

Q1 | 2023

Fusion

MAGAZINE



SUPPLY MADE **SIMPLE**

Fusion IS BACK

A magazine created by DTC full of industry related topics, features, developments, offers and clues to what's on the horizon both from our own RnD research, industry innovations and where technology is leading us. All just to share awareness of 'what's going on'.



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Fusion Magazine Editors:
Harvey Taylor & James Patch

Our DTC Easy Stock Management



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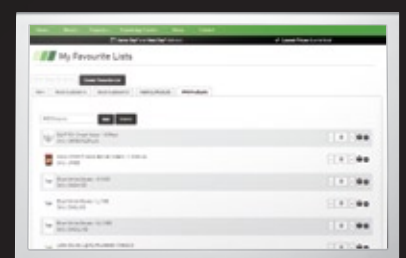
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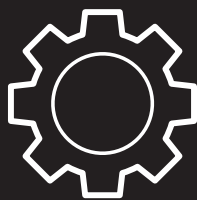
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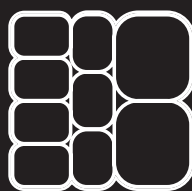
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A Look into Sustainability within the Composites Industry

INTRODUCTION

Composites are both fascinating and sophisticated materials that produce some of the most durable, high-strength and lightweight materials in the world. They can be used for a variety of reasons, including wind turbines, ship hulls, helicopter rotor blades and traffic lights.

Being tough and resistant to all manner of weather conditions mean that they crucially last for a long time and are a fantastic solution to a number of different problems.

Composites extended lifespan means they already cause less pollution than other options used for such jobs. They can also be created in multiple ways including the vacuum bagging process, which utilises a flexible and transparent film to enclose and compact wet laminate by using atmospheric pressure.

This process is hugely popular due to its success and ease of covering large areas and producing a tough, reliable product. But, with the demand for products increasing every year due to current developments in replacing older less efficient materials, repercussions on the natural environment are inevitable.

THE MARKET

In 2019, the global composites market size was estimated at 90 billion dollars, and by 2027 this is expected to grow to 160 billion dollars, which is an annual increase of 7.6%.

The UK industry alone is expected to deliver £10 billion in sales of composites by 2030, and due to the properties of the composites, it will help these industries to meet their net zero ambitions.

Composites are lightweight materials which can replace old

decaying materials which otherwise need to be replaced after a short period. This forecast showcases how much success the industry is currently experiencing, and how popular composites are becoming.

It all seems too good to be true, right? Whilst the benefit of their use is clear, the composite industry is facing some challenges in becoming a truly sustainable option.

In the UK, the industry is currently locked in the linear economy with more than 95% of composites made from raw materials and resins that are derived from oil. Worryingly, only 15% of the 110,000 tonnes of composites that are UK produced are reused or recycled.

This stat can quite easily be overlooked due to the current success the industry is having, in addition to the industry's composite-based materials support. They are vital for the infrastructure of some industries. Recent developments have now seen composites becoming increasingly more sustainable, giving them a better argument to be used.

However, views can be biased towards the success these products are seeing, rather than the implications caused by the process of creating this tough material.

THE PRODUCT

The issue with composites and sustainability comes through the process of creating the product.

Materials that are needed to make the high-density and durable products are not sustainable, and this seems to be missed when speaking about the benefits and drawbacks of composites.

Vacuum bagging, release film, peel ply, resin flow mesh and breather fabric are just some materials that are used in the infusion process to make composite materials and are all created using unsustainable elements. There is yet to be a way to recycle every single product used in the process as they remain harmful to the environment, which dampens the view on how sustainable composites are in comparison to other products.

Polyethylene is a polymer of ethylene gas which is a key component for creating vacuum bagging and is the result of major pollution across the world. Plastic (Polyethylene) pollution is a critical issue that is on the rise across the world and we don't currently have a way to deal with the waste that is produced.

Plastic is intractable to biodegradation in the natural



environment, meaning it is hard to ensure the waste is disposed of correctly. Therefore, conventional methods of plastic degradation are being used.

A landfill is the primary method of disposal, which leads to huge amounts of plastic being overexposed to the environment. This exposure releases unwanted chemicals through to our wildlife, and ingestion of these plastics causes irrevocable damage to the gut of animals who may have mistakenly viewed this plastic as prey.

A study into the biodegradation of low-density polyethylene found that the annual waste accumulation rate in the ecosystem was estimated as 25,000,000 tons and is considered a significant and serious environmental issue.

Microplastics are small particulates of plastic that measure less than 5mm in size and are a result of overexposure, littering and unsolicited dumps into the ocean. Rather than sink, microplastics are lighter than water which makes them float, adversely getting caught in different currents making them spread across the ocean.

A startling statistic found that microplastics are thought to account for 99% of the plastics in the ocean, and due to their size and appearance, are often mistaken as food, causing disruptions to the food chain.

This is just one of the major problems faced by the industry. The number of different materials and products used during the creation of composites, added to their rising demand will have an impact on microplastic numbers for years to come. This, in itself, is just one pollutant from composite manufacturing.

IT'S NOT ALL DOOM AND GLOOM

There are companies in the industry that are recycling some materials such as the vacuum bagging which is widely used in vast amounts. However, not all parts can be recycled the same way, but, carbon neutrality is a method in which we can lessen the environmental damage caused by the infusion process.

Carbon neutrality is more important than ever. More pollution is inevitable as the industry progresses and there is no current way to combat this.

Aeronix Technologies based in the southwest of England, near Southampton is starting to make a difference in these challenges.

Although creating a sustainable industry is proving harder than ever, the company is combatting the issues the industry is having. They are a supplier of composite manufacturing products, and in the last year have announced the first ever fully certified range of products.

The pollution that is generated in the production is being combated by four carbon offset projects, with one being clean oceans, which as highlighted is a serious issue.

Other projects Aeronix have dedicated to helping are biomass, afforestation, and hydropower. What the company are doing is an industry first and considering the current disarray with producing sustainable products in the industry, is positive news that is already beginning to gain attention from industry-leading brands.

Aeronix doesn't plan to stop here, however. They have already stated that this is the beginning of their sustainable industry

programme, and they aim to continue developing new innovative products with even lower emissions. There is also talk regarding the development of enabling better recycling of plastics, which as discussed is a huge issue for the environment.

FINAL THOUGHTS

This short article has investigated the benefits of composites and discussed sustainability implications in the composite industry.

Researching these aspects has been an interesting journey and has made it clear how much more there is to uncover. Although the current issues facing the industry may be at the forefront of this article, there have also been some positive aspects that reverberate through its foundation.

Aeronix is taking a brave step into the limelight of sustainability and has understood the difficult challenges that the industry faces.

To finalise, the composites industry is facing huge demand for manufacturing products, which in turn is generating more pollution. But there are now ways to combat this, which may be the first significant step towards a less harmful future.

Harvey Taylor
at DTC



aeronix
TECHNOLOGIES

Vacuum Bagging | Process Materials | Technical Partners





COVERALL SYSTEM

The BAXT coverall system was developed to address a need in the industry. BAXT created a simple system of three coveralls; the PREPPER, LAMINATOR and PAINTER. This system is currently saving many companies 40% in cost against the leading brands.



Scan the QR Code
& Watch our
Coverall Video



BAXT
C3

PREPPER

Three different colours for three different coveralls with each colour having unique protective properties. This distinctive colour system offers something not available in the market before.

The PREPPER is made from a highly breathable smart material. It keeps dust out and is splash proof. So, it's perfect for the preppers in your team.

The LAMINATOR has a premium MAXprotect breathable material on the front, offering the wearer maximum protection from resins and chemicals. It also has airflow smart material on the back, ensuring total comfort for the wearer.

Lastly, the PAINTER. This is made entirely from Max protect, which gives total protection from harsh chemicals and offers maximum comfort for the user.

**BAXT****C5****LAMINATOR****BAXT****C7****PAINTER**

The whole BAXT coverall range comes with premium features, including knitted wrists, elasticated back, anti-split stitching and a two-way quality zip. There is a short video demonstrating how the BAXT coveralls breathability. Use the QR code on the left-hand side of the page to watch it. Near the end of the video shows a fan experiment, which clearly displays the fan in the table

having no effect when blown through a market leading product but has significant impact on the BAXT products. Meaning the BAXT coverall has significantly more breathability in comparison.

The video's second experiment proves that while still breathable, the BAXT coverall has far superior protection.

WD40 was sprayed on an industry leading coverall and a BAXT coverall to compare protectiveness. The video demonstrates how easily the WD40 penetrates through market leading product, but not the BAXT coverall. Don't believe it? Use the QR code to take a look for yourself!

DTC DELIVERS



DTC Hub are excited to announce the Hub Store, a purpose-built, on-site stock container to store your consumables and tools in one centrally managed location.

The Hub Store was created out of a desire from our existing customers to have a better way of managing their stock. From an inability to efficiently store stock on-site to collecting consignment stock, there

were several inefficiencies that needed a creative solution.

The hub store provides the solution to these problems.

A BETTER SOLUTION FOR YOUR STOCK REQUIREMENTS

Located conveniently at the point of use, the hub store allows you ease of access to all fast-moving stock

on hand. This greatly enhances your productivity, allowing your skilled workers to get the job done without the additional stress of not having the right stock to hand.

When combined with our 'scan + go' mobile app, workers can simply scan what they are using, and you will know exactly who's used what and how much has been used. This unique system has a host of benefits to your company.

**INSTANT
ACCESS
24:7**

Whether at your desk, in the workshop or on the move, DTC Hub is available across all devices (including a mobile app).

**LIVE
ONLINE
CATALOGUE**

All product ranges are constantly being updated, so never miss out on the latest deal.

**STOCK
CONTROL**

Avoid unnecessary paper trails and eliminate error with an all-in-one solution to stock management.

**BAR
CODE
SCANNER**

Use your mobile app to complete stock take in record time - stock cupboard deficit is automatically worked out for you!

HUB STORE



HOW YOU CAN BENEFIT FROM THE DTC HUB STORE

The main benefit to using the Hub Store is the reduction in wasted time. Having stock on-site means work is never delayed, resulting in a huge reduction in footfall needing to collect consignment stock.

Work is also completed faster, as there are less deliveries required to ensure stock levels are maintained. The reliability of performing work

both fast and efficiently will have a positive impact on your reputation, giving you an advantage over your competition.

Using the Hub Store with the 'scan + go' app also reduces wastage. Unused goods can simply go back into the container, saving you money in the long term and subsequently improving profitability.

IT IS TIME TO ENHANCE YOUR STOCK MANAGEMENT

Are you ready to take advantage of all the benefits the Hub Store provides? For more information, get in touch now.

POINTS AND REWARDS

The more you spend with DTC the more points you accrue. Treat yourself, or your business, to some fantastic rewards.

SAVE KANBAN LISTS

Know what you need in stores at all times, as well as key favourite lists for rapid order entry.

PROJECT MANAGEMENT

Analyse usage by team, product or job. Generate reports and create orders based on actual usage.

EMAIL US TODAY:

sales@dtc-uk.com

Or contact our customer support team for more information on:

T: **023 8025 1100**

Dust Extraction: What is it All About?

Your health and wellbeing at work is of paramount importance. Regularly breathing dust can cause diseases like lung cancer, asthma, chronic obstructive pulmonary disease and silicosis. In 2019, the Health and Safety Executive (HSE) estimated 18,000 annual new cases of self-reported breathing or lung problems were caused or made worse by the work environment, with around 12,000 lung disease deaths per year estimated to be linked to past exposures at work.

With the HSE making dust in the working environment a primary focus over recent years, issuing fines of up to £2000 where inefficient, the wrong or no dust extraction is being used, ensuring the right solution for the workplace is not only a legal requirement but a moral obligation.

But what are the different classes? What are the differences between them? And what class is required for what environment? We caught up with our in-house industry experts to help clear the air!

If you have any questions, or want to explore what options you have available, our industry experts are always on hand to help. Don't hesitate to give us a call today on:

023 8025 1100

There are 3 main dust extraction classes in the UK:

L Class < 1.0% Dusts with maximum allowable concentrations (MAC) < 1 mg/m³

M Class < 0.1% Dusts with maximum allowable concentrations (MAC) ≥ 0.1 mg/m³

H Class < 0.005% Dusts with maximum allowable concentrations (MAC) < 0.1 mg/m³

BUT WHAT DOES THIS ALL MEAN?

L Class Extraction

L Class (or Low Hazard Materials) is awarded to entry level extractors and is suitable for use with less hazardous dusts such as those generated from soft woods and gypsum in plasterboard. The filter is capable of extracting 99% of particles so is not suited for use with more hazardous dusts such as those from sanding paint, fibreglass or hardwood.

Recommended for: Soft woods | Gypsum | Corian

M Class Extraction

M Class (or Medium Hazard Materials) extractors are 99.9% efficient, meaning that only 0.1% of particles might not be captured through the filters. M Class is the UK legal minimum as specified by the HSE for certain industries. Dust extractors rated as M Class will not necessarily offer greater filtration or suction performance but are generally better suited to trade users and will come fitted with safety features such as an alarm to notify the user when the filter is becoming clogged.

Recommended for: GRP | Hardwood | Paint

H Class Extraction

H Class (or High Hazard Materials) extractors remove 99.995% of dust, releasing less than 0.005% of dust back into the air. H Class is currently the highest extraction solution available and is suitable for carcinogenic dusts, and dusts containing pathogens. H Class commonly offer superior suction and filtration figures, even down to the way the bag is removed from the machine to avoid particles from being released back into the air.

Recommended for: Asbestos | Mould | Lead | Copper | Cadmium





CARBONfil™

Black Polyester Filler

THE POWER OF PURPLE

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.





CHEMSHIELD™

HEAVY DUTY CHEMICAL RESISTANT GLOVES

AVAILABLE
THIS MAY

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. The beaded cuff provides extra strength and helps prevent liquid roll back, while the textured palms and fingers improve grip, particularly when working in wet or oily conditions. The glove is manufactured with an ultra-heavyweight construction, which makes it very tough, durable, and long-lasting. The glove is also ambidextrous, which means you don't have to split a pair to replace a damaged glove.



BAXT

WP10

5 LAYER SPRAY BOOTH WALL PROTECTION



We all know too well, spraybooths can quickly get contaminated with dust, paint and other substances. Until recently the only way to prevent this build up was with a bucket of soapy water and a sponge. This is less than ideal due to the build-up of moisture and contaminants.

Then came booth wallpaper products, these often required the purchase of dispensers, applicators and tape due to the nature of the film.

Now everything has changed.....

The BAXT 5 Sheet Spraybooth Wall Protector is fast to apply and, thanks to its innovative 5 layer construction, needs replacing less often.

Designed to save busy paint shops considerable time and money in protecting their booths from overspray. The WP10 Spray Booth Wallpaper promises fast, painless and accessory free application which

will be music to the ears of the nation's paint shop managers. This new booth protector has several never-before-seen features rendering it almost incomparable to other solutions available to date. Perhaps the most distinctive of unique benefits is the five layer construction which delivers five fresh layers of protection, when one layer becomes overly saturated it's a simple case of tear and go. BAXT claim that this unique design makes it one of the longest lasting solutions available.

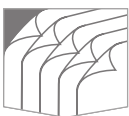
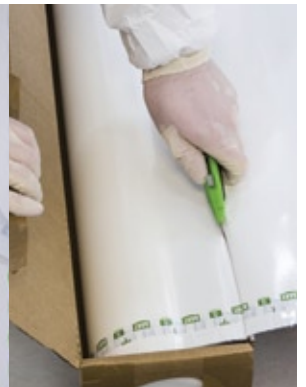
"Having replaced, refurbished and installed a multitude of spray booths and cleanrooms over the past 20 years, I have no doubt whatsoever that this is the answer to a common pain point in maintaining a clean, productive and efficient spray booth."

Warwick Binks, Head of Product Development at BAXT

Fast and easy application is another bold benefit worthy of note. BAXT claim there is no need for additional purchase of costly applicators or adhesive products. Some booth preparation may still be required prior to application, BAXT include helpful instructions with every roll to ensure maximum performance. The roll is housed in a sturdy and practical box dispenser which makes applying the product a painless experience. Southampton based Direct Tool Company who are the first distributors to offer BAXT to the UK market had this to say:

"This could be the greatest spray booth protection innovation of the decade, we're really excited to be introducing this unique product to all manner of paint shops across the country."

James Smith, Area Sales Manager at Direct Tool Company Ltd.



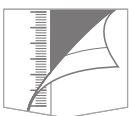
Unique 5-layer material for spraybooth walls



Fast and easy application with only a spatula required



No tape needed thanks to the clever overlapping design



Printed with measure gauge for accurate fitting and ensuring no wastage



Each coated layer is statically charged to attract and retain dust particles and overspray



The insulated material also helps to reduce booth heat loss



When each layer becomes dirty, simply peel off for a new and clean environment



Each layer is numbered indicating how many layers are left

To find out more about the WP10 Spray Booth Wall Protector give us a call, send us an email or look on our website www.dtc-uk.com

OUR INDUSTRY



Composites Evolution Selected as Material Supplier for '67 Mustang

Charge Cars has selected Composites Evolution as their official prepreg supplier for the '67, a classic car that features a brand-new bodyshell constructed using lightweight carbon fibre. To achieve the desired visual perfection, Charge Cars opted for Composites Evolution's Evopreg® EPC300 range of component prepreps for the bodywork, which offered ease of lay-up and an excellent surface finish straight from the mould.

In addition to the bodywork, a new composite prepreg system was developed and qualified by Charge Cars to meet the complex requirements of the '67's floor-mounted structural carbon battery box. The battery box needed to be structural, have a complex shape, fully comply with ECE R100 regulations for fire retardancy, offer an excellent surface finish, and be electrically non-conductive. Composites Evolution developed a novel fire-retardant, visual quality, structural epoxy prepreg, Evopreg® EPC312FR, which was tested against all aspects of the customer specification and proved to have excellent processability.

Evopreg® EPC312FR has now been officially launched by Composites Evolution, adding to their range of epoxy component prepreps. This medium temperature curing, flame retardant, toughened epoxy resin system is formulated specifically for fire retardant performance up to UL94V0, high visual quality, and high mechanical properties. It can be supplied with a range of reinforcement fibres and fabrics, including carbon, glass, aramid, and hybrids, and is designed for various applications, including automotive, motorsport, and general industrial.

Do you have an industry trend you'd like to share?

We want to hear from you!

Submit your stories to us at:
marketing@dtc-uk.com

to be within a chance of being featured in our next issue - **Q2 2023**



Marine Composites

One of the most common uses of composites in the marine industry is for the construction of boat hulls. Traditional boat hulls are often made of materials such as fiberglass, which is a type of composite made from glass fibres and resin. Other composites used in boat hull construction include carbon fibre and Kevlar.

Composites are also used in the marine industry for other applications such as decks, masts, and rigging. Composites used for these purposes are often reinforced with materials such as carbon fiber or aramid fibers to increase strength and stiffness. A study by the University of Maine found that composite materials can reduce the weight of a typical 45-foot pleasure boat by up to 50%, resulting in significant fuel savings.

The defence sector is also starting to see an increase use of composites due to these benefits. According to a report by Technavio, the global naval vessels market is expected to grow at a CAGR of over 3% during the period 2019-2023, with composite materials being increasingly used in the construction of naval vessels due to their high strength-to-weight ratio and corrosion resistance.



NASA Picks Boeing's Transonic Truss-Based Wing for Sustainable Flight Demonstrator Project

Boeing's Transonic Truss-based Wing (TTBW), boasts the ability to fly higher and faster than previous iterations. The updated design is optimized for exceptional aerodynamic efficiency when

cruising at Mach 0.80, a speed consistent with many modern passenger jets. The wingspan of the new folding wings stretches to 170 feet, made possible by a supporting truss structure that runs the entire length of the ultra-thin wing. Initially, the TTBW was intended to fly at Mach 0.70 – 0.75, but the latest design has an optimized truss and a modified wing sweep to increase its cruising speed. The angle of the wing sweep was adjusted to make the truss more efficient at carrying lift, resulting in

a more streamlined and integrated design that significantly improves the aircraft's performance. The updated design was developed following extensive wind tunnel testing at NASA Ames Research Center, as part of the Subsonic Ultra Green Aircraft Research (SUGAR) program. The program focuses on exploring innovative concepts that reduce noise and emissions while enhancing aircraft performance, and has been a collaboration between Boeing and NASA for almost a decade.



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