

PRINTED SOLAR POWER: A BETTER TACTIC FOR MOBILE POWER GENERATION



Printed solar cells offer a range of exciting deployment possibilities, including retractable solar farms and wearable solar. While printed solar technology is not new, viable real-world applications of this technology are yet to be realised. We are the first group in Australia, and one of few globally, to undertake a commercial-scale pilot of printed solar.

COMPETITIVE ADVANTAGE

A versatile, low-cost, lightweight and highly portable renewable energy solution that:

- Can be rapidly manufactured, deployed and inexpensively replaced if damaged
- Integrates into structural materials, including vehicle skins, combat ensembles, tarpaulins and tents
- Can be fitted as retractable solar fields on board vehicles for autonomous, remote power generation
- Reduces the need for generator or battery airlifting to remote troops

SUCCESSFUL APPLICATIONS OF RESEARCH

- We are one of the first research groups in the world to undertake a commercial-scale pilot of printed solar, partnering with global logistics company CHEP, a Brambles subsidiary, in 2018 to install a 200-square-metre rooftop array of printed solar in just one day

PARTNERS

- CHEP Australia
- Lane Cove Council
- Australian National Fabrication Facility (ANFF)
- National Collaborative Research Infrastructure Strategy

IMPACT

- Ultralight and flexible, printed solar can be customised to integrate with operational camouflage to recharge communication devices, night vision goggles and other electronics
- Large-scale retractable solar farms will reduce reliance on diesel fuel generators and the associated logistical burden and risk of transporting and storing explosive fuels in conflict zones
- Unlike diesel generators, printed solar is silent and odourless, minimising detection

CAPABILITIES AND FACILITIES

We are one of Australia's only research groups capable of manufacturing printed solar in-house. This process is achieved within our ANFF-funded roll-to-roll (R2R) production facility that has:

- Initial material synthesis capabilities, providing high-quality feedstocks on demand
- R2R coating lines capable of producing the ultra-thin multilayer structure of the printed solar modules
- R2R metal deposition capability, providing a scalable method for connecting the printed solar cells together
- R2R encapsulation line, which is used to coat the printed solar in mechanically and ultraviolet-stable barrier films to extend their lifetime to operationally significant lengths