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Regulatory Release
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SOR Success in Generating Electricity from Moisture

Western Australia, September 6th, 2022 - Strategic Elements Ltd (ASX: SOR) is pleased to report rapid technological progress in **generating electrical energy from moisture in the air** by 100% owned Australian Advanced Materials and research partner The University of New South Wales (UNSW). An investigation into whether Energy Ink™ cells generate more electrical charge as they increase in size was successful, with a single 100 cm^2 Energy Ink™ cell generating over 1400 mAh of electrical charge.

Unlike lithium-based batteries, Energy Ink™ uses green, sustainable materials that are safe and non-flammable and can be flexed and bent around the human body or structures when printed onto flexible plastic. The Energy Ink™ technology is still in early development, and the fundamental upper limit of aspects such as maximum power output, duration and energy density remains unknown. Significantly, the team continues to identify multiple avenues that increase performance.

To date, development has been focused on 36cm^2 battery cells relevant to the large electronic skin patch market. However, in the latest work, the Energy Ink™ cell size area was increased to **64cm^2** and then to **100cm^2** to test whether Energy Ink™ cell power output increases as the physical size of the cell increases.

The 100cm^2 cell included some (but not all) of the technological breakthroughs made by the team since the beginning of the year. When fabricating larger Energy Ink™ cells, challenges include printability over a larger area, ink adhesion and electrical contact connections, which the team continues to improve. The results showed that over the 14-day testing period, a single 100 cm^2 Energy Ink™ cell successfully generated over 1400 mAh of electrical charge, a 400% increase on the 36 cm^2 cell pack reported on January 25th 2022.

UNSW equipment has the capacity to screen print features as small as 100 micrometres and over an area as large as 30,000cm^2.

Battery Pack Milestone

The team is currently implementing and validating multiple technology breakthroughs into a world-first prototype battery pack with the goal to generate **amp hour range** of electrical charge solely from moisture in the air. The 36cm^2 cells will be printed onto flexible plastic using green, sustainable, safe materials. **Development and testing are near completion.**

Demonstrator Milestone

Based on early results of the upgraded Energy Ink™, the Company believes the technology profile has exceeded the power output requirements of many existing devices in the large USD 10 billion Electronic Skin Patch market[1]. These products are used to provide sports and health information from devices attached to the human body and currently use rigid alkaline batteries or those with lithium materials. The market for skin patches is forecast to grow to USD 30 billion by 2031[1].

Stealth Technologies Pty Ltd, an automation and robotics company, owned by Strategic Elements, is currently building programmable load simulators that will enable automated testing to show how Energy Ink™ cells perform in real-world applications. The programmable load simulator will accelerate testing and enable AAM to determine the smallest size battery cells or packs that are required to power the circuits used in different real-world products.

Importantly, automation will enable the Company to run multiple tests in parallel without human intervention, and programming will allow circuits to simulate different types of devices with different power usage patterns such as periodic sensor readings and wireless data transfers. The extensive data captured from these tests will both inform the battery development work and form a data bank that can be used in future discussions with OEM development partners for different products.
The first demonstrator from this work is on track to be available in Q4 2022.

Company Comment

Managing Director Mr Charles Murphy said, "This achievement has unlocked a potential R&D pathway for developing larger scale Energy Ink™ systems either through increased cell size or multiple cells connected over a large area. The Energy Ink™ technology is still far from reaching its maximum potential as the team continues to discover, develop and showcase the ability to enhance the technology's ability to harvest energy from moisture".

About the UNSW Collaboration

Traditional battery technologies reduce the freedom of design for new electronic devices. Screen printed graphene-oxide based cells that harvest energy from airborne water molecules could potentially directly power a device, compliment a battery to extend device life or provide energy for battery storage. Development is partly conducted under an Australian Research Council funded collaboration between the Company and the University of New South Wales[2]. UNSW has deep experience in electronic inks, energy harvesting and storage over the past 10 years and is applying that to the Energy Ink™ technology. UNSW School of Materials Science and Engineering is ranked #1 in Australia for materials science and has a number of partnerships with leading companies such as Boral, Hitachi Chemical, One Steel and many more. UNSW has world-class infrastructure and equipment geared towards advanced materials engineering and fabrication.

About the Company

The Australian Federal Government has registered Strategic Elements as a Pooled Development Fund with a mandate to back Australian innovation. The Company is listed on the ASX under the code "SOR". The Company operates as a venture builder where it generates high risk-high reward ventures by sourcing teams of leading scientists or innovators. SOR majority funds the initial development of each venture whilst seeking a strategic investor that could strongly assist commercialisation. Investors in SOR potentially pay no tax on capital gains from selling their SOR shares as the Company operates under the Pooled Development Program. More information is available on the Company's website.

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This announcement was authorised for release by the Strategic Elements' Board of Directors.

1 https://www.idtechex.com/en/research-report/electronic-skin-patches-2021-2031/821
2 ASX Announcement 30/07/2020