

Ten of the Best!

Embarked Helicopters



HeliRiviera recently opened a new office in Fort Lauderdale. **James Frean** heads up that office and we asked him to choose the best ten rotary wing aircraft to suit large yachts. He did so, but also as a bonus gave us some criteria for choice. Such criteria may be quite unfamiliar to those who are not aircrew, Masters of vessels with embarked Helos or simply experienced Helo passengers. We hope James' explanation will help them prepare for that near inevitable moment when they are asked (pray also, that question is asked very well in advance) by the boss: "Can we have a helicopter on the new yacht?", quickly followed by "Which one?" Although James' advice to use an expert too is very sound, the following (taken with the MCA's authoritative predictions of the shape of Helo decks and Regs soon to come, described in issue 79) will help those facing such questions to at least understand the basics of choosing an embarked helicopter.

Big yachts are amazing, helicopters are thrilling ... mix them together and you have a fascinating subject with overtones of James Bond and Playboys. When challenged to choose on 10 of the best helicopters for embarked operations on super yachts we faced quite a task! Our starting point was to look at the capabilities required by helicopters to operate in this niche market, and from those make the first cut and select ten that offer the most desirable features for the yacht owners. This may sound a bit technical and dull for a purchase that is often very emotive; however, as consultants to this industry, these are the steps that we have to go through to ensure our clients can make an informed decision when selecting their helicopter.

Required Features

The vast majority of the yachts carrying an embarked helicopter will sail globally, so it stands to reason that an extensive maintenance support structure is a major benefit. Applying this requirement immediately cuts our potential hot list to only those major manufacturers with a strong international presence.

Size and weight are normally a restriction on a helicopter, since it must be accommodated on the helideck. The general rule is that the helicopter must fit the yacht and not the other way around, so there is a requirement that the helicopter is selected to match the helideck's capabilities. Most requirements are particular to the owner's key missions.

mini survey – 10 best helicopters

but since this is a generic top ten, we have tried to consider a number of different scenarios for these requirements.

Desired Features

Does the helicopter really need 12 passenger seats, or could we go for six and do a second run if needed? Good question, and shows how required and desired features can be confused. Other desired elements include the choice of skids over wheels, the type of tail rotor, whether you can take all the seats out so you can fill it with bikes, skis and snowboards to be taken to the top of a mountain. These decisions are made depending on how you want to use the helicopter. On the fun side, desired elements also include looks, and why not?

The Balancing Act

Now let's discuss a bit of basic flight dynamics. Helicopters demand the most power from their engines when they are in the hover. When close to the ground, the downdraft from the rotors creates a ground cushion which the helicopter can sit on, reducing the power required significantly, or to think of it the other way round, when a helicopter does not have that ground effect cushion, it requires more power to hover than you would expect when landing or taking off. The small size and elevated position of most yacht helidecks means the available ground cushion is restricted.

Why have we called this a "balancing act"? Pilots must look at all flight parameters when planning a trip. Power margins – the difference between the power available and the power required – vary according to the conditions of the day and the weight of the helicopter. With a good power margin the pilot is generally able to

fly a safer profile, but the trade-off in achieving this margin may require reducing the number of passengers and/or quantity of fuel.

This balancing act is really important when applying key mission parameters to your prospective helicopter. Taken in isolation, performance data may be impressive, but in the real world the story is different. One generic example: a helicopter with a quoted range of 450 nautical miles, a maximum speed of 150 kt and a seating capacity of eight. But that 'brochure' range may only be possible when a full tank of fuel is used, without a reserve allowance (a flight safety no-no), at a cruising speed as opposed to the maximum speed and assuming no headwind. Also, when carrying a full tank of fuel, a life raft, flotation gear and other necessary additional equipment, the remaining useful load only allows for four people without baggage! Then you still need to find out if the pilot's weight was already included, or is he in fact one of those four people. Now, knowing 'real life' performance, how does such a generic helicopter fit into your required/desired list?

Value

We have not yet mentioned the cost of the helicopter. The price tag is an important consideration, and may well determine the final choice, but should be applied last. The true value of the helicopter is the balance between cost and capability, and that is the key to the assessment. There is no point in buying a helicopter of great or small cost if you cannot use it!

The List

Enough discussion, time to commit to our 10 of the best (in no particular order) ...

Robinson R44

The world's best-selling helicopter, powered by a piston engine (the only one on the list), much like you would have in a car. The reason the R44 makes my list is that it is a great entry-level machine, meaning it is cheap and cheerful to buy and operate. There is also a healthy used market for these machines. However, it could suffer the cut quite early when applying your requirements to the selection. www.robinsonheli.com



MD500e



Small, agile and fun to fly, this is a great helicopter. Like all the McDonnell Douglas helicopters, it has relatively short rotor blades, affording a small D-value (or overall length in the USA), making it suitable for compact helidecks. Like the R44, there are a lot of these helicopters about in general aviation, which can help with finding qualified pilots and mechanics. www.mdhelicopters.com

EC120B – Colibri



Photo: © Eurocopter

Modern in styling, this benefits from Eurocopter's fenestron tail rotor, which is safer and generally quieter than the traditional open bladed system, while still providing good tail control authority (an important feature when flying to yachts). The EC120B is a good upgrade from the R44, carrying two couples or a small family, with their luggage and the pilot, while still having a small footprint. Although relatively expensive at purchase, the long service intervals and good reliability keep maintenance costs, and thus operating costs, to a minimum, positively affecting the value of the helicopter.

www.eurocopter.com

www.eurocopterusa.com

Agusta A119 – Koala

The last of the single-turbine helicopters on the list, the Koala has the most power and the largest cabin of this class. Good looks, great speed and versatility, but suffers a little from high acquisition costs in its class and large D-value. We really like the Koala, and believe that it is often overlooked, but that may be because when it comes to an embarked helicopter choice, some are tempted to pay a little more and go for a twin-engine machine.

www.agustawestland.com



Photo: © Agusta

EC135T2



Photo: © HeliRiviera

Popular in the EMS role, this is a compact and powerful Eurocopter twin that is well suited to yacht work. Again, it has the fenestron tail, which is a plus when operating in confined areas. Versatility is one of its strong points, and it has the looks of an action helicopter but is equally at home amongst more glamorous aircraft. Suitable for owner pilots that are up for a challenge but are not able to dedicate significant amounts of time to remain current.

www.eurocopter.com

www.eurocopterusa.com

MD 902 Explorer

The McDonnell Douglas Explorer is another great EMS machine, which suits an active yacht embarked role. Our only entry with MD's NOTAR technology, which replaces the tail rotor with a system of air ducts that push air out along the tail boom and a controllable 'can' and the tip. This effectively removes all the dangers associated with tail rotors, to both passengers and tail strikes. The Explorer benefits from a spacious cabin with wide entry/exit points.

www.mdhelicopters.com



Photo: © MDHI

AS365N3 – Dauphin

Another Eurocopter, the latest N3 model has impressive power thanks to its new Turbomeca Arriel engines. Not quite as sleek as the similar styled and popular EC155, but we personally like the Dauphin as it was designed for this sort of work, with better performance and is still very swift. Wheels as opposed to skids make it more suitable for landing on hard surfaces rather than a nice remote beach!

www.eurocopter.com
www.eurocopterusa.com



S-76C++

A large helicopter with beautiful styling, it is a great corporate machine that can still be used with a very large yacht. Powerful and yet refined, the C++ gives a polished and impressively quiet ride. Sikorsky has a strong military background, but the S-76 was built to be a commercial helicopter from the start, and it shows. The latest D model takes the S-76 to an even greater level of power and performance.

www.sikorsky.com



Bell 429



The new Bell 429 maintains the classic Bell looks, but benefits from fantastic improvements of modern design. Again, versatility is key, and this helicopter has the power, speed and cabin size to meet most requirements. Of notable interest is that the 429 is the first production using Bell's innovative MAPL (Modular Affordable Product Line) approach, where multiple parts are designed to work on a variety of helicopters. Owners will benefit from MAPL as production costs will reduce and the supply change will become much simpler, speeding up delivery and therefore improving availability of the helicopter. We predict this will have a significant positive effect on the 429's value. Combined with Bell Helicopter's already excellent reputation for customer service, we can imagine happy owners and pilots.

www.bellhelicopter.textron.com

AW139

The largest helicopter on the list, the AW139 is only for real mega yachts. Unrivalled performance, even at maximum weight it has the power to maintain a hover on just one engine in all but the most extreme conditions.

www.agustawestland.com



mini survey – 10 best helicopters

Just one more thing ... with minds made up and hearts set on the perfect helicopter, the next stage is to get out there and make the purchase. It is true that a heli yacht owner will often look to acquire a new aircraft rather than seek out a used example, and so the process would appear quite simple. The problem is that although the manufacturers will be delighted to sell you a sparkling new helicopter, they are really more interested in bulk purchases of the military and large commercial operators. It is not uncommon for there to be an 18-month wait for a new build, and this can swiftly extend to two or more years (rivalling the build cycle for a yacht) for an individual purchase when a powerhouse buyer gets involved.

Your perfect helicopter may not feature on our ten of the best list, but we would certainly expect at least one of them to appear on your shortlist. The best helicopter for you will be the one that represents the best value for your particular circumstances. Remember that the opinions of most aircrew will be based on the helicopter's flight capabilities, without detailed consideration of acquisition and manufacturer issues, financial planning and life-cycle costs of ownership.

Employing an aviation consultant will in the long term save you time, stress and money, as you will be provided with the complete picture, helping you to

objectively decide on a personal shortlist, strengthening your position when negotiating with brokers or the manufacturers. When making the final decision, we would encourage your emotions to finally reappear, and you should choose the helicopter that you like the most from your shortlist. That way you are likely to use it and enjoy owning it.

James Frean

Director, HeliRiviera LLC

Fort Lauderdale

www.heliriviera.com

Helicopter	No. of Engines	D (in metres)	MTOW (kg)
R44	1*	11.76	1,089
MD500e	1	9.40	1,361
EC120	1	11.52	1,715
A119 Koala	1	13.02	2,720
EC135	2	12.19	2,910
MD Explorer	2	11.84	2,950
Bell 429	2	13.68	3,175
AS365N3 Dauphin	2	13.73	4,300
S76C++	2	16.00	5,306
AW139	2	16.66	6,400

MTOW – Maximum Take Off Weight* – The R44 is a single-piston engine

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SIMON
Integrated Ship Systems

Since 1991, Palladium Technologies has been at the forefront of integrating technologies for the marina industry. They have developed total yacht solutions that encompass all aspects of megayachts including complete glass bridge designs, IT networks and Lantic entertainment systems, while their flagship product, SIMON, has won acceptance throughout the industry for its depth of monitoring, alarm and control capabilities.