



✉ [info@LambdaStretch.com](mailto:info@LambdaStretch.com)  
☎ +44(0)7982462260  
🏠 [www.LambdaStretch.com](http://www.LambdaStretch.com)

**LAMBDA STRETCH LTD**  
St John's Innovation Centre,  
Cowley Road, Cambridge,  
CB4 0WS, United Kingdom.

# LAMBDA STRETCH

## Stretching Solar Boundaries

INVESTMENT SUMMARY

STRETCHING SOLAR BOUNDARIES

# PHOTOVOLTAIC (PV) PANEL GLASS

Lambda is developing a coating for Photovoltaic (PV) panel glass to increase the power by up to 10%.

## THE PROBLEM

Sunlight is the wrong colour for maximum PV efficiency

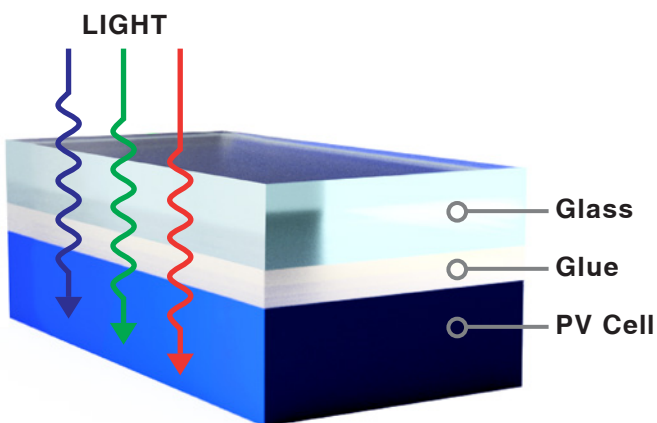


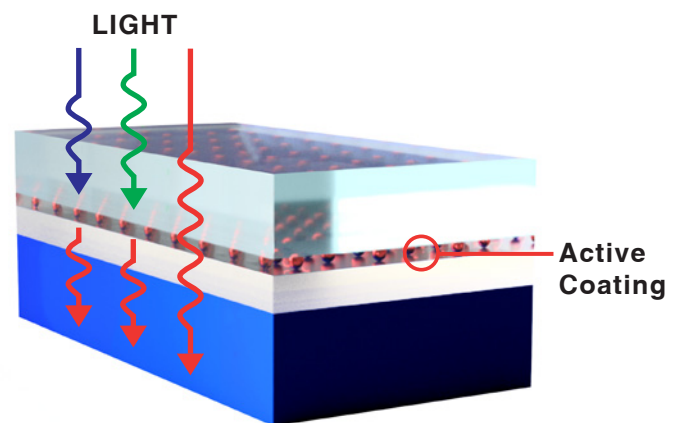
Diagram of a simple PV cell

At the heart of any panel is a PV cell, protected by a layer of glass. Sunlight passes through the glass and into the cell where it produces an electrical output.

Sunlight includes all visible colours plus harmful radiation such as Ultraviolet. The PV cells work best converting red light into electricity, but are much less effective at converting blue/green light – unfortunately this is where the sun's energy is strongest.

## LAMBDA'S SOLUTION

Changing the light to better suit the PV



Lambda's coating added to increase efficiency

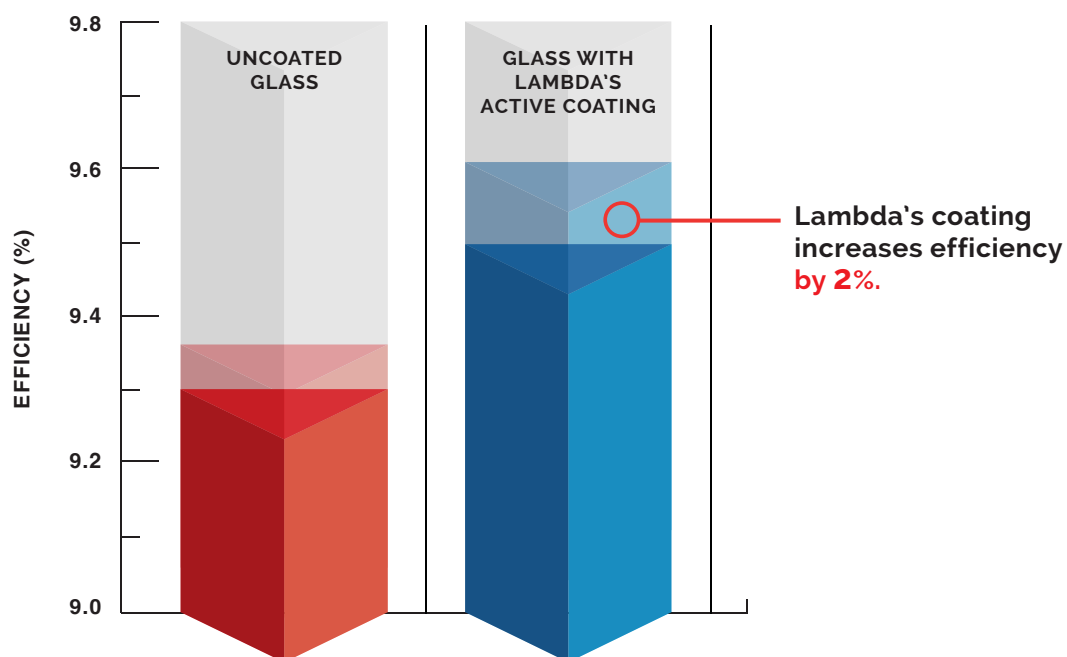
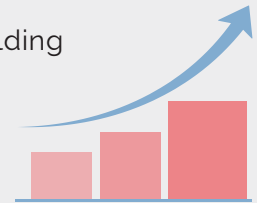
Lambda is designing an active coating to be applied to PV glass. As blue or green light passes through it will be converted to red.

As the PV cell is most effective at converting red light into electricity, the electrical output will increase.

## LAMBDA HAS BUILT A WORKING PROTOTYPE

After just 7 months' development Lambda has obtained a prototype yielding a 2% increase in electrical power output.

Academic research indicates that a 10% increase is feasible. Lambda is highly confident of achieving such performance.



Lambda prototyping results

### BENEFITS: GREATER ELECTRICITY, IMPROVED LIFETIME

- Electrical power output increases by up to 10%
- Panel temperature reduces as a direct result
- Harmful radiation prevented from damaging the cell
- Improved PV lifetime, useful for desert applications

### ALTERNATIVE APPLICATIONS FOR LAMBDA'S ACTIVE COATING

- Increasing the adoption of low-cost Organic thin film PV panels (presently lifetime limited)
- Building glass, for improved temperature control and reduced air conditioning costs
- Optimisation of light for industrial greenhouses, to maximise plant growth
- Novel electronics products including displays and sensors

## TEAM AND PARTNERS

The Executive Board all have prior experience working together for another PV start-up company.



Lambda's team: Angelos (left), Monica, Niall & Mark (right)

### MR MARK BRENCHLEY, MENG (CEO)

Mark devised Lambda's core concept in 2017, inspired by his work in telecommunications. His background is in satellite engineering and project management.

### DR MONICA SAAVEDRA, ENGD (CTO)

Monica is an exceptional materials scientist with close ties to Cambridge University. She has an Engineering Doctorate from the National Physical Laboratory.

### MR NIALL HAUGHIAN, CFA (CFO)

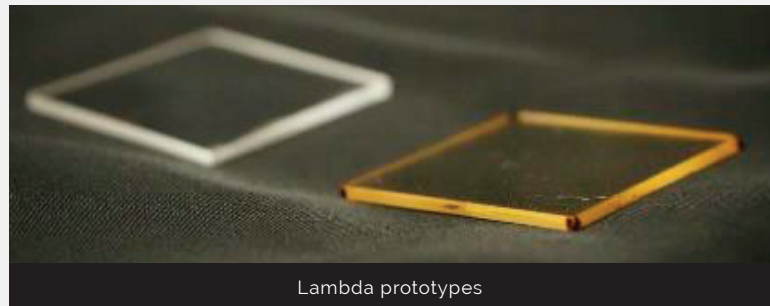
Niall has a background as a Financial Analyst and Project Manager for Blue Chip banks such as Credit Suisse and now provides fundraising expertise to renewable energy start-up companies.

### ANGELOS LAMPROPOULOS, MSC (MATERIALS SCIENTIST)

Angelos recently completed an MSc in Advanced Materials at Cranfield University where he developed Lambda's solar materials.

## PARTNER ORGANISATIONS

Our two key partner organisations are Cranfield and Exeter Universities. Cranfield performed prototyping under two Lambda-sponsored projects with supervision from Dr Indrat Aria (Cranfield) and Monica (Lambda). Exeter University is supporting our development activities and will model our second generation high performance design on their supercomputer.



Lambda prototypes

## MARKET & BUSINESS MODEL

The PV panel market was valued at approximately \$40B in 2017. There is demand for new technologies which increase power output whilst being affordable and low-risk.

Lambda will sell its technology to PV glass manufacturers, thus creating a premium PV panel product. First revenues are expected in 2021, with net profit rising from £530k in 2022 to £14.2M in 2025.

Lambda intends to coat the protective glass rather than coating the PV cells directly, as it gives the company a simpler route to market and will utilise customers' existing capital equipment.

## THE INVESTMENT OPPORTUNITY

The Management team is seeking £400k in seed investment to fund the company until the end of 2019, with a pre-money valuation of £2M. Exit will be made via a trade sale to established PV Materials Science company by 2025, at a valuation in excess of £30M. This investment is expected to be SEIS/EIS eligible.

The investment will pay for continued development of the second generation prototype, establish research centres in Cambridge and China, solidify our Intellectual Property protection and pay the industrial contribution to Innovate UK grant.



**STRETCHING SOLAR BOUNDARIES**