



**GLEAM**  
NETWORK

GLEAM presents

## Factory Tour of SHD Composites

Thursday 28th November | 08.30 & 10.30

SHD Composites, Sleaford, UK

Delivered by



**BRIDGE**



Business  
Lincolnshire



# Agenda

- **Introduction to GLEAM, the Bridge and SHD Composites**
- **Tour of SHD Composites Prepreg Manufacturing Facility & Prepreg Demonstration**
- **Tour of Tech Centre including testing, analysis, and new product development**





**GLEAM**  
NETWORK

# Creating a Manufacturing Community



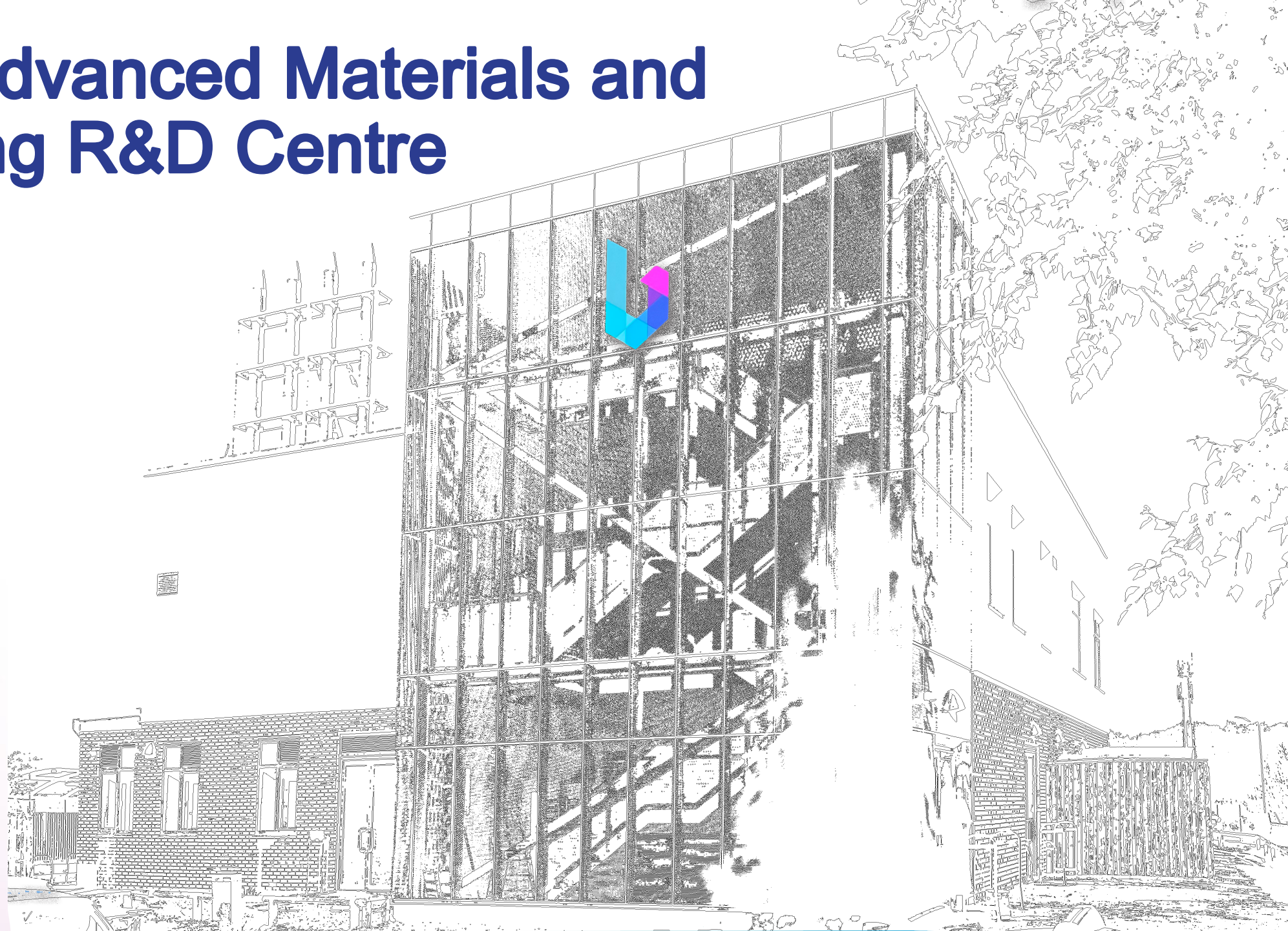
- The Greater Lincolnshire Engineering And Manufacturing (GLEAM) Network is an initiative founded by the University of Lincoln, Greater Lincolnshire Local Enterprise Partnership (GLLEP), and Business Lincolnshire and managed by the Bridge.
- GLEAM provides a knowledge-intensive business corridor locally at the heart of the manufacturing business in Greater Lincolnshire and is open to all manufacturing businesses in Greater Lincolnshire. Members are able to join free of charge and gain access to a range of benefits, including Affiliate Partner Membership with Make UK.

# Make UK Affiliate Membership Benefit

- Join Make UK as an Affiliate Member
- Make UK Affiliate Membership is open to members of Make UK partner organisations. You'll receive industry information and insight, contribute to Make UK's policy positions and have access to events, guidance and support on issues affecting our sector.
- To register for Affiliate Membership just complete the form at:  
<https://www.makeuk.org/affiliate-member-registration>



# Bridge – Advanced Materials and Engineering R&D Centre



**BRIDGE**



UNIVERSITY OF  
**LINCOLN**

# BRIDGING BUSINESS WITH INNOVATION

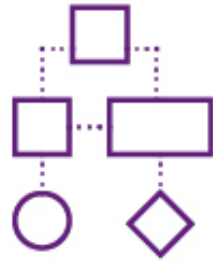
- Bridge operates from the University of Lincoln and has a dedicated team of R&D project specialists working alongside the University's academic community.
- We help businesses access technologies and methods at the forefront of research to create R&D solutions, and drive innovation.



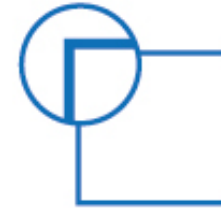
# Bridge – Advanced Materials and Engineering R&D Centre



CONSULTATION AND  
1-2-1 SUPPORT FOR  
BUSINESS DEVELOPMENT



CREATION OF NEW PROCESS  
AND PRODUCT INNOVATION  
WITH OUR DEDICATED BRIDGE  
TEAM AND R&D PARTNERS



MATERIALS RESEARCH  
AND INNOVATION



EXPERT USE OF  
INSTRUMENTATION AND  
MATERIALS ENGINEERING  
LABORATORIES



BUSINESS NETWORKING  
AND COLLABORATION



TRAINING AND  
PROFESSIONAL  
DEVELOPMENT

Watch the video at <https://youtu.be/MV4p10BIHJ0?feature=shared>



- Visit our website for a virtual walkthrough of the Bridge at <https://www.thebridge-lincoln.org/>
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- E. [mthornton@lincoln.ac.uk](mailto:mthornton@lincoln.ac.uk)

# Thank You for Listening

FUNDED BY:



[thebridge-lincoln.org](https://www.thebridge-lincoln.org)

# SHD Factory Tour



Dr Alix SAUGET  
Group R&D Manager

28<sup>th</sup> November 2024

[www.shdcomposites.com](http://www.shdcomposites.com)



# Agenda



## Presentations

### GLEAM / The Bridge: Introduction

#### SHD Composites:

- Introduction
- Company history
- Capabilities, R&D
- Markets, applications

#### Factory tour:

- Production facilities
- Prepreg hand-on
- Technical centre

### Dr Alix Sauget

*Group R&D Manager*

PhD in bio-composites at the *Université de Lorraine (FR)*.

Joined SHD in 2015 as R&D Engineer, to help developing sustainable materials offer.

Extended laboratory facilities and grew technical team.

Currently heading up R&D and material testing facilities.

# Introduction to SHD



## Company

- Manufacturing of **Prepreg materials** = [Fibres] + [Uncured Resin]



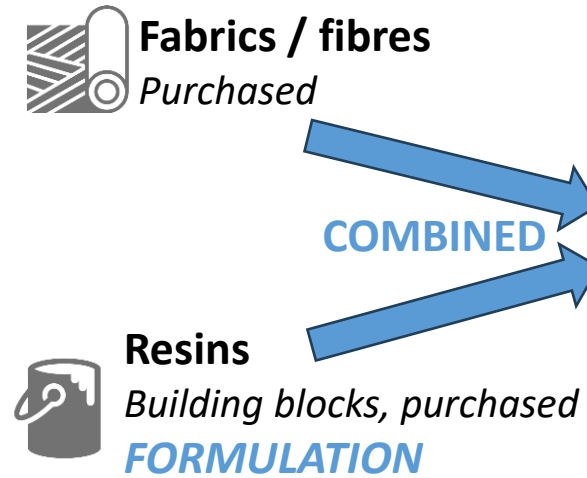
# Introduction to SHD



## Company

- Manufacturing of **Prepreg materials** = [Fibres] + [Uncured Resin]

### *SHD Process:*



**COMBINED**



**IMPREGNATION**  
*Heat,  
Pressure...*



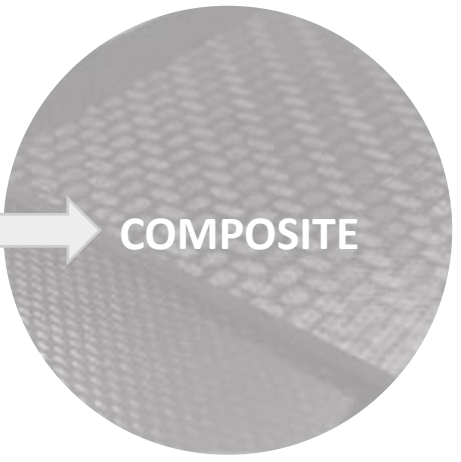
**PREPREG**

**/!\ Uncured /\!**

### *Our customers:*

**MOLDING**  
*Manual,  
Automated*

**CURING**  
*Heat,  
Pressure...*



**COMPOSITE**

# Introduction to SHD



## Company

- Manufacturing of **Prepreg materials** = [Fibres] + [Uncured Resin]
- Founded 2010, privately owned, supported by long term investors
- Revenue approx. £40m p.a.
- Supplying ~400 customers worldwide

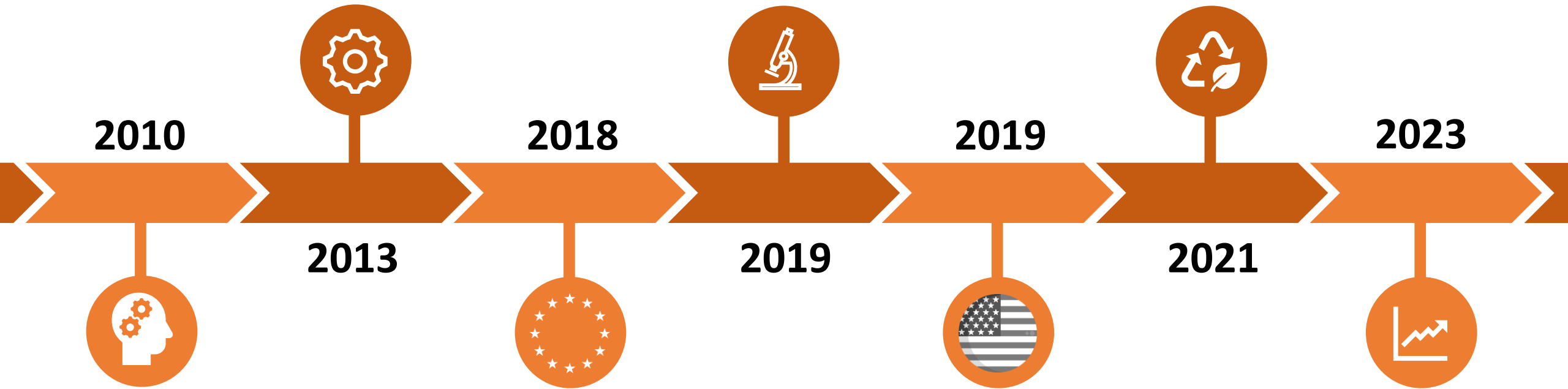
## Multiple sites

- **UK** (Sleaford, Linc), 2010      Production, HQ, R&D
- **EU** (Krsko, Slovenia) 2018      Production
- **USA** ( Mooresville, NC) 2019      Production
- **USA** (Tulsa, OK) 2023      Production
- Different sites but same production equipment and products
- Central UK based Technical Centre

## Quality

- All sites AS9100 Rev D & ISO9001:2015





Key milestones in

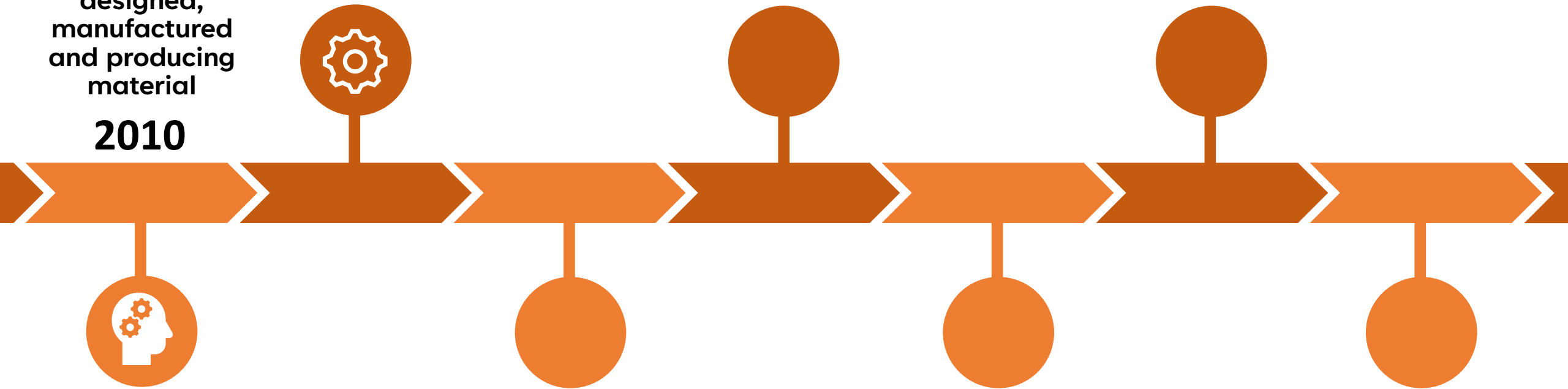
# THE GROWTH OF THE WIDER SHD GROUP

# Introduction to SHD



Initial machine designed, manufactured and producing material

**2010**



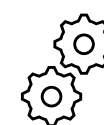
**Head count**  
**x5**



**Output** (/WEEK)  
**x500m<sup>2</sup>**



**Turnover**  
**£500k**



**Production Lines**  
**1x FL**

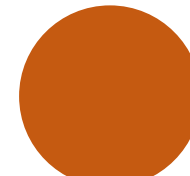
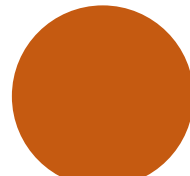


# Introduction to SHD



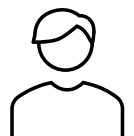
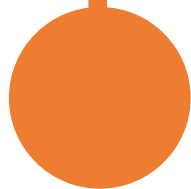
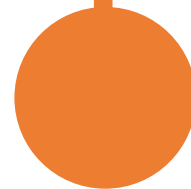
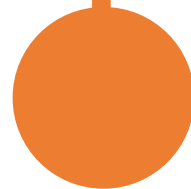
Initial machine designed, manufactured and producing material

2010



2013

Scale up of UK facility with additional lines to support growing demand in Auto



**Head count**  
x15



**Output (/WEEK)**  
x3,000m<sup>2</sup>

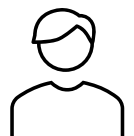
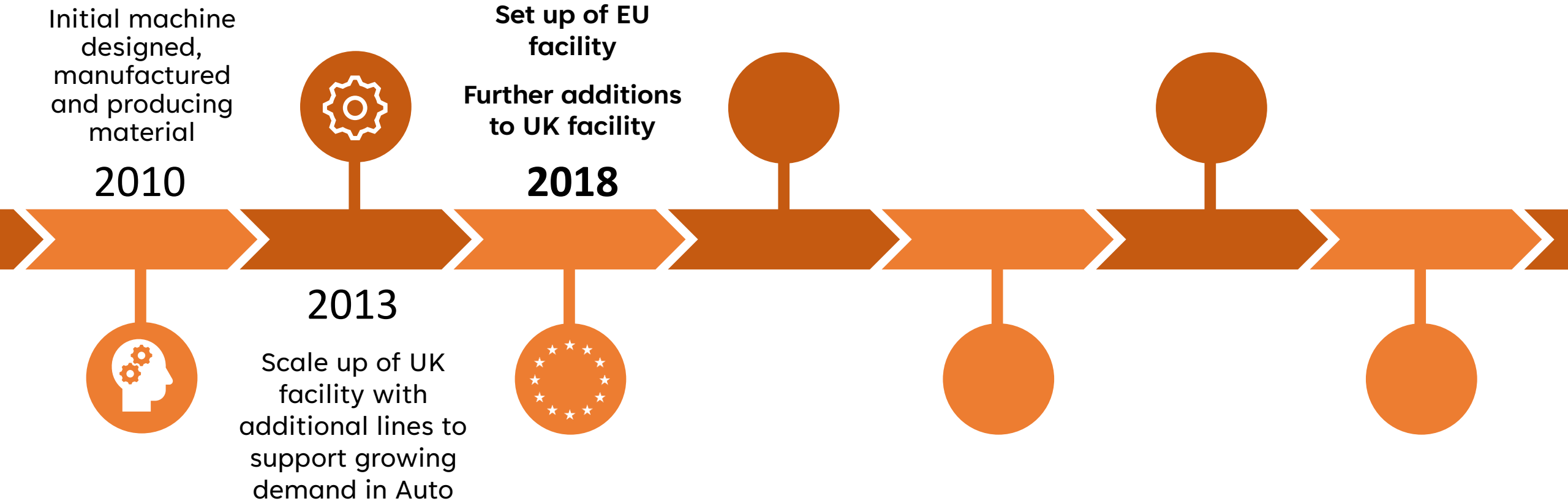


**Turnover**  
£2m



**Production Lines**  
2x FL, 1x UD

# Introduction to SHD



**Head count**  
**x55**



**Output** (/WEEK)  
**x12,000m<sup>2</sup>**

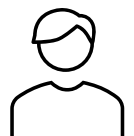
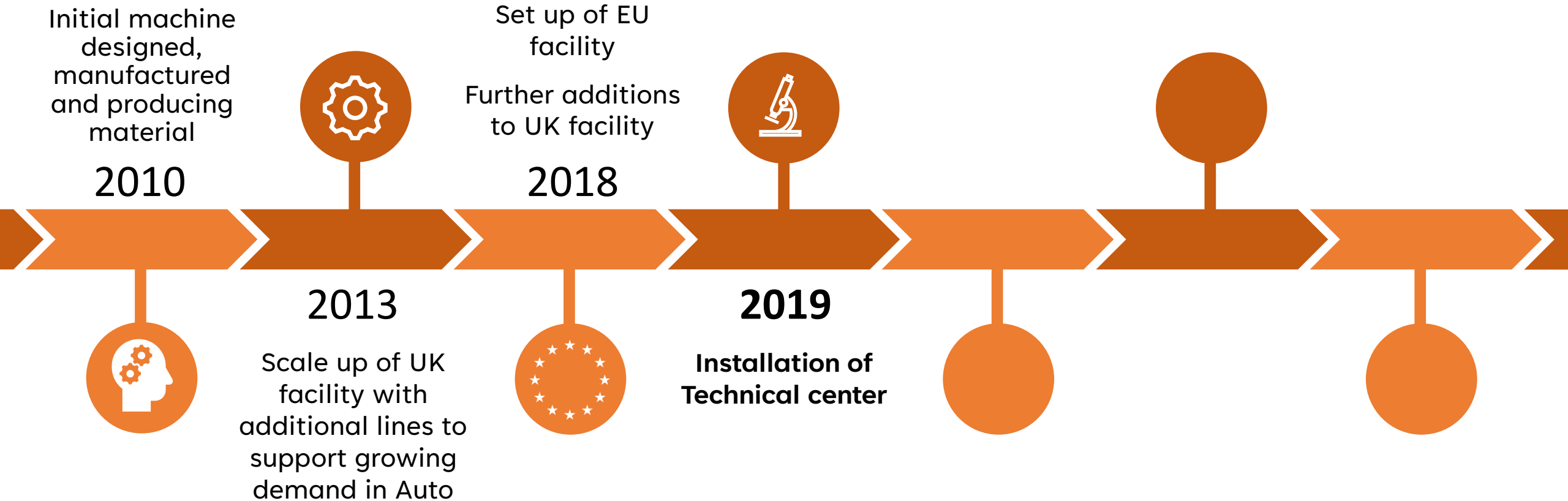


**Turnover**  
**£8m**



**Production Lines**  
**3x FL, 1x UD**

# Introduction to SHD



**Head count**  
**x75**



**Output (/WEEK)**  
**x20,000m<sup>2</sup>**

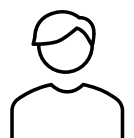
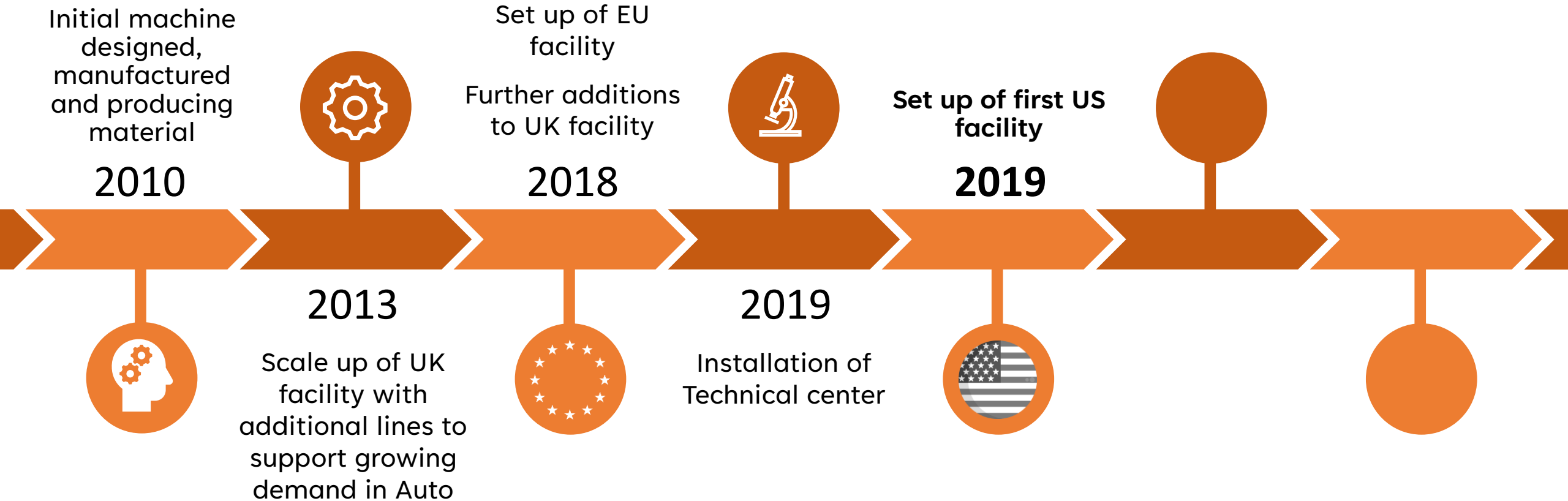


**Turnover**  
**£20m**



**Production Lines**  
**3x FL, 1x UD**

# Introduction to SHD



**Head count**  
x90



**Output** (/WEEK)  
x20,000m<sup>2</sup>

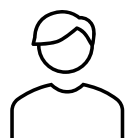
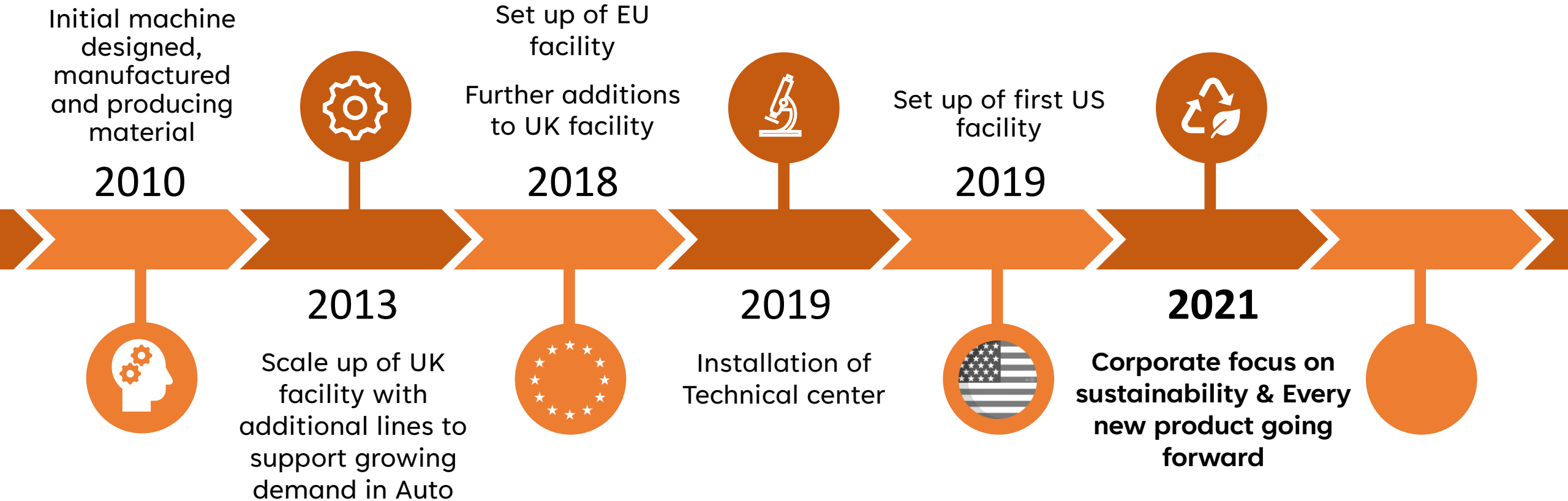


**Turnover**  
£20m



**Production Lines**  
4x FL, 1x UD

# Introduction to SHD



**Head count**  
**x140**



**Output** (/WEEK)  
**x37,500m<sup>2</sup>**

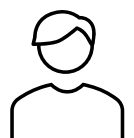
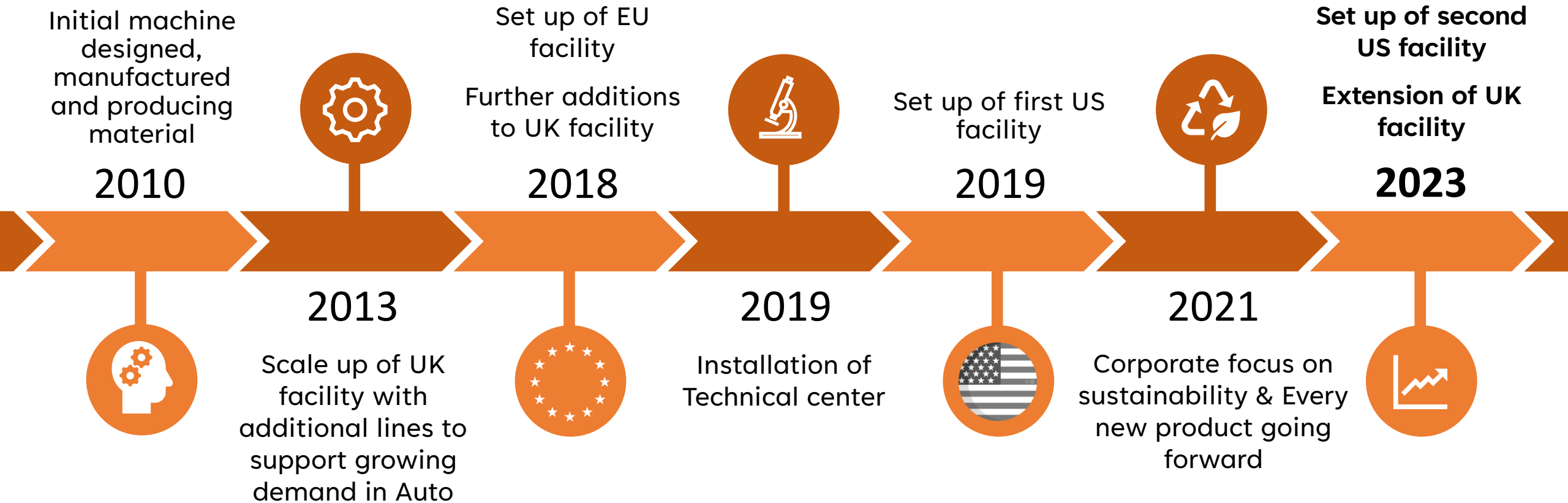


**Turnover**  
**£35m**



**Production Lines**  
**5x FL, 2x UD**

# Introduction to SHD



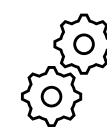
**Head count**  
**x140**



**Output (/WEEK)**  
**x40,000m<sup>2</sup>**



**Turnover**  
**£40m**



**Production Lines**  
**7x FL, 2x UD**

# Introduction to SHD



## Manufacturing / Service

- Prepreg production: “hot-melt” prepreg lines i.e. no solvents
  - *Designed & built in-house: able to quickly add capacity*
- Flexibility for 10m<sup>2</sup> to x 100,000m<sup>2</sup> batch quantities, maintaining excess capacity
  - *Support trial volumes to full production (customers, R&D)*
- Core strategy to maintain 2-3 weeks lead time

## Products & Technology

- Comprehensive resin matrix range, in-house formulation
  - *Development of specialist product through collaboration*
  - *Industry leading bio-based resin product range*
- Large range of fibre / reinforcement
  - *Carbon, glass, aramid, natural fibres, reclaimed fibres...*
  - *Strong supplier support*
- Extensive in-house technical capabilities

# Technical Department Capabilities

## Major investments

- > £500,000 spent since 2020 to upgrade test facilities with purpose-built Technical Centre
- 12 members of staff in the technical department
- Comprehensive range of in-house material testing capabilities

## Material characterisation

- **Mechanical testing:** 30kN / 50KN / 250KN frames, with climatic chamber for elevated and sub-ambient temperatures
- **Thermal analysis:** DSC (Differential Scanning Calorimetry) (x3), DMA (Dynamic Mechanical Analysis), TMA (Thermo-Mechanical Analysis)
- **Rheology:** Rheometer (x2)
- **Accelerated weathering:** UV / humidity
- **Infrared:** FTIR / ATR
  - → *Able to offer support for programme qualifications – full test packages*

## Technical support

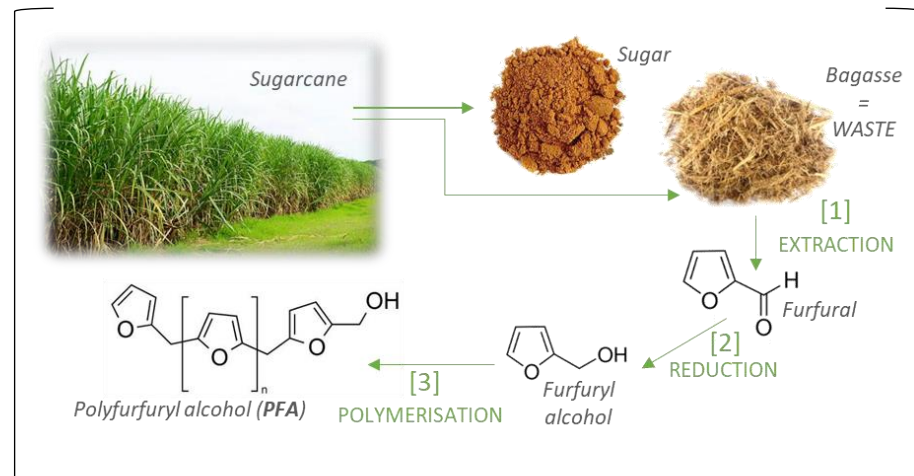
- Highly experienced technical team for reactive customer support
- Autoclave, oven and press curing equipment (support, demonstration parts, prototyping)
- Fast turnaround of development trials for both internal and external projects





# Markets, Applications

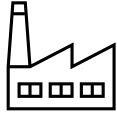
- Motorsport / High Performance
- Aerospace and Defence
- Sporting equipment
- General purpose / Industrial
- Tooling
- Sustainable materials
- etc...



*Bio-resin converted from food industry waste*

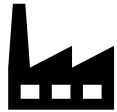


# Factory tour



## STOP 1: Production site

- Prepreg production lines



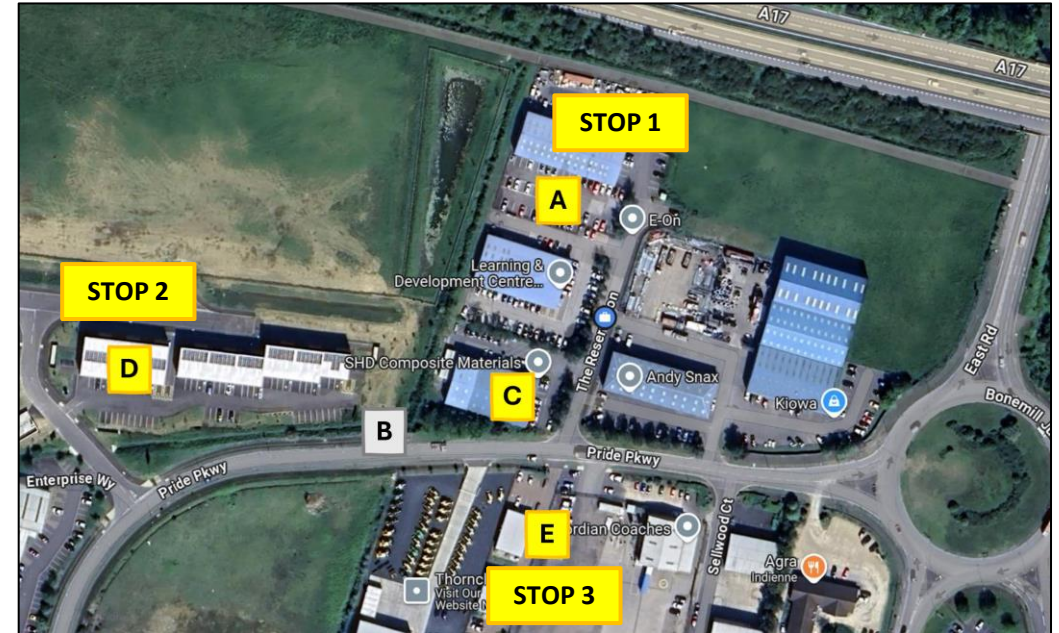
## STOP 2: Production site – latest extension

- New 'Micro-Factory'
- Prepreg hands-on
- Composite parts display



## STOP 3: Technical centre

- R&D capabilities
- Lab equipment



**Strictly no pictures**

Thank you for listening.

Any questions?



**Speaker**

[asauguet@shdcomposites.com](mailto:asauguet@shdcomposites.com)

**UK Sales**

[sales@shdcomposites.com](mailto:sales@shdcomposites.com)




**US Sales**

[us-sales@shdcomposites.com](mailto:us-sales@shdcomposites.com)




**Technical Enquiries**

[technical@shdcomposites.com](mailto:technical@shdcomposites.com)

**Phone**

-  **UK** +44 (0) 1529 307629
-  **Slovenia** +386 82 012 059
-  **USA** +1 (704) 626-6876

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