Company Note Overseas
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Archer Aviation, Inc. (AHCR)

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International Stock Market Weekly

Aerospace: airlines / Archer Aviation, Inc. (ACHR)

Over the next several decades, a majority of all transportation will undergo a transformation electric power, and Archer Aviation's (AHCR) goal is to become a key contributor to this transformation. Its second goal is to reduce urban traffic congestion, where half of the world resides. In the US alone, there are more than 1bn trips that pollute the air, and American commuters spend an average of one hour per day behind the wheel. To overcome this problem, we must utilize the Z-axis, which means we need to travel either above or below the ground. For Archer, the solution is aerial transportation.

The company's plans demonstrate that technology is here today to make this happen and should be one of the first eVTOL companies to obtain to an FAA certification. Its near-term focus is on designing, certifying, and manufacturing its eVTOL aircraft, which will have a diversified business model across the consumer and commercial areas. The company plans to operate a fleet of eVTOL itself over its own network to move commuters quickly and safely in and around urban areas. In addition, it will sell its eVTOLs directly to large operators via Archer Direct, which will help accelerate its air mobility business and diversify its revenue and cash flows.

Among the many eVTOL and UAM names, Joby Aviation (JOBY) is our favorite, however, Archer Aviation (ACHR) has undergone a severe correction since its listing due to a variety of reasons, including a patent infringement and trade secret misappropriation lawsuit file by rival eVTOL maker Wisk, which is looking more favorable for Archer. On Aug 24, the court issued and order denying Wisk's motion for a preliminary injunction, and the judge said "Wisk mischaracterizes really invents the evidence." Another quote from the judge was "despite getting robust early discovery, including access to engineering documents, Wisk was not able to demonstrate that any of its particular trade secrets was misappropriated. The court also found that "Archer has presented sufficient evidence that it is reasonable prospect of succeeding on the merits." These latest results from the court hearings indicate that Wisk's claims are without merit and are nothing more than an attempt to stifle competition. As such, while trading at the sub-USD10/sh level, we believe it offers investors a potential opportunity to gain exposure in the eVTOL space at a bargain-basement price. Of course, while the entire UAM sector is highly speculative, the industry will develop and evolve, and this will happen at a faster rate than expected. While it is true that the space is growing increasingly crowded, and the reason for this is quite simply that the potential upside is stratospheric and once the first dominoes fall, i.e., regulatory hurdles overcome, the growth will be incredibly fast. Many of the names being traded now will likely take one of three paths: 1) grow and become viable players in this new industry; 2) be acquired by a larger aerospace firm or automotive company; or 3) crash and burn. Based on our analysis of Archer's technology and business structure, we have reason to believe it is among the handful that will make it into one of the first two categories. What is more, the recent severe share price correction offers investors a buy-in opportunity at the sub-USD10/sh level, which may offset the risk of this highly speculative stock.

Stock pick for the third week of November

Archer Aviation, Inc. (AHCR)

About Archer Aviation, Inc. (AHCR)

Archer Aviation, Inc. is a Palo Alto, California-based aerospace company. The company engineers, designs, and develops all-electric vertical takeoff and landing (eVTOL) aircraft. Its products includes Maker, a full-scale electric aircraft, capable of traveling 60 miles at 150mph. Archer uses an LI-ION based system to power the Maker. To design and simulate electric aircraft, the company uses computational fluid dynamics. Archer's eVTOL has multiple sensors and computers, including an air data system, downward facing cameras, quad redundant flight computers, radar and laser altimeter, and weight on wheel (WOW) sensors. The company listed on the NYSE via a SPAC on Sep 17, 2021.

Rationale

Companies and governments are racing ahead to secure stakes in a future in which both intercity and intracity journeys done with eVTOLs. The more efficient and ecologically sound eVTOLs are expected to supplant traditional single-rotor helicopters for transport in urban centers because they are cleaner, faster, and quieter. They are also safer than their older petrol-powered ancestors thanks to built-in engine redundancy, few moving parts, and fly-by-wire tech. For investors what this means is that eVTOLs have the potential to disrupt and transform urban air mobility (UAM) economy within the decade.

Indeed, according to rival eVTOL maker Joby (JOBY) this is at least a USD500bn market in the US and a global market of more than USD1trn. And while we believe Joby is one of the best positioned to capitalize on what is likely to be strong future demand for eVTOL transportation, Archer is nevertheless an interesting proposition that can be had for a relatively deep discount.

The eVTOL / UAM industry will be immense and could prove to be one of the biggest growth industries of the decade.

Like Joby, Archer is poised to potentially become a major disruptor in one of the fastest growing future industries. Indeed, Morgan Stanley (MS) estimates the eVTOL/UAM industry will reach USD1.5tn by 2040 as we utilize urban air travel to reduce traffic and open up an entirely new dimension of intracity travel. However, investing in eVTOL stocks is somewhat akin to purchasing Tesla stock just a few years ago. Right now, outside of VCs, carmakers, and aerospace companies, few are talking about this industry. However, when it takes off, it will catch most of the investing public by surprise and the massive gains will go to those who are willing to take the risk. In the next few years, people will start traveling from city to city via eVTOLs—this is inevitable. As such, the eVTOL / UAM industry will be immense and could prove to be one of the biggest growth industries of the decade.

eVTOLs will reduce traffic in major cities and allow passengers to reach for more quickly. Currently, eVTOL stocks are for the most part near initial SPAC pricing levels of USD10, meaning investors are able to gain exposure at what is likely the lowest price possible. As a comparison, EV stocks surged in 2020

but many investors missed out on the EV boom. The eVTOL boom is inevitable and presents a similar opportunity to capitalize on the transformation to electric mobility industry. eVTOL companies will reduce carbon emissions causing global warming and improve the overall quality of life.

Among publicly traded eVTOL stocks that have the potential produce 10x or higher gains in the next few years, Archer is our second pick, after Joby. Archer's eVTOLs can take off like a helicopter and uses its six rotors forward to fly like an airplane, and if all goes according to plan, it will be certified for passenger service in the US. After certification, the company plans to launch services in the LA metropolitan area in 2024.

Archer is developing two eVTOLs, Maker, its flagship demonstrator aircraft will be autonomous, and is a full-scale eVTOL which is capable of traveling 60 miles at 150 mph with two passengers. On Nov 11, the company announced that the FAA has issued a CoA and the aircraft limitations covering Maker. The CoA and the aircraft limitations are the key components which will be the FAA basis that allows the Maker aircraft to undergo test flights. Archer has since relocated the Maker to its California flight test facility, where it is undergoing final preparations for its first hover flight later this year, as well as a thorough program of ongoing systems testing.

Archer's as-yet named newer eVTOL is designed to carry four passengers and a pilot. While the company started with a fully autonomous eVTOL, it decided to build the pilot-operated model to help it more quickly obtain regulatory approval. Rival Joby has taken the other road and is thus further ahead in the approval and launch timeline. Having said that, ultimately the goal is to remove the pilot from the loop, as this will make these businesses extremely profitable. Technically speaking, while this hurdle is considerably lower than launching fully autonomous vehicles (i.e., robotaxis), it is the regulatory environment and public perception which present higher hurdles for the company to overcome. Nevertheless, these hurdles will be overcome, and we expect this to take place within the decade, which in turn will see a rapid evolution of mobility. For comparison, it took Tesla (TSLA) a decade from its IPO before it recorded a full-year profit. Ride-hailing companies Uber and Lyft are still in the red.

United Airlines plans to buy up to USD1bn in Archer's eVTOLS as they are estimated to generate up to USD2.4mn in annual revenues with a profit of USD1.1mn per vehicle.

To scale production, Archer plans to utilize the automotive industry's supply chain through Stellantis (STLA). In addition, several companies, including Stellantis, United Airlines (UA), and Exor - the investment arm of the Agnelli family, have provided the company with an additional USD600mn in funds. In addition, former United CEO Oscar Munoz recently joined Archer as a board member, which should strengthen the partnership in which the carrier plans to spend up to USD1bn to purchase eVTOLs from Archer. The reason that United has committed to buy Archer's eVTOLs is the tremendous revenue generation and profit potential as they are estimated to generate up to USD2.4mn in annual revenues with a profit of USD1.1mn per vehicle.

Market outlook

Travelling by air instead of ground has been around since the 1950's, and several companies offer both

scheduled and on-demand services. Indeed, many cities already have helipads, but many see very little utilization due to the noise pollution that come with helicopters. As Archer's vehicles are electric, they are much quieter than traditional helicopters. As such, it can blend into the background noise of the cities in which it operates and utilize the existing infrastructure

When looking at electric-powered mobility, we see that it is not only an idea whose time has come, but one that has been successfully utilized for over century with electric trains. Electric cars, which have a history that is almost as long, have recently commenced hockey stick growth

Archer's eVTOL can take off and land like a helicopter but fly like a plane, making it safer, faster and quieter than the helicopters, according to the company. When looking at electric-powered mobility, we see that it is not only an idea whose time has come, but one that has been successfully utilized for over century with electric trains. Electric cars, which have a history that is almost as long, have recently commenced hockey stick growth thanks in large part to the efforts by Tesla. Even though aircraft have been used since the start of the last century, they have been almost completely dependent on petroleum. And commercial air travel, much like the space travel, has remained nearly unchanged for decades with improvements in areas such as aerodynamics and fuel efficiency. For space, that changed with the private sector's infusing the industry with Silicon Valley methods, which brought companies like SpaceX, Blue Origin, RocketLab (RKLB), and Astra Space (ASTR). Interestingly, the revolution in commercial air travel is coming after space But make no mistake, the revolution is here and growing. The challenge commercial air travel has faced were noise and pollution but with the advent of eVTOLs and other electric aircraft this has changed. Indeed, air travel accounted is one of the largest causes of greenhouse gas emissions, according to the EPA, while passenger vehicle still account for most transportation-related greenhouse gas emissions.

Archer's eVTOL could be the solution for a cheaper, greener, and quieter means of commercial flying, and as such allows for a rethink of transportation, expanding it from two dimensions to three dimensions. The company's latest eVTOL accommodates four passengers and a pilot. Archer has formed a partnership with North America's largest operator of parking car garages for its eVTOLs, and thus has solved one key part of the UAM infrastructure challenge. As electric propulsion systems have fewer moving parts than their fossil-fuel counterparts and thus require lower maintenance budgets, which, translates to cost savings that can be passed on to consumers in the form of lower-priced tickets, expanding the market. In addition, Archer is forgoing the autonomy option, for now, which is a good strategy from a regulatory standpoint as it lowers the barriers to FAA certification. The market has several listed eVTOL makers and more will soon be entering the fray as investors and established companies want to ensure they have a stake in this emerging potential mega-industry.

The UAM industry is on an upward trajectory

The UAM market is projected to grow from USD2.6bn in 2020 to USD9.1bn by 2030, at a CAGR of 13.5% in the period, according to MarketandMarkets. For the UAM market, the primary driver is the swelling demand to find alternative forms of transportation in urban areas. While adoption is currently limited due to legal, political, and technological barriers—these barriers are rapidly coming down. And among the current market players, Joby's product is the most promising. Joby estimates a massive untapped market opportunity of more than USD500mn in LA alone.

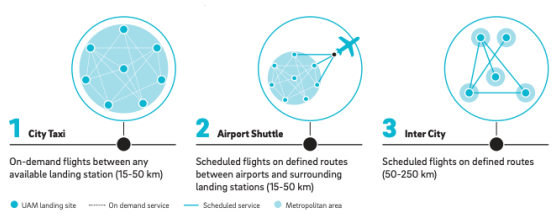
We also expect United to use Archer eVTOLs to transport passengers to airports in dense urban areas for additional flights

Archer plans to launch its first eVTOL service in the LA metropolitan area, which will put it in direct competition with Joby. In addition to LA, Archer plans to launch its ridesharing business in Miami. We also expect United to use Archer eVTOLs to transport passengers to airports in dense urban areas for additional flig hts to create additional revenue opportunities. In this regard, the company will generate revenues from eVTOL sales and its air taxi business. While many of the routes in the area can be done with a helicopter, eVTOLs should make those trips more affordable and thus more accessible. Electric motors typically have fewer moving parts than combustion engines, which translates to less maintenance. What is more, batteries reduce carbon emissions and reduce energy costs compared to jet fuel. If Archer can bring its costs down though mass production and technological innovation, that will bring the cost of transport by eVTOL in the vicinity of ground transportation, and it will inevitably reduce the number of cars on the road. If it can successfully overcome technical and regulatory hurdles and deploy its fully autonomous eVTOL, then it has the potential to completely disrupt mobility in the US.

3Q21 results

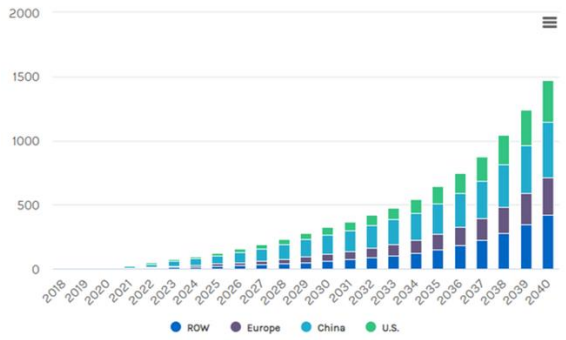
Archer reported 3Q21 results after the market close on Nov 11. In Sep, the company completed its business combination and received USD802mn in net case, paving the way for it to design, manufacture, and certify its eVTOL aircraft and achieve its vision of sustainable urban air mobility. Archer exited the quarter with USD796mn in cash and cash equivalents. 3Q capital expenditures amounted to USD1.1mn. 3Q GAAP operating expense was USD176mn, which included stock-based compensation expense of USD103mn reflecting the one-time vesting of the first tranche of restricted stock units granted to its founders, resulting from reaching the first performance milestone. In the quarter, Archer recorded a non-cash warrant expense of USD39mn related to the vesting of the second tranche of United Airlines warrants. The remaining two tranches in these warrants will be expensed when it receives its type certification and delivers aircraft to the airline. GAAP operating expense of USD176mn plus interest expense related to a Silicon Valley Bank (SVB) loan resulted in a 3Q GAAP net loss of USD177mn. 3Q non-GAAP operating expense amounted to USD29M, attributed to engineering and development related investments, which was an adjusted EBITDA loss of USD28mn.

Fig 1. Future passenger UAM market will be dominated by three main use cases



Source: RolandBerger, Hyundai Motor Securities

Fig 2. UAM total addressable market (base case)



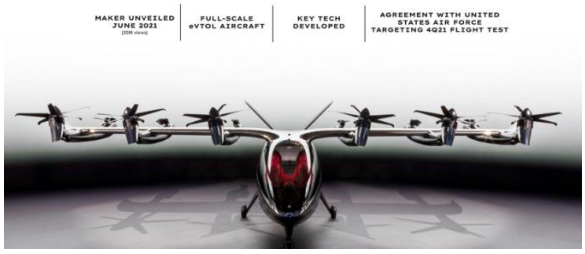
Source: Morgan Stanley, Hyundai Motor Securities

Fig 3. eVTOLs generate 18x more revenue than ride sharing a car

ECONOMICS COMPARISON	RIDE SHARE CAR	ARCHER EVTOL ESTIMATES
AVERAGE TRIP DISTANCE	25 MILES	25 MILES
AVERAGE SPEED	25 MPH	150 MPH
COST	$1.50 / MILE	$3.30 / SEAT-MILE
AVERAGE TIME / TRIP	60 MINS	12 MINS
TRIPS PER DAY	10	25
DAYS WORKED	365 / YEAR	365 / YEAR
REVENUE / YEAR	$136,900	$2,400,000

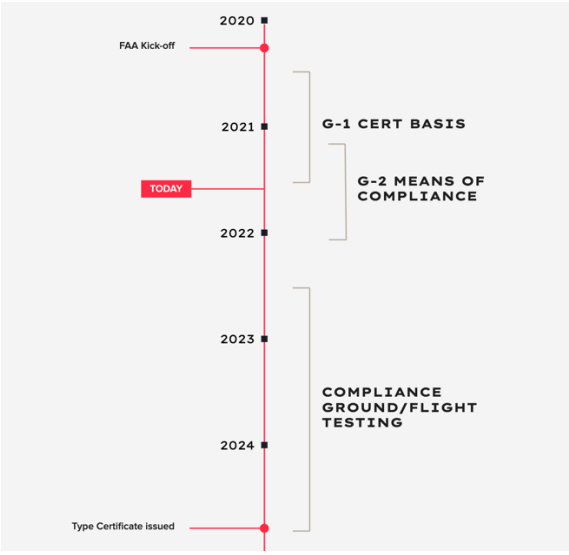
Source: Archer Aviation, Hyundai Motor Securities

Fig 4. Massive untapped market: USD500mn+ per year in LA alone



Source: Archer Aviation, Hyundai Motor Securities

Fig 5. FAA certification process & planning



Source: Archer Aviation, Hyundai Motor Securities

Fig 6. Partnerships for long-term manufacturing and supply chain

Source: Archer Aviation, Hyundai Motor Securities

Fig 7. eVTOL market expected to undergo strong growth

Source: MarketandMarkets, Hyundai Motor Securities

Fig 8. Regulatory officials focusing on electric vertical aircraft (EVA) certification

Jay Merkle
FAA UAS Executive Director

"We really cracked the code on how to take decades-old aviation [rules] and get to the essence of each of those requirements and say 'What was the safety goal here?'...**It is absolutely not true that there need to be all new regulations governing Urban Air Mobility**."

Earl Lawrence
FAA Aircraft Certification Service Executive Director

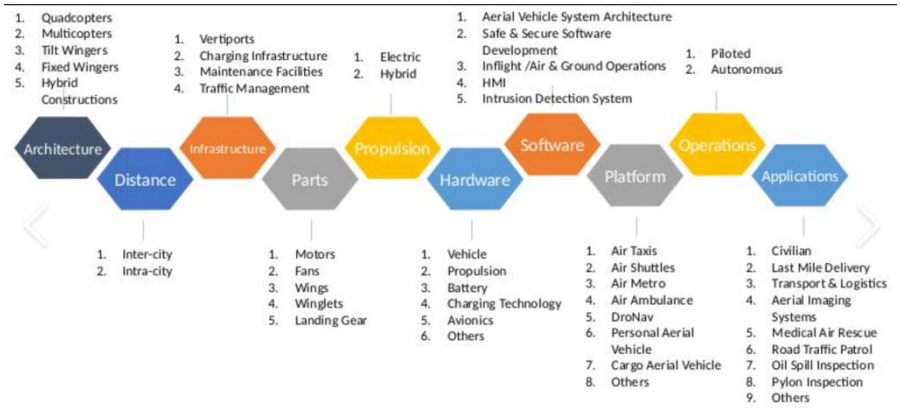
"I have four active formal applications for electric vertical-lift aircraft right now that are going to be the Urban Air Mobility aircraft of the future. These aren't concepts; these are full-up active type certification projects. **And I expect to be issuing a type certificate to one of these aircraft prior to 2022**."

Steve Dickson
FAA Administrator

"We are **currently engaged with the builders of more than 15 electric vertical takeoff and landing** Urban Air Mobility aircraft projects. In January, we saw North America's first public demonstration of an autonomous two-seat flying taxi..."

Source: Blade, Hyundai Motor Securities

Fig 9. Global UAM market size, share, trends, and forecast 2028



Source: Market Research Future, Hyundai Motor Securities

Valuation and risks

The company projects to generate revenue in 2024 and reach USD12bn in annual revenue by 2030.

Archer's current market cap is USD1.4bn, making it one of the more affordable eVTOL players in the market today. The company projects to generate revenue in 2024 and reach USD12bn in annual revenue by 2030. Archer has a P/E of 0, however from the business life cycle point of view, investing in companies such as Archer is about owning stocks in the high-growth stage. Accordingly, key metrics that are used for mature businesses are irrelevant. Dividends and P/E are not how to gauge potential returns with disruptive growth companies. Returns are based on events that take place during the rapid growth stage. If the company secures a leading position, the moat strengthens. The company breaks even and starts making a profit. As the company grows in size and liquidity, it becomes an investment target to institutional investors and more analysts initiate coverage and it then becomes included in indexes. In short, the company's intrinsic value grows as it matures.

Of course, it is not easy to determine the right price of growth stocks and investors must take the risk with a variety of options. While some early-stage companies have a compelling story, they lack the numbers to support this story. In stark contrast, mature companies should be evaluated on numbers alone. As such, only buying stocks in mid and large-cap companies eliminates any opportunity to secure 10x returns. Accordingly, investors should target an optimal mix of story and numbers with a focus on companies within disruptive or soon-to-be-disruptive industries that are about continued growth, not speculative growth. Buy the companies and hold them with a view on the long-term opportunity.

Archer's multiple is consistent with comparable high-growth emerging technology players as well as disruptive transportation peers. For context, Lyft (LYFT) and Uber (UBER) presently trade at around 2x consensus 2025 revenue estimates based on updated EVs. The comparison becomes even more compelling considering the EBITDA potential.

We expect continued volatility with the stock price highly sensitive to estimates and market sentiment. The biggest risk to watch is any setback on the certifications or timetable to launch. Having said that, the company's progress to obtaining its airworthiness certificate looks to be on schedule as the FAA recently approved Archer's G-1 certification basis, which another step towards receiving it's to FAA type certification. With the FAA's issuance of the G-1, Archer has overcome a significant hurdle in the certification process for its eVTOL. The G-1 establishes the airworthiness and environmental requirements necessary to obtain the FAA type certification.

While Archer is not generating meaningful revenues yet, there are the more risk-averse investors that may find its current valuation unsuitable to their taste. However, for those who see the massive potential that this fast-growing industry of the future offers and are able to withstand the volatility inherent with such investments, then Archer is among the more promising names to gain the exposure to this very alluring sector. Having said that, the future is always uncertain, and investors should keep in mind that Archer is fundamentally a speculative investment.

The bottom line

There is much to like about Archer, which has positioned itself as the only viable competitor to Joby in this next-generation mode of travel, supported by a credible management team, and a compelling go-to-market strategy. If Archer succeeds, it can replace traditional helicopter transportation services used by executives and HNW individuals but also captures demand from regular car rideshares.

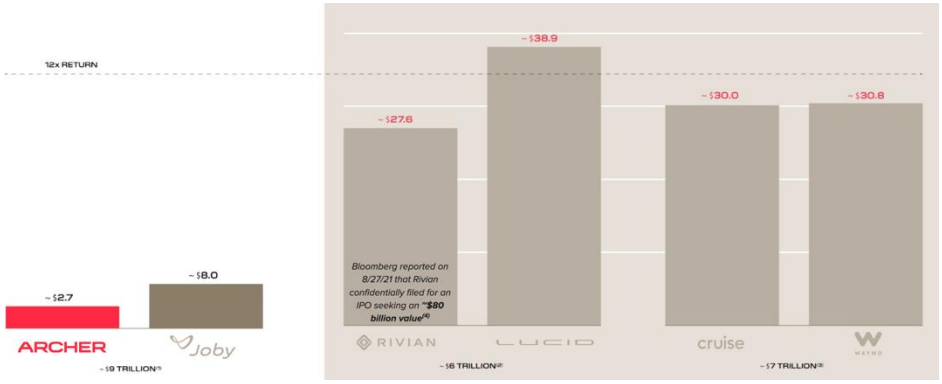
If Archer is able to start sales in 2024 and generate revenue of USD1bn in 2025, then we think that Archer, along with rival Joby has a high probability of becoming a UAM industry leader. While speculative, among eVTOL investments, Archer is very promising and could prove to be an incredible bargain at its current sub- USD10/sh price.

Fig 10. UAM is a highly attractive "hard-tech" segment

	EV CHARGING	RIDE SHARING	ELECTRIC VEHICLES	eVTOL	AUTONOMOUS VEHICLES
START-TO-MARKET	<1 YEAR	<2 YEARS	3-5 YEARS	6+ YEARS	6+ YEARS
	LOW BARRIERS TO ENTRY			HIGH BARRIERS TO ENTRY	
ENGINEERING TALENT SPECIALIZATION	COMMODITY	COMMODITY	MEDIUM TALENT SPECIALIZATION	SPECIALIZED TALENT NEEDED	SPECIALIZED TALENT NEEDED
REGULATION	USING EXISTING REGULATIONS	USING EXISTING REGULATIONS	USING EXISTING REGULATIONS	USING EXISTING REGULATIONS	NEW REGULATIONS NEEDED
TECHNOLOGY ACCESS	MINIMAL TO NO TECHNOLOGY	COMMODITY TECHNOLOGY	WELL-UNDERSTOOD TECHNOLOGY	WELL-UNDERSTOOD TECHNOLOGY	ADVANCED TECHNOLOGY NEEDED

Source: Archer, Hyundai Motor Securities

Fig 11. Immense relative value and growth potential

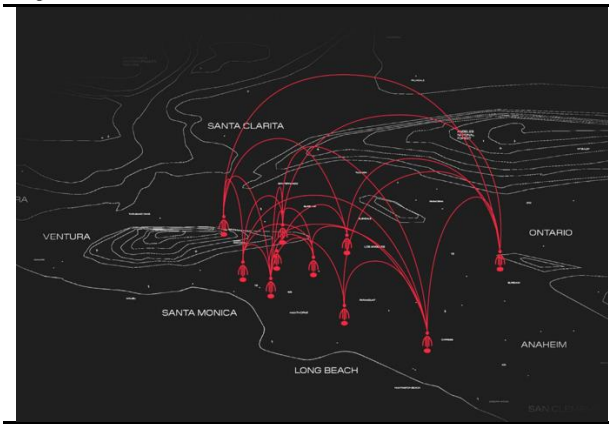


Source: Archer Aviation, Hyundai Motor Securities

Fig 12. Attractive valuation

Source: Joby Aviation, Hyundai Motor Securities

Fig 13. Archer selects LA for initial UAM network launch



Source: Archer Aviation, Hyundai Motor Securities

Fig 13. Few viable UAM companies

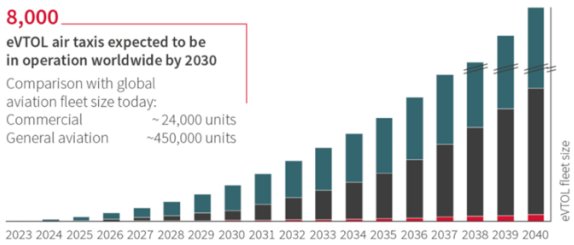
Source: Archer Aviation, Hyundai Motor Securities

Fig 14. Archer eVTOL specifications

PERFORMANCE		Empty Weight	n/a
Passenger Capacity	4	MGTOW	3,175.144 kg
Range	96.54 km	Payload Weight	n/a
Cruise Speed	241.35 kmh		
Powerplant Type	Propeller	**DIMENSIONS**	
Power Source	Electric	Length	n/a
Endurance	n/a	Width	n/a
Max Altitude	n/a	Height	n/a
Takeoff Distance	n/a	Wingspan	n/a
Landing Distance	n/a		

Source: Future Flight Aero, Hyundai Motor Securities

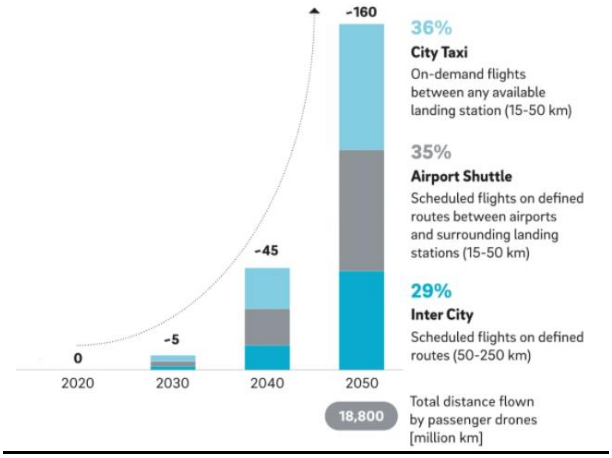
Fig 15. 8,000 eVTOL air taxis to be operating worldwide by 2030



Source: Futureflight, Hyundai Motor Securities

Fig 16. Operating UAM passenger drones from 2020-50 ('000)

Fig 17. Partnered with Reef Technology, North America's largest parking garage operator



Source: RolandBerger, Hyundai Motor Securities

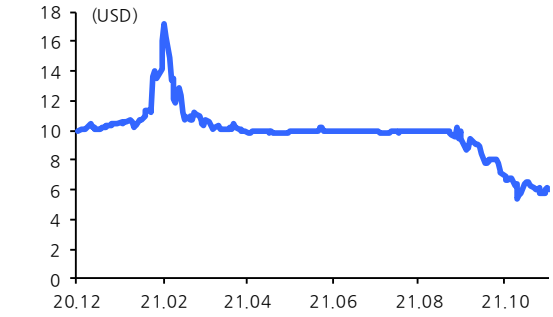
Source: Archer Aviation, Hyundai Motor Securities

Fig 18. Peer Valuation

Company	Ticker	Market Cap(USDmn)	P/E Ratio	P/S Ratio	EV/EBITDA	Sales Growth (%)
Archer Aviation Inc.	ACHR	1,381	NA	NA	NA	NA
Blade Air Mobility, Inc.	BLDE	696	NA	NA	NA	NA
Joby Aviation, Inc.	JOBY	5,495	NA	NA	NA	NA
Broadstone Acquisition Corp.	BSN	379	NA	NA	NA	NA
Lilium N.V.	LILM	2,671	NA	NA	NA	NA

Source: Thomson One, Hyundai Motor Securities

Fig 19. ACHR Stock Price



Source: Bloomberg, Hyundai Motor Securities

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