The global aerospace market, driven in large part by the Asia-Pacific region, is expected to be worth an estimated $2,991.38 million by 2019. Markets and Markets, a global market research and consulting company, recently announced these findings in a report titled Aerospace Coatings Market by End-user Industry (Commercial, Military & General Aviation), by User Type (Original Equipment Manufacturer (OEM) & Maintenance, Repair & Overhaul (MRO)), & by Region (North America, Europe, Asia-Pacific, & Row) - Global Forecast to 2019, which analyzes the global aerospace coatings market in regard to market drivers, trends and regions.

According to the report, the global aerospace coatings market is significantly penetrating its end-user industries, while the characteristics of the end-products differ as per the requirement of end-user industries and for different user types. Researchers found that the commercial segment has dominated the aerospace coatings industry, largely driven by the entry of new airlines and expansion of existing airlines.

“The Asia-Pacific region is estimated to grow at a high CAGR of 7.79 percent from 2014 to 2019 with its growing demand for aerospace coatings in different end-user industries, especially for commercial and military segments. The aerospace coatings market in North America is estimated to grow at a CAGR of 5.05 percent from 2014 to 2019,” the report stated.

Researchers at Markets and Markets found that the U.S., China, Japan, France, Germany, India and Russia are expected to persist as successful aerospace coatings markets. The markets in China and India are driving the Asia-Pacific aerospace coatings market due to increasing cargo traffic, rising number of air travellers, and international trade.

The market size, in terms of value, of the global aerospace coatings market was estimated at $2,109.64 million in 2013 and is projected to reach $2,991.38 million by 2019, at a CAGR of 5.96 percent from 2014.

“The high demand across the industries, such as commercial,
military, and MRO segments will increase the overall aerospace coatings consumption,” researchers found.

Mergers as opportunities
Airline mergers are of significant interest for aerospace coatings manufacturers, as they represent enormous potential. According to Mark Cancilla, global platform director – aerospace coatings, PPG Aerospace, the industry is always impacted by mergers because they drive livery changes for at least one of the airline fleets being merged, if not both.

“Of course, this often provides significant opportunities to the aerospace coatings suppliers, filling capacity in our factories,” he said. “This can also create some issues for suppliers who are not able to manage large fluctuations in demand.”

John Griffin, business director, North America for AkzoNobel Specialty Coatings, said that mergers contribute to the health of the industry, “and this, in turn, helps to sustain and drive growth for coatings.

“AkzoNobel has been involved in some large re-branding programs that enhance airlines’ image and increases coatings demand (for example, US Air/American Airlines and Avianca/TACA),” he said.

Mergers can also provide new opportunities for manufacturers, according to Chris Athansopoulos, director of global sales, Aerospace Division, Hentzen Coatings. For those not currently involved in the exterior market, mergers can open up new chances to participate.

“Mergers have definitely had a major effect on the market as the need for paint increases considerably,” Athansopoulos said. “Exterior surfaces will need to be repainted especially if the whole livery changes, as in the case of American Airlines. The same did not occur with the United and Continental merger. The Continental livery remained the same and only the name was painted over the aircraft. The United aircraft was totally repainted. In many cases, the interior colors will also need to be repainted.”

Increased demand and performance
Though the aerospace market can seem slow to change due to strict regulations and requirements, manufacturers in this market have reported increased demand in general.

According to Cancilla, PPG has seen demand for aerospace coatings grow as the global economy grows and as the number of people who can afford the cost of flying increases.

“The aerospace coatings supply requirements increase as the industry grows,” he said. “Today, we see increased requirements from the OEM segment where aircraft build rates continue to grow in the commercial and general aviation segments. And we continue to see moderate increases in the military segment. The supply of materials into the aftermarket also continues to grow as the global fleet of aircraft continues to rise. While today’s materials and products are quite robust and last longer than materials produced in the past, the size of the industry continues to grow at a rate such that the coatings suppliers do see annual volume increases.”

Cancilla added that customer demand for increased performance is always growing, as are their definitions of performance.

Though the industry is moving away from chromated corrosion inhibitors, he said, PPG customers still expect excellent corrosion resistance from the new chrome-free products that are being developed. “Chrome is a very robust corrosion inhibitor, and when chrome-free products are developed it is important that all aspects of the coating system are addressed to ensure that similar, if not improved, corrosion inhibition properties are achieved. So, aircraft service life should not to be sacrificed as new products are applied,” he said.

Griffin said that AkzoNobel has seen both a solid financial performance in the aerospace industry and stable production rates, which contribute to strong demand for coatings in both new constructions maintenance applications.

In terms of performance, Griffin said, customers want “reduced costs, faster cycle times, improved efficiency and reduction of waste, particularly as production rates are at an all-time high.

“Maintenance stations also want these same benefits. There is a lot of research effort going into the optimization of processes and we look to share best practices from within the industry as well as from outside (for example, from automotive),” he said. “Airlines want to reduce their downtime. They also want improved durability, allowing them to extend maintenance cycles. Customers also look for more environmentally progressive products that reduce hazards to people and the environment.”

Julie Voisin, aerospace product manager at Sherwin-Williams, said that the industry has been moving towards basecoat clearcoat, something that has been used in the automotive market for decades now. She added that it has been in use in aerospace for about five years, and is far from being fully implemented.

Basecoat clearcoat is seeing an uptick for several reasons, she said. “When dealing with paint for planes, you are painting such a large area, and it isn’t just a flat surface. It is horizontal, vertical, up and down a tail, under the belly, and so on. The paint is performing several very valuable functions, including protecting the airframe from corrosion, protecting the entire structure, and generally making the plane aesthetically pleasing. Clearcoat gives the ability to put down multiple colors fast and to help it maintain in spite of all the challenges it faces. Aerospace paint is the only type of exterior paint that has to handle such extraordinary temperature changes, as well as exposure to light.”

Voisin added that, as far as the interior cabin is concerned, there are so many people coming in and out through the day that the interior has to be stain, scratch and mar resistant. On both sides of the plane, she said, the cabin or exterior, there are lots of unique ways in which coatings have to perform.

Andreas Ossenkopf, director - head of aviation at Mankiewicz, said that the entire industry is experiencing growth at present and so the demand for coatings is expanding along with it.

Ossenkopf added that much more can now be achieved with the paint on aircraft exteriors, thanks to the development of basecoat clearcoat systems by Mankiewicz.
“Where previously it was more efficient to use decals, today one can use paint more efficiently. For example, working with Brussels Airlines we recently supplied the Magritte and Trident livery: solely paint was used for this, even for the fine facial features of the depicted artist and for complex, finely detailed structures that were like a bird’s nest. Previously, we would be forced to use decals to achieve such effects, but now we use paint alone, which is only possible due to the excellent drying times of the basecoat and the paint’s special fade-out properties. These properties combined with the outstanding durability of the coating compared to decals explain the increased demand,” he said.

Mankiewicz has also witnessed a conversion from decals to paint for aircraft interiors due to the advantages of the product. Ossenkopf said the demand for this has exceeded the growth of the market.

Athansopoulos said that Hentzen expects to see an increase in aerospace coatings in both military and commercial markets. He believes that overall market growth will parallel the OEM growth.

Growth, of course, is dependent upon meeting customer need, and Athansopoulos said that Hentzen’s customers are looking for products that are environmentally compliant, offer improved exterior durability color and gloss retention, lower weight, and faster dry time for reduction in down-time during painting cycle.

Latest Technologies
Leading coatings manufacturers are frequently introducing new technologies to the market. What follows is information on these new innovations from select manufacturers, in their own words.

AkzoNobel
Basecoat clear coat (BC/CC) is rapidly becoming the industry standard. AkzoNobel is four years into an 8-10 year adoption cycle. More than 50 percent of the paint supplied to both Airbus and Boeing is still high solid content, but we expect this to change to more than 90 percent BC/CC within the next two years.

AkzoNobel said it invests a lot of research in the development of chromate-free products that have the right combination of resin, inhibitor, adhesion and flexibility to provide maximum protection with good in-service life, plus both cost and weight reductions. The most important factor is that the OEMs are able to trust them to behave over the life of the aircraft.

For external protection, the company has developed innovative technologies to solve the problems of achieving chromate-free anti-corrosion products. For AkzoNobel, Airbus and AMS 3095 approvals are in place, while for Boeing the approval is pending.
The introduction of nanoscale grooves into the topcoat results in less aerodynamic surface friction, particularly when flying at high speeds. In order to create the special texture the paint must overcome some tricky challenges: it must remain pliable long enough to form the riblets, but then dry as quickly as possible to maintain the corrugated surface. UV light is employed to achieve the fast drying stage this requires. Of course, here again the properties of durability, colour stability and resistance to the environment an aircraft coating must withstand are important considerations.

**PPG**

PPG’s aerospace coatings business continues to invest significantly in technology and product development. The company has recently launched Aerocron electrocoat primer, the first in the aerospace industry. As the original inventor of the electrocoat process and products, PPG has extended its industry-leading position with the development of our Aerocron product which utilizes anodic coating technology in a submersion coating process which increases material utilization from 30 to 60%, with spray processes to well over 90 percent with this process. Further, it saves significant weight of the coating material applied to the substrate, particularly as the complexity of the application increases.

**Hentzen**

Hentzen has recently introduced BCCC, heat absorption coatings, and chrome-free primers for the commercial market. For the military, chrome-free primers for both interior and exterior surfaces, and fluoropolymer polyurethane for topcoats. Epoxy and polyurethane polymers are used in both the commercial and military product development.

Hentzen was recently successful in qualifying a chrome-free primer on the Lockheed Martin FSCM 81755 for use on the F-16 program.

**Mankiewicz**

With regards to passenger-added values, Mankiewicz says it has developed a solution for health, safety and environment: in an era of Ebola and other infectious diseases, even more value is added to the paint by the company’s antimicrobial coatings. Despite the confined spaces and use by many people, the paint combats bacterial growth effectively, for example in the lavatory and galley areas.

Further, Mankiewicz has been involved in the development of riblet coatings: a paint that mimics the texture of sharkskin. The introduction of nanoscale grooves into the topcoat results in less aerodynamic surface friction, particularly when flying at high speeds. In order to create the special texture the paint must overcome some tricky challenges: it must remain pliable long enough to form the riblets, but then dry as quickly as possible to maintain the corrugated surface. UV light is employed to achieve the fast drying stage this requires. Of course, here again the properties of durability, colour stability and resistance to the environment an aircraft coating must withstand are important considerations.

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substrate increases. Aerocron electrocoat primer is completely chrome free and water based, so its environmental impact is significantly less than legacy products.

PPG also continues to develop chrome-free products. The company has recently launched Desoprime CF/7521 chrome-free primer, which can be utilized for both structural and exterior primer applications. This latest product utilizes many new technologies to provide superior corrosion protection for many applications and has achieved recent, significant qualifications. PPG has also launched Desoprime CF/7530 chrome free wash primer. This is the first completely chrome free wash primer in the industry, and is well-suited for aftermarket and OEM applications in terms of improved efficiency. It, too, has demonstrated very good corrosion performance characteristics and is qualified to AMS3095.

**Sherwin Williams**

Sherwin-Williams has recently launched JCX polyester urethane and SKYscapes general aviation basecoat. JCX polyester urethane was designed to be a high-performance, high-productivity coating for exterior aircraft use. The line features simplified packaging and faster dry times. JCX is specifically focused on productivity improvements for MRO commercial airline applications. It comes in a 2:1:1 prepackaged kit and meets AMS-3095 performance requirements. It also provides chemical resistance to Skydrol and other hydraulic fluids and is free of lead and chromate hazards.

SKYscapes General Aviation (GA) Basecoat 855 Series – SG, SGE, SGM and SGP Colors – is ideal for exterior painting on general aviation and helicopters that often require expedited production times. It has been designed to deliver the maximum in appearance and productivity by delivering a consistent and colorful solid, mica or metallic finish.

SKYscapes GA Basecoat features fast dry times (approximately 60 – 90 DTT) that lead to improved productivity, an easy 6 to 1 to 2 mixing ratio, all while delivering excellent flow and leveling. After clearcoat, it provides a high gloss finish that can be easily cleaned, buffed and repaired.

Aircraft owners demand on-time delivery and the SKYscapes basecoat clearcoat system can reduce paint-process time to help meet customer demand for aircraft turnaround. The SKYscapes system cures at ambient temperature in half the time of other single-stage systems. Professional aircraft painters now have the option of which Clearcoat to use: the new General Aviation Clearcoat CM0850CC1 for increased speed, or CM0850180 for improved chemical and fluid resistance. SKYscapes CM0850CC1 clearcoat can be used over high solids opaque and metallic colors as stripes over Jet Glo or Jet Glo Express polyester urethane topcoats on business jets. CW