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*WIND ENERGY DRONES
complementing today's green power technologies for
NET ZERO CARBON EMISSION BY 2050*

GREEN POWER IS KEY TO REACH NET ZERO CARBON EMISSION BY 2050 ***BUT*** TODAY'S TECHNOLOGIES HAVE LIMITS



4%



15%



14%

ADDITIONAL CARBON REDUCTION POTENTIAL FROM TODAY TILL 2050:

HYDRO

1.8 Gt CO_{2,eq}/a

LIMITS: Public acceptance
Impact on nature
Impact of droughts on production

SOLAR

7.2 Gt CO_{2,eq}/a

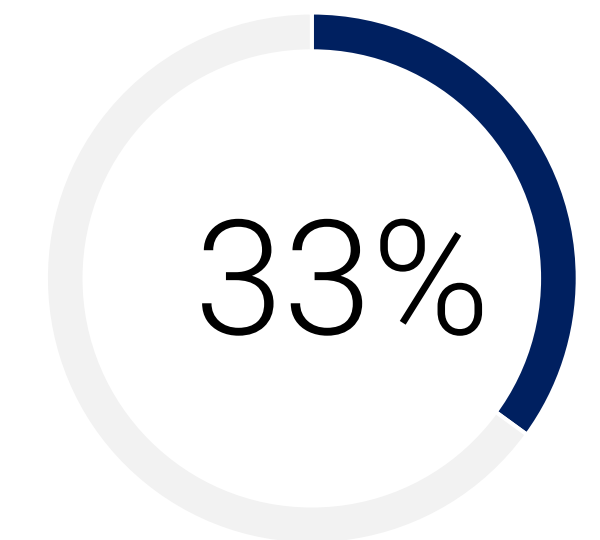
LIMITS: Land usage at free field
High material usage
Intermittency

WIND TURBINES

7.9 Gt CO_{2,eq}/a

LIMITS: Public acceptance onshore
Limited potential offshore
High material usage
Difficult to transport, Intermittency

ALL 3 KEY GREEN
POWER TECHNOLOGIES
OFFER **ONLY**



**CARBON REDUCTION
POTENTIAL TILL 2050**

FROM

51 Gt CO_{2,eq}/a today

TWINGTEC'S 6 KEY ADVANTAGES



MORE ENERGY
WITH LESS MATERIAL

¹ VTOL = Vertical take off and landing

HIGHER ALTITUDES

20% to 40% more wind
→ 2x more energy

NO TOWER & FOUNDATION

90% material reduction
→ Mobile or floating power

✓
MOBILE / FLOATING
SOLUTIONS

✓
LOW COST OF
ELECTRICITY

✓
MINIMAL VISUAL &
ENVIRONMENTAL
IMPACT

✓
IMPROVED
LAND
USAGE



MORE CARBON REDUCTION ON TOP OF OTHER RENEWABLE TECHNOLOGIES TOTAL ADDRESSABLE MARKET AWE¹: > EUR 360 B/a

DECENTRALIZED POWER
NOT ACCESSABLE
TO WIND TURBINES



Reducing diesel or grid power usage

EUR 70 B/a

HARNESSING POWER
IN UNTAPPED ALTITUDES
ABOVE WIND TURBINES



Doubling the output of wind turbine farms

EUR 90 B/a

UNLOCKING OFFSHORE
WHERE IT IS TOO DEEP
FOR WIND TURBINES



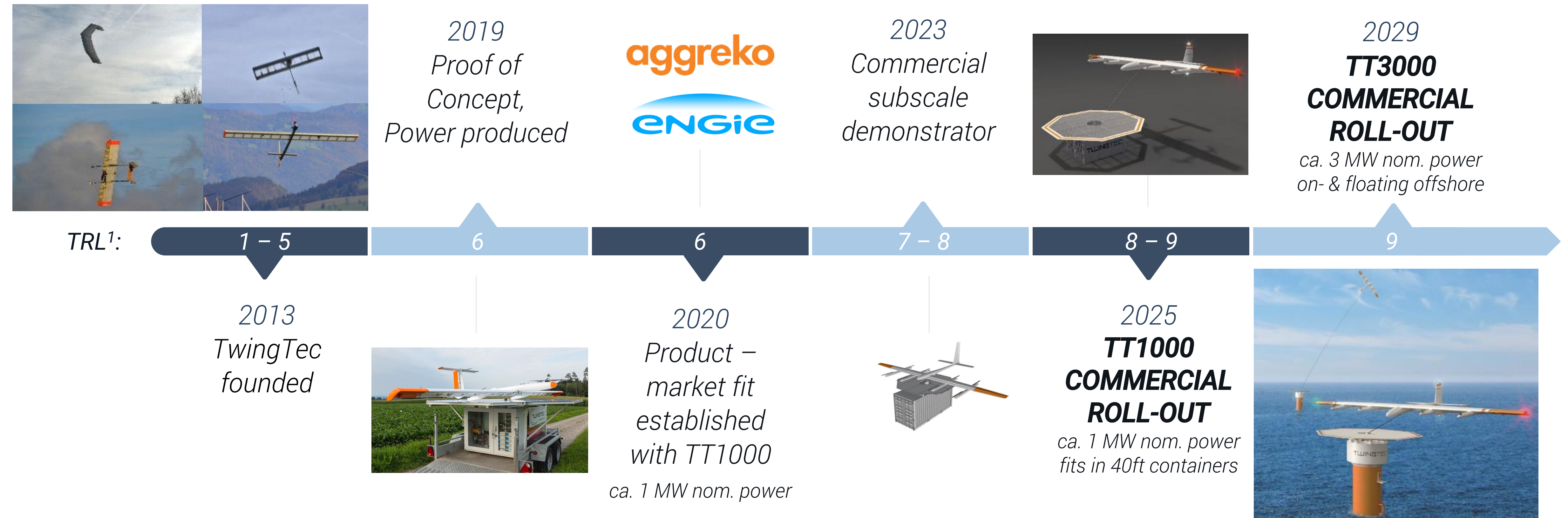
Access to almost "unlimited" wind power

> EUR 200 B/a

¹ AWE = airborne wind energy;
the market numbers account for the entire AWE sector;

only considering market volumes complementary to wind turbines, potential replacement volumes are not considered

PRODUCT ROAD MAP



CLEAR MARKET FOCUS COMBINED WITH
RELEVANT DE-RISKING STEPS



¹ TRL = Technology Readiness Level

TT1000 - THE FIRST MOBILE MW-SCALE ENERGY DRONE

Electricity cost
below 60 €/MWh

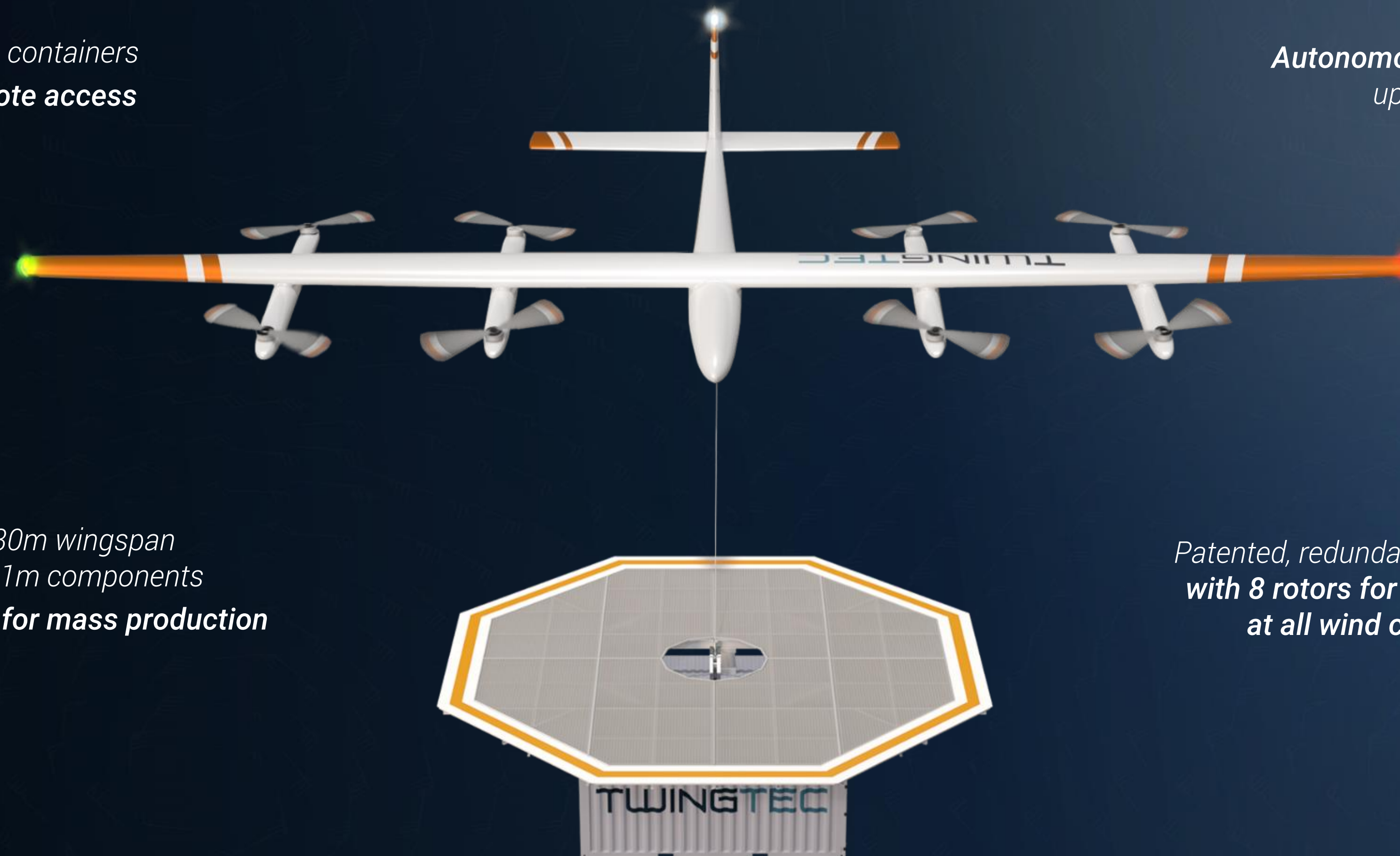
Developed
with **strategic customers**

Fits in 4 shipping containers
for **global / remote access**

Autonomous power production
up to **1.000 kW**

30m wingspan
< 11m components
Perfect for mass production

Patented, redundant VTOL system
with **8 rotors** for **safe operation**
at all wind conditions



INITIAL TARGET MARKET SEGMENTS

*DECENTRALIZED OFF-GRID
C&I OFF-TAKERS, RENTAL POWER*

*OFF- AND ON-GRID
COMMUNITIES*

*DECENTRALIZED
ON-GRID C&I OFF-TAKERS*



OFF-GRID (starting in AUS, CAN)

*Diesel & heavy fuel oil replacement
Reducing high electricity costs
Noise & pollution reduction*

ON-GRID (starting in Europe & AUS)

*Marketing green electricity self production & consumption
Replacing electricity from the grid with lower cost green power
Reducing dependencies from the grid*

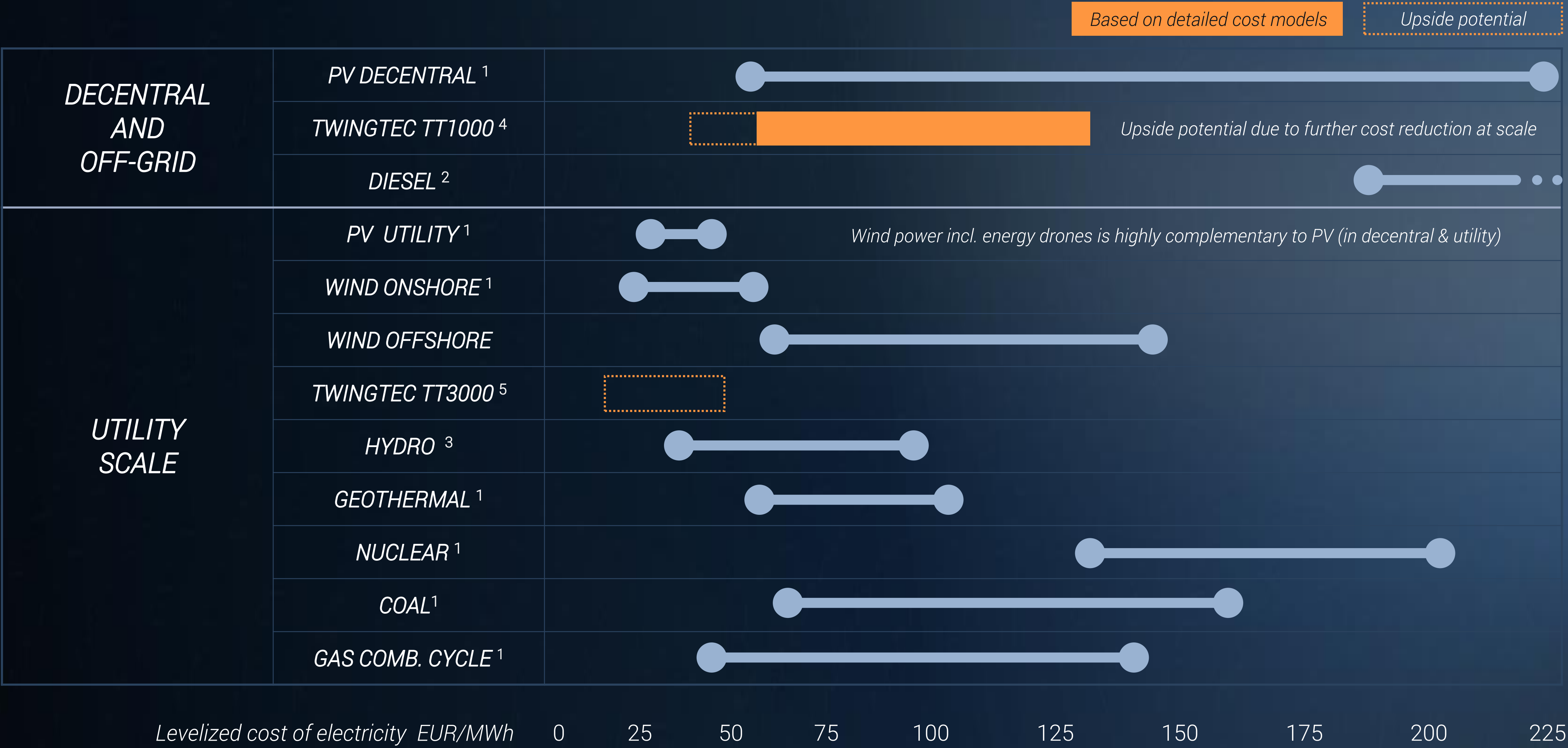
TT1000 FILLS CRITICAL GREEN POWER GAP IN DECENTRALIZED MARKETS

STEP 1: Enter DECENTRALIZED OFF- & ON-GRID MARKETS WITH STRATEGIC PARTNERS → Targeting projects with higher electricity costs

STEP 2: With lower generation costs enter the larger volume UTILITY ON- & OFFSHORE MARKETS via UTILITIES & IPP's ¹

¹IPP = independent power producer

TWINGTEC HIGHLY COMPETITIVE IN THE ENERGY MARKET



¹ Lazard, Levelized Cost of Energy Analysis V14, Oct. 2020, ² Lazard, Levelized Cost of Energy Analysis V11.0, Nov. 2017, ³ IRENA Renewable Power Costs 2019
⁴ TwingTec TT1000 for decentralized market & augmented wind farms, internal analysis, validated by industrial partners (see page 33ff), WACC 4 – 8%, Feb. 2021 ⁵ TwingTec TT3000 for utility on- & offshore, preliminary internal analysis, 2020

TWINGTEC'S COMPETITIVE ADVANTAGE

							
FULL PROOF OF CONCEPT	✓	X	X	?	?	?	✓
MW-SCALE PRODUCT CONCEPT	✓	✓	?	?	?	?	✓
VTOL for launch & land	✓	X	X	✓	X	✓	X
Off-the-shelf components	✓	X	X	✓	X	✓	X
Aerodynamic and pumping cycle efficiency	✓	✓	?	✓	X	?	X
Mobile wind power	✓	?	✓	✓	✓	✓	✓
							

OUR KEY STRATEGIC PARTNERS HAVE CHOSEN TWINGTEC,
AS WE LEAD IN EFFICIENCY, SAFETY AND COST EFFECTIVENESS

COMMERCIAL TRACTION

	 10 GW temporary power fleet	 Low carbon energy & service	 Globally leading wind OEM in offshore
MARKET	DECENTRALIZED OFF-GRID	DECENTRALIZED ON- & OFF-GRID¹ UTILITY ON- & OFFSHORE	UTILITY ON- & OFFSHORE
ACHIEVED	Strategic Client Partnership Agreement closed Profitable, large-volume business potential confirmed for TT1000	Promising business case analysis for the decentralized & utility on-grid power markets in Europe	Identified promising potential of TwingTec's energy drones to lower wind power costs on- & offshore
PLANNED	Show casing commercial demonstrator @ customer sites Joint market introduction to start adding the identified high number of TT1000 in Aggreko's fleet ²	Joint test site in the Benelux to prepare market introduction with commercial demonstrator Joint TT1000 market introduction in the decentralized power markets in Europe	Building up cooperation to industrialize multi-MW energy drones for on- & offshore

MARKET INTRODUCTION AT EARLY STAGE WITH KEY STRATEGIC PLAYERS
IN TWINGTEC'S TARGET MARKET SEGMENTS

¹ Starting with the decentralized on-grid market in Europe

² more information post NDA

TEAM



ROLF LUCHSINGER

CEO, CO-FOUNDER, BOARD MEMBER
Former head of R&D center
Light-weight structure expert
Innovation



GEORGE HANNA

CFO/COO, BOARD MEMBER
Co-founder & former Co-MD Qinous GmbH,
Management positions in business development,
sales & strategic projects @ Bosch & Q-Cells



COREY HOULE

CTO, CO-FOUNDER, SECRETARY TO THE BOARD
Mechanical engineer, inventor with experience in
project management and grant funding



FLAVIO GOHL

CHIEF ENGINEER & CO-FOUNDER
Innovative creator with engineering
background in robotics and aerospace



CEDRIC GALLIOT

CHIEF PRODUCTION & CO-FOUNDER
Mechanical engineer with strong background
in composite materials and light-weight structures



DINO COSTA

CHIEF OPERATIONS & CO-FOUNDER
Entrepreneur, inventor, engineer with
excellent testing and drone background



**STEFFEN
HESSLER**

CONTROL ENGINEER
Mechatronic engineer from ETH
Automation software professional



FLORIAN BEZARD

PRODUCT AND TESTING ENGINEER
Mechanical Engineer from Empa.
Expert in rapid prototyping of light -
weight structures



JANNIS HEILMANN

SIMULATION AND ANALYSIS EXPERT
Physicist with strong background in renewable
energies and 10 years experience in AWE



PROVEN & EXPERIENCED TEAM
WORLD CLASS AIRBORNE WIND ENERGY EXPERTISE

BOARD OF DIRECTORS



REYAD FEZZANI¹

CHAIRMAN (INDEPENDENT)

Former CEO BP Global Wind & Solar &
Chairman Tata-BP Solar &
CEO BP Aromatics & Acetyls Hong Kong²

Active in carbon capture, decentralized power,
wind & PV project development, start-ups,



MARIE-PIERRE DHERS¹

INDEPENDENT BOARD MEMBER

Founder & CEO MP&Partnairs, advisory firm for
aerospace, transport & Energy

Advisory Board of Trafalgar Industries
20 years senior management @ Air France-KLM,
incl. SVP Operations of large BU (ca. 3,500 employees)



MARC GANNE-CHÉDEVILLE¹

INDEPENDENT BOARD MEMBER

Entrepreneur & business founder, aviation expert
Former GM RUAG Aerostructures, 300 employees &
Leader mainten. engines SR Technics, CHF 500 m



TOMMASO GHIDINI

INDEPENDENT BOARD MEMBER

Head of structures, mechanisms & materials
division at ESA, former Airbus, DLR

DEPENDING ON ESA APPROVAL



MARCO ARCELLI

ADVISOR TO THE BOARD / OBSERVER

Former CEO Enel North America,
Chairman EP New Energy Italy
Utility & renewables expertise



PETER WOLFENSBERGER

OBSERVER / INVESTOR (CHAIRMAN 2018–2021)

Independent Entrepreneur,
Member of StartAngels Network



GLOBAL PROFESSIONALS FOR ALL UPCOMING CORE TASKS

¹ to be officially approved by TwingTec's shareholder assembly on 30th of June 2021

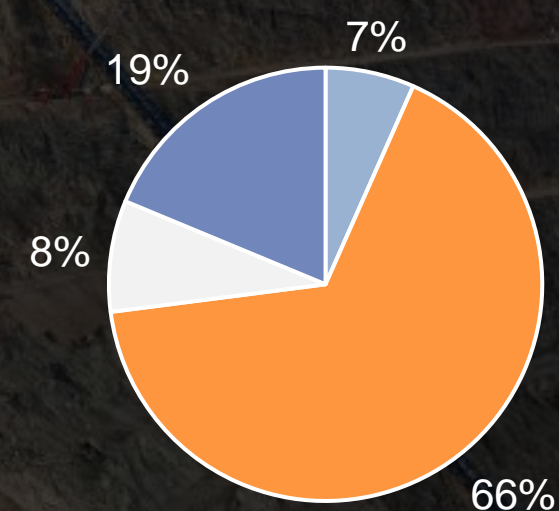
² a multi-billion-dollar revenue company ³ now part of Rolls Royce

FINANCING NEEDS

EUR 3 M
summer 2021
Bridge

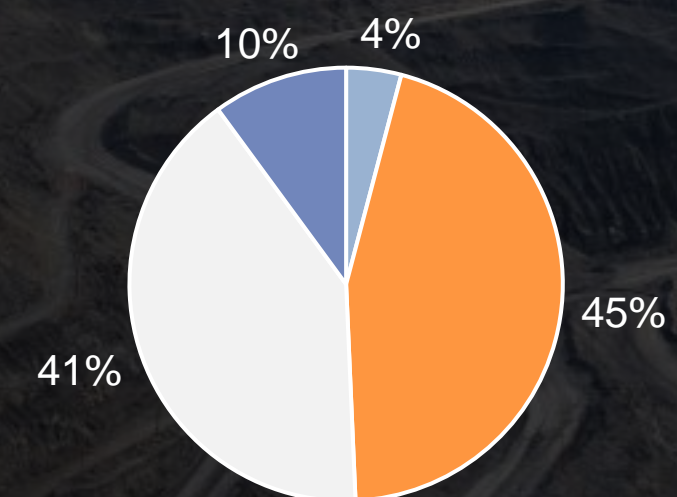
EUR 11 M
Q2 / 2022
Series A

PRODUCT CONCEPT




Sales & marketing
R&D & product development
Prototyping & certification
Administration

COMMERCIAL DEMONSTRATOR



- Design, build & test subscale commercial demonstrator
- Increase level of automation
- Execute compliance to regulation, health & safety program with aviation authorities, wind energy certification bodies & industrial partners





“Wind energy drones - Contributing to decarbonization by complementing existing green power technologies”

THANK YOU!

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