

## YOUR ONE STOP COMPOSITES PARTNER



SPORTS COMMERCIAL INDUSTRIA SPACE DEFENCE MARINE AEROSPAC SPORTS COMMERCIAL INDUSTRIA SPACE DEFENCE MARINE AEROSPAC



SPORTS COMMERCIAL INDUSTRIA SPACE DEFENCE MARINE AEROSPAC SPORTS COMMERCIAL INDUSTRIA





## **Advanced Composites Engineering is your TRUSTED** composites partner - with over 100 years experience in specialist composites engineering...

#### At Advanced Composites Engineering, we pride ourselves on being a true solutions provider bringing unrivalled expertise and experience in the bespoke composites market.

Our diverse client base see us engineering and providing premium quality composite tubing to businesses across a diverse range of sectors including:

- Defence / Military,
- Aerospace,
- Sports Equipment,
- Marine components

As well as a range of commercial and industrial applications.

We can supply many differently constructed tubes including digital motor sleeves, stator sleeves, molecular motor sleeves, housings, poles, carbon arms, beams, Chaff tubes, masts, antennas, cases, bolt spacers, Rocket parts, Telecane, Sart masts and lifting beams

#### An Unrivalled Track Record

With a collective 200 years experience in the manufacture of Composite materials our team has delivered everything from components for Rally Cars to Vacuum cleaners – and even provided self powering components for the International Space Station.

Our unparalleled experience in the composites space that has not only seen us pioneer cutting edge composite manufacture - but truly understand the capabilities and limits of these materials.

All of our products are created in house in our brand new, state of the art manufacturing facility – in addition to creating the composite tubes, we also offer a range of other services including surface machining, drilling, milling and turning services to allow us to deliver you an assembly ready component or product.

are:







#### **Composite materials offer significant** weight, performance, aesthetic and anticorrosive benefits over metallic structures.

As a result; our glass fibre, carbon fibre and aramid fibre tubes can be used to enhance your application at a cost to suit your budget. The increased durability and resistance offered by these materials make them ideal for use in some of the most challenging environments on earth - and further afield!

Examples of popular uses for our composite tubes

#### Aerospace

We supply composite tubing for aerospace applications including spacers, sleeves and fuel gauging equipment and we also hold several product specific aerospace approvals from leading aerospace organisations including GKN. Our team of composites specialists have vast experience in the design and manufacture of a range of tubular components for use in the aerospace sector including projects for the likes of: Airbus, The International Space Station, Aircraft Fuel System Components

#### Military / Defence

Advanced Composites are a trusted partner of the defence sector thanks to our extensive track record in the design and manufacture of high-performance tubular components for use across a range of military applications including Land Based Systems and Communications equipment such as Antennae. Our team has previously worked as part of the NLAW next generation light anti-tank weapon system team - a pioneering new modality which includes SAAB Bofors Technology and the use of Thales Air Defence Systems.

#### **Commercial / Industrial**

We manufacture tubular composite components for use in industrial applications such as Lightweight

Industrial Tubing, Composite Lifting Equipment and Telescopic Tubing Sets. Our team has developed extensive technical knowledge unrivalled experience in the use of woven and multi directional fibre composites and as a result we are able to advise our clients on the suitability of a wide range of resin matrices.

#### Sports Equipment

Composite materials offer significant performance benefits for sports equipment users due to their high stiffness to weight properties and durability characteristics. As a result, our team of composites engineers have extensive experience in the manufacture of a range of sports equipment and components; from Masts for use in yachts and boats to Pit Lane Equipment for use in Formula One.

#### Marine

Our team of engineers have a vast experience working with the yachting industry and work with some of the biggest boat builders in the UK.

Our wide range of options and versatile manufacturing process allows us to continuously develop a number of yachting components for builders – helping to deliver a high-performance balance of performance, weight and durability.

"The EXPERTISE and KNOW HOW that the Advanced Composites team bring is a dream from a product development standpoint.

Our understanding of Carbon-Fibre and its capabilities have increased dramatically since engaging with the ACE team and as a result we have been able to capitalise on that to deliver new and improved versions of our products - in some cases opening up whole new revenue streams for our business"

**Ryan Roberts** Technical Manager SpaceVac International The majority of our clients, come to us with a requirement to transition from the use of metal to composites to help them achieve a specific need. Composites offer maunfacturers a range of advantages including:

#### True zero degrees axial fibre alignment

A result that is not achievable utilising alternative 'winding technologies', your finished tube will benefit from fibres that re perfectly aligned precisely where they should be; ensuring the perfect tube for your application – EVERY TIME!

#### **Localised Reinforcements**

In addition to creating tubes from Composites, our engineers are able to introduce additional materials anywhere along the tube to reinforce a particular section in line with your exact requirements.

#### **Tapered tubes**

When working with pultrusion manufacturing processes it is generally not possible to deliver an end product with a tapered tube. By employing our Roll Wrap technique, we are able to deliver a perfectly tapered tube – experience gained during decades of experience creating high-performance fishing rods.

#### **Choice of Finishes Available**

Our composites specialists are able to deliver a range of finishes on your end product – ranging from a smooth to the touch matte finish, a painted tube of a particular colour or just a 'classic' woven carbon fibre finish, we are able to provide you with the perfect end product for your customers needs.

#### Repeatable: The Very Best, Every Time!

Our focus on the highest possible standards and with tightest possible tooling tolerances, means we are able to offer you a consistent level of quality; delivering the highest quality tubes, every time.

#### Affordable Tooling

Due to the way we manufacture our composite tubes, setup for jobs does not require the expensive tooling and mould set up costs associated with traditional moulding methods. Even in the unlikely situation where we don't have the correct size tool for your composite tube off the shelf, the manufacture of these new tools and casts is cost efficient and affordable for businesses of all sizes.



#### **Contact Us Today!**

Be sure to talk to our team of composites experts today to discuss your requirements with us in detail, or arrange a visit to our brand new state of the manufacturing facility to meet the team and find out more!

advcomp.co.uk





#### **Investing in our Future**

In addition to developing cutting edge Carbon Fibre products, we're also working hard to help reduce our carbon footprint (and costs!) at our manufacturing facility in Cramlington - with the installation of a new Solar Power array for the factory!



Find Out More: advcomp.co.uk | @Adv\_Composites

## Market leading technology with out of this world performance...

The unique properties of composites and unrivalled performance of these materials has made them the perfect solution for use in some of the most extreme environments possible.

Our team of composites experts have over 200 years of experience working with Composites – delivering projects for the likes of Airbus, Subaru, Dyson, the International Space Station and many more.

This unrivalled breadth of experience and composites know-how has seen us develop components for anything from Racing Cars to Space Stations – and will enable us to find the perfect solution for you – taking care of all aspects of the design, manufacture and finish of any high-performance composite products for use across a range of business sectors.

# Be sure to contact us to discuss your requirements with us today!

Furthermore, over the course of their careers, our engineering team have worked on projects and delivered components for some of the biggest companies in the world including;

Edwards Vacuum, BMW, Oracle, Cobham, Mercedes Benz, NAMSA, Premier Drums, Subaru Prodrive, Qinetic, Racal Antennas, RNIB, Space Cryomagnetics, Scottish Power, Stryker Trauma, Stewart Grand Prix, Williams Grand Prix, Thales, Thompson, Marconi, Vislink, Racal, Stryker, Renishaw, and Airbus.

## **CARBON SLEEVES**

Digital Motors [or Permanent Magnet Motors] continue to be used in greater numbers to help our modern world cope with ever increasing demands of low carbon emissions and improved efficiency.

Digital motors are based on permanent magnets which can spin at very high speeds – in excess of 200,000 rpm – in order to achieve the power outputs required. At these speeds the magnets, if not held in place, will actually throw themselves apart and destroy the motor itself.

The best way to hold the magnets in place whilst maximising the motor's performance is to use a thin nonconductive tube called a 'digital motor sleeve' which is usually made from advanced composite materials.

The thickness and strength of these 'digital motor sleeves' is a major consideration at the design stage of any new motor.

Advanced Composites Engineering Limited is a specialist in this field and has been continuing to develop its competence for over ten years whilst supplying some of the largest motor companies in the world. This includes extensive experience in material application, bespoke manufacturing techniques and specialist machines specifically designed by the Advanced Composites team. These motors are used across the world in arenas that range from aerospace through military and industrial to consumer goods.

Advanced Composites Engineering Limited is a must visit company if you find you need a 'digital motor sleeve' for your application as we can help with

- Design for manufacture.
- Supply prototype parts.
- Supply volume series production.
- Insert rotor bodies into the digital motor sleeve prior to supply.

The technology is ideally suited for use in cars, wagons, trucks, turbo chargers, aircraft, vacuums – indeed any application built around a central motor. Talk to our team of Composites experts today to see the benefits we could add to your next manufacturing project.

### Digital motors have several key advantages over their conventional counterparts.

- 1. High efficiency
- 2. High power to weight ratio
- 3. High power density
- 4. Low noise
- 5. Low maintenance
- 6. Applicable to more onerous working conditions





## Featured Case Study: SpaceVac International

SpaceVac International are the worlds leading manufacturer of high-level cleaning systems...



Their cleaning technology allows operators to clean high-level areas such as gutters, ceilings or walls from the safety of the ground floor – without having to access the areas in person on ladders or scaffolding.

To allow operators to work in this way, the system features a range of interlocking carbon fibre cleaning poles – down which the materials being removed travels – through a hose into a vacuum cleaner.

It was the supply of these interlocking poles that bought SpaceVac to us for the first time. Prior to engaging with us, the team at SpaceVac were supplied by a Chinese manufacturer which – while attractive on price – was presenting a number of problems to the manufacturing team including:

- Supply times Shipments to the UK by sea were adding a number of weeks to all orders making ordering long drawn out process.
- **Time Difference** the difference in time and working patterns meant the team often waited days and sometimes weeks (during national shutdown periods) to receive updates and information

 Quality Control – Ultimately without a local point of contact keeping regular watch on production, the team were experiencing significant quality control issues with shipments often featuring misshapen, incorrect and unusable parts.

Partnering with ACE allowed SpaceVac to solve a number of its operational problems immediately – with a U.K. point of contact providing a simple answer to both issues translating technical information and also being a timely point of contact for team whenever required.

Moreover though, our experience of carbon fibre engineering allowed us to develop and improve SpaceVacs range of products over recent years.

The manufacture process of these interlocking poles is based on the roll-wrapping of carbon sheets around a central mandrill – and ultimately this base material will govern the final properties of the pole – from its weight and durability to the amount of flex the pole is subject to. In the specific case of SpaceVac – these properties ultimately governed the total height that the system can reach in operation. Partnering with our engineering team however have SpaceVac access to range of different base materials – constructed using different carbon blends and woven in different ways to produce a range of poles that decreased the weight of the poles themselves whilst offering a substantially more rigid and durable range of poles.

The use of these new materials has enabled SpaceVac to develop and launch a range of new products within their product range for use in different environments (such as the specialist highvoltage pole which can withstand up to 50,000 volts) and pole systems capable of reaching over 20m in height.

As a result – this focus on innovation and product development has allowed SpaceVac to open up new revenue streams and business opportunities all over the world.



ISO Certified, for your peace of mind

ISO 9001:2015 is a quality management system standard that sets out requirements for organizations to demonstrate their ability to consistently provide products and services that meet customer and regulatory requirements.

If a supplier holds this accreditation, it means they have implemented a quality management system that meets the requirements of the standard and have been audited by a certification body to verify their compliance.

This accreditation is testament to the consistently excellent work carried out by our team in our manufacturing facility in Cramlington.

Be sure to contact the team to arrange a visit and find out more.





#### ADVANCED COMPOSITES ENGINEERING

**Contact us** to discuss your requirements with our team of composites specialists today!

T: 01670 335490 W: advcomp.co.uk E: info@advcomp.co.uk T: @adv\_comp

