

CHINA'S TAKING OFF

PRODUCT STORY NO. 80, AUGUST 4, 2017



ROHACELL® rigid foam from Evonik reduces weight in the new C919 passenger jet.

The Chinese C919 passenger jet celebrated its 1st successful trial flight on May 5, 2017. Flying on board was a true light-weight from Evonik: ROHACELL® rigid foam. This material is helping Chinese aviation soar higher, thanks to reduced weight and lower CO₂ emissions.

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China's taking off. The country has discovered an enormous domestic market for passenger jets and plans to produce them itself. The C919 is the first Chinese medium-range aircraft developed and manufactured entirely in the People's Republic by the Commercial Aircraft Corporation of China Ltd. (COMAC). According to information from the manufacturer, interest in the new plane has been high ever since COMAC presented the prototype of the C919 at the Airshow China in November 2010. The C919 is being marketed as a serious contender to the passenger aircraft of industry heavyweights like Boeing and Airbus. All the Chinese airlines, from Air China through China Eastern to China Southern Airlines, plan to use this passenger aircraft made in and for China on their domestic routes in the future. Depending on the version, the C919 will be able to carry between 160 and 190 passengers over a range of up to 5,500 kilometers.

Key technologies for energy-efficient solutions

In developing the new airliner, COMAC, a newcomer in the industry, has left nothing to chance; for planning and design it has taken on board strategic partners with the right mix of industry expertise, experience, and innovative power. The engine for the C919, for example, comes from General Electric. Evonik Industries is delivering precisely customized lightweight construction applications for the airliner that reduce its weight by several kilos and save fuel, thereby making the aircraft energy efficient.

For the rear section of the fuselage, Evonik's experts developed a prototype for the large rear pressure bulkhead from ROHACELL®. This PMI (polymethacrylimide) based composite material is extremely light—an important factor, because in aviation every kilo counts. It also enhances rigidity, makes the fuselage more stable, and so improves safety. "Just five months after approval of the designs, we supplied the ROHACELL® molded part ready for use, and are continuing to helping COMAC with further development," says Jacky Yang, regional manager for ROHACELL® in aircraft applications for the Chinese market. Other composite parts with ROHACELL® on C919 are the random, landing gear door, APU access door and trailing edges of several control panels. Yang adds "Aircraft makers want high-quality lightweight materials and everything should of course be cost efficient. So ROHACELL® scores on every point." It's no surprise that the composite has been in demand for many years in the aviation industry.

Finding customized solutions

Lightness and rigidity are the outstanding properties of the structural foam—and the durability and toughness of ROHACELL® make for utter reliability. But if you want to be ahead of the competition you must have even more to offer. "If the customer understands how he can use our material to the best possible advantage in his design,

we've done a good job and are recognized as equal partners," says Yang. This takes a profound understanding of the material as well as highly personalized consulting. Convinced of Evonik's high solution expertise, COMAC expanded the collaboration.

More and more industries are discovering the advantages of ROHACELL® and other composite materials from Evonik for their own applications. The automotive industry, a long-standing customer in this area, relies on lightweight solutions for an increasing number of vehicle parts. Being light and simultaneously stable, these solutions allow fuel savings and reduce CO₂ emissions. So it's a win-win situation, for air and land travelers as well as the developers of new aircraft and cars.