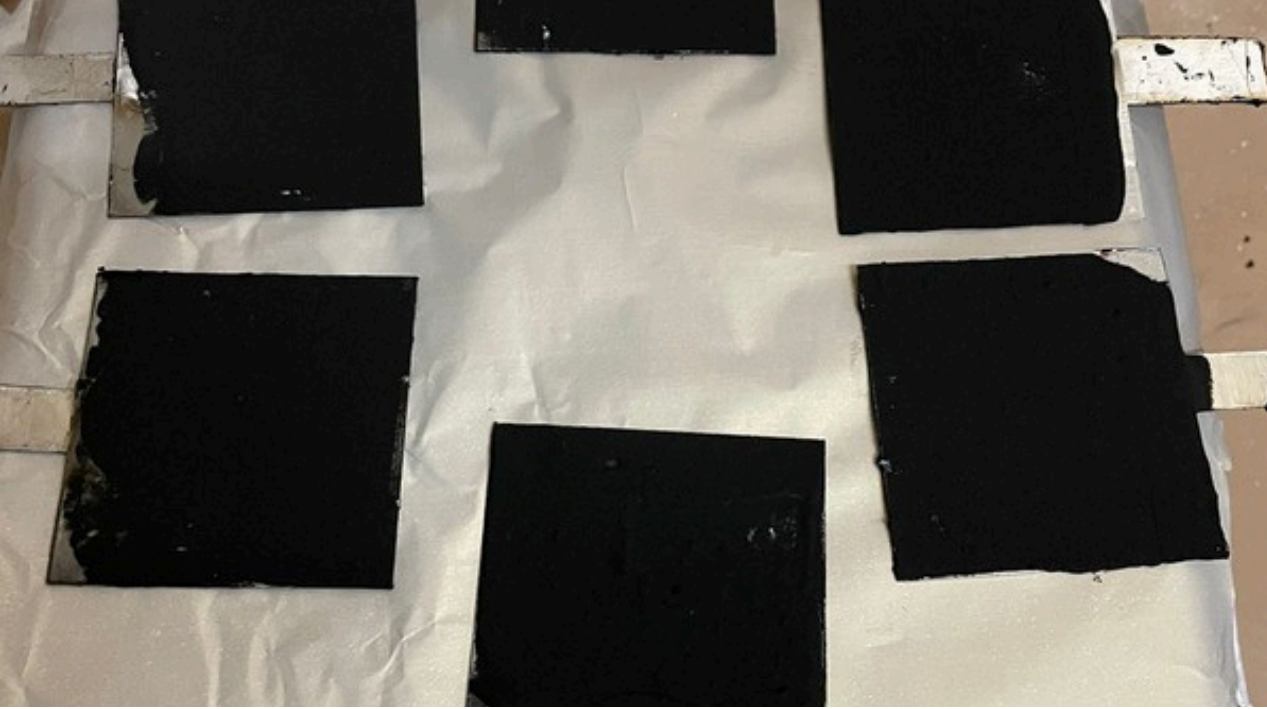
Competition



Hardware Is

Hard

but so much FUN



Funding support for

Lab-scale

Cell Manufacturing Facility



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

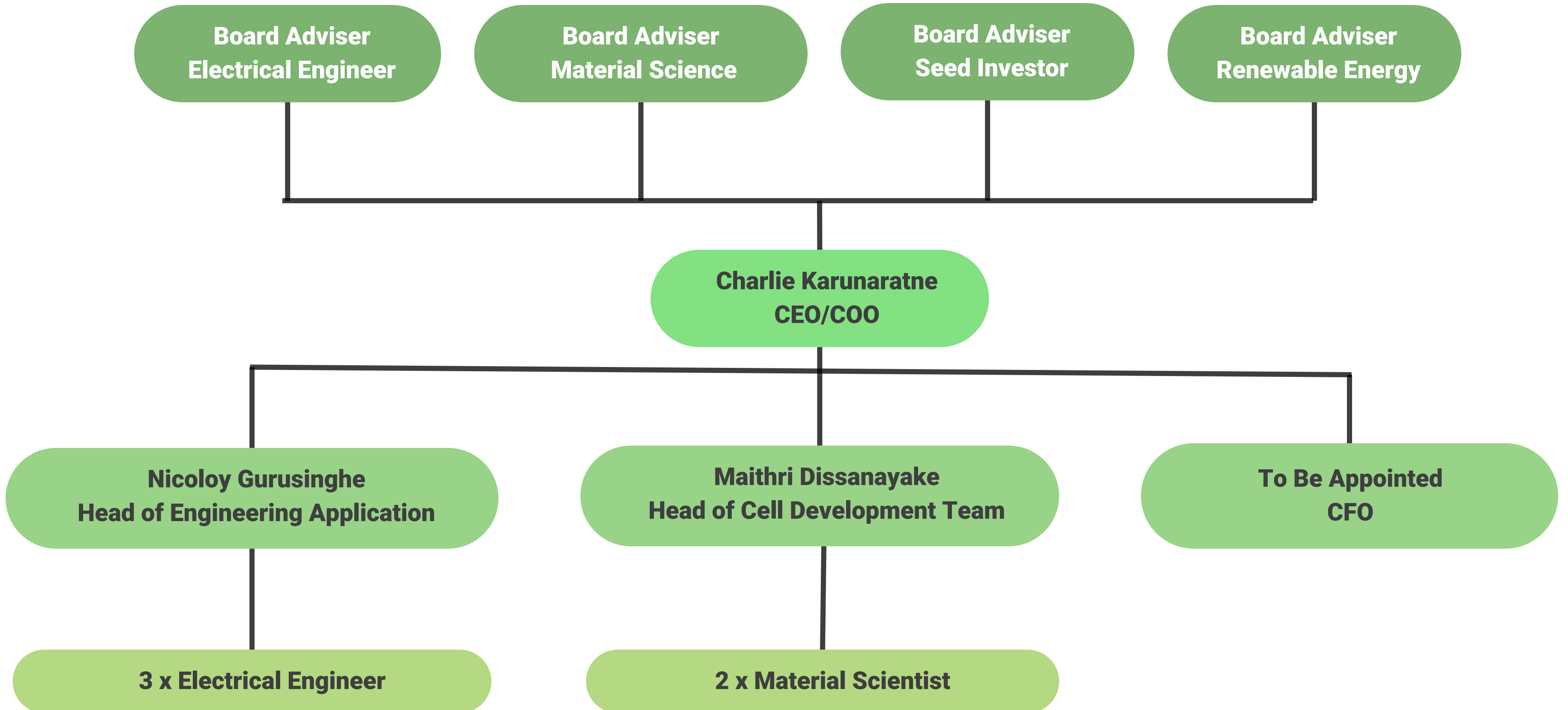
Power Electronics & Integration

PhD in power electronics
University of Waikato, New Zealand

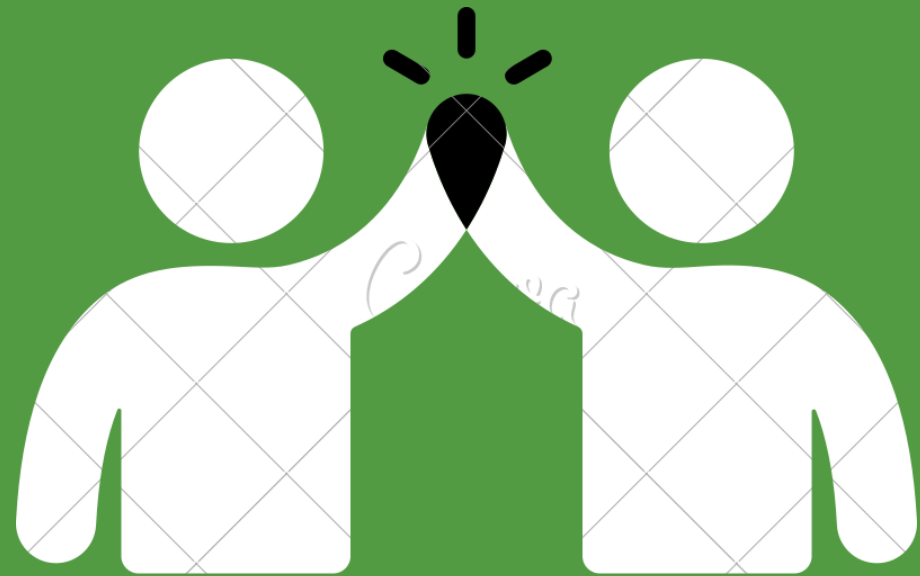
Senior lecturer in electrical and
electronics engineering, SLTC

Interested in supercapacitors,
energy storage and renewable energy

Organisation Structure



Partnership



**Volfpack
Energy**

Volfpack Energy Pvt Ltd

Volfpack's mission is to make the grid renewable ready



SLTC Research University

Sri Lanka's first non-state engineering university.

Founded in 2015

Investment

USD 350,000

Equity

17%

Item	Cost
Equipment	\$233,000.00
Salaries	\$30,000.00
Materials	\$30,000.00
Certifications/Approvals	\$30,000.00
Miscellaneous	\$20,000.00
Rental	\$12,000.00
Total	\$355,000.00



Elon Musk  
@elonmusk

Subscribe



@yes_andre I'm a big fan of ultracapacitors. Was going to do my PhD at Stanford on them. But we need a breakthrough in energy density...

3:15 AM · May 21, 2013

Thank
you

Contact

Charlie Karunaratne +94 719 751 003

charliekaru@volfpackenergy.com

Appendix

Why Now



COP28
UAE

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

M1

M2

M3

M4

M5-M12

Preparation
Secure machinery, factory space, product design, chemical

Design
Develop factory layout and lab-scale production process

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

Test
Validate product performance in real-life situations.

Approvals
Acquire necessary certifications and approvals for super capacitor production.

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

Y0

Y1

Y2

Y3

Y4

Y5-Y7

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

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

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

Production Plant P2
Continue development of the production plant.

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

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.

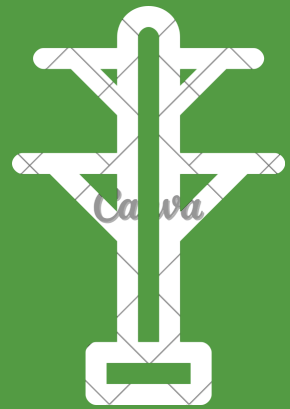
Potential Markets



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

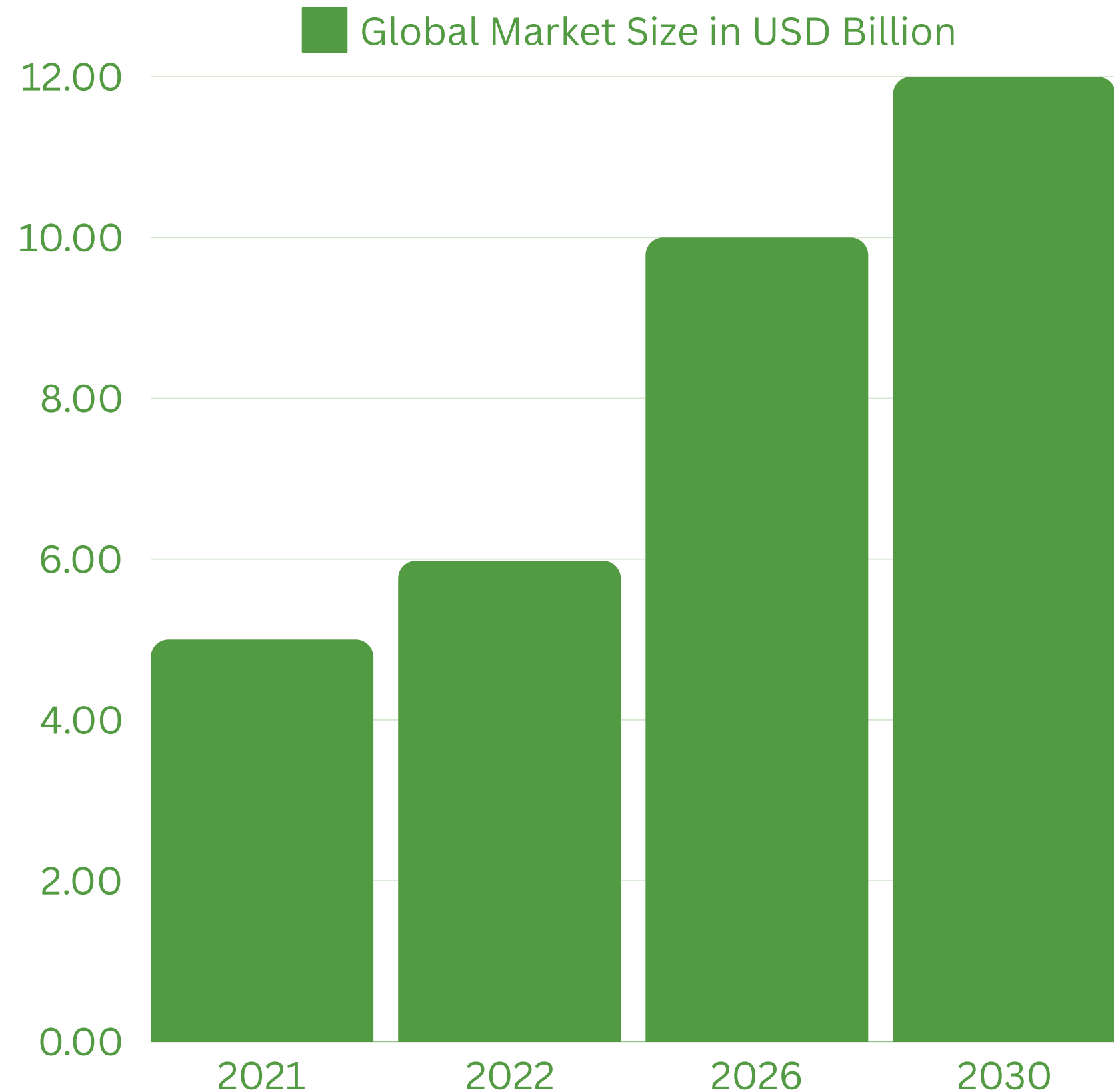
Power loss and fluctuations during transmission hinder grid effectiveness.

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

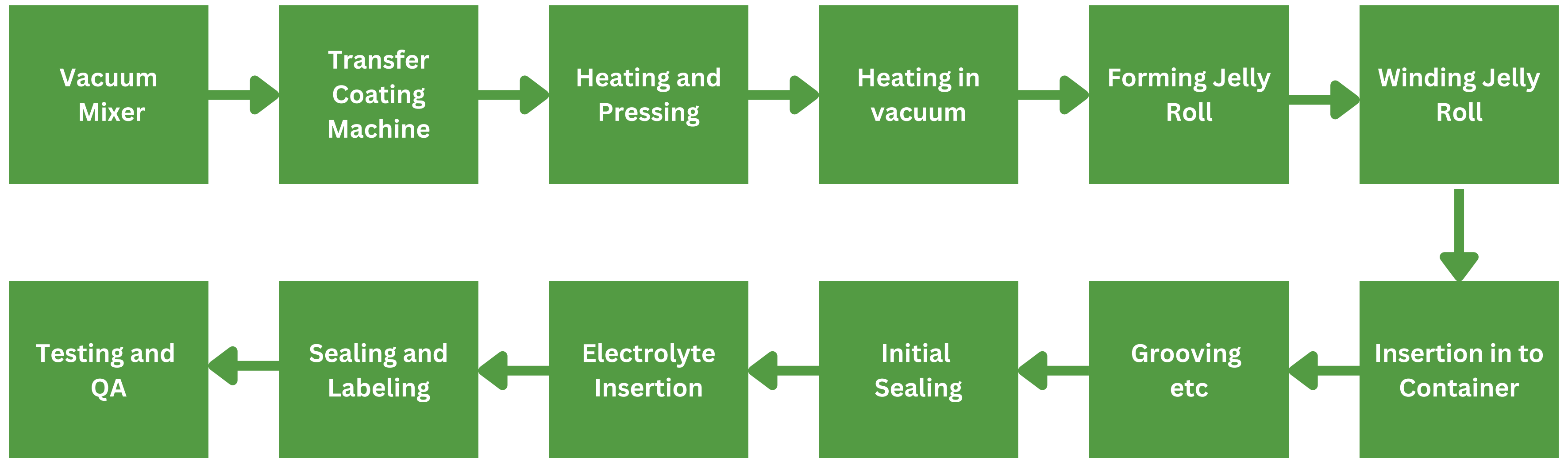
Use super capacitors to develop a system that solve fast frequency response for solar panels at grid scale

Roles

Electrical engineers, power engineers and testing

Manufacturing

Simple block diagram of super capacitor manufacturing process



Prototype Design

20KW design

