

LIVESTREAM HOUR

THE ELECTRIFYING PRODUCTION SERIES

HOW TO BUILD AN ELECTRIC FUTURE (PART 2)

ams

Expert guests



Danny Auerswald
Plant Manager,
Transparent Factory Dresden
Volkswagen Group



Gareth Tomkinson
Business Development Manager
Renishaw



Chris White
Electrification Manager,
Manufacturing Engineering
Ford Motor Company



James McAllister
General Manager Tool & Industrial
Assembly Solutions
Atlas Copco

Electrification changing processes, skills & partnerships

- New suppliers in R&D, sourcing and production, i.e. battery cells, arrays and modules
- Battery pack integration, electric motors and drivetrains require new tooling, higher tolerances and enhanced safety measures around high voltages
- Greater quality control and inspection processes for EV and battery pack

Electrification changing processes, skills & partnerships

- Automation opportunities in modular design and cellular manufacturing
- Differing OEM production strategies driving changes in assembly technology and flexibility, i.e. multiple powertrains on single line versus dedicated EV plants
- Connected plant technology opportunities converging with EV rollout
- Challenges in scaling production, forecasting, skills, supplier management

Agenda for today's show

For the next 80 minutes...

- **VW's way to emobility – Danny Auerswald, Volkswagen**
- **Advanced inspection in EV production – Gareth Tomkinson, Renishaw**
- **Bringing electrified powertrains into their E-Prime – Chris White, Ford**
- **Innovations for EV and battery case production – James McAllister, Atlas Copco**
- ***Panel Q&A – comments and questions in the chat throughout the show***

In Partnership with



LIVESTREAM HOUR

THE ELECTRIFYING PRODUCTION SERIES

AUTOMOTIVE SUPPLIERS CHARGING AHEAD (PART 1)



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[Watch full episode on-demand here!](#)

Danny Auerswald
Plant Manager
Transparent Factory Dresden





The Transparent Factory How to Build an Electric Future



VW's way to e-mobility

05/05/2021

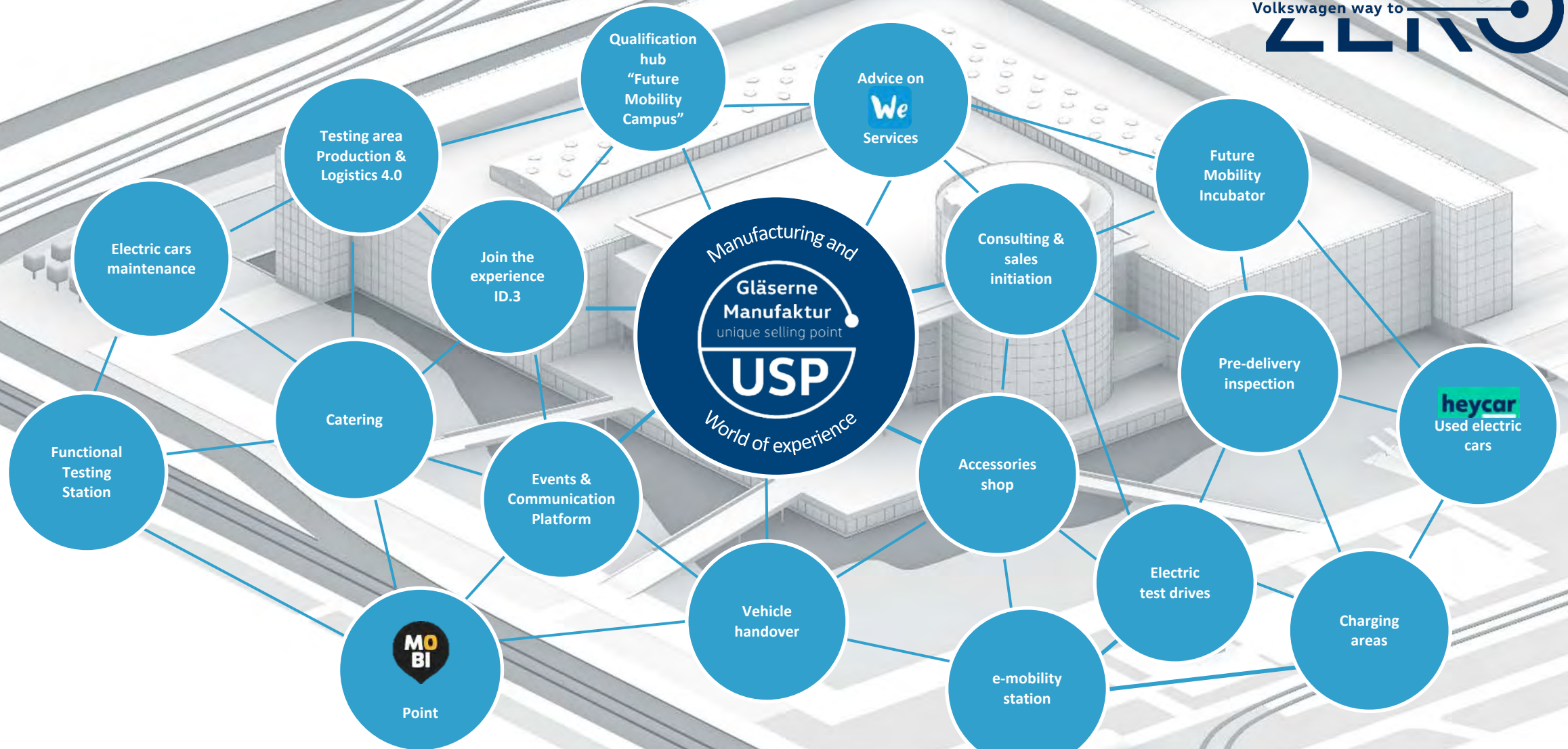
Data classification: external

The electric offensive of the Volkswagen Group

Most extensive electric offensive in the automotive sector

- 60 billion € investments for electric mobility and digitization
- Thereof 35 billion € for electric mobility
- Until 2029: 75 BEV + 60 PHEV new electric cars from the group brands
- 26 million electric cars and 6 million hybrid vehicles until 2029
- Battery strategy: 50 billion € order volume worldwide
- Zwickau as kickoff for the global rollout, Dresden as first-follower
- The Volkswagen ID.3 is the first MEB model – produced CO2 neutrally





“The strategy across the board is that we think about more modules. Instead of having everything assembly in-house, in the plant, you try to reduce the complexity and outsource module assembly...For instance, the whole front end is coming pre-assembled”

-Danny Auerswald, Volkswagen Group

[Read the article in our digital edition on E-mobility production here!](#)



Gareth Tomkinson
Business Development Manager

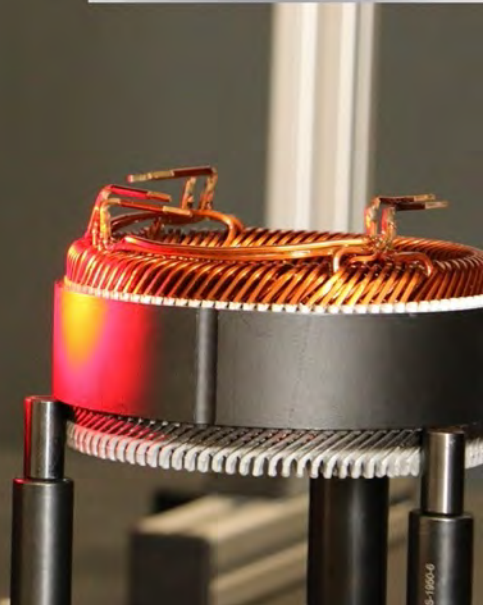
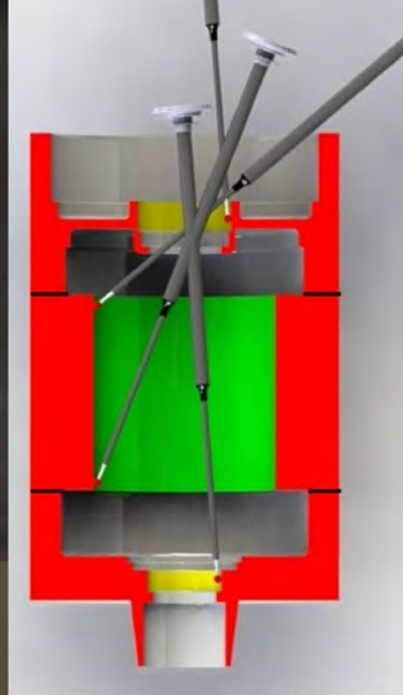
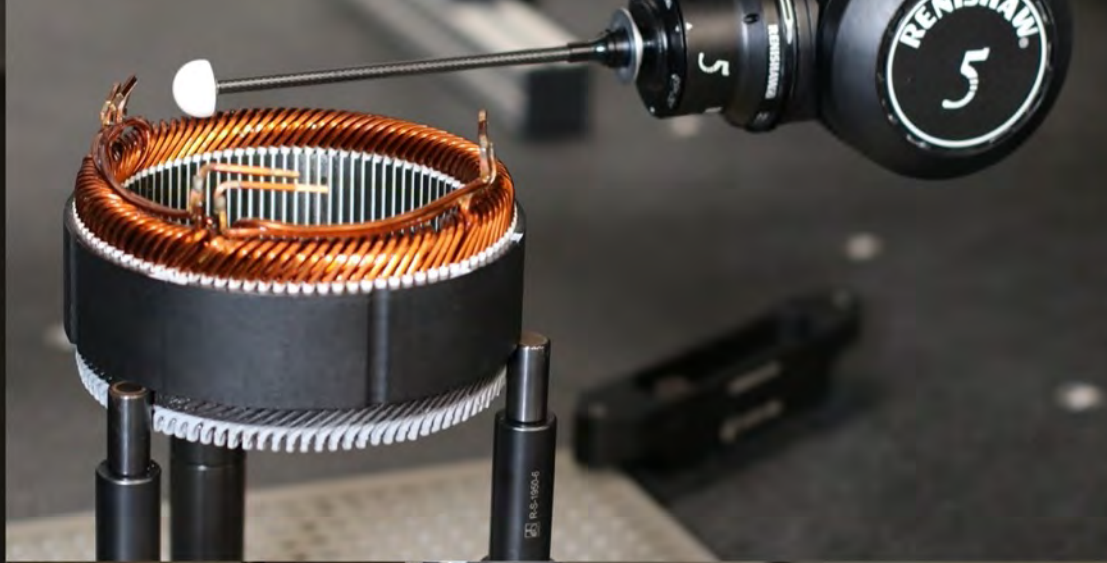


On the road from ICE to EV

Gareth Tomkinson

Business Development Manager and Smart Manufacturing Brand Ambassador, Renishaw







www.renishaw.com/automotive





TECHNOLOGY

Taking control with flexible solutions

By Renishaw | 09 February 2021



As electrification brings its fair share of challenges, Renishaw is ready to transform future production with fast, flexible, and programmable powertrain manufacturing solutions



[Read the article here!](#)

Chris White

Electrification Manager,
Manufacturing Engineering - Europe

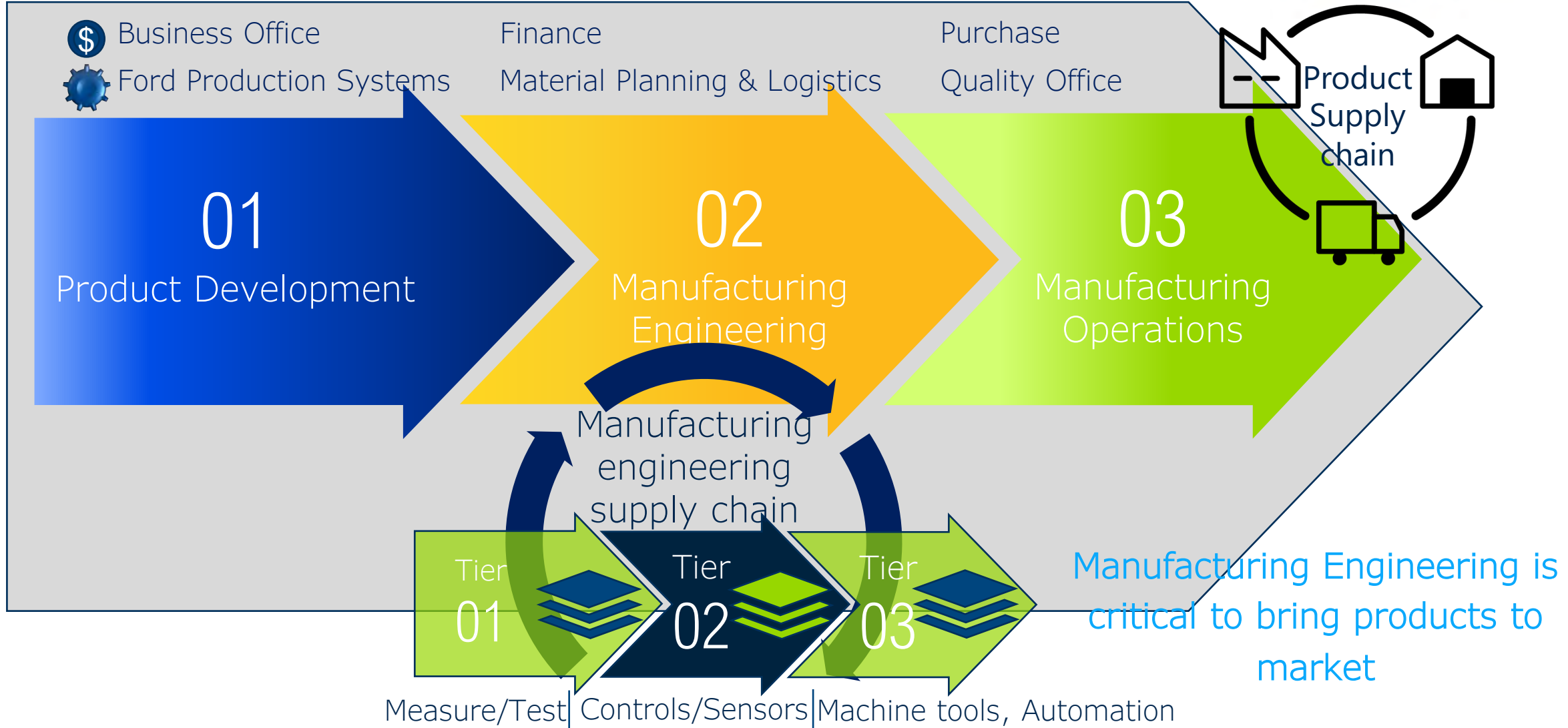




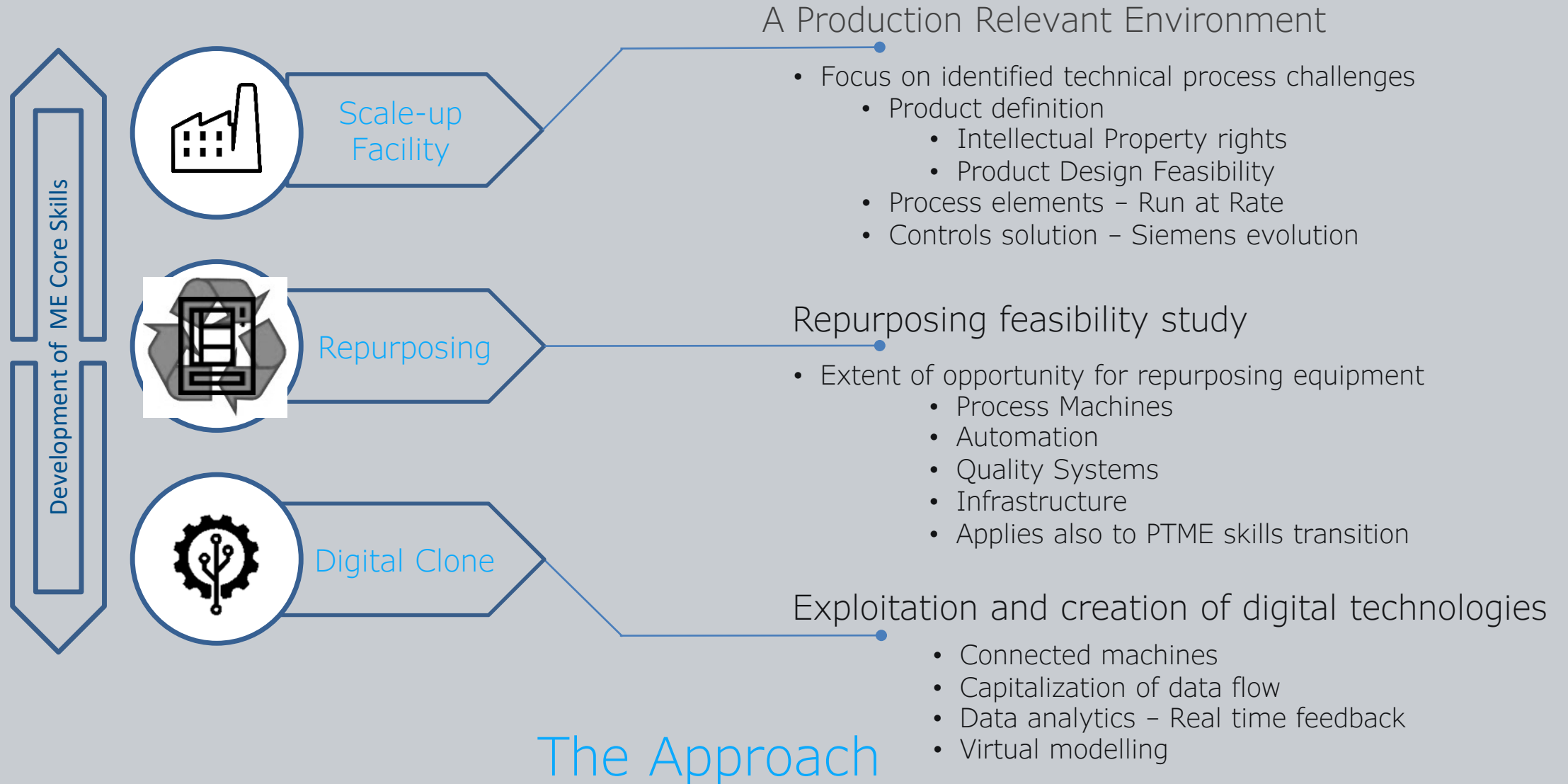
- A facility and project to support the **skills and technology transition** for EV powertrain manufacture
- Consortium project lead by Ford, 50% funded by the UK government
- Based at Ford's Dunton Campus, Essex, UK
- A fully operational pilot facility for Stators, Rotors and Battery Arrays
- Leading towards Ford's own Electrified Powertrain facilities in Europe



Project Focus – The EV Project Lifecycle



The Motivation



LIVESTREAM HOUR

FACTORY OF THE FUTURE

Live on May 26: The software-defined assembly line

Special guests include:

Patrick Matthews, VP of Robotics Systems, ABB

Michel Morvan, Co-founder, Cosmo Tech

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[Register to join here!](#)

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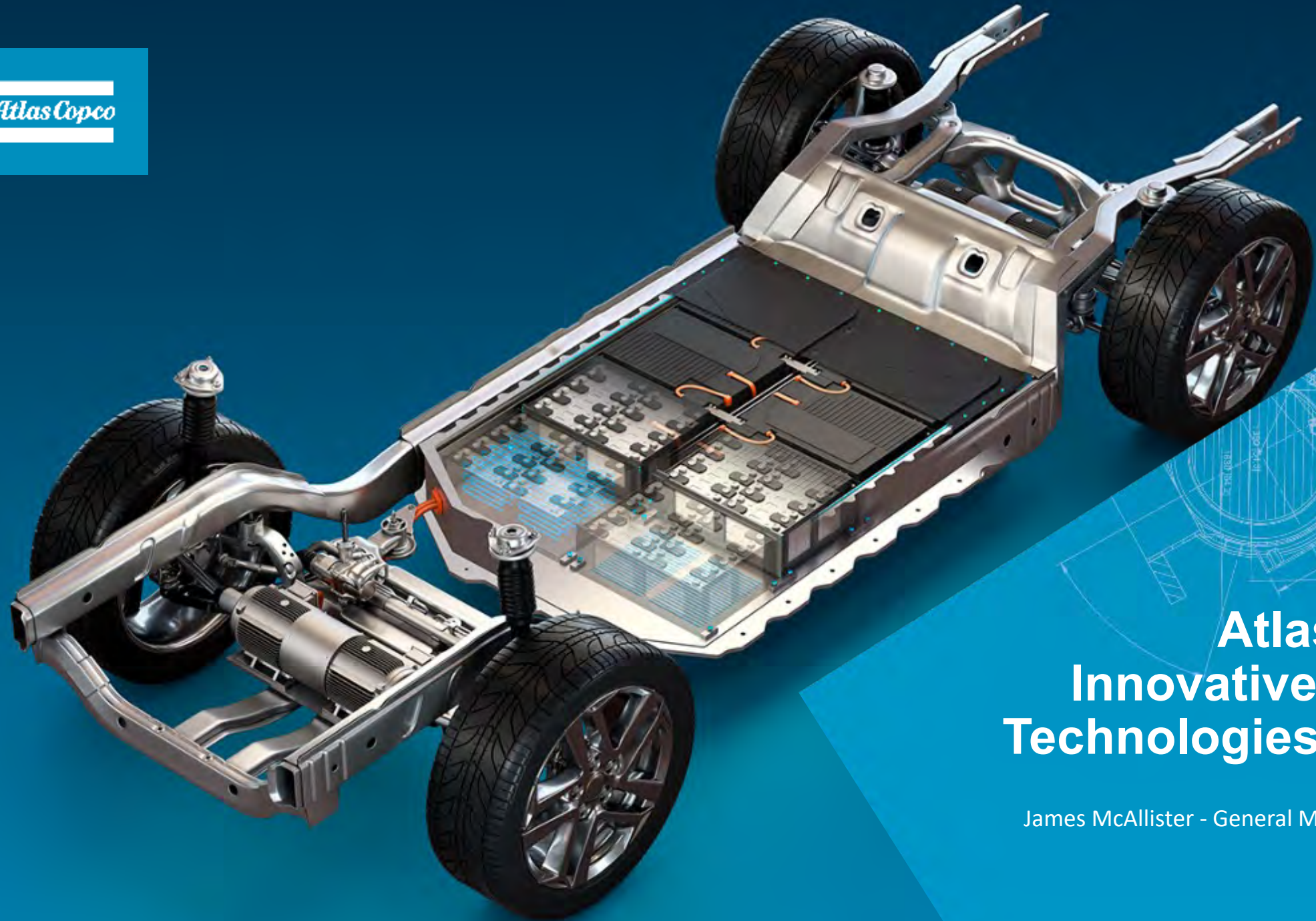
James McAllister

General Manager Tool & Industrial
Assembly Solutions





Atlas Copco



Atlas Copco Innovative Joining Technologies for EVs

James McAllister - General Manager - May 2021

A strategic partner for joining in electric vehicle assembly



Tightening



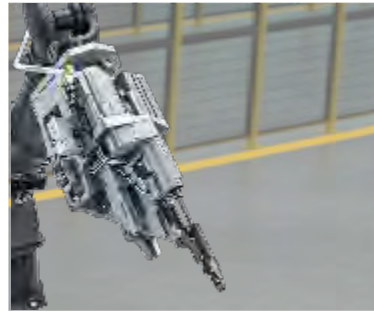
Adhesive bonding and sealing



Self-pierce riveting



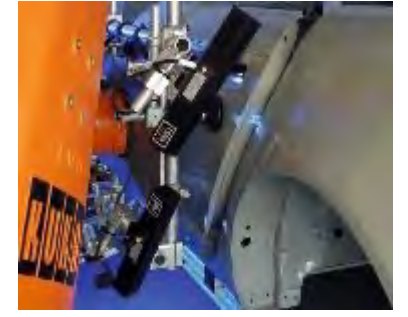
Flow drill fastening



Electronic dispensing and potting



Vision systems



Joining Technologies

Process Control

Data Collection & Traceability

Data Driven Services

Service

EV battery joining

Showcase in seven steps



2.
*Module
assembly*



1.
*Cell stack
assembly*



3.
*Battery tray
assembly*



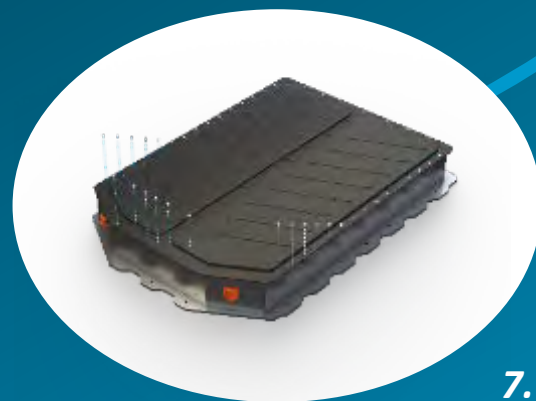
4.
*Gap filler
application*



5.
*Tightening
of modules*



6.
Cover sealing



7.
*Cover to tray
joining*

Atlas Copco acquisitions for FLEXIBLE production

SMART CONNECTED ASSEMBLY - INDUSTRY 4.0

SCA 2011



Adhesive systems and metering technology

SETI-TEC 2011



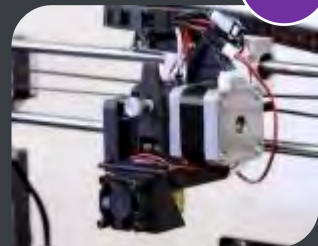
Drilling equipment

SYNATEC 2013



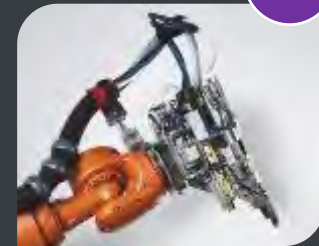
Process control solutions

BONDTECH 2016



Adhesive dispensing equipment

KLINGEL 2018



Flow drill fastening

QUISS 2019



Visual quality inspections

SALTUS 2013



Mechanical and electrical wrenches

TENTEC 2013



High torque bolting solutions

HENROB 2014



Self-pierce riveting

SCHEUGENPFLUG 2020



Electronics dispensing

ISRA VISION 2020



Machine Vision Solutions

PERCEPTRON 2020



In-line metrology solutions

INNOVATION & TECHNOLOGY LEADERSHIP



Strategic partner for EV joining technologies



Battery assembly



Our aim is to be a long-term vision and joining technology partner to our customers, providing complete solutions rather than just individual products

- **James McAllister, ACTIAS**
general manager



[Read the article in our digital edition on E-mobility here!](#)

Panel Q&A



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Ford Motor Company



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Check out our latest editions on tier suppliers & EV manufacturing

ams DIGITAL E-mobility 2021

Electric vehicle production powers up

OEMs commit to all-electric future, suppliers develop the production tech and materials

- OEMs: Going all-electric
- Schaeffler: Full-system supplier
- Drivetrain: Production tech
- Atlas Copco: Battery assembly
- Outokumpu: Stainless steels for EV motors
- Rockwell: Smart manufacturing
- Chemetal: Pre-treatment technology

ams DIGITAL Tier Suppliers

Adapt, survive and thrive

Tier suppliers seize opportunities in electrification

- ZF: Electrifying the powertrain
- SEM: Semiconductor supply
- Gestamp: Chassis developments
- Yanfeng: Interior innovations
- Auria: Reducing NVH in EVs
- ABB: Condition-based maintenance
- Renishaw: Flexible solutions

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