

Collaboration is Critical to Sustainable Development



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As climate change rapidly rises to the top of the world's agenda, Canada's aviation industry is working overtime to achieve a greener footprint through the development and implementation of airframe and engine technologies that enable aircraft to be significantly more efficient, quieter and greener.

One of the biggest imperatives is to bring to market products that are designed, produced, operated and retired with a minimal impact on the

environment throughout their entire lifecycle. This requires major and continuous investments in research and development (R&D), including the implementation of advanced manufacturing technologies to make the final product economically viable and competitive.

The resources, financial and otherwise, for successfully achieving this sustainability goal are considerable and increasingly require joint efforts and collaboration among many stakeholders in the aerospace industry. Fortunately, Canada has an extensive and world-leading aerospace R&D ecosystem that effectively identifies strategic aerospace technology areas and facilitates collaborative research and development among key stakeholders.

This innovation ecosystem includes original equipment manufacturers (OEMs), universities, research centres and a growing number of small and medium-size enterprises (SMEs). Collaboration is considerably bolstered by a number of organizations and government-supported initiatives which are

vital to fostering innovation. They include, for example, the Consortium for Research and Innovation in Aerospace in Quebec (CRIAQ), a unique model of collaborative industry-led research involving universities and research centres. It has proven so successful over the past dozen years that last spring it led to the creation of a Canadian counterpart known as CARIC (Consortium for Aerospace Research and Innovation in Canada). Based upon the CRIAQ model, which puts forward a light networked structure, CARIC will be industry-driven and bring together the best of the entire Canadian industry to identify technology priorities and facilitate collaborative R&D. I am proud to chair both organizations and believe they will take innovation in aerospace research to a new level. In Quebec, we have a highly effective rallying point for all stakeholders of the aerospace industry through the Aéro Montréal cluster, chaired by Maria Della Posta, Pratt & Whitney Canada's Senior Vice President, Sales and Marketing.

Canada's research ecosystem among OEMs, universities and research centres is mature. The pressing need is to focus and bring more SMEs to play active roles and take leadership positions in this ecosystem through increased and sustained R&D efforts. SMEs represent 97% of all Canadian aerospace firms but only 8% of the aerospace R&D investment in Canada. This is clearly not enough. The SME capacity is a rich pan-Canadian talent pool that we want to leverage to enrich the aerospace ecosystem.

Pratt & Whitney Canada and several other large OEMs are also actively involved in other important initiatives driving sustainability. The Small Affordable Green Efficient (SA²GE) program in Quebec supports industrial demonstration projects related to "green" aircraft. The Green Aviation Research and Development Network (GARDN) is a Canadian business-led network of centres of excellence dedicated to lowering noise, greenhouse gases and emissions produced by the aerospace industry.

As one of Canada's leading R&D investors committed to innovation, Pratt & Whitney Canada has long made such collaborations and partnerships a pillar of its innovation strategy. We recognize that these approaches are critical to maximizing the effectiveness of our own R&D investments and for sharing the many risks involved in developing new engines and processes.

Our current R&D projects centre on key technologies to ensure new engines surpass emerging stringent environmental standards for air emissions and noise and offer improved fuel efficiency. At the same time, we are also looking for ways to develop engines efficiently with the most advanced manufacturing technologies to ensure they are affordable, reliable and dependable.

In this regard, we are currently investing \$80 million in a world-class centre of excellence for intelligent manufacturing in Quebec with production lines dedicated to manufacturing highly complex key components for Pratt & Whitney's PurePower® engines for the next-

generation of commercial and business jets. By using new materials and technologies to reduce weight, and hence fuel burn and greenhouse gas emissions, these engines will deliver step-change improvements in environmental performance and operating costs. The unique properties of the new materials used require us to design new, fully integrated and ultra-efficient production lines equipped with automation, closed-loop process control and high-precision machining technologies.

Many of the concepts incorporated in these intelligent cells, which are so essential to our sustainability goals, were developed in collaboration with our partners in the academic and research community. They underscore, once again, the importance of such an approach to keep Canadian aerospace at the international forefront of innovation and the drive for sustainability in the global industry – not to mention development of the next generation of Canadian engineers and enhancement of the world-class capabilities and reputations of our universities.