

Development to Growth of a Wonder Material

Versarien[®]
PLC

September 2022

BOARD OF DIRECTORS



Neill Ricketts
Chief Executive Officer



Christopher Leigh
Chief Financial Officer



Dr Stephen Hodge
Chief Technology Officer



Diane Savory OBE
Non-executive Chair



Susan Bowen
Non-executive Director



Iain Gray CBE
Non-executive Director

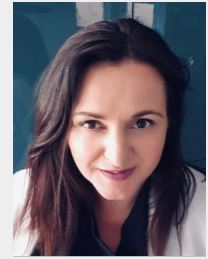
GRAPHENE ADVISORY PANEL



Iain Gray, Chairman



Andrea Ferrari

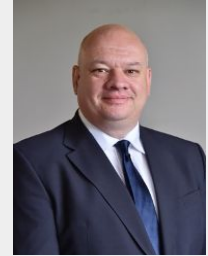


Jacqui Murray



James Baker

**Diverse and experienced
panel of advisors to
Versarien led by
Iain Gray as Chairman.**



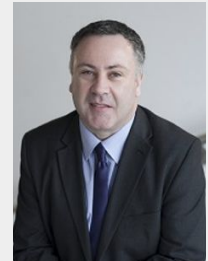
Neill Ricketts



Branson Belle



Kari Hjelt



Tony McNally

VERSARIEN

- + **Pioneer in the supply of graphene in the UK.**
- + **IP secured with over 120 patents and trademarks.**
- + **16 InnovateUK projects completed.**
- + **Largest ever UK Innovate loan £5m to scale up (GSCALE).**
- + **Focus on commercialising in Construction and Leisure.**
- + **First company to be certified and then re-certified by the Graphene Council as a “Verified Graphene Producer”.**
- + **Embedded connections with University of Manchester and University of Cambridge.**
- + **EU REACH registered with a director leading the Technical Working Group.**
- + **Member of the EC’s €1bn Graphene Flagship project.**

WHAT IS GRAPHENE?

+ Graphene:
the world's strongest,
lightest and thinnest
material.



Light



Conductive



Strong



One atom thick



Impermeable



Flexible



Transparent

WHY INVEST IN GRAPHENE?

+ **Scale of Market**

+ **Breadth of applications**

Construction Leisure Aerospace
Automotive Consumer Energy

+ **Path to commercialisation**

+ **Graphene has been widely described as a 'wonder material'**

Growth in global demand for graphene

Source: the insight partners

Global graphene market worth US\$7.55billion by 2028. It is expected to register a CAGR of 37.3% from 2021-28e

OUR HISTORY

2010

Company formed

2013

Floated on the Alternative Investment Market (AIM) on the London Stock Exchange

2014/15

Acquired majority holding in 2-DTech Limited, a developer and supplier of early stage graphene products, from the University of Manchester

2016

Acquired AAC Cyroma Limited
A polymer company

2017

Acquired majority holding in Cambridge Graphene Limited from Cambridge University

2018

Acquired majority holding in Gnanomat S.L.
An energy material provider based in Madrid

2019

Incorporation of US-based sales arm Versarien Graphene Inc. and China-based subsidiary Beijing Versarien Technology Limited

2020

£5m loan provided by Innovate UK for GSCALE
£2m DSTL/MOD - Defence Contract launched

Set up Versarien Korea Limited with assets from Hanwha

2021/22

Multiple commercial products launched

G

Graphene

Scale up
graphene
production

S

Seat

Carbon Fibre
Composites

C

Concrete

Construction
Reducing
CO₂

A

Arch

Reinforced
Thermoplastic
polymers

L

Leisure

Sports wear
Thermal
performance
Moisture
wicking

E

Elastomer

Reinforced
elastomers for
footwear, tyres
and oil & gas
sector



Reducing CO₂



Product life enhancing



Reducing
material use



Recycling



Strengthening

CONSTRUCTION

 **Cementene** ▶ Cementene is a graphene enhanced concrete admix

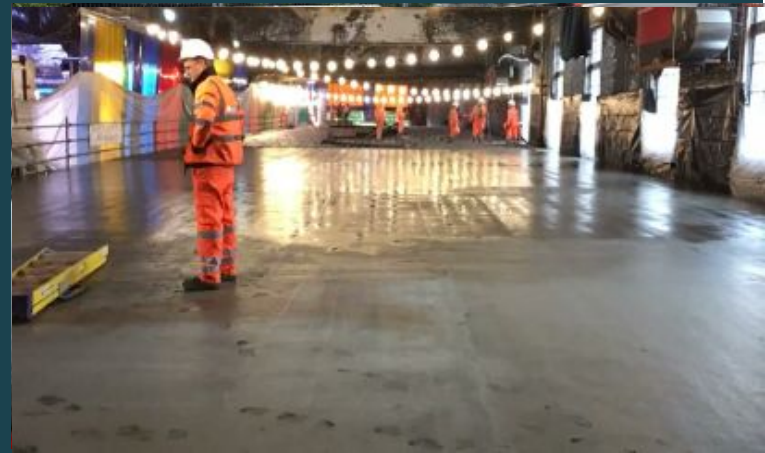
**19 Cementene™
projects since Q4 2020**

12 projects with external companies - proving
Cementene™ in the lab and in the real world

Versarien and partners have poured:

~980 tons Of graphene enhanced concrete

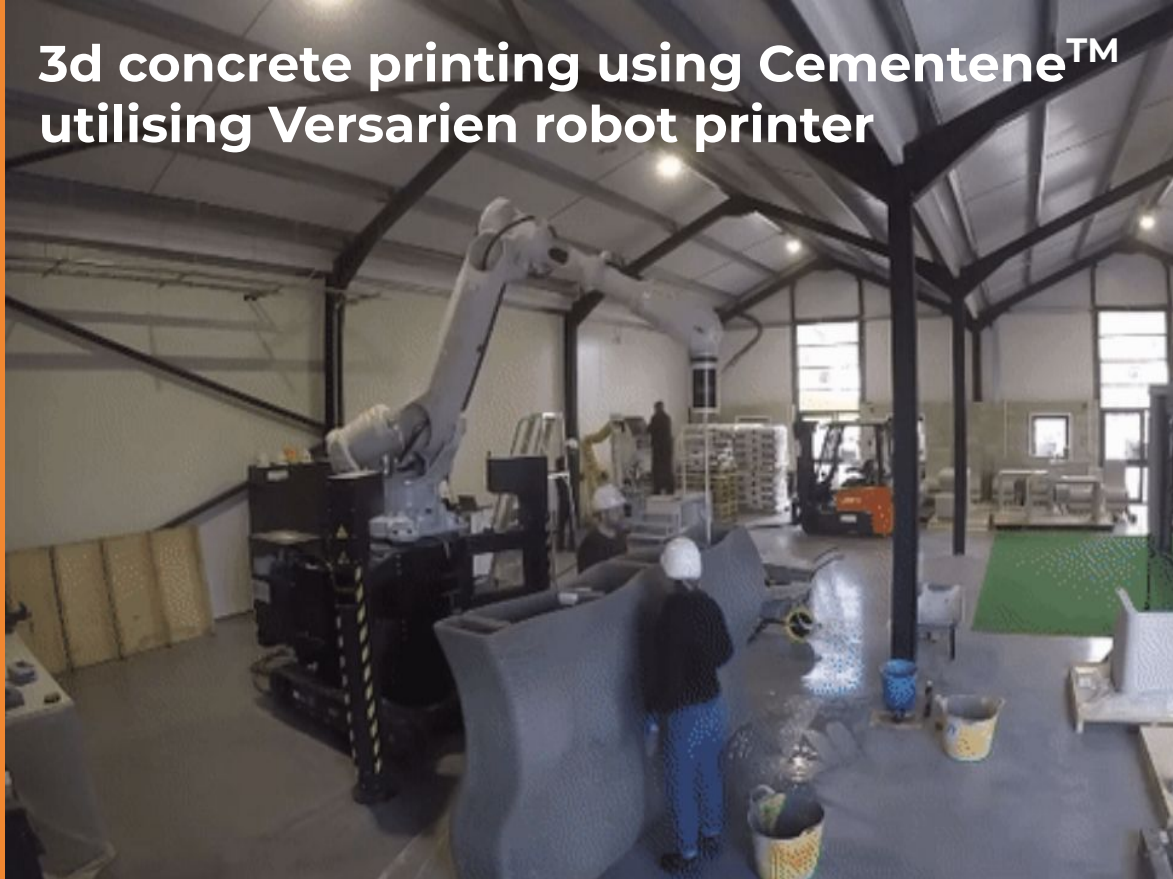
~320 Cubic metres



CONSTRUCTION

Investing in innovative construction methods

**3d concrete printing using Cementene™
utilising Versarien robot printer**

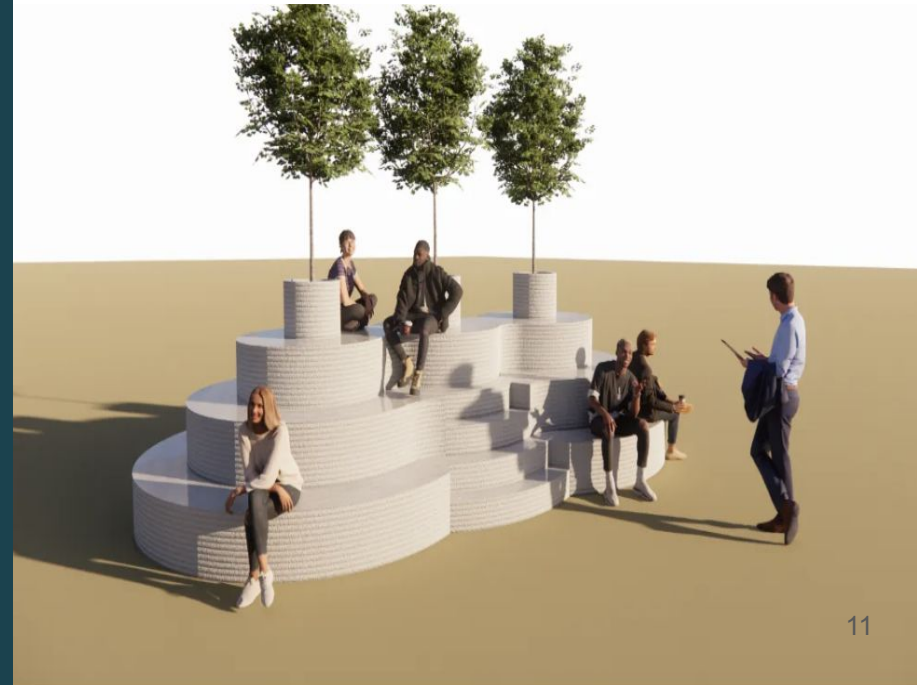


CONSTRUCTION



+ The capital's leading event for architecture and design industries

A Versarien 3d concrete printed structure designed by Stuart Padwick on display



CONSTRUCTION

Opportunities

DRAGADOS

“As a company specialising in Construction, we find Versarien an extremely promising alternative to the current low- emission concrete solutions as it can reduce CO2 emissions by up to 40% while still providing concrete with the strength and durability needed in construction.”



“Versarien PLC have and are carrying out very interesting research in the concrete sector. Their work on graphene enhanced concretes, to be able to produce a low carbon cementitious product, is very interesting to the Environment Agency.”

**Quote from
Grant Assessment**

“The innovation can disrupt the market of additives for concrete. Commercially available graphene-based additives are not widespread on the market.

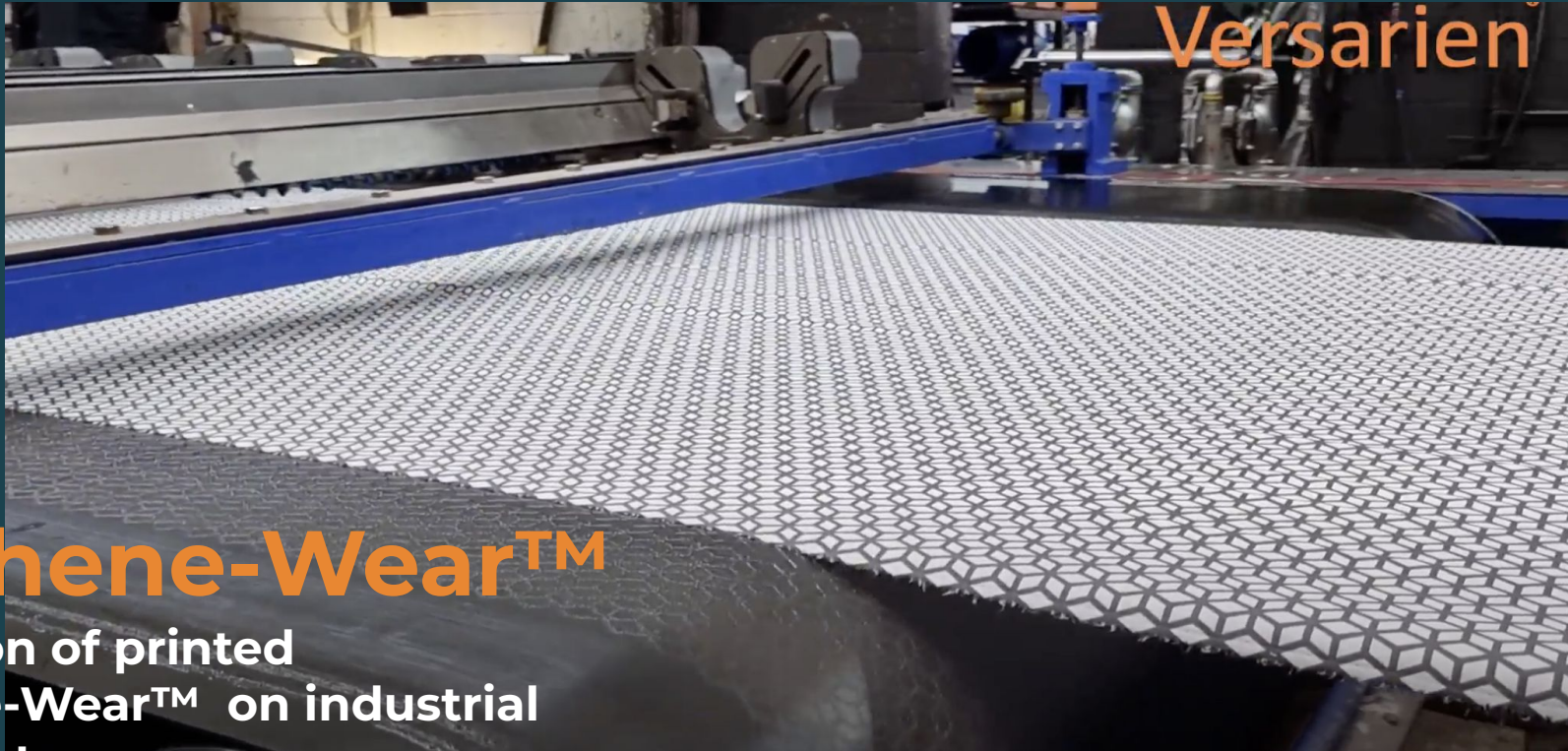
The product itself is technically and commercially scalable.”

LEISURE

Versarien

Graphene-Wear™

Production of printed
Graphene-Wear™ on industrial
equipment



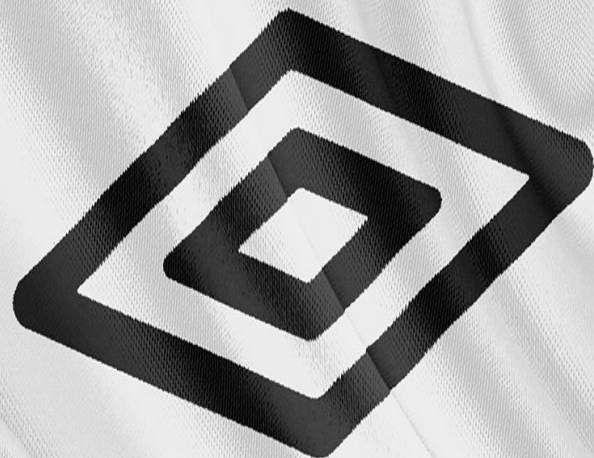
LEISURE

+ Garments

Commercial agreements signed with Superdry and Umbro to produce graphene enhanced garments, and discussions ongoing with other garment suppliers.

Graphene-Wear™

<https://graphene-wear.com/>



umbro

Global sportswear brand Umbro will integrate Versarien's Graphene-Wear™ technology into its Elite Pro-Training Kit range, initially for the 2023 spring/summer collection.

LEISURE

+ Footwear

Tensile strength +50%

Modulus +30%

Elongation +20%

Tear Strength +23%

Compared to non-graphene
reference compound

Versarien collaborations are non exclusive

Graphene-Wear™



Collaboration signed with US-based Flux Footwear LLC, an adaptive footwear company, to supply graphene enhanced elastomers.

WHY VERSARIEN?

Patents

Extensive portfolio of 120+ in graphene space

Connections

University of Manchester, University of Cambridge and UK Government

Scale

Production scaled up as part of IUK/GSCALE loan

Team

Experienced management team with key academics and a key technology advisory board

Product Road

Objective is to launch 12 products within the next year

Reach

Accreditation to produce up to 10t in Europe and UK

Scaleable patented technology and processes that can be licenced

Technology

Wide portfolio of graphene products

Global Footprint

UK, USA, China, South Korea and Europe

Graphene Council Accreditation

First company to successfully pass the Verified Graphene Producer program twice and the first to be re-certified.

Thank you
Questions

VERSARIEN KOREA

- + Focussed on developing and manufacturing Electronics grade single layer graphene for sensors and displays using Chemical Vapour Deposition (CVD).
- + Strategic investment from GrapheneLab based in Seoul together with licencing and royalty agreements.
- + 120+ international patents for CVD processes from Samsung Techwin and Hanwha.
- + Relocated to new facility co-located with GrapheneLab with Class 1000 and 10000 clean rooms.

VERSARIEN EUROPE

- + Focussed on developing battery and supercapacitor materials through majority owned subsidiary Gnanomat.
- + Utilises patented method for functionalisation of graphene materials.
- + Proven capability in anti-microbial coatings.
- + Launched new super paramagnetic materials.
- + Based in Madrid, Spain.
- + Utilised materials in Supportive (hybrid power) Innovate project.
- + Utilising hybrid materials in €16m EU Project INN-PRESSME with key partners including Skeleton technologies.