MAESTRALE

ADVANCED FLIGHT SIMULATORS


EXPERIENCE THE NEXT
LEVEL OF REALISM
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MAESTRALE
ADVANCED FLIGHT SIMULATORS

READY TO ELEVATE YOUR FLIGHT TRAINING EXPERIENCE?

1

Cost Savings

Save up to two-thirds of your flight hour expenses.

2

Maintenance Efficiency

Reduce maintenance costs by over 80%, compared to real helicopters.

3

Safety First

Train savely underrisky conditions and simulate criticalfailures.

4

Fly Whenever & Wherever

Fly whenever & whereverinspiration strikes — no more waiting for weather forecasts or daylight.

5

Regulations Ready

Stay compliant with EASAregulations. As EASA and FAA embrace simulator usage, you'llbe ahead of the curve.

Who Is Maestrale?

Maestrale is a high-tech company specializing in state-of-the-art aircraft Flight Training Devices, Full Flight simulators, and cost-effective training solutions. More than just a simulator manufacturer, we are dedicated to crafting customized solutions for our clients that are both affordable and tailored to their needs.

Our team comprises experienced engineers and software developers who collaborate closely with test pilots, aerospace advisors, and certified training centers worldwide. With a passion for technology and aviation, we share a common goal: to develop high-quality aerospace simulators and training solutions that exceed expectations.

What sets Maestrale apart is our commitment to affordability, customization, and innovation. We believe in the power of training to drive success in aviation, and our solutions are designed to help pilots, trainers, and trainees of all skill levels reach their goals.

At Maestrale, we leverage cutting-edge technologies such as Artificial Intelligence, Virtual and Mixed Reality to create immersive training experiences. Our agile approach allows us to adapt quickly and deliver customized solutions that meet the evolving needs of our clients.

We are proud to be at the forefront of aerospace simulation, and we look forward to continuing to provide top-notch training solutions to the aviation industry.

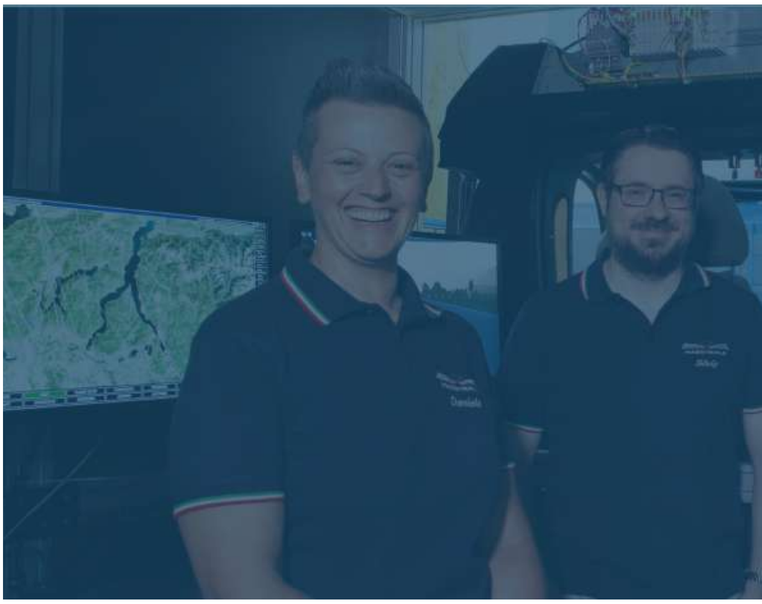
Our Values

High Quality & Industrial reliability

Born from the hands of professionals with more than 25 years of experience in automatization industry and software development and in tight collaboration with strategic partners in the helicopter and aerospace sectors, we bring a wealth of expertise adhering to the highest quality standards.

Design & Handcraft in Italy

One of our core values is to produce all our products with top quality and proximity. That's why we design and produce most of the components within our facilities in the north of Italy. Having control over the manufacturing chain allows us to maintain a high-quality standard and control over every piece of the simulator. It also enables us to adapt to the client's needs, as we engage in custom



projects.

With the customer always in mind

We believe that the key to success is to address the client's needs in the best possible way, adapting to their budget and requirements. We operate in a partnership model, enabling us to reduce costs and provide the most adaptive solution.

Cost effective

Our flight simulators and training solutions provide a valuable training tool that can streamline pilot education, reducing the overall cost of flight training while maintaining high standards of safety. Furthermore, the adoption of advanced simulators enhances the professional image of flight schools or training facilities, positioning them as modern and forward-thinking institutions committed to excellence in aviation education and training.

That is why the goal of Maestrale is to provide a tailored, budget-friendly solution that enhances training effectiveness, saves costs, and boosts visibility for your training center.

Embracing Innovation & Technology

At Maestrale, we embrace innovation as a driving force behind our success. We are committed to staying at the forefront of technological advancements in the aviation industry, constantly exploring and integrating new technologies such as Artificial Intelligence, Virtual and Mixed Reality into our solutions. By harnessing the power of emerging technologies, we enhance the effectiveness and realism of our simulators, providing our clients with state-of-the-art training experiences that set new standards for excellence in aviation education. Our dedication to innovation ensures that our solutions remain relevant, adaptable, and ahead of the curve, ultimately empowering pilots and training centers to thrive in an ever-evolving industry landscape.

In-House Design & Manufacture

At Maestrale, we firmly believe in the advantages of in-house design and manufacture for both ourselves and our clients.

Based in the picturesque region of northern Italy, we operate with a strong commitment to quality and innovation. By keeping all aspects of production within our company we maintain stringent quality control measures, ensuring that our products consistently meet the highest standards of reliability and performance. This approach also affords us the flexibility to customize solutions to meet the unique needs of each client swiftly and efficiently.

Moreover, our commitment to in-house design and manufacture fosters a culture of innovation and continuous improvement within our organization. With the freedom to experiment with new ideas, technologies, and materials in our northern Italian facility, we can drive product development forward, ensuring that our solutions remain at the forefront of the industry.

Mixed Reality - The present of Simulation

Step into a world where reality and imagination converge – where the boundaries between virtual and physical fade away. Mixed Reality isn't just a glimpse into the future; it's the present of flight simulation. With Maestrale advanced flight simulators you can immerse yourself in a dynamic training environment where innovation meets excellence, and experience flight training like never before. Welcome to the future of aviation – welcome to Maestrale Next.

What Exactly is Mixed Reality and How Does it Revolutionize Flight Training?

Mixed reality represents the frontier where the boundaries between the digital and physical realms blur, creating an immersive experience that seamlessly intertwines the virtual and real worlds. At its core, mixed reality harnesses the power of advanced simulation software to conjure virtual environments, intricately merging them with tangible elements of the physical world. In the realm of flight training, this convergence becomes profoundly transformative. Picture yourself stepping into a meticulously replicated cockpit,

Eye Tracking

The most effective way of teaching

The eye tracking system allows the instructor to accurately observe and record where the student is looking at all times. Is the student looking at the right instruments? Are they focusing on the correct points? This real-time feedback is invaluable for instructors to assess the student's situational awareness and attention to critical details during flight simulations. By identifying areas where the student may be lacking in attention or focus, instructors can provide targeted guidance and support to enhance the learning experience.

where the aircraft's physical presence is palpable, yet overlaid with a dynamic virtual environment. This fusion enables aspiring and expert pilots to not only see and touch the intricacies of their aircraft but also to navigate through simulated skies, encountering real-world scenarios in a controlled, yet incredibly lifelike setting. Mixed reality redefines flight training, offering numerous advantages an unparalleled level of immersiveness and realism, propelling learners into an immersive journey towards mastery of the skies.

Advantages

This technology presents numerous advantages compared to classic display and projector systems typically seen in flight training devices. Not only does it increase the level of realism and immersion, but it is also a space-efficient and more cost-effective solution, as it eliminates the need for dome structures or projectors, along with all their configuration and illumination drawbacks. In a nutshell, the biggest advantages that this technology offers are:

- 360-Degree Field of View: Experience a fully immersive virtual environment, yet with a real, touchable, and responsive cockpit in front of you.
- Enhanced user experience and engagement by providing a realistic and interactive environment that simulates the actual conditions and challenges of flying a helicopter with full situational awareness.
- Eye tracking system: Eye tracking is a technology that monitors the movement and direction of the user's eyes, using this information to control the simulator or provide feedback. Eye tracking can enhance the mixed reality experience by improving the performance and efficiency of the training and testing process, measuring and analyzing eye behavior such as scan patterns, fixation points, or blink rate, and providing feedback or guidance to the user, or adapting the difficulty or complexity of scenarios accordingly.
- Building muscle memory by seeing and touching real commands, switches, and instruments.

Maestrale & Mixed Reality

In 2021, Maestrale proudly unveiled The Next Simulator, a groundbreaking Mixed Reality simulator built upon the foundation of the renowned Robinson R22 aircraft. Serving as a testament to the transformative capabilities of this cutting-edge technology, The first Next Simulator paved the way for a new era in flight training.

Building upon this success, we've refined and evolved our Mixed Reality solutions to bring you the NextMR-22 – a compact, flexible, and hyper-realistic simulator designed to revolutionize the training experience. But our journey didn't stop there. We've continued to push the boundaries of Mixed Reality, expanding our offerings to include models such as the Robinson R44 and AW109SP, ensuring that pilots have access to the most advanced training tools available.

Why Using a Flight Training Simulation Device?

Flight Simulation Training Devices (FSTDs) have become an industry standard for helicopter training, providing cost-effective, safe, and environmentally friendly alternatives. This discussion outlines four key advantages, encompassing economic savings, enhanced safety, environmental considerations, and the transformative impact on training centers. FSTDs not only optimize training but also align with evolving industry standards, making them essential in modern helicopter training programs.

1.Economical Benefits:

The savings compared to actual flight time can be significant, especially with larger and more complex helicopters. Training on an FSTD is more cost-effective, allowing education while the helicopter is available.

2.Safety:

Training in an FSTD offers a controlled, risk-free environment for instructors and learners. Reduced stress fosters a faster learning process, enhancing memory retention. FSTDs enable practice of maneuvers and procedures not feasible in real helicopters, including exposure to diverse weather conditions. While not a helicopter replacement, FSTDs complement training, a perspective endorsed by EASA and other regulatory agencies promoting their use.

3. Environmental Benefits:

As more restrictions emerge regarding the environment and pollution, coupled with increased awareness and rising costs, the simulator undoubtedly presents a less polluting solution than

Types of FSTDs (EASA)

•Flight Navigation Procedures Trainer (FNPT I,II,III)

This type of FSTD is one of the most cost-effective solutions, serving as an efficient tool for practicing and demonstrating safety procedures and good practices. The main uses are:

1.Ab-Initio.

2.Navigation.

3.Procedures training.

4.Multicrew Cooperation (MCC)

•Flight Training Device (FTD 2, 3)

In addition to the FNPT, the FTD is specific to a particular helicopter type, providing the capability for type rating training. Besides the previous level it also allows to:

1.IR

2.Type Rating Training.

3.Recurrent Training.

•Full Flight Simulators (FFS)

The most complex and technically advanced simulator, the FFS is the aircraft most accurate replica. It can cost as much a the helicopter itself and it offers the capability to check and test PC, PC, LC.

a real helicopter. This, once again, aligns with the reduction of costs related to helicopter use, such as fuel and maintenance.

4. Elevating Training Centers:
Having an FSTD can significantly impact the attraction of new pilots or investors. An FSTD is an investment in every aspect—financially, in safety, environmentally, and in the overall image of the training center.

The future of aviation training

Regulatory entities (like EASA) are increasingly advocating for the integration of simulators into helicopter pilot training programs. Recognizing the efficacy and safety benefits of simulated environments, aviation authorities endorse the use of FSTDs as a vital component in the training pipeline.

Flight academies embracing this shift not only align themselves with evolving industry standards but also make a strategic investment in the future. Integrating simulators enhances a training center's capabilities, offering a versatile and efficient platform that not only optimizes learning experiences but also positions the academy at the forefront of progressive aviation education

Eurotech & Maestrale

Eurotech, one of the largest helicopter maintenance and training centers, in Italy has become a strategic partner and the first Maestrale's client, purchasing a brand new AW109SP FNPTII simulator. By investing in the future of helicopter training and staying abreast of changing regulations, Eurotech demonstrates its commitment to efficiency and safety in training. Recognizing the economic advantages that a simulator can offer to its facilities, Eurotech aims to position itself as one of the best european training centers and improve its operations.

This agreement also presents an advantage to Maestrale; as a flight simulator manufacturer, having access to Eurotech's pilots and expertise is key to success. Ultimately, the goal is to provide simulators that work seamlessly, are easy to use for instructors and students alike.

NextMR-22

The NextMR-22 is Maestrale's more versatile and cost effective solution; it can serve as a demonstrator or as a qualified simulator. Its compact design is ideal for reduced environments, yet its level of realism and immersion, thanks to the mixed reality integration, is outstanding and breathtaking. The mixed reality experience enables you to see and interact with the actual cockpit of the Robinson R22, complete with all its physical instruments. Moreover, you can turn your head and gaze through the window into the virtual world.

Why the R22? The R22 is the best seller, emblematic and well known basic helicopter where many pilots have achieved their wings. This iconic helicopter served as a base for Maestrale to introduce and experiment with the latest technologies, like the mixed reality or custom 2 DOF motion platform. The R22 just serves as an example and proof of concept, as the same technology, from the motion to the mixed reality, can be easily integrated into other aircrafts.

Trainer vs Qualified Simulator

A trainer simulator not only enhances the reputation and visibility of a business or flight school but also provides cost savings, allowing the training school to:

• Give first-time students the feeling of flying a helicopter safely and without leaving the ground, helping them decide if it's the road for them.

• Allow students who present more difficulties or fear to practice at a reduced cost.

• Increase muscle memory.

• Practice risky maneuvers safely.

• Affordable

From the instructor's point of view, they can learn the students' reactions under pressure and adapt to their training needs.

On the other hand, a certified simulator introduces heightened complexity and costs due to the qualification process, but it enables trainees to engage in authentic training, earning credits towards obtaining or renewing their licenses. The extent of credits and the simulator's applications depend on the qualification level.

Key Features

- R22 Full-size cockpit enclosure.
- R22 Replica cockpit and commands.
- Interactive Pilot & copilot training.
- Accurate R22 flight model based on measured data from the real aircraft used in replicating aerodynamics modelling (ground effect, airframe and rotor icing effects, etc.).
- Airport modelling—You choose where you want to fly.
- Upgradeable to FNPT III, FTD 2, or FTD 3.
- Pair of state-of-the-art Mixed Reality headsets for pilot & copilot.
- High-fidelity sound system for realistic helicopter and instrument sounds.
- Automated & easy to use QTG Maestrale Software.
- Instructor Operation Station (IOS) and software that allows monitor and control of system variables and insert abnormal and emergency conditions into the helicopter.
- Manuals and documentation.
- 2 Degrees of Freedom Compact Motion platform (Upgradable to 4 DOF).
- Vibration system.
- Anti torque custom pedals.
- Worldwide visual scenery with easy updatable local navigation data.

Learn before flying

If you are looking for a cost-efficient solution to train the next generation of pilots with a focus on safety, the NextMR-22 is your choice. You can practice risky maneuvers like full autorotation and exit maneuvers of vortex rings without risking the integrity of the helicopter or the safety of the instructor and students. Additionally, you can train under low visibility conditions and harsh weather, all at a fraction of the cost. Not to mention, you can use it 24/7 and fly anywhere you like.

Experience unparalleled immersion with mixed reality technology, transporting yourself and your students to high-definition, lifelike environments. With an intuitive interface, you have complete control over weather settings via the IOS station, while the Eye Tracking technology of the headset ensures precise monitoring of your student's gaze, facilitating efficient correction of spatial awareness errors.

Invest in the NextMR-22 and revolutionize your training approach. Elevate your simulator experience, elevate your training outcomes, and stay ahead in the competitive world of aviation training.

“The mixed reality experience enables you to see and interact with the actual cockpit of the R22, complete with all its physical instruments”

NextMR-44

Experience fligth training as never before with the most Immersive, Realistic and Cost effective Robinson R44 FNPTII simulator in the market.

Maestrale's NextMR-44 is a cutting-edge technology simulator designed and built to provide pilots with the most realistic flight experience. Featuring a realistic cabin, cockpit, and flight model based on the emblematic Robinson R44, it stands as the first FNPTII Mixed Reality simulator in the market. This simulator includes dual pilot positions, allowing both pilot and copilot to cooperate and train together, enhancing realism and teamwork during training sessions.

FNPT II simulator usage

Considering the escalating costs of flying and the environmental challenges faced by the aviation industry, the NextMR-44 emerges as one of the most cost-effective solutions for flight academies and pilot training, providing a safe and controlled environment that facilitates effective learning and skill development.

Regulatory entities (like EASA & FAA) are increasingly advocating for the integration of simulators into pilot training programs. Recognizing the efficacy and safety benefits of simulated environments, aviation authorities endorse the use of FSTDs as a vital component in the training pipeline.

Flight academies embracing this shift not only align themselves with evolving industry standards but also make a strategic investment in the future.

Integrating FNPT II simulators enhances a training center's capabilities, offering a versatile and efficient platform that not only optimizes learning experiences but also positions the academy at the forefront of progressive aviation education.

According to EASA regulations, you can and should utilize an FNPTII flight simulator for a maximum number of hours per course of:

•ATPL(H)/IR Integrated: 55 hours

•ATPL(H)/VFR Integrated: 35 hours

•CPL(H) Integrated: 25 hours

•IR(H) Modular:

*Single-Engine Training: 35 hours

*Multi-Engine Training: 25 hours

An R44 FNPT II simulator can not only enhance safety in training but also reduce training and maintenance costs. Furthermore, if you are interested in a type-specific simulator, you can easily upgrade it to an FTD 2 or 3 level, enabling type rating and recurrent training.

Key Features

- R44 Full-size cockpit enclosure.
- R44 Replica cockpit and commands.
- Interactive Pilot & copilot training.
- Accurate R44 flight model based on measured data from the real aircraft used in replicating aerodynamics modelling (ground effect, airframe and rotor icing effects, etc.).
- Airport modelling—You choose where you want to fly.
- Upgradeable to FNPT III, FTD 2, or FTD 3.
- Pair of state-of-the-art Mixed Reality headsets for pilot & copilot.
- High-fidelity sound system for realistic helicopter and instrument sounds.
- Automated & easy to use QTG Maestrale Software.
- Instructor Operation Station (IOS) and software that allows monitor and control of system variables and insert abnormal and emergency conditions into the helicopter.
- Manuals and documentation.
- 2 Degrees of Freedom Compact Motion platform (Upgradable to 4 DOF).
- Vibration system.
- Anti torque custom pedals.
- Worldwide visual scenery with easy updatable local navigation data.

NextMR-109SP

The AW109-SP stands out among the 109 class with one of the most complex navigation systems, presenting a significant challenge for learning navigation procedures. Equipped with four custom Genesys (Cobham/Chelton) IDU450 PFD/MFD units, this aircraft poses a formidable challenge even for the most experienced pilots. However, it also provides safety and commodities for those who are proficient in its operation.

Despite its notable advantages, the 109SP incurs considerable maintenance costs, highlighting the need for a dedicated simulator for this aircraft. Such a simulator would offer a cost-effective solution for training and familiarization, ensuring pilots can confidently navigate and operate the 109SP in various scenarios.

An increasing market demand for skilled pilots in multi-crew roles makes it extremely valuable to train in a smarter, cost-effective, and efficient way. With the AW109SP FNPT II MCC, you can enhance your training capabilities, ensuring a seamless transition for aspiring pilots from the classroom to the cockpit. This technology not only prepares students for real-world scenarios but also allows your Approved Training Organization (ATO) to expand its course offerings, including Multi-Crew Cooperation (MCC) training, in the safest and most cost-effective way possible.

Mixed Reality & Eye tracking

Integrating Mixed Reality (MR) technology into a high-end helicopter simulator combines virtual and real-world elements, offering unparalleled immersion and dynamism. Trainees can authentically and effectively hone their skills in this environment.

Some of the advantages that mixed reality offers over traditional simulators include:

•No Parallax Error: Each pilot and copilot has their own headset, eliminating parallax error associated with relative positioning, as seen in classic duoms and displays.

•360-Degree Field of View: Immerse yourself in a fully interactive virtual environment while maintaining access to a real, touchable, and responsive cockpit.

•Eye Tracking System: Monitor and accurately control the pilot's gaze, facilitating corrective actions and streamlining training processes.

•Enhanced Immersiveness & Realism: Our mixed reality (MR) simulator offers a fully immersive and realistic experience, allowing you to interact with your hands, instruments, and partner.

Key Features

- Replica AW109SP cockpit Real-Feel Touch and commands including:
  - * 4xGenesys (Cobham/Chelton)IDU450PFD/MFD;
  - * 2x EDU.
- Full Pitch & Roll motion.
- Breaker & overhead panel.
- 4 Axis autopilot with upper modes and FMS.
- Accurate AW109SP flight model based on measured data from the real aircraft used in replicating aerodynamics modelling (ground effect, airframe and rotor icing effects, etc.).
- Airport modelling.
- Upgradeable to FNPT III, FTD 2, or FTD 3.
- Full-size cockpit enclosure.
- Curved 4K 3 channel Visual system: minimum Field of View of 150°x40°.
- Upgradable to Mixed Reality.
- High-fidelity sound system for realistic helicopter and instrument sounds.
- Monitor and control of system variables, allowing the insertion of abnormal and emergency conditions.
- Automated & easy to use eQTG.
- IOS and software that allows monitor and control of system variables and insert abnormal and emergency conditions into the helicopter.
- Manuals and documentation.

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