

# Beyond fossil fuel Carbon-efficient, baseload energy and biofuels for energy security and independence

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PHOTO: EQTEC commercia

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# **EQTEC IS A TECHNOLOGY COMPANY**

Built on end-to-end process knowledge and the best quality syngas

BASELOAD

VERSATILE

CLEAN

Genuine alternative to fossil fuels for baseload energy based on continual waste availability and 24 x 7 x 365 performance

**60 feedstocks** and the full range of offtake applications including electricity, thermal, SNG, H<sub>2</sub> and other biofuels

CO<sub>2</sub> emissions 30% lower than incineration; no nitrous

oxide, toxic dioxins, furans or heavy metals

decade of exceptional operational availability

Two R&D facilities and four EQTEC plants built, one with a

**PROVEN** 

**Eight EQTEC plants operational or under construction** with 14 under development and 200+ in the pipeline



Projects using our technology are **profitable**, and we **guarantee** annual operational uptime of 86%

# TRILLION

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## NET ZERO ADDRESSABLE MARKET 2022 – 2050

WITH OVER HALF NEEDED FOR BASELOAD ENERGY AND BIOFUELS

50

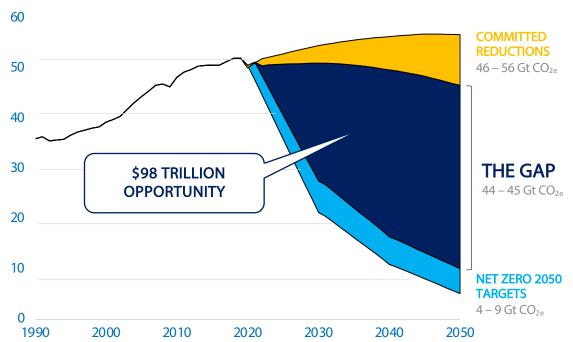
SOURCE:McKinsey & Co., The Net-Zero Transition 2022 International Energy Agency (2021), Net Zero by 2050, IEA, Paris

## **NET ZERO 2050 HAS A PROBLEM**

The world has signed up to targets that current investments cannot achieve

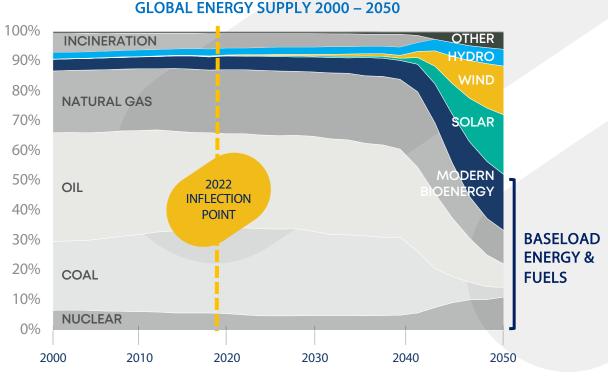
The lion's share of capital investment will go to carbonefficient energy alternatives

Investments to date leave a huge gap to Net Zero 2050, with 90% of baseload power now (>50% in future) from non-renewable sources that solar, wind and hydro power cannot replace



SOURCES: climateactiontracker.org (as cited by Bloomberg, Sky News, New York Times, Guardian, Telegraph and R4's Today programme); McKinsey & Co., *The Net-Zero Transition 2022* 

#### GREENHOUSE GAS EMISSIONS 1990 – 2050



SOURCE: International Energy Agency (2021), Net Zero by 2050, IEA, Paris



# THE MARKET FOR INNOVATION WILL GROW

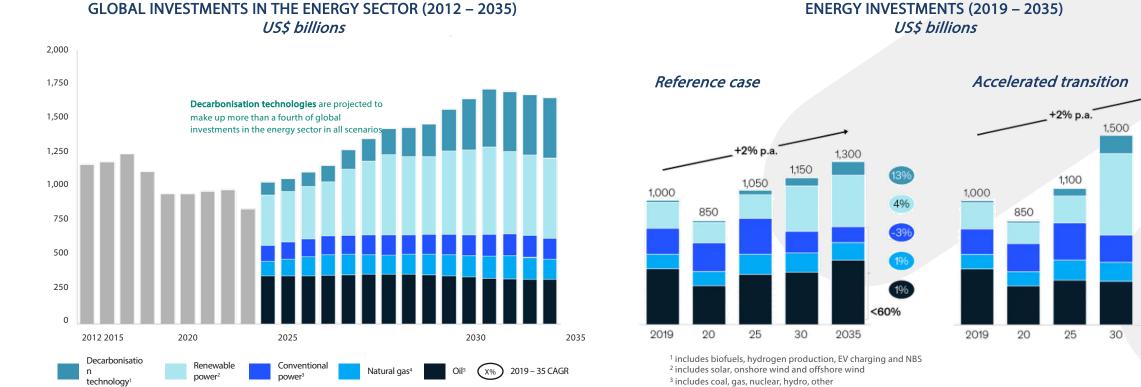
Growth in energy investments driven almost entirely by new technologies

Investment follows CAGR, which is dominated by new decarbonisation technologies

1.300

2035

McKinsey report concludes that substantial investments are required across sectors to accelerate the energy transition, projecting the fastest growing segment to be decarbonisation technologies



<sup>4</sup> includes upstream gas and LNG

<sup>5</sup> includes upstream oil, oil refining, specialty chemicals, petrochemical (only for reference)

SOURCE: McKinsey Energy Insights Energy Value Pools Model

SOURCE: McKinsey Energy Insights





# **OPERATIONAL UPTIME**

120,000+ OPERATING HOURS

## TECHNOLOGY VERSATILITY = COMMERCIAL VIABILITY

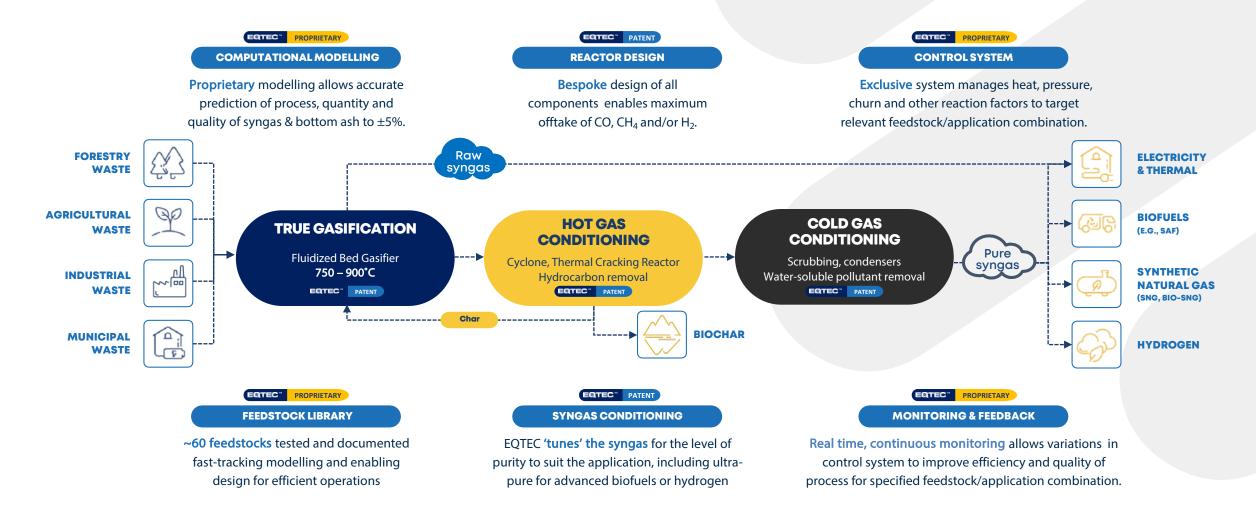
**GUARANTEED AT 7,500 HOURS P.A. (c. 86%) BY CONTRACT** 

PHOTOS: EQTEC monitoring & control systems; EQTEC-enabled commercial plant; EQTEC R&D facility

# **EFFICIENCY AND VERSATILITY**

EQTEC's IP is not a piece of equipment but world-leading design & engineering

EQTEC equipment is the physical manifestation of its end-to-end process know-how



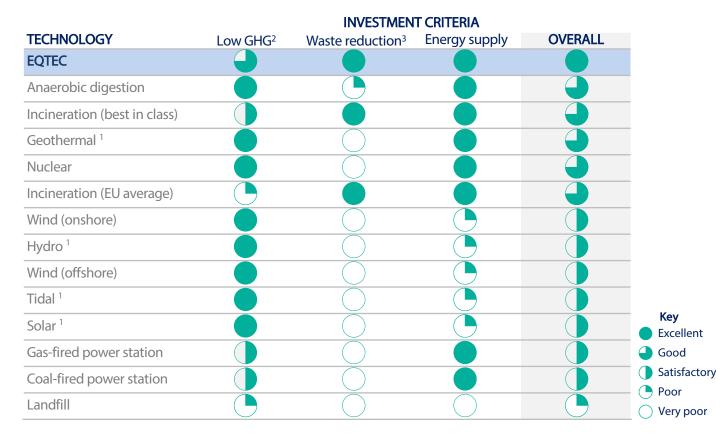


# **GREEN HOUSE GAS (GHG) FOOTPRINT**

EQTEC outperforms nearly every alternative in terms of low GHG emissions

GHGs include seven harmful gases\* with a warming impact on the climate, measured in CO<sub>2</sub> equivalent (CO<sub>2e</sub>)

EQTEC outperforms other waste-to-energy alternatives and other technologies that do not address waste or baseload power



EQTEC's process addresses both waste and energy generation emissions without burning and without releasing GHGs from its end-to-end gasification process

#### EQTEC's process is...

- 22% more efficient than incineration at waste-to-energy conversion
- 56 115% less emitting of greenhouse gases (CO2<sub>e</sub>) than incineration
- $\ensuremath{\not|} 89\%$  less emitting of greenhouse gases (CO2\_e) than landfill disposal

### ...because EQTEC's process produces...

- 💈 No toxic dioxins and furans
- 💈 <u>No</u> fly ash
- 💈 No nitrous oxide emissions
- 💈 <u>No</u> fly ash
- 💈 Non-hazardous bottom ash with no poisonous metals
- 🔗 Autothermic reactions that drive a continuous process without added heat

\* The seven GHGs (and their  $CO_{2e}$ ) are:  $CO_2$  carbon dioxide (x1); CH<sub>4</sub> methane (x28); N<sub>2</sub>O nitrous oxide (x265) and four 'F gases' (x23,500), including HFCs hydrofluorocarbons, PCFs perfluorocarbons, SF<sub>6</sub> sulphur hexafluoride and NF<sub>3</sub> nitrogen trifluoride.



# COMMERCIAL OPERATIONS

vedrs

PLANT FOR 1+ DECADES
R&D FACILITIES
4 COMMERCIAL-SCALE PLANTS
5 PLANTS UNDER CONSTRUCTION
14 PLANTS UNDER DEVELOPMENT

+100s OF QUALIFIED OPPORTUNITIES IN A GROWING 'PIPELINE OF PIPELINES'

## **PROVEN PERFORMANCE**

Added value from 'impossible' waste

### The Movialsa plant proved EQTEC's capabilities with complex waste 'problems'

## MOVIALSA, SPAIN

#### Size: 5.9 MWe & 6.6 MWth

Project status: Commissioned (2011)

#### Background:

Spain produces approximately four million tonnes of olive pomace waste annually. Because it contains high concentrations of polyphenols, lipids and organic acids, if olive wet pomace is not properly dried and disposed of, it seeps into the ground, changing the acidity and polluting soil and water. This is becoming a significant issue for the industry throughout the Mediterranean region.

#### More information

In 2011, EQTEC built a gasification plant at Movialsa in Ciudad Real, Spain to help solve the problem of creating value from complex biomass waste. Olive pomace waste is a difficult feedstock to process due to its high content of sodium and potassium, alkaline metals with very low melting points. The second challenge was the need to make seasonal adjustments to the balance of electricity and heat production from the plant.

With EQTEC's technology, Movialsa has been able to process olive pomace residue successfully, creating the first fully operational business case in the world for this feedstock, operating without subsidies or incentives.

Since 2011, the plant has clocked over 120,000 audited operating hours through its 3 GE Jenbacher engines, fed by a single EQTEC gasifier, producing 5.9 MWe of electricity and 6.6 MWth of steam – all from "difficult" to process olive pomace waste. This means not only is the plant successful, it is also the oldest and largest commercial scale gasification plant in this industry.





#### **Biomass-to-energy configuration**





## **PROVEN PERFORMANCE**

90%+ operational availability for over a decade

Very few if any waste-toenergy technologies deliver consistently at 90%+ uptime

## MOVIALSA, SPAIN

Technical Specifications

| Location   | Ciudad Real, Spain  |
|--|---|
| Size (MWe / MWth size)   | 5.9 MW <sub>e</sub> & 6.6 MW <sub>th</sub>  |
| Electrical efficiency  | 28%   |
| Total efficiency (electrical & thermal)                              | 64%   |
| Feedstock  | Olive Mill Pomace (high ash content, with high content of alkaline metals (K, Na) and very low melting point) |
| Feedstock throughput   | 17,000-20,000 tonnes per annum  |
| Engine   | 3x GE Jenbacher 620   |
| Operating temperature range  | 720-750°C   |
| Operating hours  | 111,000+ (third party certificates available)   |
| Commission / Due Date  | 2015  |
| Type (Commercial/R&D Pilot)  | Commercial  |
| Category (biomass-to-energy,<br>biomass-to-bioenergy, RDF-to-energy) | Biomass-to-energy   |
| Applications (Electricity, thermal, biochar, biofuels)               | Electricity, thermal  |

#### Externally audited operational data (2015 – 2020)

| Parameter                        | Unit     | 2015  | 2016  | 2017  | 2018  | 2019  | 2020  |
|----------------------------------|----------|-------|-------|-------|-------|-------|-------|
| Plant availability               | hrs/year | 8,600 | 7,300 | 7,060 | 7,800 | 7,314 | 8,157 |
|                                  | %        | 98    | 90+   | 90+   | 90+   | 90+   | 93    |
| Equivalent electrical efficiency | %        | 45    | 39    | 38    | 39    | 38    | 38    |
| Electricity / feedback ratio     | KW/kg    | 1.4   | 1.4   | 1.4   | 1.4   | 1.4   | 1.4   |



## **PIPELINE**

## Projects follow strategy, prioritised to demonstrate specific solutions

## EQTEC has well over 200 opportunities in its complete pipeline, increasing weekly



# **MARKET DEVELOPMENT CENTRES**

The magic of MDCs is the multiplier effect they deliver for growth and margin

MDCs are a critical first step to showing solution value, toward growing and scaling business



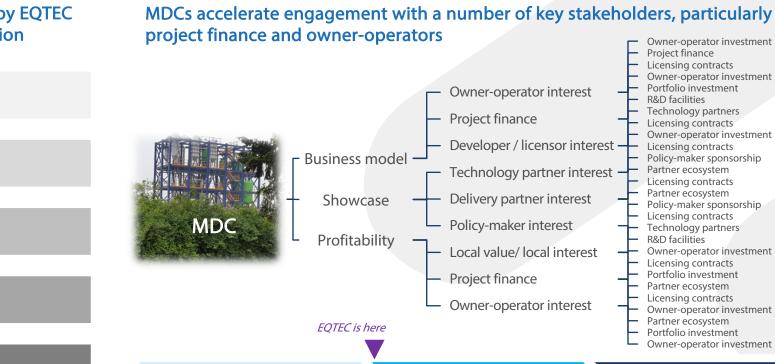
A MDC is a live, commercial plant operated by EQTEC and used to showcase the technology in action

**PROJECT FINANCE ACCELERATION** 

**DEMAND INCUBATION** 

**BUSINESS MODEL SHOWCASE** 

SOLUTION MODEL SHOWCASE



COMMERCIALLY VIABLE PLANT

EQTEC-partial funding

Project finance- fully funded

WHAT IT DELIVERS

Owner-operator-fully funded



# Strategy to innovator & global licensor

SOLUTION VERSATILITY GO-TO-MARKET PLATFORM GLOBAL PARTNER NETWORK THREE-STAGE ROADMAP

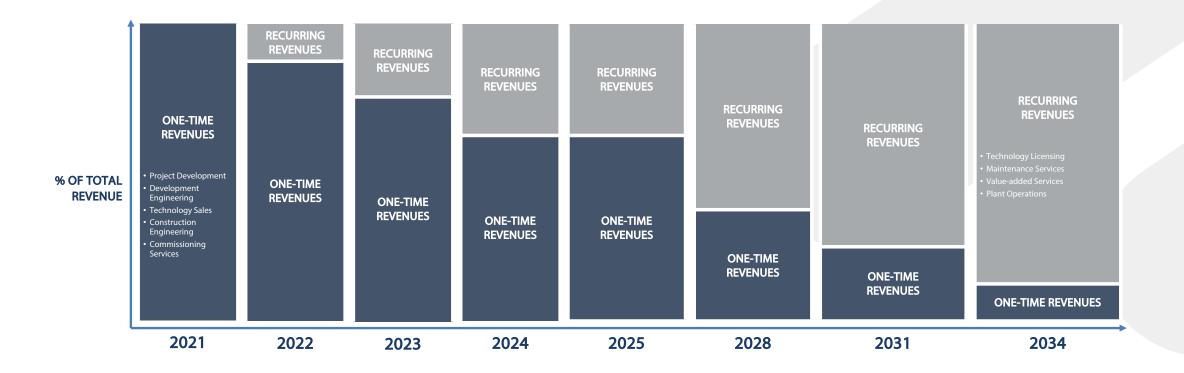
**PROVING, GROWING & SCALING TECHNOLOGY AND GLOBAL LICENSING NETWORK** 

## **BE A TECHNOLOGY LICENSOR**

Transition from one-time project revenues to being an 'order book' business

100s of plants running EQTECnot dozens of projects

## Proportion of revenue from one-time revenues versus recurring revenues, 2021 – 2034

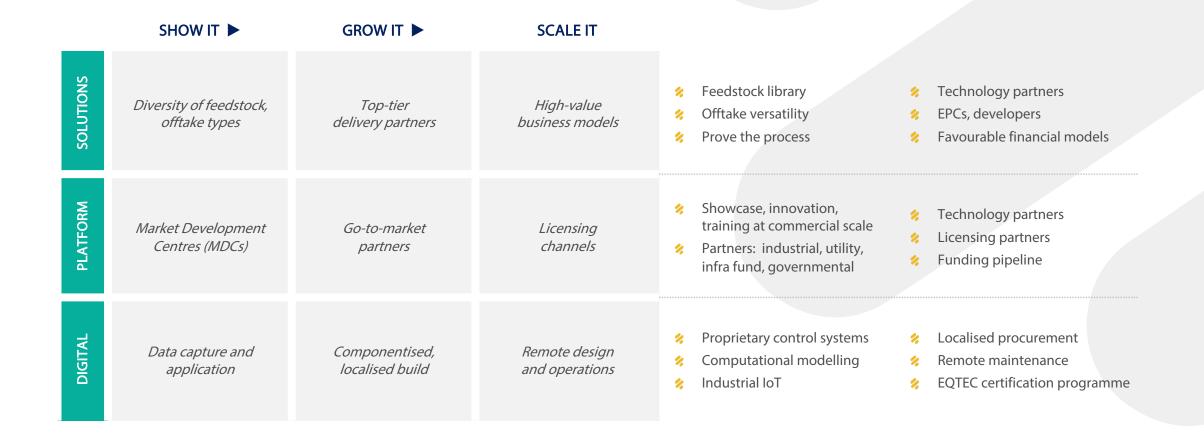




## ROADMAP

## Target investments at specific activities toward the future model

## As the strategy progresses, EQTEC can focus more on its core technology capabilities





# **STRATEGIC PARTNERS**

## The launch platform for scale and enterprise growth is already set

## EQTEC's proven technology and scalable solutions make it attractive to top-tier partners

## TECHNOLOGY

Collaborate with complementary technologies that augment EQTEC's capabilities and/or help get them to market into more business models, including multitechnology facilities.



Collaborate by leading project development up to FID/ Financial Close, with planning, permitting, negotiation of feedstock and offtake terms and onboarding of a Lead Contractor/ EPC. Coordinates funding effort to sell on SPV to an investor or owner-operator.



Collaborate by leading the integrated plant design, procurement, construction mobilization, plant build and full commissioning. De-risk and accelerate plant build and engage EQTEC purely as core technology and engineering expert. Push EQTEC to new markets.

Collaborate with additional capabilities that augment the value proposition by EQTEC, de-risk the plant construction and/or support EQTEC's longer-term development as a global licensor and innovator.



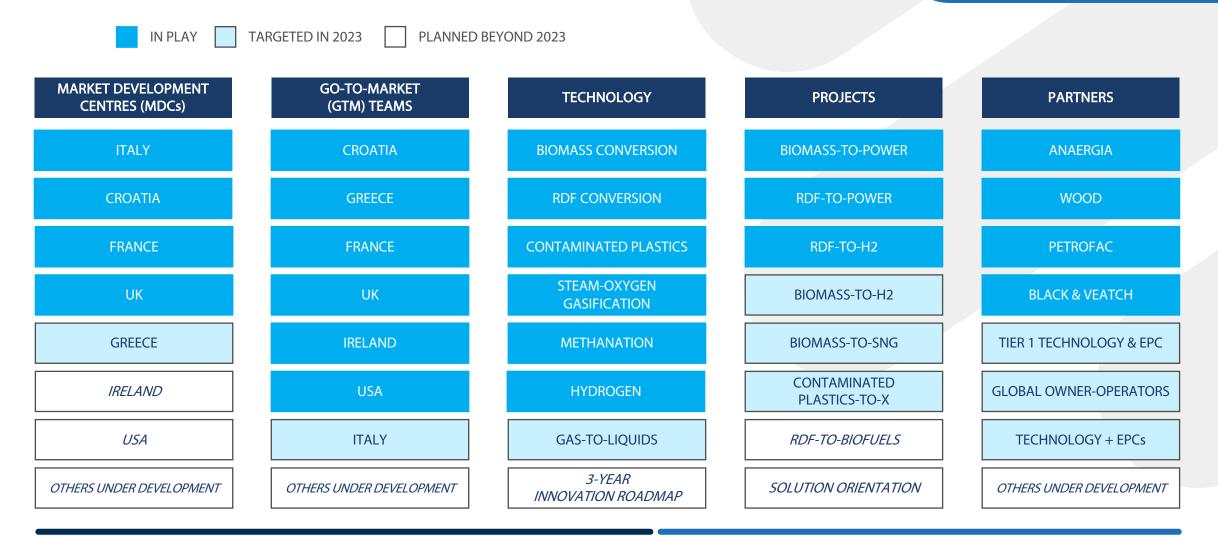
Lists above include parties with formal collaboration agreements with EQTEC and others in conversation with EQTEC; lists are not exhaustive.



## ACCELERATION

## The puzzle pieces are coming together to position EQTEC as market leader

We are positioning as the leader in both technology and commercial project execution





# Performance

# **Solid growth 2021 – 22**

REVENUE UP OPEX EVEN TIER 1 PARTNERS 20+ ACTIVE PROJECTS 3 MARKET DEVELOPMENT CENTRES

2 x PLACINGS SUCCESSFULLY DEPLOYED c. £20m INTO CAPITAL PROJECTS



Innovating and deploying clean solutions for advanced biofuels and energy for a Net Zero future.

NESTO BRAVO CAMPOS

echanical Enginee

27 professionworld

Chief Executive Officer (Commercial and Investment

AVID PALUMBO



**IEL ENTENZA ME** 

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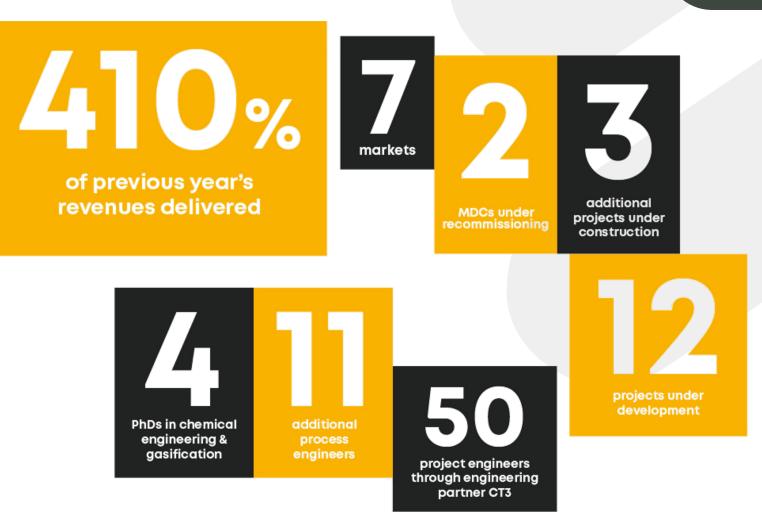
LAURA LUCAS Head of Strategic Gr



# 2021 highlights

At a glance

The business is in a much more stable position than it was even one year ago





# 2022 H1 highlights

At a glance

EQTEC continues to grow and develop in the face of market turbulence and uncertainty



## FINANCIAL

- Revenue up: €2.98 million (H1 2021: €0.48 million)
- Gross profit up: €0.24 million (H1 2021 €0.07 million)
- Selition (H1 2021 €3.49 million)

## **COMMERCIAL & OPERATIONAL**

- Two of three MDCs progress toward key milestones
- **UK RDF projects** move ahead with top-tier partners
- Contaminated plastics and liquid fuels added to solution portfolio
- Project finance accelerates project development in Greece, UK and USA



# EQTEC

 
 Public Provide Formation
 Danke

 Dankon Dankon
 Cracies
 Danke

 Danke
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PHOTO: Site for new, EQTEC-enabled waste wood plant at Wilseyville, California, USA