



3D-Printed and Vapor Smoothed Rally Car Parts Withstand Over 2,450 km of Challenging Rally Terrain



Industry

Automotive – Motorsport



Material

PA12, manufactured using HP MJF printing technology.

Over 100 3D-printed components for the Zephyr rally car, proved their resilience in the Rallye du Maroc, a journey of 2,468 km between Marrakesh and the East of Morocco.

About the Application

ABConcept designed and produced critical car components for the Zephyr rally car, ranging from battery covers to air intake ducts. Each part was optimized for performance and resilience in extreme rally conditions.

With over three years of experience producing AM parts for rally vehicles, ABConcept has manufactured more than 1,000 MJF PA12 parts across 50+ vehicles, including those competing in the Dakar 2025 Rally, one of the world's most demanding motorsports events.

Challenge & Solution

Rally racing subjects vehicle components to intense stress, vibrations, and extreme temperature changes. Traditional manufacturing methods often struggle with:

- Long production lead times for custom parts;
- Durability issues due to high mechanical stress;
- Complex geometries requiring multiple components or assemblies.

By integrating HP MJF 3D printing and AMT PostPro vapor smoothing, ABConcept improved their production capabilities, creating lightweight, reliable parts with enhanced surface quality, all while reducing the need for additional machining.

The Difference Made by PostPro Vapor Smoothing

To ensure the parts could perform reliably under the intense demands of rally racing, ABConcept applied AMT PostPro vapor smoothing as a finishing step. This surface treatment:

- Enhanced the durability and functionality of the components, making them better suited for high-stress, high-speed environments.
- Sealed the surfaces, improving resistance to mechanical wear, oils, and greases.
- Reduced drag and improved aerodynamics.

Conclusion

ABConcept's success with the Zephyr rally car proves that additive manufacturing paired with the AMT vapor smoothing technology can thrive in the most extreme motorsports environments, making it a competitive advantage for automotive engineering.

Benefits of Vapor Smoothing for Motorsports Applications

- ✓ Strong, durable & lightweight components tailored for extreme conditions
- ✓ Faster production cycles compared to traditional manufacturing
- ✓ Reduced friction & improved aerodynamics for optimized performance
- ✓ Consistent & repeatable quality for serial production




Additive Manufacturing Technologies Ltd

Tinsley Park, Airport Business Park, Unit N,
Europa House
Sheffield S9 1XU, UK

AB Concept

Rue Louis-Joseph-Chevrolet 46
2300 La Chaux-de-Fonds
Suisse

Steiner CNC - AM Technologies AG

Wynenmattenweg 1
CH-5722 Gränichen
Switzerland