

## CASE STUDY

# ELEGANCE, BEAUTY AND RACING PERFORMANCE

**Spirit Yachts achieves boat building  
perfection with WEST SYSTEM® epoxy**

# WEST SYSTEM®

### Products Used

- WEST SYSTEM 105 Epoxy Resin®
- WEST SYSTEM 205 Fast Hardener®
- WEST SYSTEM 206 Slow Hardener®

### Application Areas

- Laminating wood
- Bonding major structural components
- Vacuum bagging
- Fairing
- Sheathing
- Teak deck bonding
- Interior carpentry

### Customer

Spirit Yachts  
www.spirityachts.com

**SPRIT & YACHTS**  
THE ULTIMATE MODERN CLASSIC

**WEST SYSTEM** epoxy is an industry standard. It's a consistent, high-performing product that we trust to deliver the strength and durability we need on every one of our builds."

Nigel Stuart, Managing Director, Spirit Yachts



Photograph courtesy of Spirit Yachts

**At Spirit Yachts, boat building is a fine art. The company's beautiful, timeless, classic yachts draw crowds wherever they go, as well as winning races at classic regattas worldwide. To deliver on its vision for sailing perfection, Spirit Yachts uses the very finest materials in conjunction with modern epoxy construction techniques.**

**For 20 years, the company has built its iconic yachts with WEST SYSTEM epoxy, which offers marine grade strength and durability for every project. Spirit Yachts trusts WEST SYSTEM epoxy for a wide range of build applications, from bonding and strip-planking to fibreglass sheathing – meeting all its construction needs with just one supplier and one industry leading product.**

## Challenge

Spirit Yachts, which is famous for its beauty, racing performance and structural integrity, can be seen competing in classic regattas and cruising in waters across the globe.

Designed and built by hand to the highest standards, the Spirit portfolio includes both sail and power yachts, from 37 foot to more than 100 foot. All Spirit yachts are eligible to race in the 'Spirit of Tradition' class at classic regattas worldwide and many achieve success year after year. With a seamless in-house design and build process, crewing support and continuous after sales care, Spirit provides the best service for its discerning customers.

To create its iconic yachts, Spirit's talented workshop team uses the finest hardwoods and modern epoxy construction techniques. Nigel Stuart, Managing Director of Spirit Yachts, says, "We can use wood's natural grain in conjunction with epoxy bonds to create the lightest, strongest, fastest sailing and power yachts for our customers."

**||** We use WEST SYSTEM epoxy for absolutely everything. It's great to be able to meet all our construction needs with just one supplier and one product."



Photograph courtesy of Spirit Yachts

Spirit Yachts' hull planking is bonded with WEST SYSTEM epoxy using vacuum bagging techniques to maintain consistent pressure



Photograph courtesy of Spirit Yachts

Spirit Yachts uses the finest hardwoods and modern epoxy construction techniques on all of their new builds and restoration projects



## Solution

Spirit Yachts uses WEST SYSTEM epoxy extensively in its build processes. "WEST SYSTEM epoxy is an industry standard," says Stuart. "It's a consistent, high-performing product that we can trust to deliver the strength and durability we need on every one of our builds."

The construction of a Spirit yacht begins with laminating wooden (Sapele) ring frames, constructed using WEST SYSTEM epoxy, on full-size computer generated patterns. These are then set up on a 'strongback' and meticulously bevelled. Hull planks are glued into position, again using epoxy, before the whole assembly is faired.

The hull planking is reinforced with double-diagonal, 3mm Khaya veneers, bonded with WEST SYSTEM epoxy using the vacuum bagging techniques to maintain consistent pressure. "We add the Khaya veneers at 45-degree angles to take full structural advantage of the strength of the wood's natural grain," says Stuart. "We use vacuum bagging to add each layer of veneers, helping us to speed up the process and achieve the best results."

Once the structural veneers are in place, the hull is sheathed using biaxial fibreglass cloth and WEST SYSTEM epoxy. A vacuum bag is used to consolidate the laminate and peel ply is applied over the fibreglass to minimise sanding. "By sheathing the hull with fibreglass and epoxy, we create an almost totally waterproof barrier," says Stuart. "The process also makes the hull even stronger, while also providing an excellent base for the topside paintwork."

In addition to these major structural applications, Spirit Yachts uses WEST SYSTEM epoxy for teak deck bonding and interior carpentry. "We use WEST SYSTEM epoxy for absolutely everything; in fact we don't use any other glue or epoxy products at all," says Stuart. "It's great to be able to meet all our construction needs with just one supplier and one product."

## Benefits

### Optimal structural integrity

Spirit Yachts offer excellent structural integrity and WEST SYSTEM products play a key role. "One of our customers recently hit a rock sailing at around 10 knots with the spinnaker up and the force of the impact twisted the keel fin and bulb," says Stuart. "Even though the impact was huge, our wooden hull held up well and the yacht's owner was able to sail back into harbour safely," he adds. "It shows just how strong wood and epoxy really are: there's no way a composite boat would still be floating after a grounding like that."

### Race-winning performance

Spirit Yachts' use of epoxy allows the company to build stiffer, lighter boats that lead their field in terms of handling and performance. "With polyester or similar resin systems, much more material is needed, which makes a yacht heavier and less manoeuvrable," says Stuart. "By using WEST SYSTEM epoxy, we can build extremely light boats that offer the excellent racing performance our customers expect," he adds. "An excellent example is our 40 foot powerboat, which weighs just 4.5 tonnes, and achieves speeds of around 40 knots."

### Impressive durability

Spirit's yachts are designed to be beautiful and timeless. Building them with WEST SYSTEM epoxy helps to keep them looking new. "Recently, we lightly renovated a 15 year old yacht for one of our customers and we compared it to a new one when we were finished," says Stuart. "They both looked like they had just come out of the workshop for the very first time – and that's partly thanks to the strength and durability of WEST SYSTEM epoxy."

**||** By using WEST SYSTEM epoxy, we can build extremely light boats that offer the excellent racing performance our customers expect"

### Safer working

With WEST SYSTEM epoxy, Spirit Yachts has created a safer, cleaner working environment for its workshop staff. "Polyester and vinyl-ester resins release a lot of styrene into the air, which increases the need for extraction equipment and vapour protection," says Stuart. "With WEST SYSTEM epoxy and vacuum bagging we don't have that problem, which means that our workshop is much safer for everyone who works here."

### Streamlined construction

The use of WEST SYSTEM epoxy helps the Spirit team to maximise productivity and complete key parts of the build process faster. "Everything takes much longer with polyester and vinyl-ester resins, which require a more manual application process," says Stuart. "With WEST SYSTEM epoxy we can vacuum bag and sheath a 40-foot powerboat hull in a morning – we couldn't do it that fast any other way."



Spirit Yachts' use of WEST SYSTEM epoxy allows the company to build boats that lead their field in terms of handling and performance

Challenge	Solution	Benefits
<ul style="list-style-type: none"> <li>Delivering elegant, timeless classic yachts for customers</li> <li>Building lightweight yet strong yachts with excellent racing performance</li> <li>Providing a safe working environment for workshop staff</li> </ul>	<ul style="list-style-type: none"> <li>WEST SYSTEM 105 Epoxy Resin® with WEST SYSTEM 205 and 206 Hardeners</li> <li>WEST SYSTEM epoxy used to bond frames, planking and major structural components</li> <li>Vacuum bagging with WEST SYSTEM epoxy to bond down structural veneers and to sheath the hull</li> <li>WEST SYSTEM epoxy used for teak decking and interior fittings and furniture</li> </ul>	<ul style="list-style-type: none"> <li>Optimal structural integrity</li> <li>Race-winning performance</li> <li>Impressive durability</li> <li>Safer working conditions</li> <li>Streamlined construction processes</li> </ul>



## West System International products

**WEST  
SYSTEM®**



### The WEST SYSTEM® range

After nearly five decades of continuous innovation, WEST SYSTEM epoxy is still recognised as one of the best general-purpose marine grade epoxies in the world. It is formulated to ensure ease of use and we also offer the best technical support to all our customers. The range, originally developed for boatbuilding, boasts superior strength and moisture resistance which makes WEST SYSTEM epoxy the number one choice for marine repair and maintenance.

**PRO-SET®**



### The PRO-SET® range

PRO-SET products are used for building high-performance, lightweight composite structures that can withstand the harshest environments. Designed for use in wet lay-up procedures involving woven and multi-axial glass, aramid, carbon-fibre and hybrid fabrics, our PRO-SET resin-hardener combinations have been formulated specifically for laminating, infusion, tooling and assembly. The range has been recently reformulated and expanded to better meet the demands of modern composite manufacturing.



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West System International is a division of Wessex Resins and Adhesives. It has been working in close partnership with Gougeon Brothers, Inc., the formulators of WEST SYSTEM® and PRO-SET® epoxies, for more than 30 years. WEST SYSTEM and PRO-SET epoxies are manufactured under licence in the UK. WSI has an extensive international distribution network throughout Europe, Africa and the Far East.