



vertiflite Commentary

Transforming Vertical Flight Technology

By Mike Hirschberg, Executive Director

This is an incredibly dynamic time in vertical flight. The global helicopter industry is undergoing a significant transformation, as are customer demands and the capabilities offered by cutting-edge technologies. Governments worldwide are initiating new defense procurements for an increasingly uncertain future, while simultaneously developing and expanding indigenous production and development capabilities for both military and civilian applications. Meanwhile, new players are transforming the landscape in the global marketplace.

The US military, still by far the world's largest purchaser and developer of vertical flight aircraft, has embarked on the most transformative science and technology (S&T) initiative in decades – the Joint Multi-Role (JMR) technology demonstration effort – while planning for the Future Vertical Lift (FVL) acquisition program. With demonstrators to fly within the next three years, industry plans to prove the revolutionary capabilities of high-speed approaches for a family of future military products.

Airbus Helicopters and AgustaWestland are developing advanced high speed concepts for Clean Sky 2, while DARPA and NASA are advancing several transformative vertical flight concepts. Sikorsky has begun flight checkout testing for its fly-by-wire CH-53K King Stallion and S-97 Raider, perhaps the two most advanced rotorcraft yet built.

There is also a global explosion of enthusiasm and innovation in new commercial aircraft. Rumas in Russia and Marenco in Switzerland have recently made first flights, joining the likes of newcomers Konner and Fama with small turbine-powered European civil



helicopters. While Airbus has begun deliveries of its EC145T2, EC135T3/P3, AS332 C1e and other products, AgustaWestland moves through certification this year of the AW189, AW149 and AW169. Bell, meanwhile, will be flying its 505 and 525 in the coming weeks.

Significant advances in technology – such as coupled computational fluid dynamics (CFD)/computation structural dynamics (CSD) modeling, expanded use of additive manufacturing, fly-by-wire controls, advanced Condition Based Maintenance (CBM) and Health and Usage Monitoring Systems (HUMS) approaches, and advanced turbine engine programs – promise significant advances in rotorcraft capabilities. Innovators in unmanned aircraft systems (UAS), electric/hybrid power systems, and distributed propulsion are also developing transformative new approaches. As described elsewhere in this issue, AHS has kicked off a new joint Transformative Vertical Flight initiative, which seeks to leverage the advances in novel propulsion and energy architectures to enable flight concepts that have been heretofore infeasible.

This is the most exciting time for vertical flight in decades and AHS International is working to

facilitate these advances in vertical flight. We have set the theme for our 71st Annual Forum and Technology Display as “Transforming Vertical Flight Technology”.

The AHS International Annual Forum is the high point of the vertical flight technology calendar, and this year's Forum promises to be another epic event. Held May 5-7, 2015 in Virginia Beach, Forum 71 will feature more than 250 presentations from engineers, scientists, aviators, program managers, university faculty and students, and other innovators. Some 325 abstracts were competitively submitted for the Forum, meaning that the quantity and quality of the papers presented will again be extremely high.

Forum 71 culminates the technical community, highlighting the ongoing transformations in vertical flight. The Annual Forum plays an essential role in vertical flight by bringing together the most creative minds and visionaries of industry, academia and government with the world's leading aerospace manufacturers and suppliers. All of this will take place at the Virginia Beach Convention Center, near the research centers of NASA Langley and the US Army's Aviation Advanced Technology Directorate (AATD). Tours of local facilities and other exciting events are planned for Monday, May 4th.

Since 1943, AHS International has led numerous technology, safety, advocacy and other initiatives, tackling the toughest challenges in vertical flight, and has been the primary forum for interchange of information on vertical flight technology. With your support, we will continue to lead in “Transforming Vertical Flight Technology” for decades to come.

