

# Shaping the Future of Aviation

Brilliant G Purnawan

A large commercial airplane is shown from a low angle, focusing on the main engine and the landing gear. The engine's fan blades are prominent, and the landing gear is extended. The background is a dramatic sky with heavy, dark clouds, suggesting a sunset or sunrise. The overall tone is professional and high-tech.

Hybrid Propulsion and  
Sustainable Aerostructures



# GKN Aerospace: Leading Tier 1 Technology Supplier

Established positions  
on  
 **ALL**   
of the world's high  
volume aircraft operators



**>70%**  
revenue from  
sole source  
suppliers

**>650**

global patents  
granted



Powering  
**>90%**  
of all  
flights

**16,000**  
employees in  
**31 manufacturing**  
locations in **12 countries**  
around the world.



**£3.35bn**  
Sales in  
2023,  
15% Profit

## Our Market & Customers

Sales  
~70%

Civil



GO BEYOND



GE Aerospace



SAFRAN



Rolls-Royce

500+ repair customers

Sales  
~25%

Defence



GO BEYOND



GE Aerospace



Sales  
~5%

Adjacent



arianespace  
arianeGROUP



GE

## Our Market & Customers

Sales  
**55%**

**Civil RRSP partnerships**



Provides entitlement to  
aftermarket revenue and profit

**Original equipment +  
Aftermarket**

Sales  
**10%**

**Government partnerships**



Unique, system-level capability

**Original equipment +  
Aftermarket**

Sales  
**10%**

**Repairs**



Significant growth opportunity

**Aftermarket**

Sales  
**25%**

**Commercial contracts**



Balances profile of portfolio and  
supports partnerships' focus

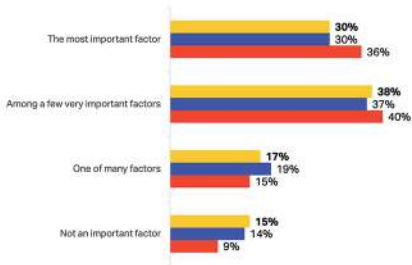
**Original equipment**

A balanced business with strong foundation as a strategic partner

# Consumer & Legal Expectation of Sustainable Aviation

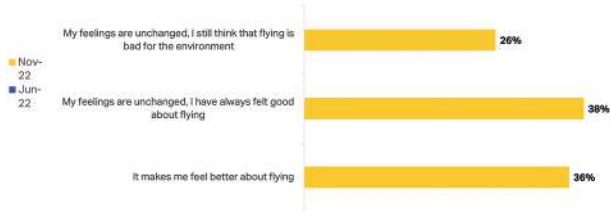
A survey of **4,700 recent** (in the last 12 months)  
**airline travelers**

**How environmental sustainability concerns related to carbon emissions impact on future air travel decisions**



Taken From  
IATA, 2022

**Feelings about flying – based on airlines' commitment to achieving net zero emissions by 2050**



Taken From  
IATA, 2022

**ICAO/EASA/UN targets for net-zero aviation emissions by 2050**

# Economic Growth Through Aviation & Business Confidence

A survey of **500 European business leaders**  
(October 2022)

**89%**

Being close to an airport with global connections gives them a competitive advantage

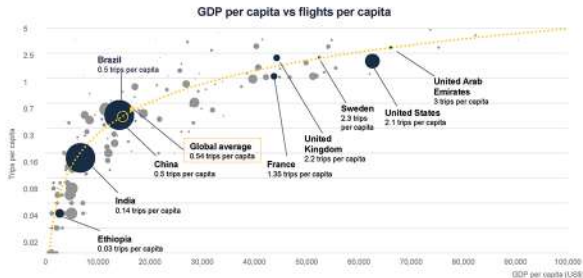
**84%**

Could not imagine doing business without access to air transport networks

**82%**

Thought their business could not survive without connectivity to global supply chains via air transport

Taken From  
IATA, 2022



- Economic growth leads to increased flights
- Rapid growth in emerging markets

Taken from IHS Markit,  
Sabre GDD,  
Airbus GMF, 2023

**Rapid growth in eVTOL markets, tackling urban congestion.**  
High-speed, regional transportation, driven by innovation and sustainability

Taken From  
Vertical Aerospace, 2024



**Vertical Aero's VX4**



Taken From  
Lilium, 2024

**Lilium Jet**



Taken From  
Supernal, 2024

**Supernal SA1**

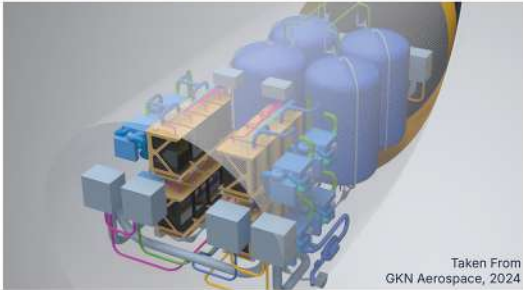
# Technological Issues





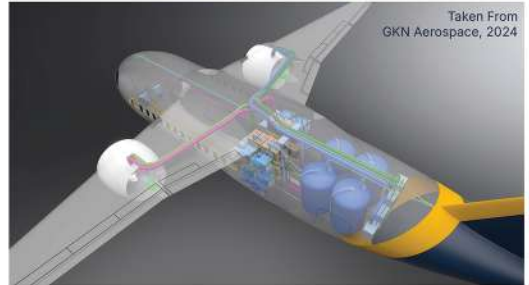
# Hydrogen Propulsion Storage &

48 passenger, 934 nautical miles



Advances in **battery storages** and **cooling systems** are required to increase capacity

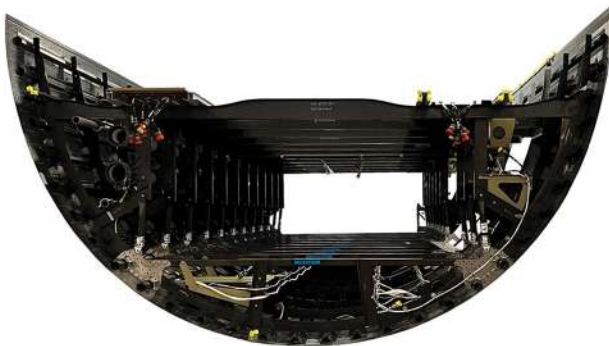
Cryogenic Storage



**Hydrogen** requires storage at **-253°C**, adding **weight and costs** due to advanced insulation needs to prevent energy loss

**Thermoplastic composites**  
production costs and scalability  
remain significant hurdles

**10%**  
Less  
Weight



**90%**  
More  
Recyclability

## Additive Manufacturing (AM): Multi-Material Printing

Standardizing **multi-material printing** processes for **mass production** while maintaining **quality and precision**



Lightweight

Complex Designs

Efficient

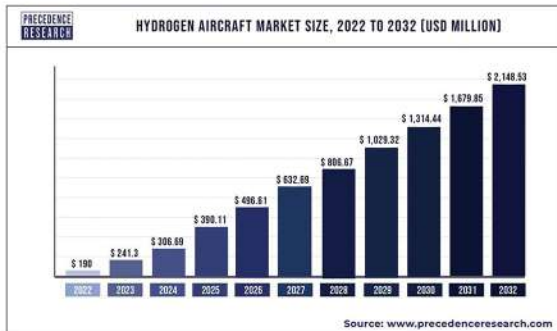
Reducing Waste **80%**

# Foresight: GKN's Vision



## Zero-Emission Aircraft by 2050

Hybrid-electric and hydrogen-powered propulsion systems will dominate the industry by 2050.



Early adoption in regional flights.

Expand to medium-haul markets as technology matures.

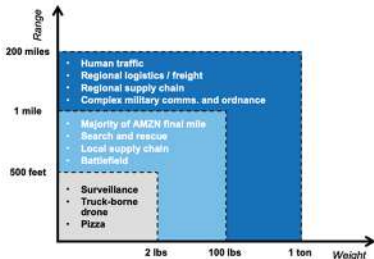
Innovations in hydrogen storage and lightweight aerostructures position

GKN as market leader

# Urban Air Mobility (UAM) Revolution

**eVTOL aircraft** integral to urban transportation by **2040**, driven by congestion and sustainability needs.

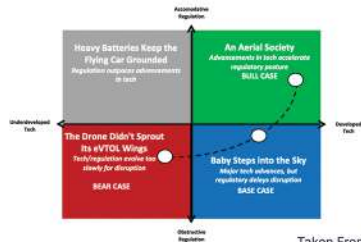
VTOL Expected Weight and Range Limitations



**GKN at the forefront** of enabling eVTOL platforms to thrive in the Advanced Air Mobility market

- Electrification
- Lightweight composites
- Hydrogen propulsion
- Smart engine systems

UAM TAM Scenario Framework



Taken From  
Morgan Stanley, 2021

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- IATA. (2022). IATA Environment Survey 2022. Available at: <https://www.iata.org> [Accessed 17 Nov 2024].
- Precedence Research (2023) 'Hydrogen Aircraft Market Poised to Exceed USD 1,720.2 Mn By 2030', Precedence Research Reports, 26 June. Available at: <https://precedenceresearchreport.blogspot.com/2023/06/hydrogen-aircraft-market-poised-to.html> (Accessed: 29 November 2024).
- GKN Aerospace (2024) Shaping the Future of Aviation: GKN Aerospace's Approach to Hybrid Propulsion Systems and Sustainable Aerostructure Solutions.
- Morgan Stanley. (2021). eVTOL/Urban Air Mobility: TAM Update - A Slow Take-Off, But Sky's the Limit.