23

HELI
INTERNATIONAL

I like to fly the H125. It offers a lot of performance and is simple to operate. It subsumes helicopter flying as it bests. The H145 is great, with the new 5 bladed rotor it starts to get a ride quality like an Explorer and from outside the aircraft has a much nicer noise footprint. For the pilot the aircraft offers one of the best avionics and a very powerful autopilot. Both aircrafts have been updated from performance and cockpit in the last decades. In comparison with other manufacturer Airbus made an excellent job in getting them up to date. They are state of the art in the helicopter business. If one compares the helicopter industry with other industries things look different. Even excellent updates can not hide the fact, that we fly around with models that are based on over 40 years old designs. Heliswiss international just bought a 60 year old helicopter, not for historical reason, to use it in daily heavy load operations.

There might be good reasons that we fly around with "very old designs" some are obvious some are hidden. Even more scary than what we do now is from my point of view what will be in 20 years. The two best sellers from Airbus will then be 60 year old designs. And actually the signs to get more modern designs until then are relatively weak. There was the SKYe SH09, it would have offered a lot of innovative features. Six years after I left the project not to much from innovations and performance is visible with the newest and fourth prototype. Not only most of the innovative features have been removed, the newest prototype was downgraded with an engine that delivers excellent performance in the Squirrel but will only deliver EC120 like performance in an aircraft with an overall weight that is 500kg higher than its hardest competitor.

From all this points, helicopter industry will need innovation. With a lot of gained experience trough the SH09 development we are sure we can deliver this innovation and we plan to deliver this innovation with a new project. And why should we do this with a conventional helicopter configuration? We are convinced that inside the main-tail rotor concept a lot of innovation can be realized. Innovation that makes helicopter safer, more efficient and brings the operational cost down. This with the large advantage that we develop a helicopter into an existing known market. Why we think so and why the above mentioned points are important we want to present you in this magazine.

HELICOPTERS AND E-VTOLS

For many years, helicopters have been available and commercially used for both aerial work and passenger transport. They play to their specific strengths in areas where vertical landing capability and the ability to hover are a requirement. However, their ability to hover as well as to take off and land vertically is also their weakness as conventional helicopters, due to their specific design properties, need much more power to attain the same transport capacity as a fixed-wing aircraft; and furthermore, the rotor has a limit on the maximum reachable speed.

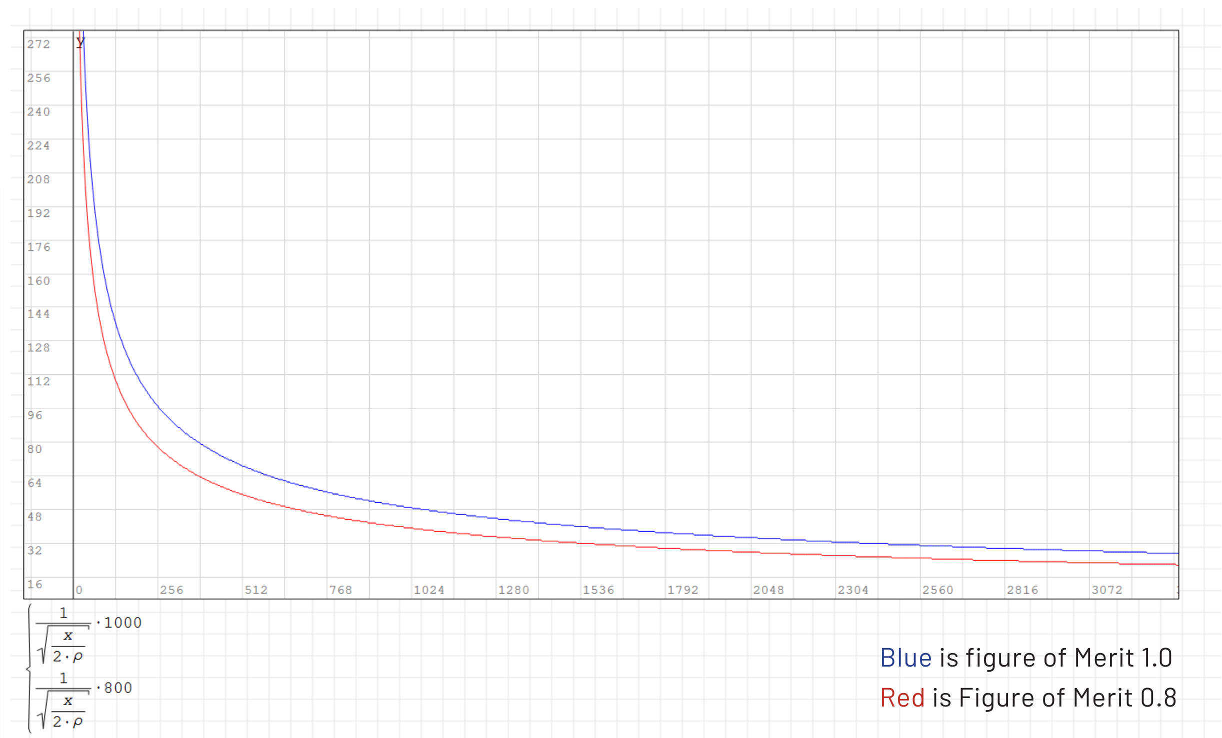
A new market is now emerging: It is called eVTOL, and the "e" preceding the acronym "VTOL" (for "vertical take-off and landing") indicates that these vehicles are driven by electric motors. The beauty in the use of electric motors in aircraft is that power can be distributed to different rotors or propellers without any complicated and heavy mechanical linkage. In addition, the propellers can be rotated from a vertical axis to a horizontal axis with low effort, which then enables conversion from a "helicopter" to a fixed-wing configuration.

With only a few exceptions, all new projects except for example Dufour Aerospace, are currently targeting the passenger transport market. The new concepts promise lower cost, lower ecological impact, lower noise signatures and, not to forget, simpler handling as piloting is performed by the electronics. Thousands of small drones seem to prove that this concept is outstanding. But have helicopters really performed that bad ... and is the future of eVTOLs so bright and easy as it is often claimed to be? First of all, let us consider some fundamental physical facts: One of them is that volume and thus weight change in cubic with length. This means that when you upscale a drone with a factor of 10, its volume and to a large extent its weight will be around 1,000 times larger. This again means that upscaling a concept that flies unbelievably well as a model does not imply any guarantee whatsoever that the upscaled version will also be able to fly, let alone that it will have any payload capacity.

Then there is the momentum theory: It is based on mass conservation which says that the thrust required to hover the weight of a VTOL must be equal to the mass flow rate of the air times the speed of the air. With a certain area of propellers or ducts required to generate the necessary amount of thrust, the only variable to generate that thrust will be the speed of the airflow. By fiddling with the formulas, we can generate a diagram showing that with higher disc load (weight per area of propeller or duct, e. g. kg/m^2) the weight per unit of power (e. g. kg/kW) that can be transported goes up in a relatively disadvantageous ratio. This basic law poses a problem in model upscaling as the area of the propellers only scales in square with length, weight in cubic. In other words: We need a much larger area to produce the required thrust in a 1-to-1 aircraft relative to a scaled model so as to avoid extreme power demand, at least during take-off and landing.

The practical relevance of these aspects becomes obvious by comparing existing VTOLs with each other: Large helicopters cannot be scaled up 1 to 1 with their rotor diameters; however, a comparison of large helicopters with smaller helicopters already reveals that the necessary installed power per kilogram goes up. And it even goes up dramatically when we compare a tiltrotor like the V22 or, even worse, a Sea Harrier with four small ducts with a helicopter. Dufour Aerospace started with a two-seater and two

Powerloading (y,N/kW) Discloading (x,N/m2)



large propellers on the tilt-wing. With two propellers, the rotor area of an R22 can be attained, namely 46.2 square meters. To this end, each of the two propellers should exhibit a diameter of 5.42 meters.

But even now, the width of this aircraft would be greater than that of a Squirrel. As can be seen in the pictures, the diameter measures maybe half of 5.42 meters, i. e. no more than 3 meters. The power requirement of an R22 to get into hover mode at sea level under standard conditions, with some tip losses and a figure of merit of 0.8 for the rotor and 90% efficiency for the drive train, is around 92 horsepower. This does at least not sound completely wrong. If I do the same calculation with the two times 3-meter rotors, for the same take-off weight, the necessary power nearly doubles up to 160 horsepower. This means that with the Lycoming engine of the Robinson Beta II, this helicopter would just be able to take off! If I take the propeller diameter with two propellers to attain the rotor area of the R22, the power demand in hovering would be 86.5 horsepower. The different power demand is explained by the higher tip loss due to 2 rotors instead of one and the less 8% loss on the tail rotor of the Robinson. With two independently driven propellers, there are not that many possibilities to survive the loss of one of the drives. Maybe it was for this reason that Dufour decided to go 4 propellers instead of 2 for the smaller model in the current range. And now it is a pure UAV with a maximum take-off weight of 210kg and a payload of 50kg. When one assumes 4 propellers with 1m diameter each (judging from the pictures), this UAV needs approximately 70 horsepower to hover, and it offers the advantage of flying very economically once the wing is tilted. More interesting from a helicopter point of view is the comparison of the larger rescue tiltwing Dufour has announced. This aircraft features 6 propellers and a maximum take-off weight of 2,800kg with a payload of 750 kg. As there are two propellers in the back with smaller diameters, seven instead of six propellers with a diameter of 2.6 meters each have been included in the calculation. To hover at sea level, the aircraft needs 1,050 horsepower. With a rotor diameter of 11 meters and the same take- off weight, a helicopter equipped with a tail rotor will need 625hp to hover at sea level under standard conditions.


Dufour Aerospace_aEro2 VTOL
image source: https://aerospaceengineering-blog.com/aero-podcast-14-dufour-aerospace-co-founder-thomas-pfammatter-on-the-aero2-vtol-electric-aircraft/


Dufour Aerospace UAV
image source: https://www.mgm-compro.com/news/dufour-complete-testing-of-their-e-vtol/


Dufour Aerospace Aero3
image source: https://evtol.news/dufour-aero-space-aero3-production-aircraft

The Dufour 6-propeller configuration seems feasible from the pure power demand. Dufour describes a hybrid configuration instead of a pure electric aircraft. It will be a major challenge to stay in the range of 2,000kg of empty aircraft weight. In addition to nearly the same systems of a helicopter, a structural heavy wing and a large battery pack need to be included in the calculation of weight. On the other hand, a payload of 750kg for some fuel and at least 4 persons on board in a typical rescue mission is very low. A size-wise similar aircraft with a retractable gear is the Bell429WLG, its weight starts at 2,150 kilograms. In order to deliver the 750kW required to hover, one would need a battery pack of at least 400kg, even at a 5C discharge rate. This means that a quarter of the 2,000kg would already be taken up by this battery pack. As the battery pack would be completely used up after 12 minutes of hovering, flying rescue missions, even when using the additi-onal engine by means of which the energy could be restored during the forward flight, the battery pack would need to be doubled. And building a tilt wing, drives, a fuselage, an engine, seats and a cockpit into a weight "corset" of 1,200kg will be quite a challenge. If you wish to perform mountain rescue with the same aircraft, the power demand will go up due to the lower density of air in higher altitude, even more so in hot summer days.

If the take-off weight was in the area of the max. 3,175kg for a CS27 aircraft, the power needed with 13% more weight would be 1,290hp and rises 22 %. This is due to the somewhat non-linear scaling of blade load to weight per power curve. The 11m-rotor-diameter helicopter would need 20% more power 755hp to lift the higher weight. Things look different when the aircraft is flying forward, but once the aircraft configuration is right for hover operations, it will be a challenge to save enough energy on short legs. Looking at HEMS(Helicopter Emergency Medical


Robinson R22
image source: https://www.trade-a-plane.com/search?make=ROBINSON&model_group=ROBIN-SON+R22+SERIES&s-type=aircraft


Ecureuil As 350 B3
image source: https://hotcore.info/babki/ecu-reuil-as-350-b3.htm


Bell 429 WLG
image source: https://www.aerospace-technology.com/projects/bell-429wlg-helicopter/

Services) aircraft and utility helicopters, current configurations seem to be quite optimal especially in operations with short flight distances. If hover performance is key, a large rotor area is important. For a certain footprint, a circle is the optimum area that can be covered by a rotor. A four-rotor configuration in a square would theoretically deliver the same overall rotor area. But even without separation between the four rotors, the aircraft would have a larger footprint than a helicopter. With four rotors in a square, the loss of one rotor will be manageable with some fancy flight maneuvers, at least for drones. However, I am not sure whether the necessary wild ride would be accepted by a pilot or by the passengers.

Most eVTOL aircraft are designed to cater to a new market where they are intended to provide air taxi services near cities. This would allow to have short flights between the recharging of the batteries. These eVTOLS need to meet other requirements and will operate in an environment that is defined by manageable constraints. If the market really emerges, the companies will come up with production numbers that are sure to exceed current helicopter figures by far. Future manufacturing levels are expected to resemble that of luxury cars. To achieve broad acceptance of VTOL operation and thus attain high manufacturing levels, three prerequisites (in addition to the short-flight criterion) need to be meet: Firstly, the purchase price of these aircraft must be much lower than that of comparable helicopters. Secondly, to the noise level generated by the new aircraft must also be lower than that of helicopters. And thirdly operation of the new aircraft must not only be more economical in terms of lower purchase prices but also over time (long service life and low maintenance cost). It is more than questionable whether the whole set of goals and targets can be attained with the current projects. At present, even short-flight projects are not capable of delivering adequate performance with the existing battery technology. Challenges are not only about overall battery capacity as such, but rather also about the relationship between battery capacity and the maximal possible discharge rate. The high disc load in helicopter mode that plagues nearly all projects will demand higher battery capacity resulting in weight increases, which will make the situation worse. For real-world commercial air transport, not only the energy required for the flight must be carried on board, but there must also be sufficient reserve to cover unforeseeable events. It might be possible to carry the battery capacity for a typical flight on board plus some reserve – if you are willing to accept a high battery discharge rate. In this case, the achievable battery cycles will be very low, in the range of 500 cycles or below. The relationship between battery capacity, battery discharge rate and battery weight is critical in determining the pure feasibility of eVTOLs in terms of aircraft weight and thus payload as well as flyability. Besides the aspect of pure feasibility, the maximum achievable battery cycles are a key factor in determining operational costs. When a flight time of 20 minutes is assumed, the battery would need to be replaced after 170 hours. With a lifetime of 2,000 cycles, it would need to be replaced after 700 hours. The typical lifetime of batteries is in the range of 5,000 cycles or 1,600 hours. As already mentioned, this performance can only be achieved by a very low discharge rate. But even then: Every 1,600 hours of flight time, a major part of the overall purchase price of the aircraft would need to be reinvested. All in all, getting airborne with eVTOLs at affordable prices will only be possible with new battery technology that combines higher discharge rate with enhanced lifetimes. Without such new battery technology, either battery lifetime will be very short, or the eVTOLs will become too heavy.

And even once this point is solved, the purchase price for the aircraft, the noise level and the operational costs will still remain critical aspects. Maybe some cost can be saved through large-volume manufacturing and with simpler technics (installation of electric motors). It is questionable whether, in light of the same certification effort and manufacturing as it is predicted by the potential manufacturer. And when manufacturing prices are higher than predicted, maintenance costs will also rise – under the same operational standards as with the rest of aviation. In helicopter operations, the air speed throng the disc to get airborne is relatively low. For eVTOLS with higher discloads, speeds will be higher. The initial constraints to become quieter than a helicopter are not that easy. Higher speed normally means greater noise. In addition, a lot of propeller jet and structure interaction tends to make aircraft noisy. And then is there is one huge step that even precedes operation and large-scale manufacture: certification! Nearly all, if not all eVTOLs depend heavily on flight control software to fly. When the effort to get an unmanned aircraft airborne is manageable with the technology from drones, the effort required to obtain certified flight control software will be enormous. And the Boeing 737 MAX story does not improve the situation. The two helicopter projects which need flight control software, the Leonardo AW609 and the Bell 525, are both plagued by long certification delays. It might be an indication that this challenge cannot be solved so easily. Bell (where both projects have originated) has extensive experience with similar projects for the military.

The problem is even larger as it is a large step from a flyable software to solid software. Depending on the degree of automation, the software would not only need to cover the normal flight envelope but also situations like vortex, small performance margin, turbulences, emergencies. The helicopter industry has paid lots of apprentice premiums to enable pilots to handle all of these situations. And we have by far not uncovered all conceivable situations where multirotor aircraft in 1:1 scale will get in trouble and how to overcome them.

There is one aircraft that comes close to multi-rotor configuration and is even able to tilt its rotors in order to fly as a normal fixed-wing aircraft, namely the V22. In contrast to the majority of eVTOL aircraft, its propellers are mechanically linked and feature both collective and cyclic pitch, which allows them to get out of emergency situations even with two propellers. Two propellers allow for a large rotor area in the footprint of the wingspan. Comparing the necessary energy to hover or the energy necessary for a typical operation, the V22 aircraft can only be meaningfully used when speed or and range are the driving factor and or only very short hovering maneuvers are necessary. In all other operations, a helicopter can do a better job. For the currently most-coveted market of short taxi flights (for example from the airport to the city), speed and range do not matter. A tilt propeller can make sense as it helps to hold the power demand in forward flight low and if the hovering phases with high power demand are very short. As long as the discharge rate plays a major role in determining battery size, it will remain questionable whether an eVTOL will really be able to do what helicopters can already do, and it is even more questionable whether they will be able to accomplish this at better prices and in a more ecological way.

Leonardo AW609
image source: https://helicopters.leonardo.com/en/products/aw609

Bell 525
image source: https://de.bellflight.com/products/bell-525

V-22 Osprey
image source: https://www.stuttgarter-zeitung.de/inhalt.v-22-osprey-lego-stoppt-bausatz-fuer-militaerflugzeug.0e7d37f2-5390-4543-b6dd-986808e79e2c.html

THE VISION OF M12 & M22

The vision is a helicopter family with a 2-ton payload. A family, as we realize on the same platform both the single-engine helicopter (M12) and the twin-engine (M22). The helicopter fits into the existing gap in the 2-ton payload range and of course also covers the needs of customers in the 1.5-ton range.

The helicopter is being developed for the existing market. No new market needs to be developped. This market will grow in the coming years due to challenges in the environmental sector, in the HEMS sector as well as for passenger and goods transport. Thanks to a modern serial hybrid power-train, the helicopter combines the existing market with great potential with the future possibilities offered by alternative drive systems.

With the helicopters in use today, the market leaders are at the end of their life cycle. For this reason, the industry will not be able to tap this potential in an economically or ecologically sensible way with the material available today.

Our target market will need new, safer, more efficient, more economical and more ecological helicopters for the next 5 decades. A new generation is needed. A generation that uses the latest technologies.

The idea and thus the rough concept are in place. With the development of the SKYe SH09, we have also proven that we can develop a helicopter from scratch. But there is much more at stake here than a new development of a helicopter. We are also talking about a highly attractive business opportunity for at least the next 40 to 60 years.

With a modern drive design in a cell and rotor concept that has been tried and tested thousands of times but has been significantly refined, we want to trigger the same disruption that Tesla has unleashed in the automotive sector with the electric drive.

We are currently looking for potential investors who are interested in an attractive and profitable business opportunity for the next one or two generations. People who think long-term, have an affinity for technical solutions or even better for helicopter flying. Funders willing to enter into a long-term partnership with a highly motivated team of developers with an excellent track record.

Where does the shoe pinch?

The basic development of the best-selling helicopter in the largest commercial market dates back to 1975. VW's Golf 1 was also developed around this year. So it can be said that from a technical point of view, at least as far as basic development is concerned, we are still flying around with a Golf 1.

Although the helicopters have been modernized to the extent possible, it is visible in many solutions that compromises had to be made, which are due to the outdated platform.

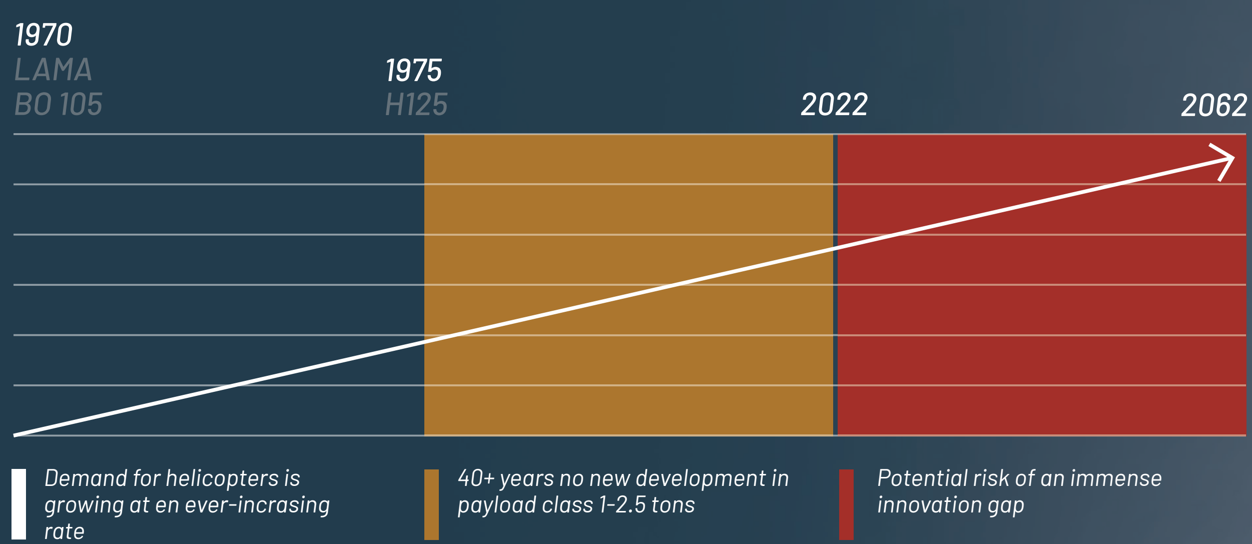
It is a fact that for 40 years there has been no completely new helicopter development in the 1- to 2.5-ton class. The only exception is SKYe SH09. We are indeed facing the risk of an immense innovation gap if this issue is not addressed in the next few years. The requirements for the operation change (rules, regulations, areas of application, environmental influences, etc.). Are today's platforms ready for these changes?

How long will technologies from the 1970s and 1980s stand up to future demands, or where would we be in terms of technology, if a further development comparable to that in the automotive sector had taken place with new models?

Can maintenance costs be reduced without new technologies?

What can we do to reduce the need for operations in the mountains to be carried out at the absolute limit of the machines?

These are all questions that need to be asked in the context of future challenges.




MARENCO SWISS HELICOPTER
HB-ZXM
www.marenco-swisshelicopter.com

Effects of the innovation gap or what awaits us with an outdated fleet

What happens if innovation continues to fail? What scenarios will the helicopter industry and especially the flight operations face?
The impact will be massive. The following list shows only a few examples:

The environmental impact cannot be reduced. High fuel consumption due to the use of outdated turbines pollute the environment and, in any case, have a negative impact on operators' costs.

The limits have been reached with the helicopters currently in use in our target market. The lemon is squeezed. There will be severe restrictions on the safety standards of old helicopters. Without a completely new development and thus new approval, only marginal adaptations and modernizations are possible.

Helicopters are increasingly operated at their performance limits. This will lead to greater material wear and ultimately significantly higher maintenance costs. The risk of an incident increases.

Inefficient flight operation, due to a lack of alternatives, it is often necessary to fly with oversized helicopters, as no modern helicoptersare available in the 2to range. In the more dangerous case, the operation is forced with a helicopter that is too small.

The state of the market is being exploited. Helicopter or turbine spare parts are traded at prices far above standard.

Currently, new helicopters are mainly offered by only three leading manufacturers. One of which has a market share of 90% or more in certain segments. The market is sorted, so the competitive situation no longer exists.

Technical & Financial Impacts

ENVIRONMENTAL IMPACTS

Inefficiently high kerosene consumption of old turbines leads to environmental pollution and massive operation costs

LIMITS REACHED

There are severe limitations to the safety standards of old helicopters. Certifiability is highly constrained

HEAVY IMPACTS

Performance limits are exceeded. This causes heavy material wear and high maintenance costs

LACK OF SOLUTIONS

Insufficient performance often forces operators to use oversized helicopters

EXPENSIVE PARTS

The state of the market is being exploited. Spare parts are traded prices way above the norm

OLIGOPOLY POWER

As of today, helicopters are mainly produced by only three leading manufacturers

The true potential of M12 & M22

Market share can be gained through innovation. The helicopter industry is open to new, innovative solutions.

With an intelligent design and a simplified powertrain, maintenance costs can be significantly reduced.

Requirements for new, stricter rules and regulations as well as increased safety requirements can be implemented with the new development.

The economic efficiency is increased, the environmental impact is reduced.

The helicopter is ready for future powertrain developments. Batteries, combined powertrains and fuel cells can be easily integrated.

Ready for an innovative future?

The modular design with an electric powertrain allows us to develop two helicopters on the same platform with virtually the same components. M12 as a single-engine and M22 as a twin-engine helicopter. In this way, we create a huge added value for future operators. Pilots, crew and mechanics can be trained within the same helicopter family. This simplifies the procurement and storage of spare parts.

We think sustainably about the future. Our innovative hybrid powertrain ensures subsequent conversion to alternative powertrains. Even if these are not ready for series production today, things will be different in five to ten years.

We attach great importance to broad and flexible application possibilities. The more versatile the helicopter can be used, the more flying hours can be flown. This is a must for successful flight operations. M12 and M22 are highly modular. The helicopters can be qickly adapted to mission specific requirements. The cabin can not only be used modularly, but also offers space for internal load transport and especially for HEMS equipment, which leaves hardly anything to be desired.

Our goal is to develop a multi-purpose helicopter that can be used to its maximum potential both regarding internal and external loads and in summer and winter.

The modular design with an electric powertrain allows us to develop two helicopters on the same platform with virtually the same components.

MODULAR

Allows the produciton of two aircrafs on the same platform.

> M12 (single-engine)
> M22 (twin-engine)

FUTURE-ORIENTED

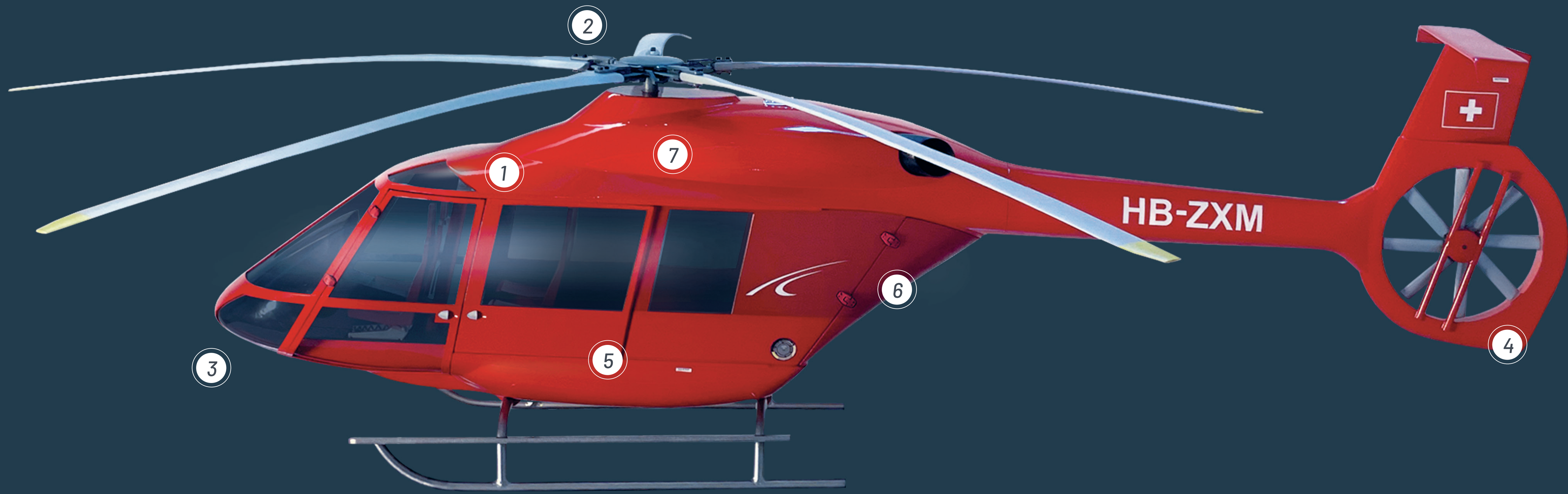
Our innovative hybrid powertrain ensures subsequent conversion to alternative engines.

> e.g. fuel cells

FLEXIBLE

M12 and M22 are highly modular. The helicopters can be quickly adapted to mission-specific requirements.

The best in its class?
Get to know the key features!



With a payload of 1.2 tons at 4,500 meters above sea level, we are setting a new benchmark. The performance is out of the competition! Outstanding ergonomics for pilots, excellent accessibility to systems, power reserves and high safety standards create added value every day. That is a big promise, we are aware of that. We trust in our origins, our profession and our passion. With the development of the SKYe SH09, we have proven that we can develop helicopters and set new standards with them. We will put all this on the line for future flight operations, pilots, crew, mechanics and also accountants.

1. Maximum cost efficiency thanks to the same chassis for M12 and M22.
2. Minimal vibrations and noise emissions thanks to 5 blade main rotor, electrically operated.
3. Best access to all flight information in the cockpit as well as cost-efficient maintenance through optimized ergonomics for pilots, crew and ground staff.
4. Maximum safety for crew and machine with the protected, electric tail rotor.
5. Crash-proof tank for 3 hours of flight time and battery for short-term more power or a few seconds of full power in case of autorotation provide additional and maximum safety margin.
6. Large double-wing doors (rear height 1.80 m) facilitate loading and unloading. Reconfiguring for other missions becomes an easy task.
7. Ensuring a low-maintenance operation and maximum performance thanks to serial hybrid powertrain without gearbox. This is also the gateway for retrofitting future alternative powertrains.

Facts about the market

8

Curently there are 8 major manufactures of helicopters

3

The market is supplied by only 3 of these manufacturers

0

No manufacturer lists a 2-ton class model

45

USA is largest market participant with 45% market share

↗

Demand for aircraft is on the rise (especially South America)

The Business Model

1

Annual demand: 1K helicopters

50

Min. 50% market potential of M12 & M22

60

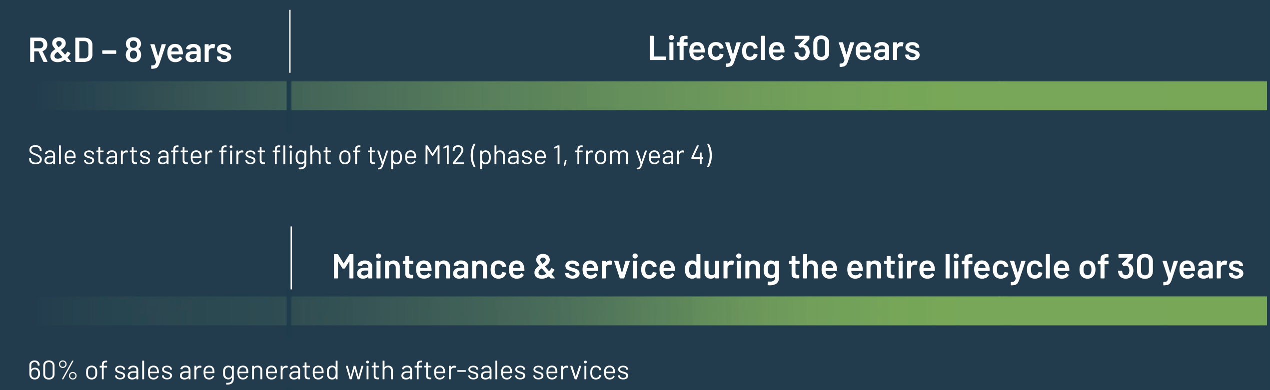
60% light single-engine

100

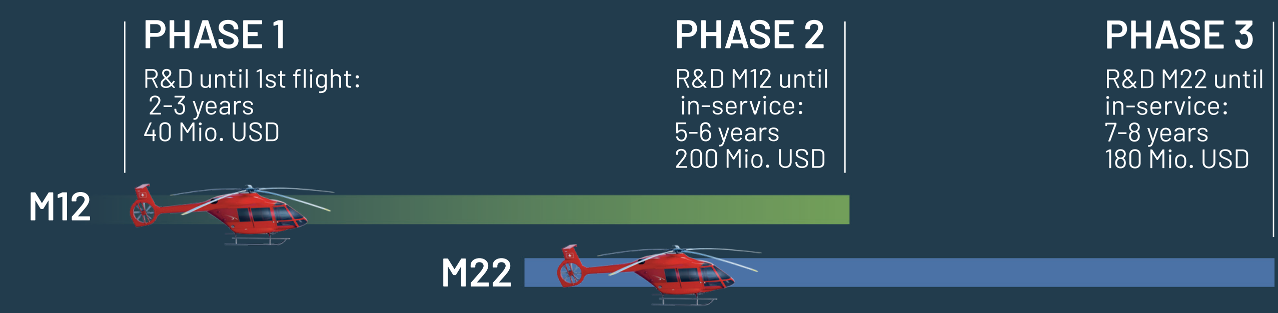
100% light twin-engine

30

With a market share of 30%, MSH sells 170 helicopters/year



Market size: 1'000 helicopters/year | Volume: 4+ billion dollars



Initial funding aim: Securing funding for phase 1 R&D to first flight of type M12
Break Even: 8 years after project start

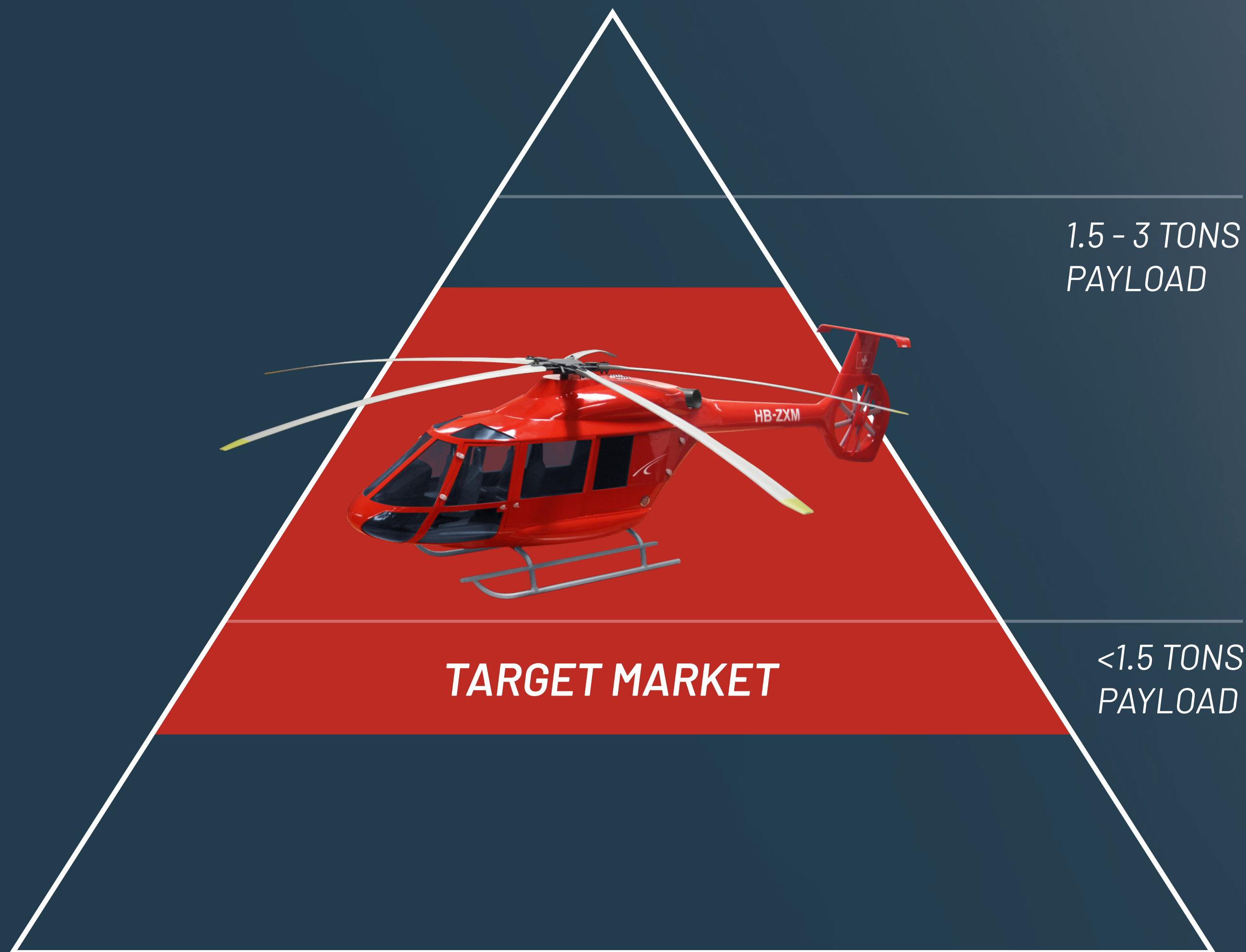
Our market observations show that the demand for helicopters will increase. We identify a market size of 1,000 helicopters sold annually with a volume of USD 4+ billion. Of this, we see at least 50% potential for M12 & M22 together. We are aiming for a market share of 30%. Our goal is to sell 170 helicopters per year of both models together.

In a first step we will develop the M12 and in a second step then the M22. The first phase covers the development up to the first flight of M12 within 3 years. This requires USD 40 million. This figure is based on experience from the SKYe SH09 project. Sales activities for the helicopter can already start in this phase. In the second phase 2, the M12 is approved. This phase lasts 6 years and costs USD 200 million. In phase 3 and another 3 years, the M22 is to be approved. We are budgeting another USD 180 million for this. Part of these funds can be raised through the sale of M12. In all phases of the M12 development, the twin-engine variant is considered. Our initial funding target is: Securing funding for phase 1 R&D until the first flight of the type M12. Break-even: 8 years after the start of the project.

The approx. 8-year development and approval phase is followed by a life cycle of at least 30 years. Most of the helicopters in use today have already exceeded their service life of 40 years.

Particularly attractive and the long-term core business for maintenance and service throughout the life cycle of 30 years or more. Over the lifetime of a helicopter, 60% of the sales revenue is generated through maintenance and service.

Summary



OUTSTANDING PERFORMANCE

SAME PLATFORM FOR M12 & M22

UPGRADEABLE & FUTURE-PROOF

MARKET SIZE: 4+ BILLION USD

REALISTIC 30% MARKET SHARE

BREAK EVEN FROM YEAR 8

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We are actively looking for investors. If this article has appealed to you and aroused your interest, we are looking forward to hearing from you.