

FUSION

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A DEFINING MOMENT IN UK DEFENCE PROCUREMENT

The Defence Procurement, Research, Technology & Exportability (DP RTE) 2025 event, held on 26–27 March 2025 at Farnborough International Exhibition & Conference Centre, marked a pivotal moment for the UK defence industry. For the first time, the exhibition adopted a two-day format, allowing delegates more time to engage with expert speakers, explore technological advancements, and strengthen collaborative ties across the defence supply chain.

This year's event occurred amid a significant uplift in UK defence spending, with £2.9 billion announced for 2026 and a further £2.2 billion for 2027. This increased investment reflects the UK government's continued commitment to national security and technological superiority—creating new opportunities for defence primes, SMEs, and innovators alike.

KEY THEMES AND TAKEAWAYS

A Strategic Shift in Procurement

Maria Eagle MP, Minister of State for Defence Procurement and Industry, opened the event by emphasising the importance of collaboration, resilience, and innovation. Her announcement of a new SME hub and the appointment of a National Armament Director signalled reforms aimed at making defence procurement more efficient, transparent, and inclusive.

Highlights included:

- Increased defence spending for warfighting readiness and deterrence
- A dedicated SME hub to support smaller businesses
- Creation of a new defence innovation body
- Procurement reforms to enhance capability delivery and accountability

Industry and Innovation in Partnership

Huw Walters, MOD Director of Economic Security, highlighted the Defence Industrial Strategy and its alignment with economic growth. Initiatives such as the Defence Industrial Joint Council (DIJC) and Industry Wargames are set to test supply chain resilience while strengthening export pathways and international collaboration.

Science & Technology as a Driver

Tim Sheldon from DSTL underscored the critical role of science and technology in defence readiness. The UK's investment in quantum technologies, sensor management, and AI is reshaping operational effectiveness. Suppliers were urged to register with the R-Cloud framework to access upcoming opportunities.

Accelerating Commercial Pathways

Helen Bates (DE&S) and Andrew Butler (MOD) presented the Accelerating Commercial Pathways programme. Designed to reduce procurement complexity and foster innovation, the initiative includes tailored pathways for SMEs, low-complexity acquisitions, and science and technology experimentation.

Defence Infrastructure for Operational Readiness

Claire Benham, DIO's Commercial Director, detailed the infrastructure challenges facing Defence. With 3,000 staff managing over a million hectares and 132,000 assets, the DIO focuses on sustainability, modernisation, and social value—critical to supporting Defence personnel across the UK and abroad.



Looking Ahead to DPRTE 2026

DPRTE 2025 effectively reflected the growing momentum within the UK defence landscape. With increased funding, procurement reform, and a strong emphasis on innovation and SME engagement, the exhibition is set to become even more influential.

DPRTE 2026 will return to Farnborough International Exhibition & Conference Centre on 25–26 March 2026. It promises to be a cornerstone event for stakeholders seeking to align their capabilities with national defence priorities.

To stay connected and informed, delegates can engage with the DPRTE webinar series and utilise post-event support from Defence Contracts International (DCI), which offers tailored insights and access to contract opportunities.

For organisations across the supply chain, the key takeaway is clear: collaboration, adaptability, and a forward-looking mindset are essential to shaping the future of UK defence.



FORGING THE FUTURE:

Lighter, stronger, smarter – the defence industry is undergoing a material revolution. As composite technology continues to advance, its impact on military equipment and strategy is transforming the way modern warfare is approached.

From the battlefield to the skies and deep undersea, composite materials are proving indispensable. Their unique strength to weight ratios, corrosion resistance and adaptable properties make them ideal for armoured vehicles, stealth aircraft, naval vessels and beyond. In fact, their integration is reshaping not only equipment design but also the strategies and tactics deployed in military operations.

A New Era in Military Materials

The journey from traditional metal alloys to advanced composites marks a pivotal shift in military engineering. Composites offer strength, flexibility, and resistance to heat, fatigue, and corrosion, essential in the harsh environments faced by defence forces. Though far from new (as seen in the AW101 Merlin helicopter back in the 1980s), modern composites are becoming more sophisticated, efficient, and versatile than ever before.

What's driving this revolution? The answer lies in both technological advancement and operational necessity. As defence requirements become more demanding, requiring equipment that's simultaneously lighter, more durable, and capable of withstanding extreme conditions, composites have emerged as the material solution of choice for next generation platforms.

Composite Types Driving Innovation

The two most prominent materials in defence applications are carbon fibre and fibreglass composites, each bringing unique advantages to military technology:

- **Carbon fibre** excels in aerospace and missile applications due to its exceptional structural integrity and lightness, both critical for performance and fuel efficiency. Its remarkable strength to weight ratio (up to five times stronger than steel while weighing significantly less) makes it ideal for high performance aircraft structures and ballistic protection systems.

- **Fibreglass**, on the other hand, plays a vital role in naval engineering, valued for its water resistance, durability, and cost effectiveness. It's used in everything from submarine hulls to vehicle body panels. Its electromagnetic transparency also makes it particularly valuable for radomes and electronic warfare applications.

Beyond these mainstays, ceramic matrix composites (CMCs) are gaining ground in high temperature environments, while aramid fibres (like Kevlar) continue to revolutionise personal protection equipment.

Revolutionary Manufacturing

Innovations such as 3D printing, automated layup processes, and additive manufacturing are streamlining production. These techniques allow for intricate, optimised shapes and faster turnaround times, lowering costs while maintaining strength and precision. Meanwhile, nanocomposites and hybrid materials are pushing the boundaries of what's possible, enabling next gen applications with self-healing, smart, or shape shifting properties.

The UK's defence industrial base is increasingly adopting these advanced manufacturing methods, with centres of excellence at institutions like the National Composites Centre in Bristol working alongside defence primes to accelerate innovation. These partnerships are critical for maintaining sovereign capabilities in strategic composite technologies.

Composite Applications in Action

- **Aircraft and Drones:** Composites enable lighter, more agile designs, with built in stealth features and improved fuel efficiency. The upcoming Tempest aircraft, set to join the RAF in 2035, is being engineered with advanced composites to endure extreme temperatures and performance loads. These materials comprise over 40% of modern military aircraft structures, compared to just 2-3% in earlier generations.
- **Naval Vessels:** Ships like the HMS Glasgow, with its composite mainmast and sonar dome, showcase how fibreglass and carbon fibre reduce weight, resist corrosion, and even help avoid detection. Modern minehunters feature all composite hulls that provide enhanced protection against magnetic mines while offering superior structural integrity in challenging maritime environments.

- **Rotorcraft:** From the Sea King's rotor blade programme in the 1970s to today's Merlin MK3, helicopters are continually evolving thanks to composites offering ballistic protection and aerodynamic improvements. The latest composite rotor systems deliver increased payload capacity, range, and operational efficiency while reducing maintenance requirements.
- **Ground Systems:** Infantry fighting vehicles and tactical platforms are incorporating composite armour solutions that offer superior protection at reduced weight penalties. These innovations allow for increased mobility, better fuel economy, and enhanced protection against emerging battlefield threats.

Enhancing Defence Strategies

Composites don't just make equipment better; they change how it's used. Lighter vehicles improve mobility and deployability. Stealthier aircraft redefine air dominance strategies. Submarines with composite components become harder to detect, reshaping underwater warfare doctrine.

The strategic implications extend to logistics as well. Composite materials often enable modular designs that simplify field repairs and reduce maintenance requirements. This translates to higher operational readiness rates and more sustainable deployment models for expeditionary forces.

Challenges and Future Directions

Despite their advantages, composites present unique challenges. Complex repair procedures and specialised training requirements can complicate field maintenance. Initial procurement costs often exceed traditional materials, though lifecycle analyses frequently reveal long term economic benefits through reduced fuel consumption and maintenance.

Looking ahead, the integration of smart technologies with composites promises to revolutionise defence capabilities further. Self-monitoring structures capable of reporting damage, adaptive materials that can change properties in response to environmental conditions, and multifunctional composites that serve structural, electrical, and sensing purposes simultaneously are all on the horizon.

For defence procurement specialists and industry partners, staying ahead of these developments will be critical. The competitive edge in future conflicts may well depend on mastery of these advanced materials and the manufacturing processes that bring them to life.

As the UK defence sector continues its technological evolution, composites will undoubtedly play an increasingly central role, forging not just stronger equipment, but stronger strategic capabilities for the challenges ahead.

HOW COMPOSITES ARE RESHAPING DEFENCE TECHNOLOGY



FLOATING WIND: A NEW FRONTIER WITH UNANSWERED QUESTIONS

What will floating wind farms mean for marine life?

As the UK accelerates plans to harness floating offshore wind in deeper waters with ambitious targets to deploy 5GW by 2030, scientists are calling for more focused research into how these developments will affect the marine mammals that share the seas, including dolphins, whales, porpoises, and seals.

A newly published scientific review, led by the University of the Highlands and Islands (UHI) in partnership with the Scottish Association for Marine Science and the University of Aberdeen, has brought attention to a pressing issue: while floating wind offers considerable potential to meet renewable energy and net zero targets, its impact on marine ecosystems remains largely unknown.

The findings, published in the Marine Pollution Bulletin, collate existing data from the few floating wind sites currently in operation. The review notes a mix of potential benefits and unresolved concerns. On the positive side, turbines may encourage local biodiversity by acting as artificial reefs, attracting fish and boosting feeding opportunities for some species. However, the risks cannot be ignored. These include:

- **Underwater noise pollution** from mooring systems may disrupt communication and navigation in marine mammals
- **Entanglement risks** from anchor lines or inter-array cables
- **Ecological changes** linked to ocean mixing or disruptions to primary production
- The potential impact of **regular maintenance operations** on behaviour and habitat use

Lead author Caitlin Harris, a PhD researcher, emphasised the importance of evidence-based development: "Floating offshore wind will be key to meeting renewable energy and net zero goals – but dedicated research is essential to ensure its sustainable development."

Despite its promise, floating offshore wind is still in its early stages, with limited real-world data available. This review will help shape ECOFlow EQUIFY, a large-scale research project aimed at informing future government policy and industry practices to balance ecological protection with renewable energy growth.

As the push for offshore innovation continues, the message is clear: the future of floating wind must go hand-in-hand with responsible stewardship of marine ecosystems. The critical questions raised in this research highlight the need for science to keep pace with technological advancement as we venture into these uncharted waters.



KEY TREND IN AUTOMOTIVE COMPOSITES

#1

ADVANCED ECO- FRIENDLY SOLUTIONS DRIVE MARKET GROWTH

The automotive composites market is on a strong growth trajectory, projected to expand from \$8.14 billion in 2024 to \$9.06 billion in 2025, with a CAGR of 11.3%. By 2029, the market is expected to reach \$13.8 billion, driven by rising demand for lightweight, fuel-efficient vehicles and sustainable material innovations.

Market Growth Drivers

- **Lightweight Vehicle Demand:** Composites reduce weight, enhancing fuel efficiency and performance while meeting stricter emission regulations.
- **EV Market Expansion:** Increased electric vehicle production fuels the need for advanced composite materials.
- **Sustainability Focus:** Recycling, bio-based materials, and eco-friendly manufacturing are shaping the future of composites.

Emerging Trends

- **3D Printing & Additive Manufacturing:** Streamlining composite part production.
- **Nanoparticles:** Enhancing strength, durability, and heat resistance.
- **Advanced Coatings & Software Tools:** Optimising performance and longevity.

With rising global vehicle production and consumer preference for efficient, high-performance cars, the automotive composites market is set for sustained growth. Manufacturers focusing on innovation and sustainability will lead the next decade of advancements.



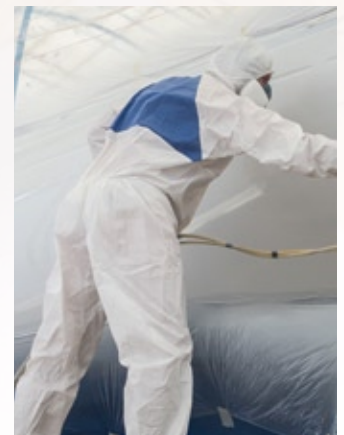
PPE FOR PAINTSHOP PAINT SPRAYING SUITS, GLOVES & COVERALLS

The legal requirements for safety clothing and equipment in paint shops have never been stricter than they are today. There is a whole host of regulations and requirements that employers and operators are required to adhere to.

Some of these regulations may seem inconvenient and even occasionally over the top. But they are all backed by hard evidence that proves their efficacy (and just how essential they are). Today, we are going to take a look at the reasons why protective clothing is essential for paintshop operators, some of the different types of protective clothing, and a few product recommendations for different situations.

Why Are My Normal Clothes Unacceptable?

Gone are the days when a pair of old jeans and an old jacket were considered acceptable clothing as PPE for paint spraying in a paintshop. Custom design is now essential. But why is that? The simple (and short) answer is that normal clothes designed for everyday usage are often permeable. This means that molecules from the paint (or whatever else is being sprayed) can easily get through them and make contact with the operator's skin.



This is probably not going to cause issues if you are a hobby sprayer giving your car or yacht a new coat of paint once in a blue moon (but protection is still recommended). However, for professionals in the finishing industries, regular skin contact with chemicals (paints) can cause serious and undesirable health consequences.

Additionally, lint and dust can be brought in from the outside world to the spray booth and can destroy the finish on whatever it is you are painting. It's imperative to have a static-free, dust-free, lint-free environment while spraying. Protective clothing seals all that inside the clothing, keeping it out of the booth. So protective clothing not only protects you from the paint, but it protects the paint from you, too.

Note: From here on out, we will be using the term chemicals to describe paints, lacquers, primers, and all other manner of things sprayed in a paintshop.

What Happens When Chemicals Make Contact With My Skin?

Our skin is pretty darn good at keeping unwanted chemicals out of our bodies. There is a single layer of skin that is responsible for providing an almost seamless barrier between the inside of our body and the outside world. No one could fault the valiant effort that this wafer-thin layer of skin puts forward to protect us. But despite all its efforts, it's not perfect. Some molecules will always find their way into your body.

Most chemicals used in paintshops are toxic to a certain extent; some are almost harmless, and others are pretty darn nasty. Individual exposure to most of these chemicals is not going to cause you any long-term distress or health issues.

But paintshop operators are often exposed daily. Over time, the amount of toxic chemicals absorbed by the skin into your body starts to add up, with pretty serious potential consequences.

Some of the milder issues that can be caused are things like skin irritation or a burning sensation, and while this is uncomfortable, it is not lethal. However, much more serious health issues can (and do) develop over time; skin cancer is uncomfortably common among paintshop operators.

To make things even worse, the amount of molecules that are absorbed by the body dramatically increases when the skin is damaged. Even the smallest cut, scrape, or graze can create a nearly unrestricted pathway for chemicals to enter your body.

When the rate of absorption goes up, so does the risk; this is why PPE for paint spraying is so important. We recommend chemical-resistant gloves as a minimum.

The Different Types Of Protective Clothing

There are many different individual items of PPE for paint spraying that should be used by paint shop operators. In this section, we will take a look at some of the more common kinds of protective clothing to see what they are and why they are needed.

PPE Coveralls

The most common and important piece of protective clothing is the coverall. As you might have guessed from the name, they are single-piece garments that are designed to cover your entire body. These paint spray suits are essentially a giant adult-sized "onesie" (usually with a hood) that is designed for protection.



PPE coveralls (also called paint spray suits) provide a strong and stable barrier between your normal clothing and the chemicals that are being sprayed in the booth. This not only protects your clothing (which means you don't drive home in dirty clothes) but also protects your skin (and whatever it is you are painting). Coveralls come in two main types: disposable and reusable. One of the most common questions we get asked about PPE coveralls is, "What's the difference between the two types, and which one should I get?"

Reusable coveralls are almost always thicker and stronger and are usually used when some kind of physical strength or chemical resistance is required (in conjunction with chemically resistant gloves). While they certainly have their benefits for certain applications, it often comes down to personal preference and may depend on the type of application. Disposable PPE coveralls are generally more convenient as there is no cleaning required. You simply throw them in the bin at the end of your shift and put on a brand new, fresh set the next day. Disposable coveralls are light, breathable, and surprisingly comfortable to wear for the most part. Some lower-quality coveralls can feel a little abrasive around the elastic parts on the ankles, wrists, and hood – but if you choose the right brand, you will have no problems at all.

Recommendation: Disposable Coveralls – BAXT C7

We stock 3 different brands of disposable coveralls on our shelves (and we always have everything in stock). All of the paint spray suits we sell are of the highest quality, we won't work with any brand that doesn't live up to our stringent high standards.

Our recommendation for disposable coveralls is the C7 range from BAXT. They provide excellent protection and comfort (and actually outperform some of the more well-known brands we stock).

For example, one of the most popular providers of disposable paint spray suits and coveralls is Tyvek. Tyvek produces excellent products that are more than worthy of your consideration (which we stock). Tyveks CHF5 coveralls are probably their most popular coverall, and as such, that is what we used as a benchmark to decide our recommendation here.

The CHF5 from Tyvek is super breathable, but the C7 from BAXT provides up to 30% more breathability.

The CHF5 has excellent liquid penetration protection, but the C7 from BAXT provides up to 80% less liquid penetration. (The disposable coveralls we stock from 3M are similar to the Tyvek in quality; they do the job they are supposed to do – and they do it well.)

The main deciding factor for us for paint spray suits was economics; the C7 from BAXT is significantly cheaper than the offerings from 3M or Tyvek.

When you consider the fact that replenishing stocks of disposable coveralls is going to be a regular ongoing cost (and combine this with the superior quality of the C7), our recommendation of the C7 is a no-brainer.

Overshoes For Paint Shops

The vast majority of coveralls will cover your head all the way down to your ankles, leaving your feet exposed. While normal shoes will provide you with more protection than clothing, they are still permeable and need a little extra protection to keep you safe.

But, despite the additional safety benefits, the main reason people wear overshoes is for cleanliness. Anyone paintshop professional knows the place with the most overspray is usually the floor. If protective overshoes aren't used whilst spraying has occurred, things get messy outside the spray booth quickly.

Our Recommendation – Tyvek Overshoes

As we mentioned above in the coverall section, Tyvek is one of the most well-known and respected brands when it comes to disposable clothing protection. Their overshoes are some of the best in the business and are our go-to recommendation for overshoes.



Comfort is not really an issue with overshoes (because you don't feel them through your normal shoes); it's all about security and stability. The Tyvek overshoes have a non-slip sole built into them and are made with high-quality elastic that reliably secures them to your feet. They are a one-size-fits-all product and will protect your shoes (and your floors) from paint.

Hoods For Painting

Most coveralls (disposable or reusable) will come with a protective hood attached to them. This makes the demand for separate protective hoods reasonably limited. However, a hood is arguably the most important kind of clothing protection. If you don't have one (or it's damaged), then these separate hoods can be a great alternative to buying new coveralls.

Our Recommendation: Tyvek Hood

Again, Tyvek is our recommendation for the hood category. They use the same high-quality protective (yet breathable) material for their hoods as they do in their overshoes and their coveralls.

Tyvek's disposable hood is extremely comfortable to wear with high-quality, soft elastic that safely secures the hood in place. The innovative one-piece design includes a collar around the base of the hood, which is designed to overlap your coveralls beneath. This provides a reliable and secure continuous line of protection from head to torso.

Trousers For Paint Shops

The final item of protective clothing we are going to discuss today is protective trousers. Instead of utilising a coverall, protective trousers and a protective jacket can provide more comfort and are less restrictive in their movements. They are not as popular as coveralls, but if you can't stand the "onesie" style protection that coveralls provide, they are a great alternative.

Our Recommendation: Disposable Trousers

The disposable trousers we stock might not have a big brand name attached to them, but they are excellent quality. They are made from an anti-static microporous material that provides total protection from chemicals while allowing for maximum comfort and breathability at the same time.

The high-quality waistband ensures a snug and secure fit, and they are available in 3 sizes – medium, large, and extra-large.

Conclusion

So, there you have it, an in-depth overview of the different kinds of paintshop clothing protection and recommended PPE for paint spraying.



PROFESSIONAL INSIGHTS: YACHT POLISHING



Maintaining a yacht's pristine appearance is not merely about aesthetics. It is a crucial aspect of care that preserves the vessel's value, functionality, and longevity. For seasoned industry professionals, the intricacies of yacht polishing are familiar territory. However, periodic reminders and fresh perspectives are always beneficial to ensure best practices are followed. Below, we look at expert strategies and considerations for effective yacht polishing.

Fibreglass vs Painted Yachts

Yachts come in various materials, each requiring tailored maintenance. Fibreglass yachts feature a gel coat, which is a protective resin layer that provides colour and gloss. Over time, exposure to harsh marine environments and UV rays causes the gel coat to oxidise, leaving it chalky and dull. Polishing helps restore its natural oils, removing surface imperfections and enhancing its shine.

Painted yachts, on the other hand, are coated with materials rich in emollients. While visually stunning, these surfaces are equally prone to fading and oxidation when exposed to sunlight and salt water. Polishing rejuvenates the paint by removing dead layers, restoring the oils, and reviving its depth and vibrancy.

Polishing in Maintenance

Polishing is often misunderstood as a simple waxing procedure. In truth, polishing involves abrasion. This is a controlled process of removing imperfections, such as fine scratches, stains, and oxidation, to reveal a smoother, shinier surface. Done correctly, it revitalises a yacht's gel coat or paint, setting the stage for the crucial next step: waxing.

Waxing

After polishing, waxing provides a protective barrier against UV rays, salt, and contaminants. It seals the surface, preventing oxidation and prolonging the freshly restored finish. Waxing should be part of regular maintenance, ideally performed at least twice per season or more frequently for yachts exposed to harsh conditions.

Tools to Use

The tools and products used in yacht polishing can make or break the process. Industry-grade materials ensure efficiency, precision, and long-lasting results. Here is a quick rundown:

- **Polishing Pastes and Compounds:** Designed to remove oxidation and imperfections, these vary in abrasiveness. Professionals often start with a coarser compound for initial correction before transitioning to finer products for a flawless finish.
- **Protective Waxes:** Marine-specific waxes provide superior UV resistance and water repellence. Always opt for formulations designed for the gel coat or marine paint to ensure compatibility.

- **Polishing Tools:** Orbital polishers are a staple, ensuring even pressure distribution and minimising the risk of surface damage. For tight corners or sensitive areas, manual polishing with microfibre cloths offers greater control.

Steps for Effective Yacht Polishing

1. **Preparation:** Begin with a thorough wash to remove salt, grime, and existing wax layers. A clean surface ensures polishing compounds work effectively without embedding dirt into the finish.
2. **Inspection:** Check the hull for damage, such as cracks or deep scratches. Address these issues before proceeding to avoid further deterioration.
3. **Polishing:** Apply polishing compound in small sections, working in circular motions for even coverage. Orbital polishers can expedite the process, but manual techniques are indispensable for intricate areas.
4. **Wax Application:** After polishing, apply a thin, even layer of wax using a soft cloth or applicator pad. Let it set as per the product instructions before buffing to a high shine.
5. **Final Touches:** Use finishing sprays to enhance gloss and provide an extra layer of protection. Regular rinsing after outings and quick waxing between sessions can maintain the shine and extend the time between full polishes.

Frequency of Polishing

How often a yacht requires polishing depends on usage, exposure, and environmental factors. Charter yachts, which endure heavy use and constant exposure, benefit from polishing at least twice a year. This is usually done before and after the charter season. For private vessels, annual polishing combined with regular inspections and touch-ups suffices in most cases.

Professional vs DIY: Finding the Balance

While many yacht owners take pride in DIY maintenance, professional polishing offers unparalleled precision and durability. Professionals possess advanced tools and expertise, ensuring even application and minimal risk of damage. For heavily oxidised or damaged surfaces, professional intervention is often the most cost-effective choice.

Beyond Aesthetics

Polishing is more than cosmetic. It is an investment in your yacht's long-term health and value. By committing to regular maintenance and adopting professional techniques, you will ensure your vessel remains not only a source of pride but also a reliable partner on the water.

THE BEST ABRASIVES FOR REFINISHING

For marine, composite, and automotive professionals, achieving the perfect finish requires precision, expertise, and the right tools. Refinishing composite materials, such as those used in yacht and boat hulls, or high-performance carbon fibre components, presents unique challenges. From ensuring a flawless surface to enhancing durability, selecting the right abrasives is critical. This article delves into the best abrasives for refinishing, exploring technological advancements, key considerations, and innovative solutions.



THE CHALLENGES OF REFINISHING COMPOSITE MATERIALS

Refinishing composite materials is demanding due to their structural complexities and sensitivity to surface imperfections. Common challenges include:

- **Blistering and cracking:** Improper abrasive choice or technique can cause surface damage.
- **Dust generation:** Excessive dust can obscure visibility and affect the final finish.
- **Bleeding and fading:** Colour inconsistencies often arise from inadequate surface preparation.
- **Mildew growth:** Poor surface sealing can leave materials vulnerable to environmental damage.

Addressing these issues requires abrasives that offer precision, durability, and consistent performance.

KEY FEATURES OF HIGH-PERFORMANCE ABRASIVES

When selecting abrasives for refinishing, consider the following attributes:

- **Hardness:** Essential for tackling tough materials, hardness ensures that the abrasive maintains its structure under pressure.
- **Toughness:** Abrasives must withstand the high-pressure demands of the grinding process without breaking down prematurely.
- **Grain Structure:** A uniform grain structure enhances both efficiency and surface finish, reducing the risk of imperfections.

KEY FEATURES OF HIGH-PERFORMANCE ABRASIVES

1. BAXT Nexus Disc

The BAXT Nexus Disc stands out in the industry for its exceptional performance in the final stages of sanding. Specifically designed for composite surfaces, this disc ensures a smooth, even finish that eliminates detailing issues such as micro-scratches or uneven textures. Its advanced grain structure minimises dust generation, allowing for better visibility and a cleaner workspace. Professionals trust the Nexus Disc for its consistency and reliability, making it an indispensable tool for final preparation before polishing.

2. BAXT CARBONite and Crystal Cut Ranges

The CARBONite range offers unparalleled toughness, making it ideal for heavy-duty sanding of carbon fibre components and composite materials. Meanwhile, the Crystal Cut abrasives deliver precision for intricate detailing, ensuring optimal results on curved or complex surfaces.

3. MIRKA Abrasive Discs

Mirka's cutting-edge abrasive technology is well-regarded for its dust-free sanding solutions. Their discs combine innovative grain structures with excellent durability, providing a cost-efficient option for professionals.

4. 3M Cubitron II Belts

For high-pressure grinding applications, 3M Cubitron II belts excel with their precision-shaped grain technology. These abrasives deliver faster cut rates and longer life, reducing operational costs and improving performance.

PROBLEM-SOLUTION APPROACH TO COMMON REFINISHING ISSUES

Dust Generation: The BAXT Nexus Disc and Mirka's dust-free systems offer superior dust management, ensuring a cleaner and safer workspace.

Blistering and Cracking: The toughness of BAXT CARBONite abrasives prevents premature wear, reducing the risk of surface damage.

Bleeding and Fading: High-quality grain structures, such as those found in BAXT and 3M products, ensure consistent colour and finish.

Mildew Protection: Proper surface preparation with durable abrasives like the Crystal Cut range provides an excellent base for sealing, preventing mildew growth.

THE BENEFITS OF CHOOSING THE RIGHT ABRASIVES

Investing in the best abrasives offers multiple advantages:

- **Cost Efficiency:** Long-lasting abrasives reduce replacement frequency, saving time and money.
- **Longevity:** Durable tools ensure reliable performance over extended periods.
- **Performance Improvements:** Advanced technologies deliver superior finishes, enhancing the quality of your work.

FINAL THOUGHTS

Selecting the right abrasives is critical for achieving professional refinishing results. At DTC, we proudly supply industry-leading solutions to the marine, composite, automotive, and aerospace sectors. Explore our range of BAXT abrasives, including the CARBONite, Nexus, and Crystal Cut lines, designed to meet the highest standards of performance and reliability. Additionally, discover the value of Mirka and 3M products, trusted by professionals worldwide.



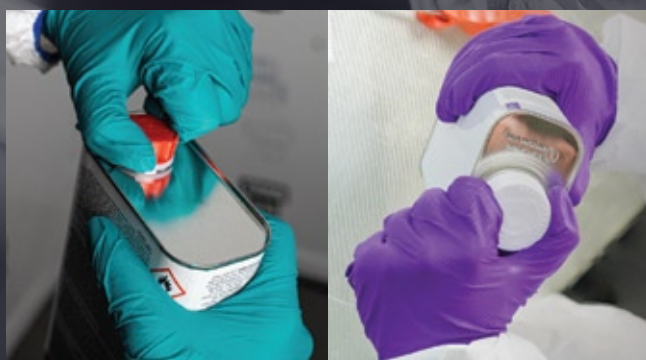


Main Image:
Disc shown is from the CarboNite range by BAXT

BAXT

PAINTSHOP RANGE

GLOVES



CHEMSHIELD

DURABLE NITRILE GLOVES

BAXT Chemshield are high-quality, durable nitrile glove that are resistant to a range of chemicals and conforms to the hand during use for a comfortable fit.

Key Points:

- Ambidextrous
- Nitrile formulation conforms to the hand during use
- Resistant to a range of chemicals
- Ultra-heavyweight construction is very tough, durable and long lasting

CARBONGRIP

PREMIUM NITRILE GLOVES & DISPENSER

The BAXT CARBONGrip Premium Nitrile Gloves have been designed specifically for the composite, engineering and automotive market, and for the handling of composite material.

Key Points:

- For the handling of composite materials
- Specially formulated to be robust and resistant
- Non-slip, 100% silicone free
- Lasts up to 5x longer than regular disposable gloves
- Fish scale exterior design for superior grip
- Internal grip minimizes slippage and hand fatigue
- Extended 3 inch cuff
- Available sizes: S, M, L, XL

TAPE



T9 TAPE

HIGH PERFORMANCE MASKING TAPE

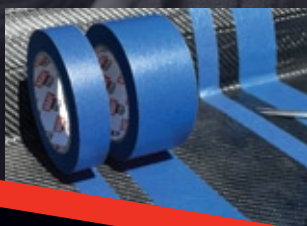
Long Mask The specific formulation of the T9 High Performance Masking Tape allows it to be used perfectly even in overlapping and with masking paper or film applied. The tape can be used over longer periods of masking and leaves no adhesive residue or tears when removed.

T29 TAPE

80" PREMIUM MASKING TAPE

Key Points:

- 14-day UV resistance
- Clean edge
- Can withstand up to 80° C
- Blue colour



POLISHING



MICROFIBRE CLOTH DISPENSER

The BAXT Microfibre Cloth Dispenser Box offers a convenient storage solution for premium-quality cloths. Each dispenser contains 24 professional-grade cloths perfect for all your cleaning needs.

These versatile microfibre cloths feature advanced technology that effectively grips dust and small dirt particles without leaving lint behind. The edgeless design ensures no scratching on delicate surfaces, making them ideal for polished, sensitive surfaces.

The stylish half-grey, half-purple dispenser box provides easy access to cloths while keeping them clean and ready for use.

M100 GELCOAT AND MARINE COMPOUND

BAXT M100 fast-cut Polishing Paste efficiently removes sanding marks and significant imperfections from production and tooling gel coat surfaces.

Can serve as a one-step solution when working from P800 or P1000, ideal for quickly polishing white production gel coats in areas where a mirror finish isn't necessary.

DRIVEN BY PERFECTION

POLYESTER FILLERS



CARBONFIL BLACK POLYESTER FILLER

Polyester filler, applicable with knife or plastic spreader, with an excellent filling capacity and very easy to sand. It is recommended both for filling and little touches-up. Thanks to its high black dye content, Carbonfil can be clear coated over to retain true black visual aspect.

Key Points:

- High elasticity and flexibility, and perfect for pre-preg carbon fibre hole filling
- Provides an incomparable finish once sanded and clear coated
- Excellent longevity on parts highly stressed by vibration
- Thanks to its high black dye content, CARBONfil™ can be clear coated over to retain true black visual aspect



JASPER GOLD POLYESTER FILLER

Jasper Gold, has exceptional sanding qualities, can be used for heavy fill applications, and has high elasticity and flexible properties. The creamy, smooth formula is easy to mix, easy to apply & spread, and due to the Quick-Cure properties, is extremely light once activated & hardened.

Key Points:

- Superior adhesion to Steel, Aluminium, Fibreglass,
- Galvanised Steel & Carbon
- Provides an incomparable finish once sanded & clear-coated
- Excellent longevity on parts highly stressed by vibration
- Very low density & lightweight
- Hardening time 20-30 minutes at 20°C
- A unique formula, designed to spread & level to a smooth finish

ABRASIVE DISCS



NEXUS 3000 ABRASIVE DISCS

Designed specifically for the crucial paint keying stage before the blending process, these discs are poised to transform your paint preparation workflow. With their innovative pyramid or triangular block structures, these discs incorporate multiple layers of fine-grade abrasive mineral.

Key Points:

- Abrasive wears away for a consistent finish and long lifespan
- Cutting-edge technology for superior metalworking and finishing
- They incorporate multiple layers of fine-grade abrasive mineral
- These discs feature innovative pyramid or triangular block structures
- Specially designed for the paint keying stage before the blending process
- 75mm or 150mm



CRYSTAL CUT ABRASIVE DISCS

For high-quality sanding tasks requiring precision and superior finishing, consider the BAXT Crystal Cut Disc. These discs combine the durability of the film backing with the fast-cutting, long-lasting properties of aluminium oxide mineral abrasive.

Key Points:

- Tough and self-fracturing abrasive
- Various grits available
- 150mm
- Exceptional Cut



WALL PROTECTION

WP10 5 SHEET SPRAY BOOTH WALL PROTECTOR

The BAXT Multi-layer Booth Wall Protector is not only fast to apply but can last 9-12 months due to its innovative 5 layer construction. When the top layer is soiled and dirty, simply peel off the old layer and you are ready to go! No time wasted re-applying a booth coating every time.

Key Points:

- Tape-Free application thanks to overlapping self-adhesive sheets.
- No accessories or special tools: comes ready packed in a dispenser box.
- Easy & fast application: covers the spray booth walls with just a spatula.
- Each roll is 80m long x 77cm wide
- Only replace once per year: the only option available with 5 durable layers.
- Dust attracting surface: each layer has a slightly tacky, statically charged surface which acts like a magnet to airborne contaminants.

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ACHIEVING THE PERFECT FINISH: FILLING & FAIRING FOR MARINE CRAFT

Whether working on a composite, wooden, ferrocement, or metal surface, achieving a flawless finish is fundamental for optimal performance and aesthetics. Filling and fairing play a key role in reducing water resistance and ensuring a craft's performance is second to none. This essential yet labour-intensive process can make all the difference from hulls to underwater appendages like keels and rudders. Here, we look at the best practices and products that simplify the journey to perfection.

Why Filling and Fairing Matter

Smooth, fair surfaces on marine craft improve hydrodynamic efficiency and contribute to better handling and fuel economy. Nowhere is this more important than on underwater surfaces, where even the smallest imperfections can significantly impact performance and reduces the skin friction drag. Filling and fairing ensure a seamless finish that maximises both functionality and appearance, making it a vital process for professionals and DIY enthusiasts alike.

THE TOOLS OF THE TRADE: KEY PRODUCTS FOR SUCCESS

Epoxy Resin Systems

Epoxy-based fillers are the gold standard for marine applications. Compared to polyester resin systems, epoxy offers:

- **Superior Water Resistance:** Essential for long-lasting results.
- **Minimal Shrinkage:** Ensures durability and stability.
- **Enhanced Adhesion and Strength:** Ideal for demanding marine environments.

Professionals often favour the "recipe" method, mixing liquid epoxy resin with low-density filler powders. This approach allows the customisation of filler consistency for specific applications, offering flexibility and control.

Filler Ingredients

Hollow sphere fillers, such as microspheres, reduce weight while ensuring ease of application and sanding. These lightweight fillers displace resin to create a foam-like consistency, allowing for smoother finishes. Key types include:

- **Phenolic Microballoons:** Lightweight and easy to sand.
- **Glass Bubbles:** Ideal for structural applications.

However, achieving the perfect mix is crucial. Overloading with filler powder can result in a pasty texture and compromised adhesion.

Preparation Is Everything

The success of filling and fairing lies in thorough preparation. Different substrates require tailored approaches:

- **Wood:** Pre-coat with unfilled epoxy resin to enhance adhesion.
- **Polyester GRP:** Sand surfaces and solvent wipe for a strong key.
- **Metal:** Sandblast or prime with epoxy-based primers for optimal results.
- **Ferrocement:** Ensure reinforcement isn't exposed and clean thoroughly before application.

FILLING AND FAIRING TECHNIQUES

Overall Fairing

For large surfaces, such as hulls, start with thin layers of filler applied using a flexible applicator. Use tools like plastic fairing battens for an even spread. Employ techniques such as notched application to minimise filler waste and sanding effort. Once cured, sand high spots and fill low areas with a contrasting tinted mix to ensure precision.

Localised Fairing

For smaller areas like screw holes or voids, apply a stiffer filler mix using a spatula or straight edge. Colloidal silica can be added to improve non-sag properties, particularly on vertical surfaces.

REFINING THE FINISH

Preliminary Fairing

Use tools such as sanding boards or mechanical sanders to remove excess filler and achieve a smooth surface. Coarser grades of abrasive paper are recommended during the early stages.

Fine Fairing and Finishing

High-build coatings, like SP Hibuild 302, are ideal for intermediate stages. These solvent-based products fill minor imperfections and sanding marks while minimising shrinkage. Alternate white and grey coats to identify high and low spots, then sand to achieve a flawless surface ready for paint application.

Your Path to Excellence

From resin systems to filler powders and high-build coatings, the right products and techniques ensure filling and fairing are efficient and effective. By mastering these processes, you'll not only enhance your craft's performance but also achieve a finish that's smooth, fair, and built to last. Whether you're working on a personal project or a professional endeavour, this guide provides the tools and insights to deliver exceptional results.





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KEY TREND IN AUTOMOTIVE COMPOSITES: #2

ADVANCED ECO-FRIENDLY SOLUTIONS DRIVE MARKET GROWTH

As the automotive and industrial sectors evolve, integrating robotic technology in spray booths is becoming increasingly important. By 2024, the robotic paint booth market is set for substantial growth, driven by innovations that promise greater precision, efficiency, and sustainability. This article explores the latest developments and their implications for the industries that rely on them.

The Rise of Robotic Paint Booths

The global market for robotic paint booths is projected to grow significantly throughout the decade. According to industry insights from Fortune Business, one of the primary drivers behind this growth is the automotive sector. Robotic systems improve the consistency of paint applications and reduce the time and materials required for the process, offering a compelling case for manufacturers looking to streamline operations.

Technological Advancements Fuel Growth

Modern robotic paint systems come with a suite of benefits that go far beyond automation:

- **Precision and Consistency:** Robots apply coatings with remarkable accuracy, delivering smooth, even finishes while significantly reducing overspray and rework.
- **Efficiency and Speed:** Unlike human operators, robots work continuously without fatigue. This increases throughput on production lines, supporting higher output with fewer resources.

- **Reduced Waste:** Robotic applicators control paint volume precisely, cutting down material waste and lowering environmental impact, which are key considerations in today's sustainability-focused landscape.

Industry Applications: Beyond the Automotive Sector

While automotive manufacturing remains a dominant user of robotic paint systems, other industries are following suit:

- **Aerospace:** In environments where precision is paramount, robotic booths ensure consistent and flawless coatings that meet stringent compliance standards.
- **Industrial Equipment:** From agricultural machinery to marine components, robotic spraying enhances durability and aesthetic quality with minimal downtime.

Challenges to Widespread Adoption

Despite clear benefits, some barriers remain:

- **High Initial Costs:** The capital expenditure for robotic booths can be significant, particularly for small and medium-sized enterprises.
- **Maintenance and Training:** Ensuring smooth operation requires skilled technicians and regular maintenance.

However, these challenges are increasingly offset by long-term gains in efficiency, quality, and reduced waste. For businesses aiming to future-proof their production processes, the investment is quickly becoming a strategic necessity.

Looking Ahead: AI and Machine Learning in Paint Automation

As artificial intelligence and machine learning technologies mature, robotic paint systems are becoming smarter and more adaptive. Shortly, we can expect robots capable of:

- Real-time adjustments based on surface conditions
- Automated quality control and defect detection
- Predictive maintenance features to reduce downtime

These innovations will not only improve output quality but also further reduce the need for manual oversight, paving the way for near-autonomous coating operations.

Conclusion: A Smarter Future for Surface Finishing

The robotic paint booth market is not just growing, it's transforming the way manufacturers think about surface finishing. Whether it's improving sustainability by reducing waste, increasing output with consistent quality, or meeting the stringent demands of sectors like automotive and aerospace, robotic paint technology is becoming indispensable.

Spray booth operations rely on a range of consumables to achieve high-performance outcomes. These include advanced polishing compounds, precision masking films, and abrasives of which are essential across the automotive, marine, aerospace, and industrial sectors.

As technology continues to evolve, so too will the standards of excellence be automated, precise, and built to last.



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	70 mm x 12 m 5 Rolls / Case	115 mm x 12 m 3 Rolls / Case
Grade	Part Number	Part Number
40+	-	34460 (115 mm x 8 m)
80+	51430	34462
120+	51431	34464
150+	51432	34465
180+	51433	34466
220+	51434	34467
240+	51435	34468
320+	51436	34469
400+	51437	34470
NEW GRADES 500+	34451	34471
600+	34452	34472
800+	34453	34473
1000+	34454	34474

3M™ Cubitron™ II Hookit™ Clean Sanding Abrasive Discs & Sheet Rolls 737U

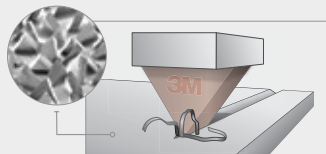
3M™ Cubitron™ II Hookit™ Clean Sanding Abrasive Discs & Sheet Rolls 737U combines long-lasting triangular shaped grain and multi-hole pattern for superior dust extraction making the disc ideal for a long life. The very wide range of available grades offer discs for coarse body work up to fine sanding of blending areas.

Kiss-cut technology makes it easy to tear off abrasive from the sheet rolls in the right lengths for the job. For best results, fold and then tear the perforations. The perforations are strong enough to remain intact during use, but can be torn cleanly using this method.



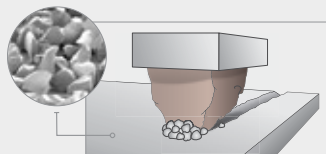
	75 mm 50 Discs / Carton 4 Cartons / Case	125 mm 50 Discs / Carton 4 Cartons / Case	150 mm 50 Discs / Carton 4 Cartons / Case	203 mm 25 Discs / Carton 4 Cartons / Case
Grade	Part Number	Part Number	Part Number	Part Number
40+	-	-	31370*	31375
80+	31361	31366	51369	31376
120+	31362	31367	51370	-
150+	31363	31368	51421	-
180+	31364	31369	51422	-
220+	31461	31471	51423	* 25 Discs / Carton
240+	31462	31472	51424	
320+	31463	31473	51426	
400+	31464	31474	51428	
NEW GRADES 500+	31465	31475	31485	
600+	31466	31476	31486	
800+	31467	31477	31487	
1000+	31468	31478	31491	

3M™ Cubitron™ II Abrasives features 3M™ Precision- Shaped Grain, triangular-shaped grains that cut faster and last longer than other traditional ceramic abrasives.



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ARE WE TRYING TO ADD TOO MUCH TECHNOLOGY INTO OUR WAREHOUSE OPERATIONS?

In an era where technology drives efficiency and data fuels decision-making, warehouse operations are evolving at breakneck speed. From autonomous mobile robots (AMRs) and artificial intelligence (AI) systems to warehouse management software and real-time tracking, warehouses have never been more advanced. But amidst this surge in innovation, it's worth asking: are we going too far? Are we at risk of overcomplicating what should be streamlined and straightforward?

The Drive for Digital Efficiency

Modern warehousing technology offers undeniable benefits: reduced manual labour, increased picking accuracy, optimised storage, and faster order fulfilment. Automated systems can operate 24/7, AI can predict demand patterns, and Internet of Things (IoT) devices can monitor equipment health to pre-empt maintenance needs.

This tech-forward approach is largely a response to customer expectations. As e-commerce grows and delivery times shrink, warehouses must keep pace by working smarter and faster. Technology provides a pathway to do just that.

According to a 2024 Warehouse Technology Survey by Logistics Management, operations implementing advanced automation solutions reported an average 27% increase in productivity and 32% reduction in picking errors. For high-volume facilities processing thousands of orders daily, these improvements translate to significant cost savings and competitive advantage.

The Hidden Complexity

However, with every new layer of tech, the landscape becomes more complex. Systems need to be integrated, software requires updates, and staff must be trained (and retrained) regularly. When multiple platforms manage inventory, logistics, maintenance, and analytics, compatibility issues and inefficiencies can arise.

Moreover, the capital investment needed to adopt cutting-edge solutions can be significant. For smaller businesses or those operating in legacy facilities, this barrier can create a digital divide, where some operations surge ahead while others fall behind.

CASE STUDY:

The Cautionary Tale of MaxSpeed Fulfilment

In 2023, MaxSpeed Fulfilment invested £4.2 million in a comprehensive technology overhaul, implementing an advanced WMS, automated sortation system, and fleet of picking robots simultaneously. Six months later, they were dealing with system integration problems, staff frustration, and fulfilment rates worse than before the implementation. The company ultimately had to pause half of their new systems while they rebuilt processes from the ground up, costing them both time and customer confidence.

The Human Element

Technology can support the workforce, but it should not replace its value. Over-automation risks alienating experienced workers, reducing human oversight, and creating environments that rely too heavily on systems. When something goes wrong, whether a software glitch or hardware malfunction, it often takes human insight to resolve it.

Striking the right balance between automation and human intuition is critical. Employees are often the first to spot bottlenecks, inefficiencies, or opportunities for improvement that algorithms might miss.

Research from the Institute of Warehouse Management found that operations maintaining a "technology-assisted human workforce" model experienced 18% fewer critical system failures than fully automated alternatives. They were also able to recover from disruptions an average of 40% faster, highlighting the resilience that comes with maintaining human oversight.

When Is It Too Much?

The key question becomes: does every problem need a high-tech solution? Sometimes, simple process improvements, layout changes, or better staff communication can achieve more than a costly digital overhaul.

Warehouses should continuously evaluate whether their technology stack aligns with operational goals. Are the tools in use genuinely solving problems, or are they introducing new ones? Are systems scalable and adaptable as business needs change?

Technology Assessment Framework

Before implementing new warehouse technology, consider these critical questions:

1. **Problem Identification:** What specific operational challenge are we addressing?
2. **Alternative Solutions:** Could this be solved through process improvement or simpler means?
3. **Integration Capability:** Will this technology work with our existing systems?
4. **Total Cost Analysis:** Beyond purchase price, what are the implementation, training, and maintenance costs?
5. **ROI Timeline:** How long until this technology pays for itself?
6. **Scalability:** Can this solution grow or adapt as our business evolves?
7. **Human Impact:** How will this affect our workforce, and what support will they need?

Industry-Specific Considerations

Different warehouse operations face unique technology considerations:

E-commerce Fulfilment

With high SKU counts and individual picking requirements, e-commerce warehouses often benefit most from pick-to-light systems and sortation automation. However, their seasonal demand fluctuations mean systems must be flexible enough to scale up and down rapidly.

Cold Storage

Temperature-controlled environments bring additional challenges for technology implementation. Batteries perform differently, and electronics may require special housing. Before investing in automation, cold storage operations should ensure solutions are specifically designed for their environment to avoid costly failures.

Manufacturing Support

Warehouses serving manufacturing operations typically benefit more from inventory accuracy technologies and just-in-time delivery systems than from picking speed enhancements. Their technology priorities should align with production needs rather than distribution metrics.

Success Through Strategic Implementation

CASE STUDY:

Phased Excellence at Regional Distribution

Regional Distribution Ltd took a different approach than MaxSpeed, implementing new warehouse technology in carefully planned phases over 18 months. They began with core WMS improvements, ensuring data integrity before adding automation. Staff were involved in each implementation decision, with dedicated "technology champions" trained ahead of each rollout.

The result: 35% productivity improvement, 44% error reduction, and perhaps most importantly, 92% staff satisfaction with the new systems. Their phased approach cost 15% more upfront but delivered ROI three months earlier than projected due to smoother transitions and fewer disruptions.

Conclusion: A Smarter Path Forward

Warehouse innovation isn't inherently negative; in fact, it's vital. But innovation for innovation's sake can do more harm than good. The smartest operations are those that critically assess what tech to adopt, when to implement it, and how to support it with skilled people and processes.

The most successful warehouse operations follow these principles:

1. **Targeted Implementation:** Focus on technologies that address specific operational challenges
2. **Phased Rollout:** Implement changes in manageable segments with time for adaptation
3. **Workforce Involvement:** Engage employees in technology decisions and implementation
4. **Continuous Evaluation:** Regularly assess whether technologies are delivering expected returns
5. **Balanced Approach:** Maintain appropriate human oversight of automated systems

Asking whether we're adding too much technology isn't a call to reject progress; it's a reminder to keep it purposeful, manageable, and aligned with long-term strategy. Because in the end, the best warehouses aren't just the most automated—they're the most adaptable.







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PROTEUS TAKES SHAPE: LEONARDO REVEALS NEXT GEN ROTORCRAFT DESIGN

Pioneering uncrewed flight for the Royal Navy's future battlespace

Leonardo's unveiling of the Proteus Uncrewed Rotorcraft Technology Demonstrator represents a watershed moment for naval aviation, promising to transform how the Royal Navy conducts maritime operations. This cutting-edge autonomous platform, developed through close collaboration with the Royal Navy and the Ministry of Defence's DE&S Future Capability Innovation team, is rapidly progressing toward its anticipated first flight in mid-2025.

Aimed at supporting the Royal Navy's **Maritime Aviation Transformation (MATx)** strategy, Proteus is a bold leap towards operational autonomy, modular mission payloads, and next-generation manufacturing methods. The circa three-tonne aircraft blends proven components from Leonardo's rotorcraft portfolio with cutting-edge innovations in **digital design, AI-driven control software, and composite manufacturing**. With an estimated operational range of 200 nautical miles and endurance of up to six hours, Proteus is designed to extend the Royal Navy's surveillance and response capabilities significantly beyond current limitations.

One of Proteus' most compelling features is its **modular payload bay**, designed to enable rapid role change and mission adaptability. The system allows for complete payload swaps in under 90 minutes – a fraction of the time required for conventional aircraft reconfiguration. In anti-submarine warfare configurations,

for example, Proteus can deploy sonobuoy dispensers and magnetic anomaly detection equipment while maintaining continuous communication with surface vessels. For reconnaissance missions, the same platform can be quickly reconfigured with advanced electro-optical/infrared sensors and maritime radar systems, eliminating the cost and complexity of managing multiple specialized airframes.

This agility is underpinned by **digital twin** technology, allowing Leonardo to simulate and test Proteus in a synthetic environment across thousands of flight conditions before physical construction. This approach has compressed the development timeline dramatically, reducing the traditional 5-7 year rotorcraft development cycle to just 3 years from contract award to first flight. The digital twin continues to evolve alongside the physical prototype, supporting autonomous flight control development and enabling continuous improvement through data-driven testing.

Beyond software innovation, Proteus serves as a proving ground for **advanced digital manufacturing**. Techniques such as **additive layer manufacturing (3D printing)** for complex structural components and the use of **low-temperature cure composites** have reduced production stages by approximately 40%, improving supply chain resilience while supporting more sustainable rotorcraft manufacturing with reduced energy consumption and waste.



The project's development roadmap has maintained remarkable momentum since its €71M (£60M) contract award in June 2022. Following completion of the critical design review in late 2023 and structural assembly beginning in early 2024, the program remains on track for ground testing later this year before its maiden flight in 2025. This accelerated timeline demonstrates the effectiveness of the **Agile methodology** Leonardo has adopted, breaking the project into manageable, collaborative phases that encourage fast iteration and adaptability.

In practical deployment scenarios, Proteus would extend the Royal Navy's operational reach without putting personnel at risk. During anti-submarine warfare operations, for instance, Proteus could patrol vast areas of ocean autonomously, using AI algorithms to identify

underwater threats and relay critical data to command centers or nearby surface vessels for immediate action – maintaining persistent coverage in environments where crewed aircraft would require frequent rotation.

As the UK sharpens its focus on maritime autonomy, Proteus demonstrates the transformative potential of **uncrewed aerial systems** in delivering capability, flexibility, and value for modern defense. Following its 2025 flight testing program, the technology demonstrated by Proteus is expected to inform the development of operational systems by the late 2020s, potentially establishing a new standard for autonomous rotorcraft that could attract significant international interest. With innovation at its core, Leonardo's latest venture is helping to redefine the future of naval aviation – in the air, at sea, and beyond.



HYDROGEN POWER: THE SOPHISTICATED CASE FOR CLEAN ENERGY



As global decarbonisation efforts accelerate, hydrogen is emerging as a critical element in the energy transition but its path to wide adoption is more nuanced than many realise.

Beyond “Clean” Energy: The Production Spectrum

Not all hydrogen is created equal. While touted as a zero-emission fuel, over 95% of today's hydrogen is “grey” produced from natural gas, emitting 9-12kg of CO₂ per kilogram of hydrogen. “Blue” hydrogen incorporates carbon capture to reduce emissions by 60-90%, while truly carbon-neutral “green” hydrogen produced via renewable-powered electrolysis represents less than 2% of current production.

The economics remain challenging: green hydrogen costs £3.5-5/kg versus £1.3-2.1/kg for conventional production. Projections suggest a 40-60% cost reduction by 2030 as electrolysis technology scales and renewable electricity prices continue to fall.

The Technical Reality of Storage and Transport

Hydrogen's physical properties present significant engineering challenges. With exceptional gravimetric energy density (120 MJ/kg) but poor volumetric density (0.01 MJ/L at ambient conditions), hydrogen requires either high-pressure compression (350-700 bar), energy-intensive liquefaction (-253°C), or chemical carriers for practical storage and transport.

These processes impose energy penalties of 10-30% and demand specialised materials to prevent hydrogen embrittlement of conventional metal infrastructure issues often underrepresented in popular discourse around hydrogen adoption.

Sectoral Applications: Where Hydrogen Excels

For heavy transport, hydrogen fuel cells operate at 60% efficiency substantially outperforming internal combustion engines (25-35%). Hydrogen systems offer compelling advantages for commercial applications:

- System-level energy density of 1.6-2.0 kWh/kg versus 0.1-0.16 kWh/kg for lithium-ion batteries
- Refuelling times of 10-15 minutes compared to hours for equivalent battery charging
- Minimal payload reduction (5-7%) versus battery alternatives (15-25%)

In power generation, hydrogen enables grid-scale seasonal storage capabilities beyond battery limitations while achieving 55-60% electrical efficiency in advanced turbine systems. For aviation, hydrogen offers two pathways: direct combustion in modified turbines or fuel cell electric propulsion with system efficiencies of 40-45%, though volumetric constraints currently limit applications to smaller aircraft and shorter routes.

The Infrastructure Challenge

Global hydrogen infrastructure remains nascent with fewer than 700 refuelling stations worldwide. Distribution approaches include repurposing 70-85% of existing natural gas pipelines at 10-30% of new-build costs and developing liquefaction facilities at £500-750 million per GW of throughput capacity.

The economic viability of these investments hinges on effective carbon pricing analysts suggest prices of £42-58/tonne would enable blue hydrogen cost parity, while green hydrogen requires £83-100/tonne under current production economics.

Strategic Integration, Not Silver Bullets

As hydrogen technologies mature, their integration with complementary clean energy systems not competition will determine their role in decarbonisation. Industrial clusters, where hydrogen production, storage, and multiple applications can share infrastructure, present the most promising near-term deployment model.

The technology's greatest potential lies not in complete energy system dominance, but in strategically addressing sectors where direct electrification proves technically challenging or prohibitively expensive. With continued innovation in production efficiency, storage solutions, and regulatory frameworks, hydrogen will likely emerge as an essential if specialised component in the complex mosaic of tomorrow's low-carbon economy.

GREEN STRIPE

A COMPOSITE JIGSAW BLADE WITH PROFESSIONAL-GRADE PERFORMANCE

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COMPOSITES

GREEN STRIPE

Composite materials demand specialised jigsaw solutions. The **GREEN STRIPE Jigsaw Blade** is engineered specifically for professionals working with fibreglass, carbon fibre composites, and other advanced materials that quickly dull standard blades.

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- Specialised tooth design creates clean cuts in fibreglass, carbon fibre, and other composite materials
- Maintains sharpness even after repeated use in abrasive environments
- Consistent 1.25mm blade height for stability during jigsaw operations
- **GREEN STRIPE Jigsaw Blades** are designed to offer precision and durability for all your cutting needs. Crafted with high-quality materials, these blades ensure optimal performance and longevity.

PROFESSIONAL DESIGN

- Compatible with major brand jigsaws
- Available in two lengths for versatility:
- T141HM 100mm for maximum control and precision
- T341HM 130mm for extended reach in difficult-to-access areas

Part No	Length	Blade Height	TPI
DGSJ141HM	100mm	25	6T (4.23)
DGSJ341HM	130mm	50	6T (4.23)



Scan the QR Code for more information



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