

A photograph of an offshore wind farm with several wind turbines in a row across the ocean. The sky is a mix of orange, red, and blue, suggesting a sunset or sunrise. The water is dark blue with some whitecaps.

# ENABLING SUSTAINABLE SOLUTIONS







# TT ELECTRONICS: ENABLING SUSTAINABLE SOLUTIONS

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# CLEANER, SMARTER, HEALTHIER

## TT ELECTRONICS

It is a mindset rooted in driving value for not only our shareholders, but every person our business serves: our employees, our leadership team, our suppliers, our customers, and our communities. Sustainability is at the very core of what we do at TT Electronics. It's embedded in our purpose:

“Solving technology challenges for a sustainable world.”

Why? Because it makes total sense... quite simply any business let alone a technology business, like TT, cannot sustain its current performance, or growth if it doesn't help to sustain the people, the environment, the infrastructure, and economy – on which it depends to drive value.

Our cleaner, smarter, healthier focus is a key differentiator of our customer-offer and drives our approach not only to R&D but to the way we design, engineer and manufacture our products. Our skilled technicians deal in incremental gains each day, where the smallest fractions make a huge difference.

Get to know TT and you quickly realise how critical sustainability is to the future of our business. TT's technologies address key sustainability megatrends in our markets to bring environmental and social benefits to society. Whether its improving fuel efficiency through the development of lighter aircraft power supplies, manufacturing complex factory automation equipment to drive productivity gains or improving health and patient outcomes through our highly precise medical device technologies, sustainability is at the very core of what we do.

Over and above this focus on cleaner, smarter and healthier products, we also have an ambitious agenda to reduce our environmental footprint

and carbon emissions. We're building a safer, more inclusive and engaged organisation while increasing efficiency, reducing emissions and eliminating waste across our own operations.

It has taken a concerted effort throughout the organisation to achieve these results, with each of our sites putting in place environmental action plans before being tasked with making it happen. It says a lot about the 'can-do' attitude we have within our teams and facilities that we have been able to achieve so much in such a short space of time.

More results will follow as we continue at speed, mindful that we cannot allow perfect to be the enemy of good. However, sustainability at TT is so much more than how we hit figures. It is a key component to our business, an integral piece of our strategy. And we are committed to reaching the very forefront of sustainable technology development and determined to play our part in building a better tomorrow.

**Michael Leahan**  
Chief Operating Officer  
TT Electronics

“Looking back, I am incredibly proud of the progress we have made.

Significant time and resources have been

allocated to drive TT's sustainability agenda and

we are already seeing the reward.”



# WELCOME TO TT ELECTRONICS...

## OUR PURPOSE:

Solving Technology Challenges for a Sustainable World.

TT Electronics engineers advanced electronics that benefit the planet and people for future generations. We do this by designing, manufacturing and working in a way that is cleaner, smarter and healthier.

Listed on the London Stock Exchange (TTG.L) with headquarters in Woking, U.K., TT Electronics employs around 4,700 staff with sales, engineering and manufacturing sites across the U.K., Europe, North America and Asia - positioning the organisation well to serve its global customer base. We work with market-leading customers to provide value-added solutions to the healthcare, aerospace & defence and automation & electrification sectors.

## TT AT A GLANCE:

 **TT ELECTRONICS**  
ORIGINALLY  
DATES BACK TO **1812**

 **£617M** 2022 GROUP  
REVENUE

 **4700** GLOBAL  
EMPLOYEES

 **25** WORLDWIDE  
LOCATIONS

## OUR MARKETS

TT Electronics works with market-leading customers in the healthcare, aerospace & defence, and automation & electrification sectors.



### HEALTHCARE

- Advanced Surgical Devices
- Imaging and Direct Patient Care
- Laboratory Automation & Diagnostics



### AEROSPACE & DEFENCE

- Commercial & Military Aircraft
- Space & Satellite
- Defence Systems & Vehicles



### AUTOMATION & ELECTRIFICATION

- Automation & Control
- Energy & Smart Devices
- Infrastructure

THERE FOR YOU,  
WHEREVER YOU ARE...



## OUR CAPABILITIES



### POWER & CONNECTIVITY

The Power and Connectivity division designs and manufactures high-performance power application products and connectivity devices. We collaborate with our customers to develop innovative solutions to optimise their electronic systems.

- Power Conversion
- Electromagnetics
- Electromagnetic Tracking
- Connectors
- Power Supplies
- Connectivity
- Human Machine Interface



### GLOBAL MANUFACTURING SOLUTIONS

The Global Manufacturing Solutions division provides low volume, high mix electronic manufacturing services for high reliability markets. We are vertically integrated, delivering agile and scalable solutions underpinned by new product introduction support, design for excellence and proactive supply chain services from our global facilities.

- Manufacturing Services
- New Product Introduction
- Engineering & DFX
- PCBA
- Box Build & HLA
- Cable & Harness Assembly
- Supply Chain Management



### SENSORS & SPECIALIST COMPONENTS

The Sensors and Specialist Components division works with customers to develop standard and customised solutions including sensors and power management devices. Our solutions improve the precision, speed and reliability of critical aspects of our customers' applications.

- Optoelectronics
- Flow Sensors
- Pressure Sensors
- Temperature Sensors
- Encoders
- Potentiometers
- Resistors
- Connectivity
- Microelectronics

## North America

Boston, US	Cleveland, US
Dallas, US	Juarez, MX
Loveland, US	Mexicali, MX
Minneapolis, US	Kansas City, US
Philadelphia, US	

## UK

Abercynon, UK	Barnstaple, UK
Bedlington, UK	Cardiff, UK
Eastleigh, UK	Fairford, UK
Hartlepool, UK	Manchester, UK
Nottingham, UK	Sheffield, UK
Woking, UK	

## APAC

Dongguan, China	Hong Kong, China
Kuantan, Malaysia	Singapore
Suzhou, China	

Our business activities and the way we operate are closely aligned to six of the UN's 17 Sustainable Development Goals.

## OUR ALIGNMENT TO THE UN SUSTAINABLE DEVELOPMENT GOALS

### UN SDG

### OUR CONTRIBUTION



- Our products help to diagnose and treat disease earlier, contributing to better life outcomes for patients.
- We are committed to the safety, health and wellbeing of our employees and are focused on physical health, mental health and financial health.
- We contribute to the wellbeing of our local communities through our community activities.



- We are committed to equal opportunities for all persons. We have 53% women in our organisation, and we prioritise the recruitment and development of female leaders.
- We are actively working on ED&I and education initiatives to attract more women into our sector and support women to progress in their careers.



- Our products are enabling customers to accelerate cleaner energy technologies including electric vehicles, offshore wind and micro turbines.
- 45% of our electricity comes from renewable sources and we are committed to moving to green electricity where it is available.



- We are a global employer of talented design, engineering and manufacturing experts.
- We are passionate about encouraging young people to consider STEM careers and, in turn, make their own contribution to industry and innovation in the future.
- Our products are enabling our customers to operate more efficiently and to develop smart infrastructure that is changing the way we live.



- We conduct business with integrity, transparency and professionalism.
- We are driven by the concept of zero harm in terms of the safety of our people and our approach to managing our impact on the environment.
- We are reducing our consumption of single-use plastics and waste sent to landfill.
- We develop, design, engineer and manufacture our products to use raw materials and other resource inputs in the most efficient way, including using recycled materials.



- We are targeting Net Zero for Scope 1 & 2 emissions by 2035. We have met our short-term emissions reduction target a year early.
- We are focused on moving to renewable electricity at all sites and investing in projects that will contribute to meaningful reductions in usage and self generation.
- We have identified and are beginning to measure our most significant indirect emissions (Scope 3).
- Our products are enabling customers to meet their own climate goals.





**SUPPORTING CUSTOMERS  
TO ACHIEVE THEIR OWN  
SUSTAINABILITY GOALS**







## Healthcare

Electronic Healthcare solutions that deliver increased accuracy, reliability and improved patient outcomes.

### DRIVING SUSTAINABLE SOLUTIONS

## Supporting customers to deliver on their sustainability goals...

From renewable energy generation; cleaner, more efficient homes and industrial processes; safer, lighter more environmentally friendly aircraft; as well as vehicle electrification and sustainable transport. TT supports its customers across the globe in meeting their own sustainable product development - leveraging combined innovation and technology expertise to deliver cleaner, smarter and healthier products..



### Renewables

Products supporting renewable energy generation and cleaner, more efficient homes and industrial processes



### Aerospace

Advanced electronics for aerospace applications that enable safer, lighter and more environmentally friendly aircraft



### Electrification

Solutions supporting vehicle electrification, fuel economy and sustainable transport

## OUR DIFFERENCE

# Sustainability at the core of our customer offering...

We are committed to helping our customers to develop cleaner, lighter, more efficient and durable solutions that help combat climate change and resource scarcity. Our cleaner, smarter, healthier focus is a key differentiator to our customer offer: it drives our approach not only to R&D but to the way we develop, design, engineer and manufacture our products and use raw materials and other resource inputs in the most efficient way.

### DEFINED R&D INVESTMENT PROGRAMME

A defined and sustainable programme of investment in R&D (currently circa 5% of annual sales), allows us to introduce new and innovative products ensuring we meet our sustainability commitments in delivering smarter, cleaner and healthier products.

### DEVELOPING SKILLS, KNOWLEDGE AND EXPERTISE

TT's knowledge base is focussed on our 11 R&D centres around the world developing and delivering the skills and expertise we need to keep TT at the very forefront of innovative product development.

We invest significant resources in attracting, motivating and developing the talented engineers, designers and technicians of tomorrow. We are passionate about building the knowledge, insight and expertise to deliver a smarter and more intelligent future.

### OPERATIONAL EXCELLENCE

We are recognised for our agility and ability to package solutions that make our customers end-products smaller, lighter and less power consuming.

A global network of manufacturing facilities ensures we can meet and often exceed customer requirements in diverse geographical regions – providing a more sustainable supply-chain network to lower cost base, optimising manufacture and operational excellence.

### DOING MORE WITH LESS

The drive to do more with less is at the very core of our product development. Everyday our teams of Development Engineers strive to deliver cleaner solutions supported by our R&D centres around the world – keeping TT at the cutting edge of product innovation.

It is this design expertise and manufacturing ability that enables our drive to develop optimised solutions that are smaller, lighter and more efficient - increasing value for our long-term partners.

### STRINGENT QUALITY, REGULATORY CAPABILITIES

Our global factories offer the highest quality, regulatory and traceability requirements that the industry demands. With an extensive global network of manufacturing capabilities, we provide design and manufacturing solutions for a range of diagnostic, surgical and direct-care patient devices critical to the treatment and prevention of disease. We manufacture laboratory and mass spectrometry products for leading life-science customers that protect people and enable cleaner, safer environments.

### SUPPLY CHAIN

A sustainable supply chain is important to us, and we appreciate the part we play in building a sustainable and ethical supply chain for our customers.

As well as upholding environmental and social values and practices, we are committed to sustaining environmental and social standards for our global operations, and ensuring alignment in our suppliers' operations.

### RELATIONSHIPS BUILT ON CREDIBILITY, EXPERIENCE AND EXPERTISE

Credibility, experience and expertise is central to our partnerships with customers and suppliers, often working in collaboration over many years to develop new and innovative solutions. We seek customers who value what we do and where we can add-value in markets with long-term structural growth dynamics driven by sustainability.

### PARTNERSHIPS

We work with customers and suppliers to turn ideas and design concepts into reality using our electric engineering expertise and domain knowledge.

An enhanced approach to selling and partnering enables us to invest in training and tools to help increase share with strategic customers aligning resources and ensuring we develop the right applications in the right markets – at the right time.

"Our design expertise and manufacturing capability enables our drive to develop optimised solutions that are smaller, lighter and more efficient - increasing value for long-term partners."

**Michael Leahan**  
COO - TT Electronics

#### OUR CAPABILITIES:

#### World Class R&D

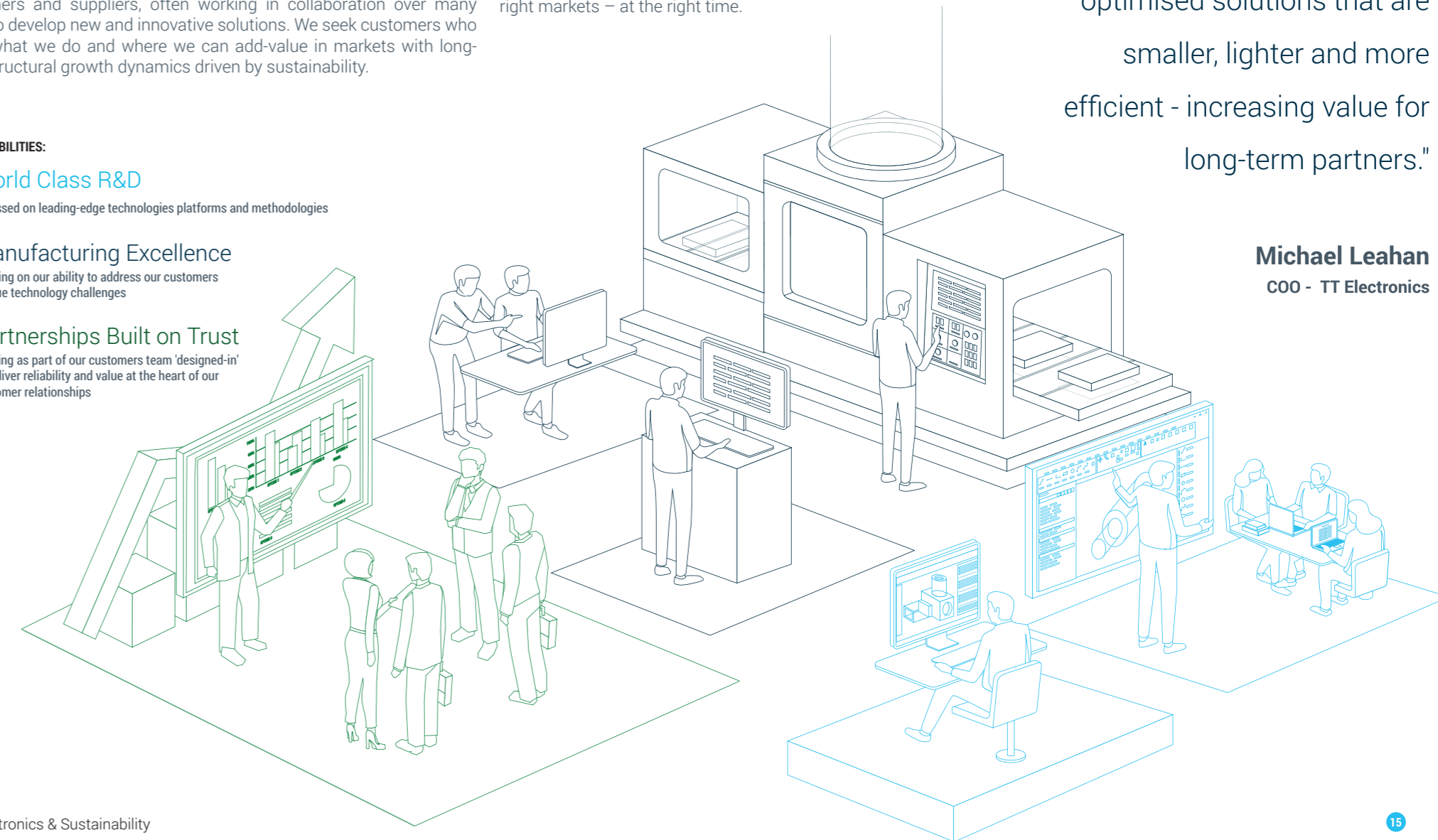
focussed on leading-edge technologies platforms and methodologies

#### Manufacturing Excellence

building on our ability to address our customers unique technology challenges

#### Partnerships Built on Trust

working as part of our customers team 'designed-in' to deliver reliability and value at the heart of our customer relationships





# TT HAS ENJOYED A STRONG TRACK RECORD FOR THE DELIVERY OF SUSTAINABLE INNOVATION

Innovation and technology continues to remain a critical component in the pursuit of greater sustainability. From its very outset TT Electronics has been at the forefront of developing innovative technologies and deliver a more sustainable future.

TT has an incredible track record of being able to deliver cleaner, smarter and healthier technologies. Every day our dedicated innovation and product development teams help contribute to solving the biggest environmental challenges society faces.

Within the following pages you will find just some of the many recent examples of how TT has been able to partner with, and support customers worldwide to deliver sustainable solutions at scale –creating increased business value and wider environmental benefit.



## TT Enabling the Sustainable Electrification of Aircraft

From its state-of-the-art facilities in Bedlington and Barnstaple, TT has been working with one of the world's leading engine manufacturers to spearhead the development of electronic Power Modules and Electromagnetics to power a wide range of aircraft systems. This innovative approach will not only deliver superior flight performance but also promises substantial sustainability gains, significantly reducing the current impact of air travel on the environment.

Within Bedlington, TT is continuing to make promising strides in the development of Silicon Carbide (SiC) power modules for use in a range of aerospace applications. SiC is a cutting-edge material known for its exceptional electrical properties, enabling higher power density and efficiency. By leveraging SiC technology, TT Electronics is able to produce power modules that deliver improved performance, reduced weight, and enhanced reliability which translates into reduced fuel consumption, lower emissions, and ultimately, a greener aviation industry.

In parallel with its SiC power module development, TT's Barnstaple site has also been involved developing Electromagnetics, Motors and Generators. Following meticulous research and development

in collaboration with leading universities and "Tier 1" industry organisations, TT has been able to develop and optimise the design and manufacturing processes of these electromagnetics, to enable greater energy efficiency and overall system performance along with the requisite fault tolerance of critical systems.

The Power Module and Electromagnetic Motors and Generators are all critical components in the continued drive to electrify flight and play a vital role in an aircrafts' Electric Starter Generators, Cabin Air Systems, Electric Pumps, as well as its Electric Actuation systems.

The electrification of aircraft systems delivers significant sustainability gains, setting the stage for a more environmentally friendly aviation sector. By replacing traditional, fuel-dependent systems with electric alternatives, TT power modules, motors and generators will contribute to a substantial reduction in carbon emissions. Moreover, the enhanced efficiency achieved through SiC technology will not only save energy but also reduce the industry's reliance on fossil fuels, driving opportunity to decrease greenhouse gas emissions.



## RENEWABLE ENERGY: HELPING TO POWER A SUSTAINABLE FUTURE

TT's Global Manufacturing Solutions (GMS) division has partnered with a leading energy transformation and innovation provider to position itself at the very forefront of the renewable energy revolution, delivering expertise through the supply of complex printed circuit board assemblies (PCBA) that drive power conversion for the world's largest offshore wind farms.

This leading technology collaboration is already delivering results with the offshore wind farm now capable of generating a staggering amount of green energy, surpassing the electricity needs of over 1 million homes each day, while significantly reducing carbon emissions.

TT electronic assemblies play a crucial role in converting the AC power generated by the turbines to deliver DC power and allowing for the efficient and reliable transfer of clean energy via the farm's substation. The company's dedication to quality and precision ensures that the assemblies are capable of withstanding harsh offshore conditions, delivering long-term operational efficiency with minimal maintenance requirements.

At the heart of this achievement lies the utilisation of renewable energy, a crucial component in addressing the global climate crisis. In helping transform this wind power, TT Electronics continues to play a vital role in driving innovation and propelling the transition to a cleaner, smarter, healthier future for us all.





## RENEWABLE ENERGY: HARNESSING THE POWER OF THE SUN

The growth of solar energy has seen a significant surge in recent years, powered in part by the global energy cost crisis. The rising cost of fossil fuels and the instability of energy markets have incentivised governments, businesses, and individuals to invest in solar power as a long-term, cost-effective energy option. This shift towards solar energy not only mitigates the impact of rising energy prices but also reduces dependence on precious non-renewable resources.

Technology continues to play a crucial part in this growth, with the development of new innovative solutions enabling smarter and more efficient conversion of the sun's energy. TT actively supports the development of solar power energy sources and has recently provided custom optoisolators, specifically designed to meet the technical requirements of solar panel inverter systems for domestic and industrial applications. Developed to provide increased safety and reliability, TT's custom optoisolators protect against electrical faults, delivering dynamic efficient energy transfer helping to provide a clean, abundant, and sustainable solution to the global energy crisis.

## Smart Metering at the Heart of the Green Revolution

Smart meter technology plays a crucial role in our modern world, offering significant environmental benefit and transforming energy management. With the ability to provide detailed insights into energy usage patterns, smart meters enable individuals and organisations to make informed decisions about their energy consumption, identify areas for efficiency improvements, and ultimately reduce energy waste.

With global electricity consumption projected to increase by 70% by 2030, the need for energy efficient solutions becomes even more critical. When you consider that buildings are the largest GHG producers, with electricity contributing up to 50% of CO2 emissions in residential and commercial sectors, the importance of smart meters becomes even more evident.

TT has been at the heart of this drive supporting its customers from the very outset of smart metering and environmental monitoring development. Active in the fields of smart energy storage, battery management systems, and current sensing - TT Electronics has partnered with many of the leading solution providers to support the

growing trend towards smart meters and environmental monitoring – helping to realise the remarkable environmental benefits they offer.

A commitment underlined through our recent involvement in one of the world's largest smart meter deployments, partnering with a leading supplier to help deliver over 35 million meters as part of a national upgrade programme. Energy suppliers and technology solution providers rely on TT for their depth of application knowledge, rapid sampling capabilities and high product reliability. Its resistors deliver exceptional current sense and pulse withstanding capabilities which protect the circuits from destructive voltage spikes, and demonstrate exceptional reliability. These qualities coupled with its global manufacturing capabilities make TT Electronics an ideal partner for the development and delivery of smart systems.

In an era where sustainability has become perhaps the most pressing global concern, the role of smart meters and environmental monitoring cannot be overstated in enabling us to reduce energy wastage, optimise consumption, and pave the way for a greener future.



## Charging into the Future: Vehicle Electrification

Electric vehicles have gained immense popularity in recent years. Technological advancements and improvements in battery capabilities are driving a transformation towards the smarter and cleaner mode of transport. Improved range, wider model availability and increased performance have all contributed to an exponential growth in sales – with estimations now indicating that electric cars will account for almost one in five of every new cars sold in 2023.

TT Electronics have been involved in this transformation from the very outset, working with leading automobile manufacturers across the globe to supply innovative solutions to assist with the drive towards vehicle electrification. From power inductors to sensors, resistors to transformers, HMI to connectivity - TT has been trusted to develop, manufacture and supply technologies to keep pace and surpass even the most demanding industry developments.

This was most recently demonstrated in China, where TT has been working with a global car manufacturer to supply resistors that have been specifically designed to provide high surge and overload tolerance to deliver reliable protection during charging and battery disconnect conditions - for both hybrid and electric vehicles.

But our expertise doesn't stop with cars. Elsewhere in Asia, TT Electronics has worked closely with a leading developer of electronic scooters and a battery swapping network operator to supply its innovative, high performance resistor technology. Managing over 200,000 battery swaps a day through its national network of charging stations requires precision current sensing capabilities to deliver high-power, in a small space - with TT being chosen as supplier of choice due to its product stability advantages.

Well versed in delivering electrification solutions for all types of transport, TT has recently supported a customer in the roll-out of a recent large scale push-bike sharing system. This required a complex optical sensor, with TT developing a rugged solution that incorporated a leverage arm, wire harness and immunity to visible ambient light irradiance.

The ability to deliver technology solutions for a sustainable world is at the very core of what we do at TT and transportation will undoubtedly remain a key component in combatting climate change as the drive towards electrification brings enhanced energy efficiency, reduced noise pollution and a reduction in our global carbon footprint.



## SOWING THE SEEDS OF A NEW AGRICULTURAL REVOLUTION

Technology continues to dominate the 'Third Green Revolution' with the Internet of Things (IoT), GPS, robotics, sensors and actuators, Big Data, Unmanned Aerial Vehicles (UAVs, drones) and precision equipment all contributing to smarter cultivation, reduced labour and increased yields.

TT has been involved across the sector helping to deliver solutions that expand the scale, speed and productivity of farming equipment. Most recently, TT assisted a world-renowned manufacturer of farming equipment to meet their precision sowing requirements – supplying a unique sensor that could detect and count small seeds while traveling at high speed in large farming equipment.

With the development of its customised LED/photodiode reflective array and proprietary algorithm, TT enabled the counting seeds of various sizes while traveling at high speed.

These precision farming techniques not only contribute to meeting the increased demand for food, but also ensure the sustainability of primary production, based on a more precise and resource efficient approach to production management – in essence 'producing more with less'.





**UNDERSTANDING  
AND REDUCING  
OUR OWN IMPACT**



# UNDERSTANDING AND MEASURING OUR OWN IMPACT...

In order to take action to reduce emissions, we need to first understand where they're sourced from. Grouping emissions into the 3 Scopes outlined within the GHG Protocol Corporate Standard enables TT to standardise, track, allocate and accurately measure our approach. The following Scopes are therefore grouped accordingly:

## SCOPE 1

Scope 1 covers our direct emissions. We measure our use of natural gas for heating as well as the consumption of petrol in vehicles.

## SCOPE 2

Scope 2 is our use of electricity and accounts for about 90% of all of our Scope 1 and 2 emissions.

All of the data is entered into CRM tool and 'emissions factors' are used to calculate the carbon emissions.

All figures are shown as tonnes eCO2.

Results are published each year by UK law in TT's Annual Report: [www.ttelectronics.com/annualreport](http://www.ttelectronics.com/annualreport)

## SCOPE 3

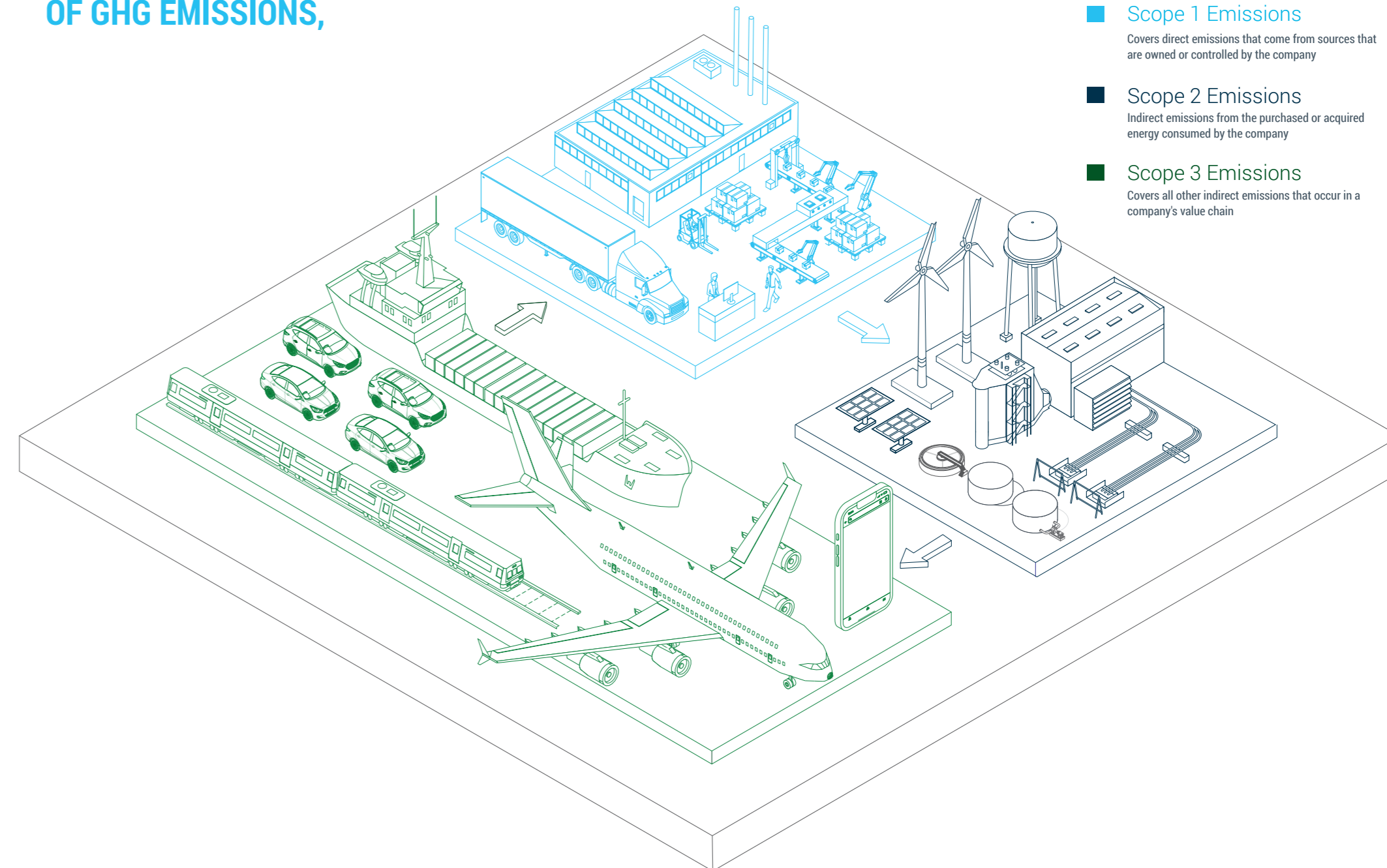
Scope 3 includes anything and everything in our Value Chain that is not covered by Scope 1 and 2.

As a company that makes significant use of global shipment, distribution networks, resale product and capital goods, Scope 3 is very important for us to understand, measure, report and combat.

The overwhelming majority of actions for Scope 3 involve;

- Data collection & reporting
- Governance of Value Chain
- Partnership

## THE THREE SCOPES OF GHG EMISSIONS,



### MEASURING OUR GHG EMISSIONS

- **Scope 1 Emissions**  
Covers direct emissions that come from sources that are owned or controlled by the company
- **Scope 2 Emissions**  
Indirect emissions from the purchased or acquired energy consumed by the company
- **Scope 3 Emissions**  
Covers all other indirect emissions that occur in a company's value chain



# MEETING OUR SCOPE 3 CHALLENGES

TT Electronics is committed to measuring, reporting and eliminating the emissions from our value chain (Scope 3) and we will achieve Net Zero by 2050 if not sooner. We began our journey in 2022 when we assessed our emissions inventory for Scope 3 and selected the categories for measurement and reporting, which are shown here. The reporting of our first measurements will commence in 2023 and thereafter set our Baseline year and reduction targets.

We are committed to;

- Reducing the use of air freight through logistics strategy.
- Partnering with key suppliers who are also committed to a net zero journey.
- Eliminating all possible waste from facilities through recycling.
- Minimising business and employee travel.

Managing the emissions of our Value Chain is as much at the heart of what we do, as managing emissions from our own operations.

## TT ELECTRONICS - SCOPE 3 EMISSIONS



### CATEGORY 1:

#### Purchased goods and services

We have implemented a process to assess and measure our supply chain.



### CATEGORY 4:

#### Upstream transportation and distribution

We have partnered with customers, suppliers and logistics providers to gain access to emissions data.



### CATEGORY 5:

#### Waste generated in operations

We have constructed a robust system to measure and report all of our waste streams at our facilities.



### CATEGORY 6:

#### Business Travel

We have partnered with centralised travel providers to gain access to emissions data.



### CATEGORY 7:

#### Employee Commuting

We will calculate these emissions centrally taking into consideration employee data and GHG Protocol guidance.



### CATEGORY 9:

#### Downstream transportation and distribution

We have partnered with customers, suppliers and logistics providers to gain access to emissions data.



## TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES (TCFD)

We fully support the need for businesses to be transparent on climate and environmental matters as a driver of change. We set out how our disclosures comply with the TCFD recommendations on page 55 of the Annual Report.

[www.ttelectronics.com/annual-report](http://www.ttelectronics.com/annual-report)

## EXTERNAL RECOGNITION

We are pleased to continue to receive external recognition for ESG matters.



We participate in CDP's annual climate change survey, receiving a C (Awareness level) rating in 2022 for our 2021 data submission.



We also received a rating of AA in the 2022 MSCI ESG Ratings assessment, placing TT in the leading companies in its sector group.





## REDUCING OUR OWN IMPACT

### Setting Ambitious Sustainability Targets

Understanding and managing the impact of our business operations on the environment and our local communities is an important part of the way we do business. We continue to make excellent headway with our ambitious commitment to achieving Net Zero in our own operations (Scope 1 & 2 emissions) by 2035.

We have targeted a 50% reduction in Scope 1 & 2 emissions by the end of 2023 against our 2019 Baseline, and Net Zero for own operations (Scope 1 & 2) emissions by 2035, at the latest. Thanks to the focused efforts of teams across the Group, we achieved our 50% reduction target in 2022 – one year early.

To demonstrate our commitment, Scope 1 & 2 emissions were added to our Group KPIs in 2020 and they continue to be aligned with executive remuneration objectives and flowed through the organisation.

In order to continue our emissions reduction success story, we had all sites that were able to purchase electricity on renewable tariffs either do so or plan to switch as soon as possible in the future. All of our

sites have completed this switch except for two with a mixed energy supply (both renewable and non-renewable) and seven sites still with non-renewable supplies (one of which has low electricity usage). In the case that we cannot move to renewable supply in the near-term, we will explore other opportunities, including electricity generated at source for instance, through the use of solar panels. We have one such facility that has completed a significant solar panel installation.

We will also seek and take action to reduce emissions through: reductions in actual energy consumption; elimination of waste energy; use of alternative energy sources (for example the replacement of natural gas for heating); switching to electric vehicles; increased recycling; and better use of building space.

NET ZERO OWN OPERATIONS BY

# 2035

NET ZERO OWN OPERATIONS  
AND VALUE CHAIN BY 2050

REDUCTION SINCE 2019

# 54%

# 50%

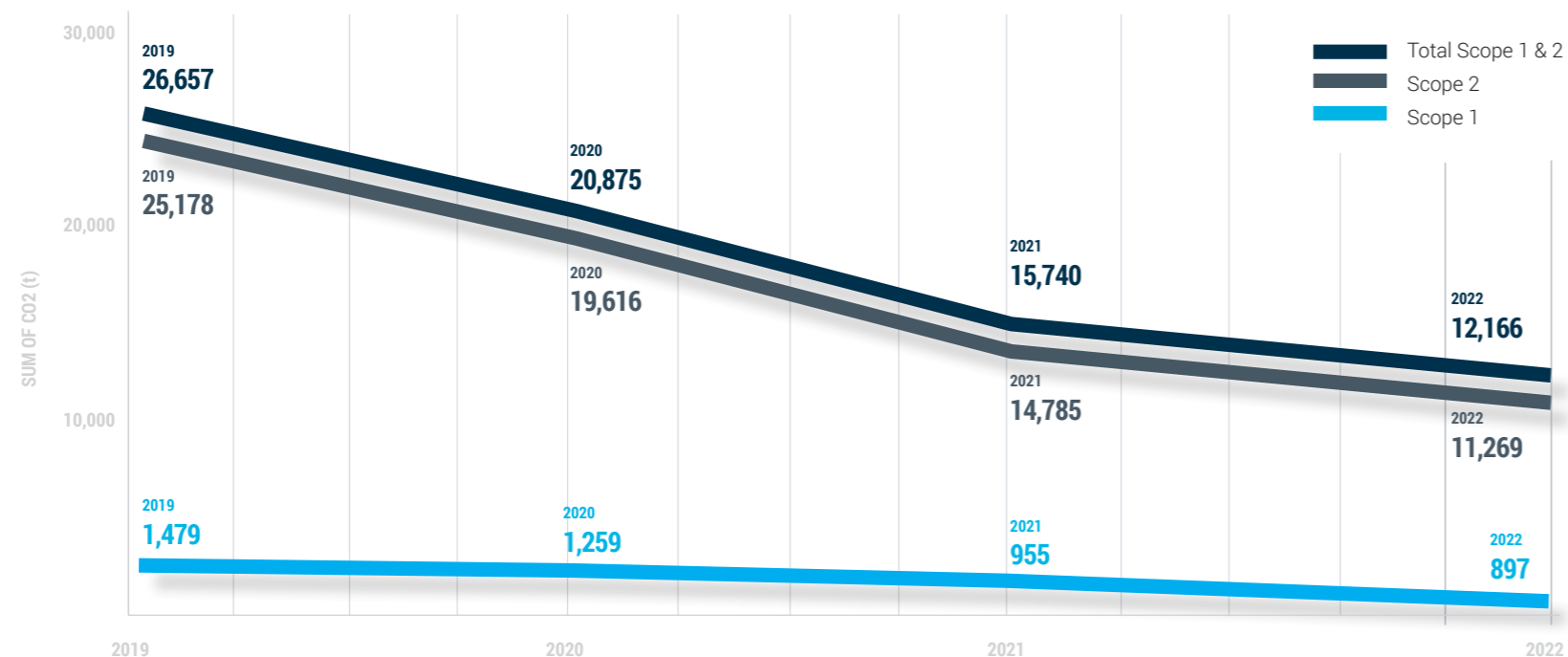
REDUCTION TARGETED  
BY 2023 VS 2019



## ENERGY USAGE AND SCOPE 1 & 2 REPORTING

In producing more sustainable products for our customers, we are also acutely aware that our own activities come with some environmental impact. This is why we are also leading by example to optimise our own operations to reduce TT's impact on the environment.

### TOTAL CO2: SCOPE 1 & 2:



### DRIVING SCOPE 1 & 2 EMISSION REDUCTIONS

The primary drivers of our Scope 1 & 2 emissions reductions in 2022 were:

- The transfer of production to a modern sustainable facility
- A reduction in energy consumption driven by site activities
- Reduction in Mexico grid emissions

Our results were calculated centrally from data collected locally. We use the market-based method for emissions calculations and, in line with GHG Protocol guidelines, we use the following information in this order

of priority: energy attribute certificates; contracts; supplier emission rates; residual mix or grid average emission factors.

Other greenhouse gases are not included within these figures as they have been measured and found to be a negligible proportion of overall emissions. We are using an operational control boundary for direct GHG emissions. We have adopted a cross-sector calculation method in line with the GHG Protocol Corporate Standard. For Scope 1 emissions, we include our total owned and leased vehicle direct emission impact.

## ENERGY USE AND SCOPE 1 & 2 EMISSION REPORTING

	2022	2021	2020	2019
<b>Scope 1 tCO2 e</b> Emissions from activities which the Group owns or controls, including the combustion of fuel and operation of facilities	897	955	1,259	1,479
<b>Scope 2 tCO2 e</b> Emissions from the purchase of electricity	11,269	14,785	19,616	25,178
<b>Total gross Scope 1 &amp; 2 emissions tCO2 e</b>	<b>12,166</b>	<b>15,740</b>	<b>20,875</b>	<b>26,657</b>
Revenue £m	<b>617</b>	<b>477</b>	432	478
<b>Intensity ratio: Gross Scope 1 and 2 tCO2 e/£m revenue</b>	<b>19.7</b>	<b>33</b>	<b>48.3</b>	<b>55.7</b>

### 2022 ENERGY USE AND SCOPE 1 & 2 EMISSIONS BY SOURCE AND BY GEOGRAPHY

GEOGRAPHIC REGION	UNITED KINGDOM	REST OF EUROPE	NORTH AMERICA	ASIA AND ROW	TOTAL 2022	TOTAL 2021
<b>Natural gas (MWh)</b>	<b>2,381</b>	-	<b>1,673</b>	-	<b>4,054</b>	<b>4,110</b>
Fuel in company owned/leased vehicles (MWh)	573	1	20	31	625	818
Electricity (non-renewable) (MWh)	61	-	14,750	11,985	26,765	33,078
Electricity (renewable) (MWh)	12,151	16	9,815	-	21,982	18,738
<b>Total energy (MWh)</b>	<b>15,166</b>	<b>17</b>	<b>26,258</b>	<b>11,985</b>	<b>53,426</b>	<b>56,744</b>
Total scope 1 emissions (tonnes CO2 e)	580	0	310	7	897	955
Total scope 2 emissions (tonnes CO2 e)	12	-	4,599	6,658	11,269	14,785
<b>Total scope 1 &amp; 2 emissions (tonnes CO2 e)</b>	<b>592</b>	<b>0</b>	<b>4,909</b>	<b>6,658</b>	<b>12,166</b>	<b>15,740</b>
Revenue (£million)	130	104	236	146	617	477
<b>Tonnes of carbon dioxide equivalent per £million of revenue</b>	<b>4.5</b>	<b>0</b>	<b>20.8</b>	<b>45.6</b>	<b>19.7</b>	<b>33</b>

## WATER

While water use is not a key driver of our environmental footprint, we recognise that water is a precious global resource and should be managed as such. We therefore monitor our water use and seek to minimise it wherever possible, as well as directing wastewater to useful activities such as irrigation.

	2022	2021
<b>Total Water Usage m³</b>	127,720	104,024

## WASTE TO LANDFILL

We are also reducing our waste to landfill by reducing overall waste and increasing the amount we recycle. The majority of sites are now segregating their waste streams to increase the amount of waste that can be recycled, including cardboard, paper, metal, hazardous waste, wood and plastic. Our target for all of our sites is to send zero waste to landfill and three sites have already achieved this. Waste management will now be driven through our Scope 3 initiatives.

## SINGLE USE PLASTICS

We are reducing our reliance on single-use plastics and replacing them with more sustainable products. The majority of single-use plastics in our business are used in packaging products for shipment to customers and, working with customers, sites are switching to recyclable bubble wrap, pallet wrap and other packaging materials. We do not purchase single-use plastic bottles at any of our sites.





“We are proud to say that, thanks to the great efforts of our teams, we have beaten our 50% reduction target a full year early.”

**Vicki Faith**  
Group Head of HSE & Sustainability



# DRIVING OUR OWN STRATEGY...

Environment, Social and Governance (ESG) is integrated into our strategy and day-to-day decision making at all levels of our organisation. Across the organisation we have introduced dedicated teams, enabled to drive their own local agendas. This means we can engage with the projects that are closest to our employees and promote key STEM skills in the communities where we live and work.



## Driving Continual Energy Reductions Across the Organisation

Every TT site developed and executed a plan to reduce electricity consumption annually. These plans also focus on reducing waste and water consumption. We have seen a significant dividend on the hard work from our teams as we have recorded a reduction in electricity consumption, in absolute terms, in a year when activity and revenue grew by a considerable amount.

A great example of this has been in Mexico where TT has significant manufacturing capability, primarily because of the talented people we have in our teams. We monitor long-term trends in power generation where our facilities are located as part of our strategic planning. Mexico



has seen a significant reduction in grid emissions recently due to a move to more renewable energy and a shift from coal to natural gas. This means that our emissions in Mexico have been reducing while our activity has grown.

In Suzhou, China – we created a new ceiling in the site's Integration workshop which will reduce energy use by around 10% due to a reduction in lighting, heating, ventilation and air conditioning.

Across TT our teams are committed to driving continual improvement to ensure we can build a brighter, more sustainable organisation.



## TT Cardiff Raises a Massive £10k to support Ukraine Relief Fund

On hearing of the plight of Ukrainians affected by the Russian invasion of Ukraine our Cardiff team pledged to support them in any way they could. Then began a fundraising campaign which would ultimately raise more than £5k, which was matched by TT. Events included a raffle, a bake sale and a Walk for Ukraine and the team sold pins and asked other local businesses for donations.



## Raising STEM Skills

We encourage our teams to take an active role in their local communities, whether fundraising and volunteering for chosen charities or committing time and resources to promoting STEM education and careers.

Across the world we aid school curriculum's directly by supporting science projects and engineering competitions to highlight the importance of STEM subjects in everyday life

TT Cleveland recently hosted a group of students from the local Auburn Career Center for a careers event. The students enjoyed a site tour, followed by a presentation and Q&A about TT and STEM careers. Two team members – Helen Cole and Halley English, a graduate of Auburn Career Center – then shared how their careers had developed at TT. Throughout the year STEM specific events were also held at our facilities in Kuantan, Malaysia, Mexicali in Mexico and Nottingham, UK.



## Solar Power Driving Responsible Energy Strategy

At TT, we recognize solar energy as a crucial component of our overall energy strategy, aimed at generating several thousand megawatts of power for our company. In 2022, we celebrated our first significant milestone as our first solar farm came online in Kuantan, Malaysia where the installation has proven instrumental in offsetting energy costs and reducing the carbon footprint at our facility. By harnessing the power of the sun, we are not only ensuring a more sustainable future for our organisation but also taking responsibility for the v well-being of future generations.

This first solar panel installation in Kuantan is only the first step of our journey with several other installations planned across the group in the coming months as we look to meet our broader objective of achieving Net Zero status by 2035.



## EQUALITY, DIVERSITY & INCLUSION

At TT we see equality, diversity and inclusion (ED&I) as a solution to business challenges. It is a critical driver of employee engagement, talent acquisition and retention as an important and positive aspect of the employee experience, and this makes TT a happier and more productive workplace which is good for business.



## INTERNATIONAL WOMEN'S DAY

This year, we celebratd International Women's Day right across TT, aiming to celebrate women in the organisation and highlight the importance of 'Breaking the Bias' to enable women and minority groups to achieve their goals, advance their careers and contribute their best. On the day we shared profiles of a wide range of women in the business and information about training and resources aimed at supporting female success with many of our sites holding their own special celebrations to mark the day.



