



DAIR GREEN FUND

IMPACT REPORT 2022-2025

September 15, 2025



DAIR

DOWNSVIEW AEROSPACE / DOWNSVIEW AÉROSPATIALE
INNOVATION & RESEARCH / INNOVATION & RECHERCHE

The DAIR Green Fund is a program supported by the Government of Canada through the Federal Economic Development Agency for Southern Ontario (FedDev Ontario). The Green Fund is designed to support research, development and commercialization projects led by small- and medium-sized enterprises (SMEs) across southern Ontario. These products and technologies can contribute to greening and sustainability efforts in the industry as well as enhance the economic prosperity of the industry.

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Canada

DAIR would like to extend our gratitude to Innovitech for your expertise and dedicated support in helping us develop a world-class funding program. Your partnership has been instrumental in achieving our goals, and we appreciate your professionalism and innovative approach.



On behalf of our team, we would like to thank the Review Committee members for your valuable knowledge, experience and guidance throughout the Green Fund program review process. We greatly appreciate your time and dedication, and we look forward to your continued support as we work towards our sustainability goals.



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Who is DAIR?

DAIR is incorporated federally as a not-for-profit organization, a consortium of aerospace companies and post-secondary institutions.

MISSION:

DAIR catalyzes world-class innovation by facilitating collaboration within industry, academia and government to develop transformative technologies and a future-ready workforce.

We do so by:

- Offering access to state-of-the-art equipment and infrastructure to accelerate leading-edge research and technology adoption.
- Creating training solutions for business and technology challenges of today and tomorrow.

- Providing a platform for industry, academic and government synergies, to foster and advance R&D partnerships.
- Supporting continuous improvement and innovation in the supply chain; and
- Harnessing our collective voice to bring awareness to and promote the aerospace industry locally, nationally and globally.

FUTURE OUTLOOK:

At all times, the principle focus of DAIR is on the effective collaboration within academia, industry and government on innovation and research, and the Green Fund is a key component of this. But we can do more.

Message from the Executive Director and Green Fund and R&D Manager

Over the past three years, the DAIR Green Fund has solidified its role as a powerful driver of innovation in Canada's aerospace sector. We are pleased to share the tangible progress we've made in catalyzing sustainable, future-focused solutions that are led by SMEs and that are helping to transform aerospace into a more environmentally responsible industry.

At its core, the DAIR Green Fund was created to support small- and medium-sized enterprises (SMEs) committed to reducing aerospace's environmental footprint. Through targeted support by the Government of Canada through the Federal Economic Development Agency for Southern Ontario (FedDev Ontario), the DAIR Green Fund has empowered companies to accelerate the development of technologies and processes that are not only innovative but aligned with Canada's net-zero ambitions.

In 2022–2025, the Green Fund has supported:

- **29 cleantech projects** focused on emissions reduction, electrification, sustainable aviation fuels (SAF), advanced materials and process efficiency
- **\$1.86 million** in non-dilutive funding distributed directly to Canadian SMEs and startups
- **56 collaborative partnerships** with academic institutions and industry organizations
- **53 jobs supported or created** through project funding and commercialization acceleration

Behind each of these numbers is a success story of ingenuity, determination and vision. Whether it's a company developing lightweight composites to reduce fuel burn, or a startup harnessing data to optimize flight operations, each DAIR Green Fund project moves the needle on our industry's sustainability goals.

We are especially proud of the inclusive and collaborative model that defines our approach. The DAIR Green Fund is not only a funding mechanism – it is a platform for partnership, collaboration and global impact. By connecting innovators with academic and industry networks, we ensure that supported projects are positioned for long-term success and real-world application.

As we look ahead, we envision an evolution of our program to also support SMEs from coast to coast. DAIR is focused on strengthening Canada's aerospace innovation pipeline and ensuring that clean technology continues to be a pillar of future flight.

Thank you to all the SMEs, researchers, funders and partners who have made these past three years a success. Your dedication inspires us to keep pushing boundaries, building momentum and delivering real impact through Canadian innovation.



Phil Arthurs
Executive Director



Steven Cargnello
DAIR Green Fund and R&D Manager

What is the DAIR Green Fund

The DAIR Green Fund (referred to as “GF”) has the objective to provide financial support for small- and medium-sized enterprises (SMEs) to help advance the technology readiness level (TRL) of projects that can ultimately help reduce the environmental footprint of the aerospace sector. The intent is to help projects that will support the industry and the Government of Canada’s priorities for reducing the environmental impact of aviation.

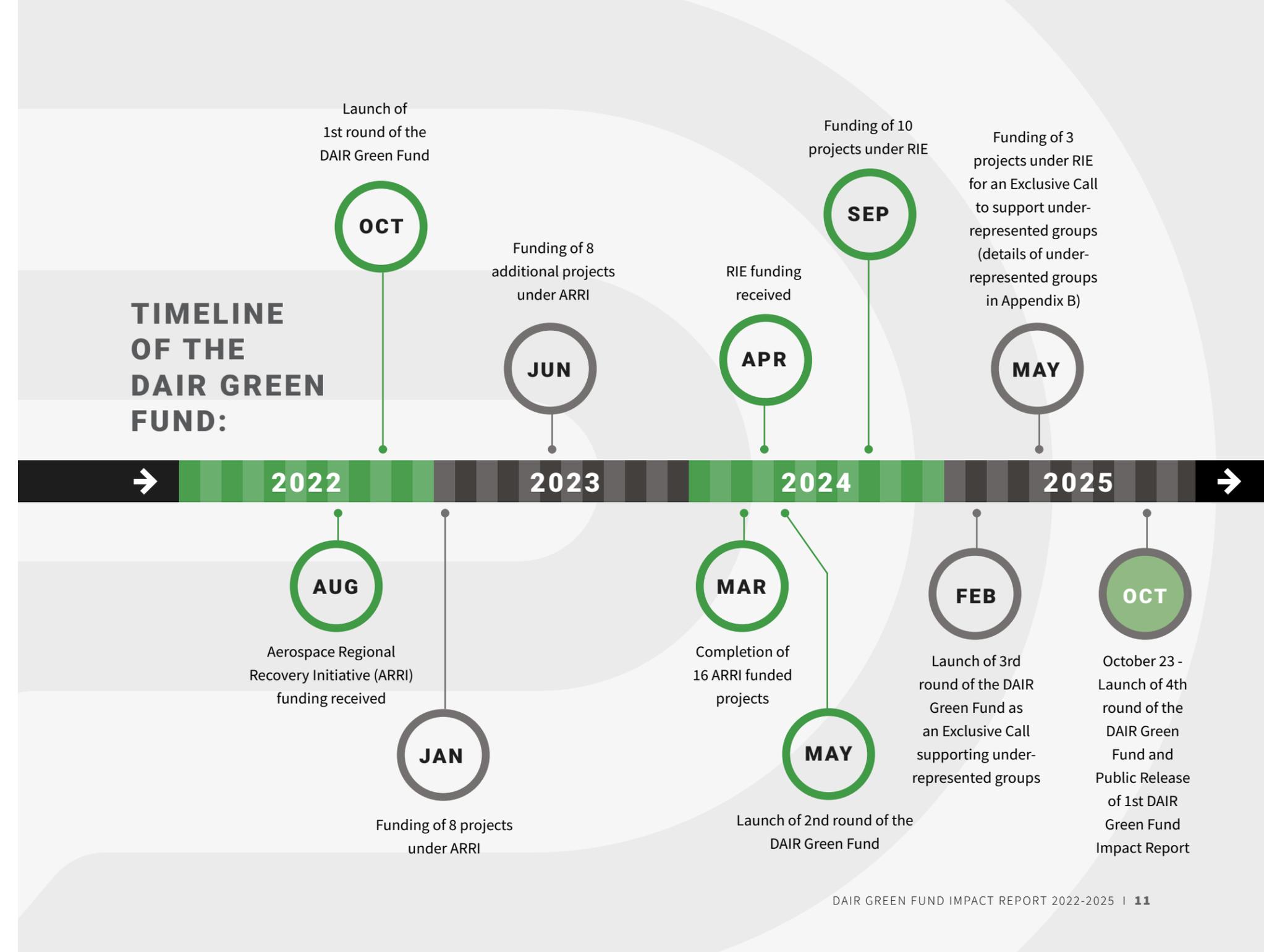
FOUR PILLARS OF THE DAIR GREEN FUND:

The technology developed during the project must fall into one of these four pillars:

- **ENERGY / PROPULSION** (SAF, electrification or hydrogen, etc.)
- **AIRCRAFT CONFIGURATION AND SYSTEMS** (AAM, eVTOL, etc.)
- **OPERATIONS** (assembly, in-flight, airport, etc.)
- **ADVANCED MATERIALS** (light-weighting, alloys, composites, etc.)

WHO IS ELIGIBLE?:

- The applicant must be an established company:
 - Have a minimum of two full-time employees and fewer than 500 employees.
 - Demonstrate growth potential through the development of new or improved technology-driven products, processes or services.
 - Can demonstrate sufficient funding to support the project to completion.
- The applicant must have a place of business in southern Ontario.



Statistics

DAIR 1st COHORT (COMPLETED)

Number of projects

16

Total DAIR contribution
(Average \$75K)

\$1.2M

Total SME contribution
(Average \$58.19K)

\$931K

Sales

\$280.41K

Average TRL progression

Start

4.88

End

6.31

Job creation

Full time

25

Part time

24

Total partners

Academic

18

Industry

22

Number of new products, processes and services

Commercialized

12

Prototypes

25

DAIR 2nd COHORT (IN-PROGRESS)

Number of projects

10

Total DAIR contribution
(Average \$57K)

\$570K

Total SME contribution
(Average \$39K)

\$390K

Number of new products, processes and services

Prototypes **7**

Total partners

Academic **4**

Industry **7**

Job creation

Full time **6**

Part time **1**

Average TRL progression

Start

4.80

DAIR 3rd COHORT (IN-PROGRESS)

Number of projects

3

Total DAIR contribution

\$90K

Total partners

Academic **2**

Industry **3**

Average TRL progression

Start

6.00





Completed projects



COMPANY BIO: Advanced Mobility Products Inc. (AMP) is a small Canadian company, incorporated in 2018 in Newmarket, Ontario, which offers engineering and management consultation to companies in the automotive and aerospace industry.

TITLE:
Development of Safe and Reliable Rechargeable Energy Storage System (RESS) for a Solar Battery Electric UAS

PROJECT: The project is to develop Safe and Reliable RESS for Superwake's UAV commercial applications. As Superwake begins its drive towards commercialization of its product, the need for conformity to regulatory standards is critical to the success of the product. This project focuses on a product conformity related to regulatory framework such as Transport Canada Advisory Circular (AC) No. 922-001 - Remotely Piloted Aircraft Systems Safety Assurance. More specifically, a more complex RESS is required in advanced operations such as beyond visual line of sight (BVLOS), flying in controlled airspace and near people.

RESULT: The project led to the creation of three battery packs, with each iteration providing valuable insights into the development of Rechargeable Energy Storage Systems (RESS). Through pack testing, the team was able to improve the design at each stage, identifying that the mechanical configuration of the battery pack could significantly impact the system's capacity.

The Rechargeable Energy Storage System (RESS) was designed in accordance with UL 3030, the standard for unmanned aircraft systems. In the course of the project's development, AMP joined the UL 3030 committee, enhancing its ability to shape and influence policies within the realm of unmanned aircraft systems.

Additionally, the design led to the adaptation of unique Nickel-Copper tabs serving as effective fuses, aligning with UL 3030 requirements.

An initial and simplified battery systems model was developed in MATLAB, serving as the foundation

SUSTAINABILITY IMPACT:

The use of smaller solar battery electric drones can replace some applications of small, manned utility aircraft used in commercial applications. The cost to operate these drones would be substantially lower using solar battery electric drones.



for future Battery Management Systems (BMS) development. These simulations ensure that the RESS operates safely and in compliance with aircraft operations.

The acquired skills and knowledge are poised to become invaluable assets for future collaborations on other energy-related projects, including automotive and aerospace, equipping the AMP team for the successful commercialization of innovative products in the near future.

METRICS

Number of commercialized products/processes/services	1
Number of prototypes	2
Start TRL	5
End TRL	6
Full-time jobs created	1
Part-time jobs created	2
Academic partners	1
Industry partners	1
Total Project Spend	\$100,814.60 (\$75,000 DAIR, \$25,814.60 SME)

TESTIMONIAL:

In retrospect, the DAIR Green Fund has been instrumental in advancing our aerospace battery development. Building on our prior CREATEV solar-electric UAV work, this project allowed us to optimize power delivery from advanced battery packs, enhance our technical services, secure new electrification contracts, and increase our headcount to expand the engineering team. The experience gained has also provided valuable insight for participation in UL committee activities, ensuring our expertise contributes both to commercial growth and the development of future UAV safety standards.

V-Bond Lee
President of AMP



COMPANY BIO: Aeroflux is engaged in the design, development and manufacturing of magnetic brakes for business, commuter and commercial aircraft. Our innovative patent-pending braking technology utilizes the principle of eddy current braking to enable completely contactless, and therefore wear-free, braking of even the largest passenger jets. The successful integration of this technology into the aircraft braking industry will translate into numerous benefits for airlines and aircraft operators.

➔ **TITLE:**
Research & Design of an Optimized Rotor Alloy for Aircraft Eddy Current Brake Applications

PROJECT: The technology behind Aeroflux's innovative contactless brakes is based on the principle of eddy current braking. Whereas a typical friction brake decelerates an aircraft through friction generated by bringing a moving and non-moving surface (the stator and the rotor) in contact with one another, an eddy current brake does so without the need for any physical contact between the stator and the rotor. Currently, there are alloys present to perform the work but with limited success on life and consistent performance. An optimization of a current alloy or development of a new alloy

will be required to provide consistent performance metrics and meet target life expectations for commercial applications.

RESULT: Overall, this project can be considered a success due to the knowledge gained on how material alloys affect performance and on the potential for heat treatment to help improve desired properties. With the scale rotor testing in a simulated environment being completed, this technology has moved from a TRL 5 to a TRL 6, bringing Aeroflux one step closer to achieving the goal of seeing this technology operating on an actual aircraft.

METRICS	
Number of prototypes	1
Start TRL	5
End TRL	6
Part-time jobs created	3
Academic partners	2
Industry partners	2
Total Project Spend	\$100,494 (\$75,000 DAIR, \$25,494 SME)

**SUSTAINABILITY
IMPACT:**

Frictionless eddy current brakes do not wear, and no brake replacements are required.

Eddy current brakes produce half the lifetime CO₂ emissions of traditional friction brakes.



TESTIMONIAL:

The DAIR Green Fund was a key part of the journey on which our company has embarked, and we have made remarkable progress since the collaboration took place. The joint project with Centennial College and York University was focused on testing various rotor materials for an eddy current braking system with the goal of determining an ideal alloy for the aerospace application. The project was a significant success, not only enabling us to identify unique materials crucial for our specific application, but it also laid the groundwork for an invaluable relationship with the academic partner, York University, with whom we are still actively collaborating on different projects today.

Due to the success we have had on the aerospace side, we have expanded our technology to applications in rail and automotive as well. We have achieved substantial milestones this past year.

Earlier in the year, we successfully tested a second prototype, specifically for rail applications, working with a large industrial partner. The brake unit remained structurally sound throughout the hundreds of tests done, and there was strong correlation observed across many test cases, which helped validate our internal performance models. The rapid progression from initial material testing to an improved prototype for a different application demonstrates our commitment to innovation across multiple industries.

The progress we have achieved over the past year would simply not be possible without the critical support we have received through initiatives such as the DAIR Green Fund. The material testing done as part of the Green Fund supported project was a critical step in advancing towards a commercially viable design as the rotor material was a significant barrier to overcome. Aeroflux

is well aligned with DAIR's overarching goal of rapidly advancing technologies with significant environmental benefits, positioning us to contribute meaningfully to sustainable transportation solutions in the aerospace, rail and automotive sectors.

We are incredibly proud of our achievements since partnering with DAIR and would like to give a strong recommendation for any SMEs looking to advance their technology in a similar manner. DAIR provided consistent and reliable support and were extremely easy to approach regarding any issues or concerns throughout the entire project. We would be delighted to share some pictures of our projects and dedicated team to further illustrate our journey and capabilities.

Nikola Kostic
CEO of Aeroflux



COMPANY BIO: Brampton Processing is a metal finishing company dedicated to excellence in our continuous service to the aerospace and commercial metal finishing industry. Located in Brampton, Ontario, just minutes from the airport and the technology triangle, we have been providing outstanding quality service since 1991.

TITLE:
Development of Process to Phase-Out Hexavalent Chromium Compounds from Anodizing and Plating Processes

PROJECT: Brampton Processing is developing a process to phase-out toxic hexavalent chromium compounds from its anodizing and plating processes. The goal of the project is to eliminate toxic hexavalent chromium emissions into the environment and replace it with less toxic trivalent chromium emissions.

RESULT: Brampton Processing's new plant layout was completed, new tank foundations poured, and new tanks installed. Next phase is to get the processes approved for production.

METRICS	
Start TRL	4
End TRL	6
Full-time jobs created	6
Industry partners	1
Total Project Spend	\$303,817.50 (\$75,000 DAIR, \$228,817.50 SME)



SUSTAINABILITY IMPACT:

Reduced toxic emissions in anodizing and plating processes for metal finishing in aircraft manufacturing.

This new process will reduce occupational health risks.



TESTIMONIAL:

The support we received through the Green Fund has been instrumental in accelerating our transition toward more sustainable and environmentally responsible manufacturing practices. With this funding, we were able to prioritize the development and qualification of Chrome-Free Acid

Anodizing (Process 160-045) – a key initiative aimed at eliminating hazardous substances from our surface treatment operations.

Thanks to the Green Fund, we successfully finalized the technique sheet and launched a comprehensive

qualification matrix that includes corrosion resistance, sealing efficiency and fatigue testing across multiple aluminum alloys. These efforts are not only helping us meet stringent environmental regulations but also positioning us as a forward-thinking supplier in the aerospace and defence sectors.

The funding enabled us to collaborate with external labs, invest in specialized testing and allocate resources toward R&D without compromising our production timelines. It has empowered our team to innovate confidently, knowing we have the backing to pursue cleaner, safer and more sustainable technologies.

Alex Cajic
Vice-President of Ontario Division
Groupe DCM



COMPANY BIO: As one of the largest metal additive manufacturing (AM) contract manufacturers in North America, we are a leading provider of end-to-end solutions for complex challenges and demanding industries. Burloak provides proprietary AM and post-processing capabilities across various industries in their AM adoption journey. Our extensive heritage includes sectors like space, aviation, energy and defence. With a staggering number of parts in flight, our metal AM flight heritage is among the most extensive in the world.



TITLE:
Development of Tungsten Additive Manufacturing & Heat Treatment Processes for Canadian Aerospace

PROJECT: The development and use of tungsten powder is very nascent for laser powder bed fusion additive manufacturing (AM) technology. With recent demand for AM tungsten development within the aerospace/defence industry in Canada for purpose-driven weight balancing parts for helicopters, as well as radiation shielding for electronic components, this project will serve to create an all-Canadian solution to meet this demand. It will develop

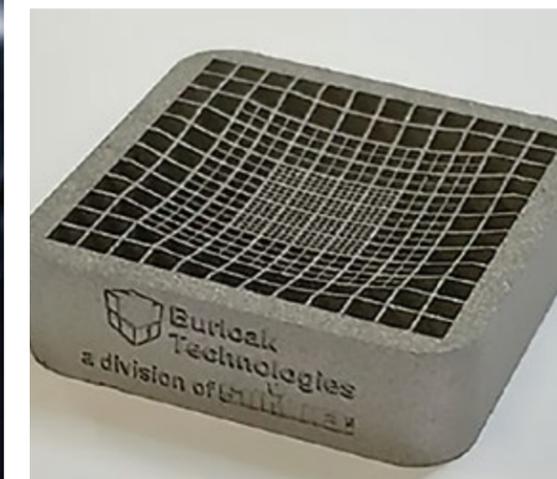
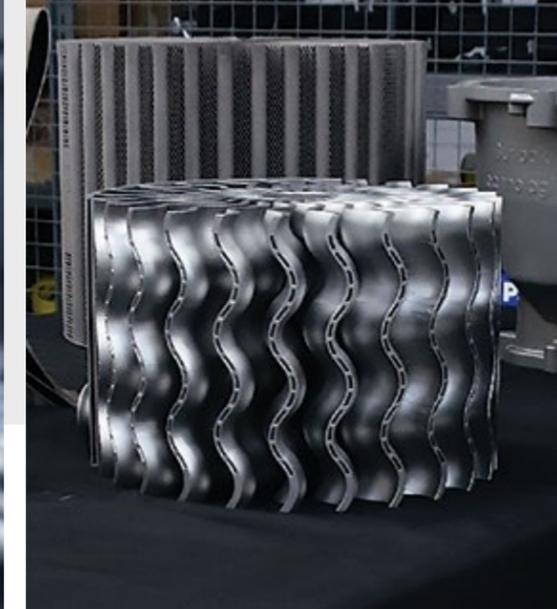
METRICS	
Number of commercialized products/processes/services	2
Start TRL	3
End TRL	4
Academic partners	1
Industry partners	2
Total Project Spend	\$102,279.01 (\$75,000 DAIR, \$27,279.01 SME)

AM processes at Burloak necessary for the use of tungsten, and the tungsten powder will be sourced locally through Tekna in Canada, which is beneficial for security purposes, as other major suppliers of tungsten come from Russia and China.

RESULT: Burloak has developed a repeatable AM process using tungsten powder and produced relatively simple parts for a potential aerospace customer that has tungsten part requirements within the industry they support.

SUSTAINABILITY IMPACT:

Compared to conventional manufacturing methods, additive manufacturing provides a reduction in material waste, energy usage and machine emissions.



TESTIMONIAL:

As a leader in additive manufacturing, Burloak understands the importance of innovation, and this is why we are grateful for the support from DAIR who has similar values. This has

enabled us to push boundaries and achieve great things, like becoming one of the only additive manufacturing companies in North America capable of 3D printing tungsten for

production applications.

Jason Ball
 VP and General Manager of Burloak Technologies



COMPANY BIO: Columbiad Launch Services Inc. is an aerospace company engaged in the design and engineering of space systems, related to propulsion, energy, additive manufacturing, robotics, space domain awareness and in-situ resource utilization. Founded in 1999, Columbiad focuses on solutions providing low-cost access to space, high-altitude platforms and multi-domain situational awareness services. Columbiad’s mission is to improve the quality life on Earth through the advancement of sustainable energy, space exploration and the laws of flight.

TITLE:
High Altitude Platforms – Autonomous Flight Powered Using Wireless Power Transmission

PROJECT: The project is part of a feasibility study to fly an uninhabited aircraft for very long, multiday missions by providing it with power using a mix of wireless power transmission and solar power. Power is transmitted as microwave energy from a ground-based transmitter and sent to a receiver that is attached to the lower surface of the aircraft wing, which converts it to DC power. The DC power would be used to drive electric motors on the airplane for propulsion, to power the payload and control systems, and

METRICS	
Number of commercialized products/ processes/services	2
Number of prototypes	1
Start TRL	5
End TRL	6
Full-time jobs created	2
Part-time jobs created	4
Academic partners	2
Industry partners	1
Total Project Spend	\$133,751.85 (\$75,000 DAIR, \$58,751.85 SME)

to charge standby energy storage units. The project includes modelling, wireless power transmission flight testing using small uninhabited aircraft, and performing a life-cycle assessment of high-altitude platforms.

RESULT: The wireless power transmission system demonstrated promising results: 1) Efficiency: The system achieved an average efficiency of 50%-73% at 2.45 Ghz and

SUSTAINABILITY IMPACT:

Emission reduction through the adoption of a novel and cleaner alternate energy source.



5.8 Ghz, surpassing initial expectations for low power transmission. These results indicate a viable method for recharging drones wirelessly. 2) Configurations: Demonstration power beaming with receivers in-series, and in-parallel configurations to maximize performance with respect to power at receiver, measured single rectenna power, and measured parallel connected rectennas. 3) Distance Performance: The system consistently provided effective power transmission within the defined operational range with indoor testing up to 20 metres from the transmitter to tested embedded receivers on a drone wing, with multiple tests performed at 14, 15, 16 and 17 metres. Additional power variations relative to the angle of transmitter beam were assessed with respect to the flight paths (circle, racetrack, figure 8 and ellipse), these were compared to the simulation models for wireless power transmission, and we found

a good correlation during the validation process. 4) Compared theoretical and measured wireless power transmission in variations in power and distance for theoretical power at receiver, measured single rectenna power, and measured parallel connected rectennas. 5) Safety Measures: The implemented safety features proved successful in preventing potential hazards, ensuring the technology’s safe use, and updated results based on these findings.

Using microwave power transmission for recharging flight vehicles has shown significant promise in addressing the limitations imposed by traditional battery constraints to enable continues operations. The achieved efficiency, operational range and safety measures support the feasibility of implementing this technology for practical drone applications.

TESTIMONIAL:

We would like to thank DAIR for enabling this project. It has served to be invaluable in testing and developing new technologies and accessing new markets internationally.

Haroon Oqab
President of Columbiad Launch Services



COMPANY BIO: Drone Delivery Canada (DDC) is a drone logistics company, founded in 2014, with the mission of solving the last mile challenges using remotely piloted aircraft systems, often referred to as drones. DDC provides a system, which includes proprietary software, hardware (drones and supporting infrastructure) and all professional services that come with this solution. DDC was the first to market with this approach – we provide a complete turnkey logistics solution, offered as a managed service. We were also one of the first companies in Canada to have been certified as a Compliant Operator by Transport Canada under their original certification process

TITLE:
Care by Air – Transport of Time Critical Medical Supplies by Remotely Piloted Aircraft (Drone)

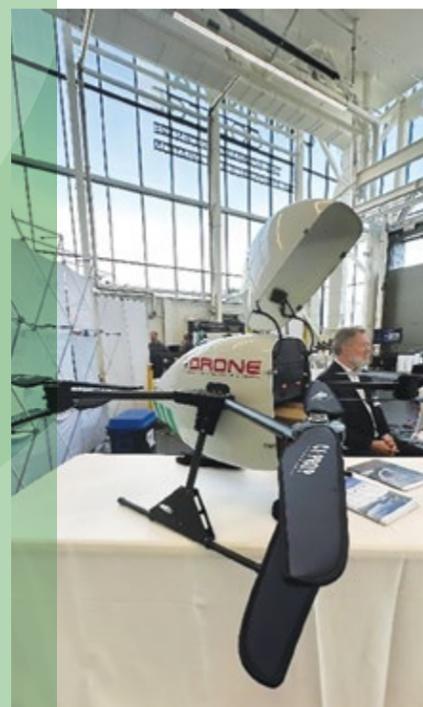
PROJECT: The project is a collaboration between Drone Delivery Canada, DSV Air & Sea Inc – Toronto, McMaster University and Halton Healthcare Services Corporation. Through a pilot project, the partners will explore the viability of using remotely piloted aircraft (drones) for the delivery of isotopes and other vital medical supplies from point of production to patients in hospitals, with the aim of alleviating

supply chain uncertainties in the transportation of these medical products.

RESULT: This project was considered very successful from a technical, operational and collaboration aspect. As part of this project, Drone Delivery Canada was able to prove the value of using remotely piloted aircraft to transport time-critical medical supplies, in this case medical radioisotopes, in a timelier manner than conventional transportation options. The project included a stepped approach to the carriage of these materials and resulted in over 50 successful flights over the course of the project with a zero accident/incident rate. In addition to the operational and technical success, this project also enabled the collaboration with key stakeholders from the medical radioisotope industry (McMaster University and Halton Healthcare) and the regulatory environment (Transport Canada Civil Aviation, Transport Canada Dangerous Goods, Canadian Nuclear Safety Commission). This collaboration was critical to the success of this project. The success of this project has also attracted the attention of other sectors of the medical industry who are trying to address logistical issues and resulted in follow-on activities to support hospital-to-hospital deliveries of medical samples and lab tests.

SUSTAINABILITY IMPACT:

Reduced CO₂ emissions from less reliance on traditional aircraft or land vehicles for delivery.



TESTIMONIAL:

Since our first project with DAIR, which supported the installation and validation of a ground-based radar detection system, DDC has made significant progress in advancing drone technology and expanding its real-world applications. That project was a turning point for our organization: by proving the effectiveness of ground-based radar, we were able to safely and reliably operate Canada’s longest urban drone delivery route, a 14-kilometre corridor connecting DSV Milton to Oakville Trafalgar Hospital.

Importantly, this route is still in operation today, transporting patient samples for the Halton Healthcare network. The sustainability and impact of this service are clear proof that DAIR’s early investment has had lasting benefits for Canadian health-care logistics and for the growth of our company.

The DAIR Green Fund has also been instrumental in supporting DDC’s mission of combining innovation with sustainability. It provided us with the resources to pursue

projects that are not only technologically advanced but also environmentally responsible. By enabling us to integrate green practices into our operations, the fund has helped us align with Canada’s broader climate and sustainability goals while continuing to deliver cutting-edge solutions to our clients. This support has allowed us to reduce environmental impact, validate new technologies, and strengthen our position as a leader in safe and sustainable drone delivery.

We are grateful to the DAIR Green Fund for their ongoing support and vision. Your contributions have been instrumental in transforming innovative ideas into sustainable, real-world successes. Together, we are proving that drone technology can deliver both immediate value to Canadian communities and long-term benefits for the country’s innovation ecosystem.

Greg Colacetti
COO of Drone Delivery Canada

METRICS

Number of commercialized products/processes/services	1
Number of prototypes	5
Start TRL	6
End TRL	8
Academic partners	2
Total Project Spend	\$116,118 (\$75,000 DAIR, \$41,118 SME)



COMPANY BIO: FliteX is a Canadian startup with a goal to deliver global value-based aviation cloud software solutions using big data analytics and proprietary algorithms that optimize costs and improve efficiency and safety for over 400 aviation stakeholders, airlines and air traffic agencies across the globe. At FliteX, we build solutions that address known industry problems that are deployed as a cloud-based Software as a Service that directly reduces our customer costs and increases revenues.

We strive to deliver the advantages of speed, agility and scalability of our constantly evolving cloud platform for immediate cost and efficiency gains to our customers in a quick and cost-effective manner. We are on a digital transformation journey to ‘optimize the sky.’



TITLE:
Airline Fuel Efficiency using Predictive Analytics

PROJECT: In this project, use of flight-time metrics will in turn develop efficient fuel-consumption prediction models using the advances in data training and machine learning historical data sets, while also applying external variables such as winds, precipitation and traffic congestion.

RESULT: From the DAIR funding a final model was created, and it represents a comprehensive and robust framework for optimizing airport operations, enhancing efficiency and improving passenger satisfaction. By leveraging advanced predictive techniques and thorough validation processes, the model enables informed decision-making, resource allocation and real-time optimization of airport management, ultimately contributing to smoother operations and enhanced airport performance.

METRICS	
Number of commercialized products/ processes/services	2
Number of prototypes	3
Start TRL	5
End TRL	7
Full-time jobs created	2
Part-time jobs created	2
Total Project Spend	\$104,755.27 (\$75,000 DAIR, \$29,755.27 SME)

SUSTAINABILITY IMPACT:

The development of optimal flight paths will enable fuel savings and reduce emissions and carbon footprint of the industry.



TESTIMONIAL:

As a result of the DAIR Green Fund, we are now engaging directly with potential customers to move in to phase 2 of our development. We need to recognize and appreciate the initial support from DAIR and the Green Fund, which helped provide for the vital groundwork for this complex AI and ML project.

Bernard Gonsalves
Founder of FliteX

HEBÉ

COMPANY BIO: HEBÉ Hydrogen is a Mississauga, Ontario-based early-stage startup focused on innovative, safe, low-cost green underground pressurized gaseous hydrogen storage design and construction.

TITLE:
HEBÉ Hydrogen Storage and Management for Use as Aircraft Fuel

PROJECT: HEBÉ Hydrogen is developing techniques for sealing of underground cavities so that green electrolytic hydrogen produced at pressures of up to 35 bar(g) can be



safely stored for future processing. A key challenge is to find an affordable way to install underground storage in the most difficult geologies on Earth. It is anticipated that engineering and field validation works will generate intellectual property registration opportunities for HEBÉ Hydrogen.

RESULT: HEBÉ achieved the following milestones:
1) Gel coating + epoxy granite + on a low-cost substrate (sono-tube) can hold pressurized hydrogen.
2) Epoxy granite pressure vessel demonstrates a 90% lower carbon footprint + 80% lower cost.

METRICS

Number of prototypes	4
Start TRL	3
End TRL	5
Academic partners	2
Industry partners	2
Total Project Spend	\$153,758.48 (\$75,000 DAIR, \$78,758.48 SME)

SUSTAINABILITY IMPACT:

The hydrogen-storage repositories will provide 100% availability of green fuel on-site for air transportation in all remote regions.



TESTIMONIAL:

Working with DAIR has been incredibly positive for our company. As a young company, bootstrapping to where we are now has been great – with the Green Fund we have reignited the mission, formed new partnerships and advanced our prototyping of the technology towards achieving

commercialization. We're rapidly putting the HEBÉ Cell through its design phases for the global green market to positively impact our environment.

Enzo Cavaliere
Founder of HEBÉ





COMPANY BIO: Founded by an elite fighter pilot and fuelled by a lifetime in military and commercial aviation experience, Horizon Aircraft has assembled a team of engineers, pilots and business specialists dedicated to expanding the possibilities of regional transportation.



TITLE:
Engineering Design of a Hybrid Power System Novel Power Distribution Scheme

PROJECT: Horizon Aircraft is developing a unique hybrid electric Vertical Takeoff and Landing (VTOL) aircraft. To take off and land vertically, the aircraft uses an array of electrically driven lifting fans located in both the main wings and the canards that draw significant power during this short phase of flight. As such, it is beneficial to have a power distribution schema wherein electrical power for vertical flight is routed from two distinct sources: (1) directly from the generator that is part of the main hybrid electric power system; and (2) from an on-board battery array.

RESULT: The hybrid system structure has been defined and the connection between the main components of the system has been defined. A MATLAB Simscape model of the hybrid drivetrain has been developed, which includes a canard fan and a wing fan. The simulation results have shown the capability of the hybrid system to take off and land and charge back the batteries to 90% SoC in air in less than 15 minutes. Also, the fuel consumption of the turboshaft engine and required power demand have been calculated in the simulations.

For future steps, the computer model can be expanded to include all 14 fans of the Cavorite X7 and the dynamics of the turboshaft engine.

METRICS	
Number of prototypes	1
Start TRL	5
End TRL	6
Academic partners	2
Total Project Spend	\$109,712 (\$75,000 DAIR, \$34,712 SME)

**SUSTAINABILITY
 IMPACT:**

Use of electrical and battery power in hybrid systems will reduce requirements to use emission-causing fuels.



TESTIMONIAL: Horizon Aircraft is progressing exceptionally well since the last project with DAIR. With the support of innovative initiatives that support sustainable growth technologies, Horizon has been able to accelerate the development of its hybrid-electric VTOL development project. Specifically, we were able to finish the flight test program on our large-scale prototype aircraft and move on to the design, development and testing of the technology that underpins the full-scale aircraft. For example, we already have full-scale main wing vertical propulsion units fully fabricated and under test.

Brandon Robinson
 CEO of Horizon Aircraft



COMPANY BIO: We are a software engineering studio composed of a bunch of tech geeks, futurist gamers, wide-eyed artists and passionate storytellers. We've created StellarX to help industries, businesses and individuals alike access 3D experience creation through immersive technologies and artificial intelligence.



TITLE:
PhygitalX - Remote Training, Unrestricted

PROJECT: PhygitalX is a software used on the latest extended-reality hardware, combining the best of virtual reality (VR) and augmented reality (AR) to remove the requirement for physical travel in training sessions for aerospace manufacturing or maintenance, while preserving the integrity of the learning experience (a feat otherwise impossible with VR-only or AR-only software). Remote training activities are no longer compromised or restricted – everyone, regardless of physical location, has holistic engagement and presence. Cost savings are significant when remote training sessions are just as good or better than in-person sessions.

RESULT: Over the course of a year, the PhygitalX project remained on schedule and achieved its planned milestones.

The final product, now integrated into OVA's StellarX software, is available for commercial use. It enables users in different locations to participate in collaborative training sessions, with capabilities for both on-site participants and remote users. For those co-located, the software allows for a live feed of the physical environment to be integrated with digital overlays, facilitating an interactive training environment. For example, a field technician could use PhygitalX to view a digital manual or instructional videos overlaid onto their real-world workspace, while remote participants interact via digital avatars.

Future plans include expanding marketing efforts and exploring new applications for the technology in various adjacent industries.



**SUSTAINABILITY
IMPACT:**

Reduction of environmental emissions by making high-quality training possible without the need for travel.



TESTIMONIAL:

Since completing our project with DAIR, OVA has continued to grow, particularly within the defence sector. We've delivered projects for the Royal Canadian Navy, Cadets Canada, and most recently the Royal Canadian Air Force through a major

initiative with the Canadian Forces School of Aerospace Technology and Engineering (CFSATE). Using our AI-enabled VR/MR platform, StellarX, we have developed immersive training scenarios for aerospace engineering officers and technicians

that combine theoretical knowledge – such as Bernoulli's principle – with visualizations of airflow and interactive system maintenance procedures.

Primarily, the Green Fund support has reinforced our commitment to sustainability – our VR training reduces the need for travel, enables remote collaboration in fully spatial environments, and delivers scalable, low-carbon training solutions that align with our vision for environmentally responsible innovation. Furthermore, the support has been instrumental in advancing our aerospace technical expertise and R&D efforts, allowing us to enhance StellarX with new features focused on realism and mixed reality integration.

Harold Dumur
CEO of OVA

METRICS

Number of commercialized products/processes/services	1
Number of prototypes	1
Sales from commercialized products/processes/services	\$239,405
Start TRL	7
End TRL	9
Full-time jobs created	4
Part-time jobs created	3
Academic partners	1
Industry partners	1
Total Project Spend	\$109,935.23 (\$75,000 DAIR, \$34,935.23 SME)

PROMATION

COMPANY BIO: Founded in 1995, Promotion – a privately owned Canadian Corporation – is a leading automation manufacturer in Oakville. We deliver custom equipment and turnkey systems to our global customers in different industrial sectors including aerospace and defence.

TITLE:
Enabling Circular Economy through Autonomous Repair and Remanufacturing of High-Value Gas Turbine Blades using Intelligent Laser Directed Energy Deposition (LDED)

PROJECT: The project focuses on the repair and restoration process of high-value turbine blades by combining the principles of Industry 4.0 through intelligent LDED-PF based AM. Material characterization work in this project includes feedstock analysis, microstructural analysis, mechanical testing and Non-Destructive Testing (NDT).

RESULT: The project has come a long way over the last year and has achieved many of the outlined objectives since its inception. In particular, the overall procedures of

METRICS	
Number of commercialized products/processes/services	1
Start TRL	5
End TRL	6
Full-time jobs created	2
Part-time jobs created	5
Academic partners	2
Total Project Spend	\$103,624.36 (\$75,000 DAIR, \$28,624.36 SME)

co-ordinating additive printing, scanning and subtractive milling operations have been solidified. The robots are now able to operate collaboratively without potentially colliding. Multiple layers of deposition can be executed with machining and scanning processes completed between deposited layers. The process of generating an additive toolpath printing, scanning, generating a subtractive toolpath, and then machining has been tested and is repeatable. This process has been automated and produces consistent results.

SUSTAINABILITY IMPACT:

The energy consumption and carbon footprint of using LDED to repair and remanufacture a turbine blade is substantially lower than manufacturing a new turbine blade.



Laser scanning and data processing of the point cloud has been greatly enhanced. A major achievement is the development of documentation and report submission. Previously, there was limited documentation covering the system and software applications developed thus far. This gap in documentation resulted in additional efforts being centred around the development of a comprehensive software manual and system overview.

TESTIMONIAL:

Our 3D printing and repair capabilities have come a long way since project inception because of support from DAIR.

Mark Zimny
 CEO of Promotion



COMPANY BIO: RAMPF Composite Solutions Inc. specializes on the development, design and manufacturing of high-performance composites. We design and manufacture parts mainly for the aerospace, surveillance and medical sectors.



TITLE:
Developing Ultra-lightweight Composite Propeller for Aerospace Applications

PROJECT: The purpose of this project is to develop a low rotational mass moment of inertia propeller, which takes advantage of composite Tailored Fibre Placement (TFP) technology in conjunction with flexible tooling. Such a propeller will reduce the loads and stresses experienced by the aircraft powertrain – thereby extending the life of the powertrain components.

RESULT: The project commenced with the design and development of a baseline propeller using the traditional approach involving carbon fibre fabrics, tape and a foam core. Finite Element Analysis (FEA) was conducted to meet the known requirements for the propeller, guiding the definition of a suitable laminate. The first prototype propeller was then

METRICS	
Number of prototypes	3
Start TRL	4
End TRL	7
Academic partners	2
Industry partners	1
Total Project Spend	\$139,400 (\$75,000 DAIR, \$64,400 SME)

manufactured and inspected according to specifications. Building on the success of the baseline propeller, a more complex profile propeller was designed using the same traditional approach of carbon fibre fabrics, tape and foam core. FEA analysis once again played a crucial role in determining the suitable laminate. The first prototype propeller with a more intricate profile was manufactured and inspected to meet specifications.

Subsequently, a TFP version of the propeller was developed, maintaining the same performance characteristics as the previous designs. TFP preforms were stitched and validated against the FEA model.

SUSTAINABILITY IMPACT:

Lightweighting will create a reduction in greenhouse gases as we enable the reduction of weights and electrification of various transportation industries including aerospace, defence, Urban Air Mobility, UAVs and space vehicles.



Transitioning from a quest for flexible tooling, the project shifted focus to adopting a dissolvable mandrel approach. Extensive research led to the identification of TriMech as an optimal consultant and partner. Substantive discussions with TriMech delved into the project's requirements and the future potential of the dissolvable mandrel approach, extracting valuable insights. The design of a dissolvable mandrel was executed, and utilizing TriMech technology, three prototypes were 3D printed for upcoming trials. Recognizing the importance of continuous enhancement, the TFP programming was revisited, incorporating improvements to achieve enhanced weight reduction and seamless integration within the tool alongside the mandrel.

TESTIMONIAL:

Since our first engagement with DAIR, RAMPF Composite Solutions has made significant progress in advancing our capabilities in lightweight composite design and sustainable manufacturing. The collaboration has strengthened our technical expertise, expanded our market opportunities, and reinforced our position as an innovative contributor to Canada's aerospace and advanced

manufacturing ecosystem. DAIR's support has been instrumental in helping us bridge the gap between research and commercialization, accelerating our ability to deliver impactful solutions.

The Green Fund has been pivotal in enabling us to pursue ambitious R&D initiatives that align with Canada's net-zero and sustainability goals. With this funding, we have been able to explore innovative ideas in RAMPF cutting-edge technologies such as Tailored Fibre Placement (TFP), which would have been challenging to pursue at the same pace without this support. The program has not only reduced financial barriers but also provided a platform to collaborate with academic and industrial partners, amplifying the impact of our work.

Atefeh Nabavi
Director of Engineering and Quality at RAMPF



COMPANY BIO: Solid UltraBattery Inc. is a subsidiary of Volt Carbon Technologies Inc. (Volt) which is a public company, and a high-tech enterprise focused on design and production of low-cost, high-energy, solid-state lithium-ion batteries.

➔ **TITLE:**
Development of Lithium-ion Battery for Small Drone and UAV applications

PROJECT: This project is to develop a 5 Ah lithium-ion battery for testing in a small, unmanned, fixed-wing drone application. Solid UltraBattery anticipates that high-energy-density lithium-ion or lithium-metal batteries more than 400Wh/kg will be required for aerospace and drone applications, due to high energy demands during takeoff and cruising stages of flight under inclement weather conditions. The initial battery will target 400Wh/kg as a starting point. The goal is to develop a small 5 Ah building block for a much larger battery that can be developed in the future for substantially larger flight vehicles.

RESULT: Successfully achieved the project goal of developing a lithium (Li) battery with an energy density

METRICS	
Number of prototypes	1
Start TRL	6
End TRL	7
Full-time jobs created	1
Part-time jobs created	2
Academic partners	1
Industry partners	1
Total Project Spend	\$140,663.53 (\$75,000 DAIR, \$65,663.53 SME)

of 400Wh/kg. Additionally, we have assembled a delta-wing drone and operated it on the ground, utilizing the developed batteries.

SUSTAINABILITY IMPACT:

Use of lithium batteries will reduce environmental emissions compared to use of traditional fuel sources.



TESTIMONIAL:

Our first DAIR Green Fund project delivered a breakthrough by achieving 400 Wh/kg Li-metal batteries, a milestone that makes our technology viable for aerospace. This success proved we can meet the challenging weight and performance demands of drones and electric aircraft while setting the stage for even greater energy density, longer cycle life and

aerospace certification. Building on this momentum, we are now engaging new aerospace partners to bring this innovation to flight.

The DAIR Green Fund was a catalyst for our growth. It enabled us to develop a 400 Wh/kg Li-metal battery for aerospace applications, dedicate more staff to the project and gain

greater visibility with key customers. This led to substantially improved customer engagement and faster technology development, positioning us for future aerospace partnerships and market expansion.

Hey Woong Park
Head of Battery Development at Solid UltraBattery Inc.

SUPERWAKE

COMPANY BIO: Superwake builds and operates solar-powered, remotely-piloted aerial (RPA) systems. Our objective is to provide scalable access to high-quality Earth observation (EO) data, primarily aerial imagery and video.



TITLE:
Arctic Shoreline Mapping Pilot

PROJECT: The purpose of this project is to supply the Department of Environment and Climate Change Canada (ECCC) with high-definition aerial imagery and video of shoreline regions in the Canadian Arctic, which will be used to segment the shoreline into a digital model. Superwake will join a team from ECCC in the Arctic in summer 2023 to test the effectiveness of their long-endurance, solar-powered, remotely piloted aerial systems (RPAS) for this application. This project is part of a larger effort by ECCC to evaluate various coastal mapping methodologies, comparing satellite imagery and RPAS to helicopter-based operations, which form the baseline.

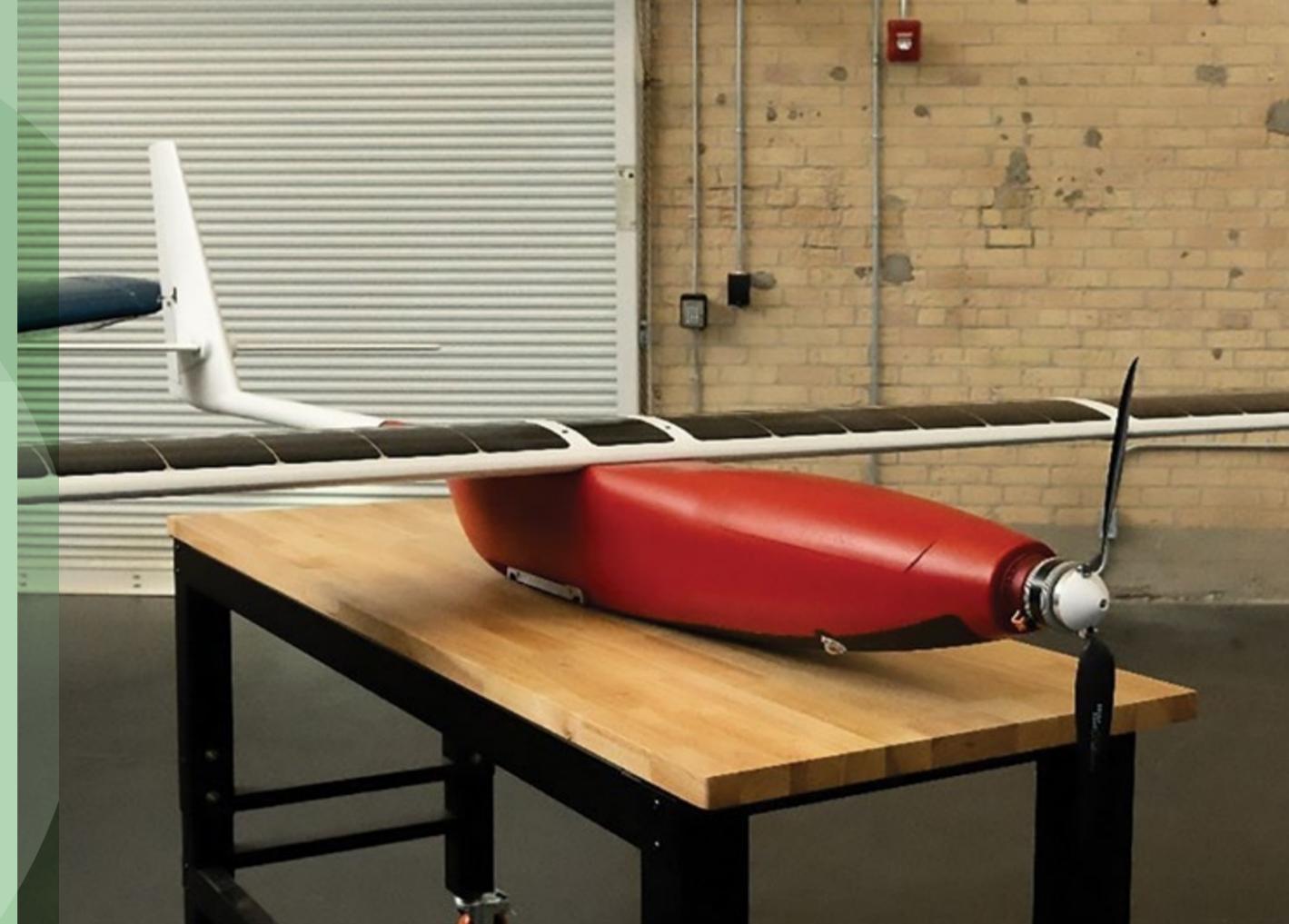
RESULT: With ECCC, we set out to determine if long-endurance drones could be a tool to help with their mapping. We identified the payload requirements based on existing

METRICS	
Number of commercialized products/ processes/services	1
Number of prototypes	2
Sales from commercialized products/ processes/services	\$41,000
Start TRL	7
End TRL	8
Full-time jobs created	2
Part-time jobs created	2
Academic partners	1
Industry partners	1
Total Project Spend	\$100,269.36 (\$75,000 DAIR, \$25,269.36 SME)

flight data and integrated a camera into our drone aircraft. With guidance from ECCC, we ended up conducting tests along several segments of shoreline in British Columbia. We varied the position of the drone and the angle of the camera relative to the shoreline in order to determine what

SUSTAINABILITY IMPACT:

Superwake RPAS offers a reduced fuel consumption of the operations, versus the current helicopter option.



configuration is most effective for interpretation. With ECCC, we are reviewing the data obtained and comparing it with the traditional helicopter-based video obtained several years ago for the same segments of shoreline.

Preliminary results show that the drone is effective at capturing high-resolution imagery of the shoreline. The resolution of the imagery is very high, and allows

the interpreter to determine pebbles down to a few centimetres in diameter. The next steps are focused on how to scale up the amount of shoreline we can tackle in a mission, which involves complying with regulations around flying the drone beyond visual line-of-sight. We also identified several other interesting ways this drone imagery could be used, including surveying birds and seals, which were both captured in the imagery.

TESTIMONIAL:

The first project with DAIR, focused on developing and testing a coastline mapping workflow for ECCC using the SW117 platform, was a valuable step in demonstrating Superwake's capabilities in environmental monitoring applications. It allowed us to validate both our aircraft and data processing pipeline in a real-world use case, which helped build confidence with potential clients in the government and environmental sectors. Since completing the project, we've seen increased interest in similar mission profiles, and it has directly informed how we design and package our drone services for operational use. Importantly, the capabilities developed through this project have led to additional pilot projects with other government agencies and their subcontractors.

Michael Melville
COO of Superwake



COMPANY BIO: Tristar Coatings Ltd. is a small to medium-sized Canadian manufacturer in the coatings industry. Tristar has been in business since 1971 and has been operating as a sole proprietorship under the ownership of Svetlana Melkova since 2018. Tristar Coatings manufactures water- and solvent-based primers and topcoats for the aerospace, industrial, agricultural and architectural industries. Tristar’s mission is to be the industry leader providing the best engineered specialty coatings ensuring long-term protection and outstanding finish in all the markets we participate in.

TITLE:
Chromate-free, Solvent & Water Based Primers and Integral Fuel Tank Coating for the Aerospace Market

PROJECT: This project will allow testing and certification steps to commence on Tristar Coatings blends of chrome-free water-based and solvent-borne products.

RESULT: Research on our chrome-free water-based products has shown similar results to solvent-based products with chrome. Salt spray results were better for

METRICS	
Number of prototypes	1
Start TRL	4
End TRL	5
Full-time jobs created	5
Part-time jobs created	2
Industry partners	1
Total Project Spend	\$187,063.04 (\$75,000 DAIR, \$112,063.04 SME)

water-based with results up to five times greater than current specifications. After proving the water-based formulation has good corrosion resistance, mechanical properties, fluid resistance and very low level of VOC, we progressed to a chromate-free solution for an integral fuel tank coating. After the third formulation, a solution was found to provide suitable characteristics to pass specifications required in aerospace. From the results of this project, TriStar Coatings has been able to have discussions and start testing their solutions with industry leaders such as DeHavilland and Airbus.

SUSTAINABILITY IMPACT:

This project aims to eliminate the chromates in the primers, which will greatly reduce the exposure of all workers involved in the manufacturing, spraying as well as in the shipping and repair processes.



TESTIMONIAL:

The funding received from the DAIR Green Fund provided us many opportunities that we would have otherwise missed out on. We focused our efforts on a chromate-free aerospace primer for this project. Historically, strontium chromate has been used as an anti-corrosive pigment in the aerospace industry as it is the best at protecting sensitive and hard-to-reach areas. Research into replacements with the same performance has been ongoing for more than 20 years due to its toxicity and carcinogenicity. The funding provided us with the opportunity to further our research into replacements.

Our work at Tristar to eliminate strontium chromate from aerospace primer, while still meeting/exceeding the OEM requirements, has provided Tristar many new opportunities to meet and present our work with the IAEG (International Aerospace Environmental Group), SAE, as well as directly with many OEMs

worldwide. There has been great interest in our developments, and currently we have samples out for testing with our customers.

Some of the challenges we have been facing include equipment (both lab and production), floor space for manufacturing and warehouse. The funding we received helped us purchase a second lift for our filling department, a forklift for shipping and helped us install a mill used to make our primers. The lab was able to purchase a new colourimeter to match challenging colours faster and more accurately to meet our customer’s needs, new spray equipment to mimic the environments used by our customers, and a UV testing machine to be able to test the UV resistance for products sold to the industrial and aerospace markets.

Scott Murray
Technical Director at Tristar Coatings



COMPANY BIO: Zentek is an IP development and commercialization company that uses expertise in nanomaterials and strategic partnerships to break through the barriers of molecular science and uncover new possibilities in health, safety and the environment. We believe our proven, next-generation, patented nanotechnologies will help solve the world's most complex challenges.

TITLE:
Developing a Passive Icephobic Coating for Dash 8-400 Propellers

PROJECT: Ice is one of the significant challenges that the aviation industry faces. Ice increases the weight of planes, but more importantly changes the aerodynamic profile of wings and propellers. There are two main pathways to reduce the effects of ice: to actively control the ice through heat or mechanical energy during flights, or to provide a passive coating that will allow ice to shed at low kPa. Zentek has developed a patent-pending passive icephobic coating that will be assessed and optimized for the Dash 8-400 propellers.

RESULT: Zentek worked closely with UQAC to test multiple coating solutions that showed promising results, and although it was found to not ultimately be suitable for aviation purposes, there is a strong interest that it will provide sufficient protection for smaller RPAS drones. The current material will continue to be tested with RPAS drones in the next stage of this research.

METRICS

Start TRL	4
End TRL	5
Part-time jobs created	1
Industry partners	1
Total Project Spend	\$124,660.52 (\$75,000 DAIR, \$49,660.52 SME)



SUSTAINABILITY IMPACT:

A passive icephobic coating on a propeller will improve safety, reduce the energy of in-flight de-icing, and will reduce the complexity of the current active systems that require regular maintenance.



TESTIMONIAL:

The DAIR program allowed Zentek to further invest in this promising technology. Although, the coating may not ultimately be suitable for aviation purposes, there is a strong

possibility that it will provide sufficient protection for smaller RPAS drones. The DAIR administration was very supportive during the project and provided both feedback and offered

assistance when we faced technical challenges.

Colin van der Kuur
CSO at Zentek



In-progress projects



COMPANY BIO: BioFlight Fuels Inc. was created to supply the aviation industry with sustainable aviation fuel (SAF). BioFlight uses sustainable, reliable feedstock and proven technology, innovatively stacked to ensure project success.



TITLE:
SAF Flight School - SAF Certification and Carbon Reduction Modelling Plan (CCRMP)

PROJECT: The project integrates three critical work packages from our SAF Flight School Project to de-risk and validate sustainable aviation fuel (SAF) production from renewable biogas feedstock.

SUSTAINABILITY GOAL: BioFlight will focus on certifying the synthesized paraffinic kerosene from the Fischer-Tropsch process as ASTM-compliant SAF, develop a comprehensive supply chain accreditation framework with a working carbon reduction model to quantitatively assess GHG savings compared to conventional jet fuel, then test and verify models at our SAF demonstration plant in Salt Lake City. Collectively, these initiatives advance renewable technology by maturing the SAF production process, reducing operational risks and demonstrating substantial contributions toward net-zero aviation targets.

TESTIMONIAL: DAIR's Green Fund support has been instrumental in propelling BioFlight Fuels forward. The funding allowed us to accelerate our work on Sustainable Aviation Fuel (SAF) certification and carbon modelling, deepen our partnerships and engage key stakeholders across our ecosystem. Most importantly, the Green Fund has validated the importance of our work and opened doors to new conversations with potential investors, municipalities and airline partners. It is helping to de-risk a critical phase of our commercialization journey.

Our SAF Flight School project is progressing well. In partnership with Brightspot Climate and IVYs, we have initiated work on our carbon reduction modelling, RNG traceability and fuel certification plan. Our demonstration facility in Salt Lake City – developed in collaboration with OxEon Energy – is

now operational and producing SAF, with fuel available for testing in the coming weeks. This is a major milestone. We have also advanced planning for our pilot deployment at the Barrie Wastewater Treatment Plant and have begun aligning site logistics and regulatory planning. Together, these efforts are validating our supply chain and GHG reduction assumptions and will support our efforts to commercialize SAF production in Canada.

Lynn Strachan
Founder and VP of Government Relations at BioFlight Fuels



COMPANY BIO: At BMP Metals, our work is a testament to our unwavering commitment to quality and precision in metal fabrication. Each project we undertake reflects our dedication to excellence and our drive to exceed industry standards. From intricate designs to large-scale productions, we deliver outstanding results every time.

Our experienced team brings expertise and innovation to every stage of the fabrication process. Explore our portfolio to see how we turn ideas into reality, showcasing the true craftsmanship of our work.



TITLE:
Project Green Heat Efficiency

PROJECT: This project aims to enhance energy efficiency, reduce operational costs and reduce our carbon footprint by reclaiming heat from the paint line process and introduce a low cure temperature, low volatile organic compounds (VOC) paint, resulting in a reduced carbon footprint from our facility.

SUSTAINABILITY GOAL: By reclaiming heat from an in-house process, BMP will be reducing their carbon footprint in the manufacturing facility.

TESTIMONIAL: The Dair Green Fund has been instrumental in accelerating our Green Heat Efficiency project, which will assist Bempro in transitioning to sustainable advanced manufacturing. With this funding, we've been able to invest in our paint line to improve energy efficiency and reduce our greenhouse gas emissions.

We just commissioned some of the equipment, and the new ducting is complete. All critical components are in place, and we are working on some minor items to have them installed before the end of August.

Lori Holjevac
VP Finance at BMP Metals





COMPANY BIO: Brampton Processing is a metal finishing company dedicated to excellence in our continuous service to the aerospace and commercial metal finishing industry. Located in Brampton, Ontario, just minutes from the airport and the technology triangle, we have been providing outstanding quality service since 1991.

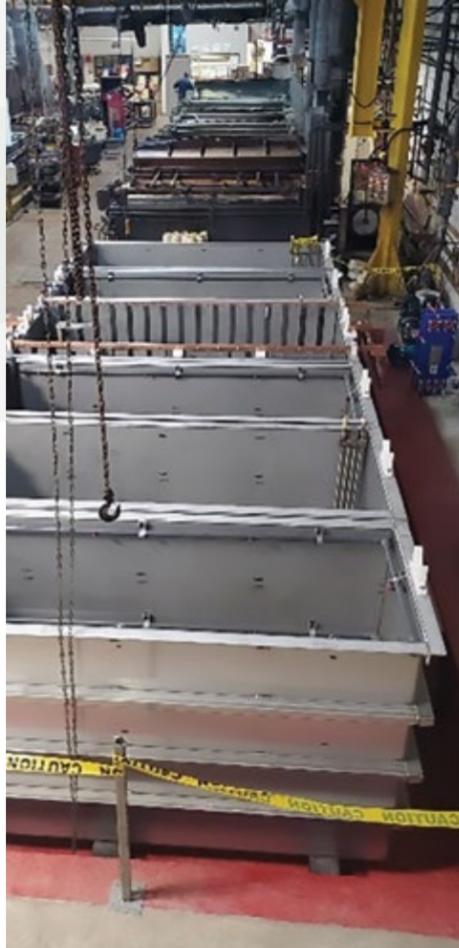


TITLE:
Development of Process to Phase-Out Hexavalent Chromium Compounds from Anodizing

PROJECT: This project is to test and certify the process to phase-out toxic hexavalent chromium compounds from its anodizing and plating processes. The goal of the project is to eliminate toxic hexavalent chromium emissions into the environment and replace them with less toxic trivalent chromium emissions.

SUSTAINABILITY GOAL: Eliminating toxic emissions into the environment contributing to net-zero aviation targets.

TESTIMONIAL: Our current Green Fund-supported project is progressing exceptionally well, with key milestones already achieved and a clear path toward full qualification. The focus



of this initiative – Chrome-Free Acid Anodizing (Process 160-045) – represents a major step forward in our commitment to sustainable surface treatment technologies.

To date, we’ve finalized the technique sheet and completed six out of nine critical qualification tests, including corrosion resistance, coating weight and

sealing efficiency. These results have validated the performance of our chrome-free process across multiple aluminum alloys, and we’re now advancing into the final phase of fatigue and paint adhesion testing, with completion targeted by the end of September.

The anticipated results of this project are transformative. We expect to fully qualify a high-performance, environmentally friendly anodizing process that meets aerospace and defence standards – eliminating the need for hexavalent chromium while maintaining structural integrity and corrosion resistance. This will not only reduce our environmental footprint but also open new market opportunities with clients seeking sustainable alternatives.

Alex Cajic
Vice-President of Ontario Division Groupe DCM



COMPANY BIO: FTG is a global corporation offering design, development and manufacturing solutions for aerospace and defence. FTG Aerospace designs and manufactures high-reliability, high-quality Avionic sub-system hardware including; backlit control panels and assembly, integrated switch panels, MCDU keyboards, primary display bezels, cursor control devices and advanced control panel assembly LRUs. FTG Aerospace products are utilized in flight and simulated devices in commercial aero and defence platforms.



TITLE:
Developing Water-Based Paint Processes for Lightplates in Cockpit Panels

PROJECT: This project aims to develop sustainable water-based paint processes/applications for lightplates used in cockpit products of aerospace applications. The initiative is driven by the goal of reducing Volatile Organic Compound (VOC) emissions, reduction of solvents for urethane-based paint cleaning purposes and enhancing the environmental sustainability of aerospace manufacturing processes.

SUSTAINABILITY GOAL: By producing water-based paints, FTG will be using non-hazardous materials, reducing



energy consumption due to lower curing temperatures, and will reduce VOC emission levels.

TESTIMONIAL: The DAIR Green Fund has been invaluable to FTG in advancing our efforts to reduce the environmental impact our production could have on the environment. In our business making cockpit products, we have used solvent based paint for years as it needs to meet stringent aerospace requirements. If we could transition to water-based paint and still meet these requirements, it would be good for FTG, our customers and the environment. While we are not yet complete, it is exciting to see the development and testing going on, and we are hopeful we will be successful in achieving our goal!

Brad Bourne
President and CEO of FTG



COMPANY BIO: GasTOPS provides innovative equipment health monitoring and maintenance management solutions. These solutions include fluid sensing and analysis systems as well as specialized technical services for high-value and mission/operational-critical equipment in a wide range of industries including aviation, defence, energy and marine. Our key offerings include oil debris sensors, analyzers, blade health monitoring sensors, and simulation, MRO and remote monitoring services.



TITLE:
Fuel sensing for aircraft engine thermal management

PROJECT: This project aims to identify and validate feasible approaches to address fuel coke formation from a jet engine fuel source through advanced sensors providing data for diagnosis.

SUSTAINABILITY GOAL: This project contributes to the aviation industry's net-zero targets in two ways – enabling lower fuel burn and corresponding greenhouse gas (GHG) emissions and supporting the use of sustainable aviation fuels (SAF) that have lower net lifecycle GHG emissions.



TESTIMONIAL: The Green Fund has helped us accelerate technology development in an adjacent application, and foster collaboration early on to

ensure that the development meets the market needs and will make positive contributions to our industry's net-zero targets in the future.

The project is on track, the feasibility experiments have been completed and testing is underway with the prototype sensor (see picture). The results will enable us to plan and drive the future phases of development, including engine representative testing.

Pooja Suresh
Director of Corporate Strategy at GasTOPS



COMPANY BIO: HEBÉ Hydrogen is a Mississauga, Ontario-based early-stage startup focused on innovative, safe, low-cost green underground pressurized gaseous hydrogen storage design and construction.



TITLE:
HEBÉ's Mineral Composite Compressed Gaseous Green Hydrogen Storage Tank (42 bar) Commercialization

PROJECT: HEBÉ will design, model and perform analysis for a mineral composite pressure vessel system to be used for hydrogen storage. The unique design is aimed at ensuring easy transportation and easy set up as underground storage for the aviation sector.

SUSTAINABILITY GOAL: Hydrogen is one of the clean fuel options for the aviation sector to achieve global net-zero goals. HEBÉ is proactively solving the logistics and storage problem now to prepare for the future need of hydrogen at airports.

TESTIMONIAL: On behalf of HEBÉ, I wish to extend our sincere gratitude for the instrumental role that the DAIR Green Fund has played in enabling our company to consistently progress through critical technology readiness levels. With your support, we have

successfully advanced our subterranean hydrogen storage system to TRL 7 by Q2 2025, and we are firmly on track to reach TRL 9 by late-2026.

The support of DAIR's Green Fund has done more than finance our technical development – it has positioned Canada as a global leader in long-duration clean energy storage. These funds address a critical gap in Canada's innovation ecosystem: enabling companies like HEBÉ to bridge the “valley of death” between breakthrough research and full-scale commercialization. Without them, technologies essential to a sustainable, decarbonized future risk remaining trapped at early-stage development.

Looking forward, DAIR Green Fund continues to be vital not only for HEBÉ but for the broader Canadian clean technology sector. Canada needs bold,

forward-looking capital platforms like DAIR to ensure we do not cede leadership in hydrogen and clean energy storage to other jurisdictions.

For HEBÉ, the trajectory is clear: from validated prototypes at TRL 7 today, to commercial pilot installations in 2026-27, and ultimately to global deployment. DAIR Green Fund's support ensures this vision can be realized here in Canada.

On behalf of our team, I thank you and the DAIR Green Fund initiative for your trust and partnership. We are proud to be part of your portfolio and remain committed to demonstrating Canadian leadership in the global clean energy transition.

Enzo Cavaliere
Founder of HEBÉ



COMPANY BIO: Founded by an elite fighter pilot and fuelled by a lifetime in military and commercial aviation experience, Horizon Aircraft has assembled a team of engineers, pilots and business specialists dedicated to expanding the possibilities of regional transportation.

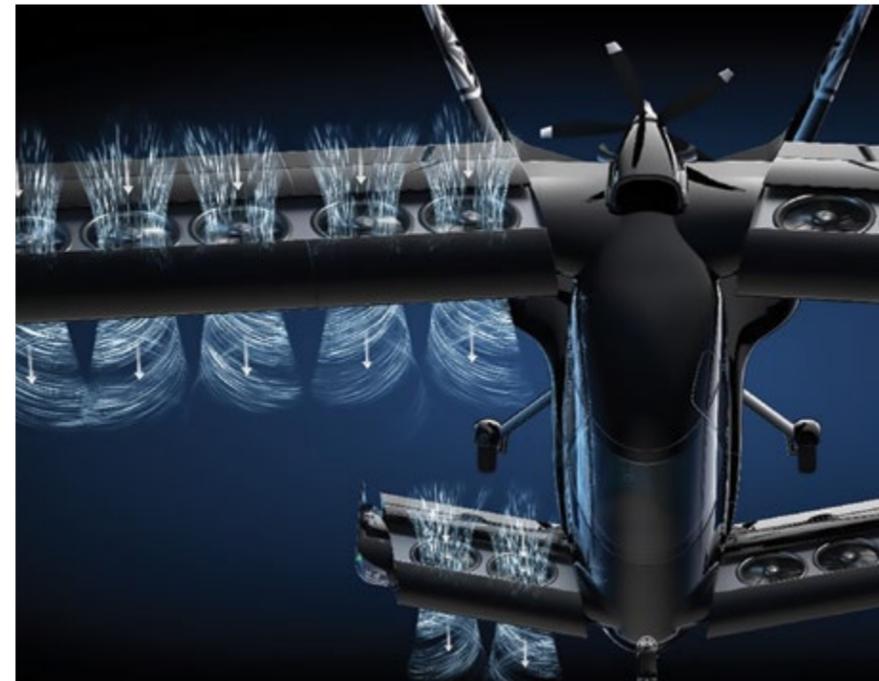
➔ **TITLE:**
Advancement of eVTOL HOVR Wing

PROJECT: Horizon engineering team will build, test and perform data analysis on full-scale wing components for their unique and patented fan-in-wing system.

SUSTAINABILITY GOAL: Aircraft burn the most fuel during takeoff, and with the advancement of electric vertical takeoff and landing (eVTOL) aircraft, the use of this technology requires far less fuel burn at takeoff thus reducing greenhouse gas (GHG) emissions.

TESTIMONIAL: The Green Fund funding has been helpful in a few ways. First, developing a new, innovative aircraft is expensive; every little bit of funding counts. Second, winning a highly competitive Green Fund round is a message to the world that we are doing something special, and not a company that

simply has a good idea. We are doing the hard engineering to build an aircraft that will improve the way people and stuff moves around the world more efficiently. Finally, being part of a growing DAIR network has given us access to other world-class Canadian companies with whom we may partner in the future. The result



could be a powerful Made In Canada story.

We are happy to say for the current project that we are on track to achieve the intended results, and more!

Brandon Robinson
CEO of Horizon Aircraft



COMPANY BIO: NordSpace's vision is to help Canada become a sustainable technology and manufacturing powerhouse in aerospace and defence. The company is currently developing sovereign orbital launch vehicles for dual use in Canada, securely delivering commercial satellites and critical national security payloads into low Earth orbit. We are focused on incorporating sustainable aviation fuels (SAF) additive manufacturing and minimal environmental footprints in its design of critical space launch capabilities for Canada.

➔ **TITLE:**
Performance Characterization of SAFs in Liquid Bi-propellant Rocket Engines

PROJECT: The proposed project will experiment and modify our liquid bi-propellant rocket engine to enable it to run on SAF rather than kerosene.

SUSTAINABILITY GOAL: An improved "green engine" will be developed using SAF and liquid oxygen, reducing the amount of carbon into the environment thus contributing to net-zero targets. It will help launch operators come into compliance with carbon regulations with greater cost-effectiveness and agility.

TESTIMONIAL: The DAIR Green Fund has been important in advancing NordSpace's mission to build a sustainable future for Canada's aerospace and defence sectors. With strategic support from the DAIR Green Fund, NordSpace has been empowered to accelerate its pioneering efforts to develop Canada's first commercial orbital launch vehicle using sustainable aviation fuels (SAF), with a view towards net-zero targets. The Green Fund's resources have allowed NordSpace to initiate SAF research and experimental development on the Hadfield rocket engine, focusing on transitioning its operation away from conventional kerosene-based rocket fuels. This initiative would not have been possible at its current pace without the DAIR Green Fund's commitment to supporting innovative and transformative projects.

The DAIR Green Fund's contribution has reached beyond technical milestones; it

has amplified NordSpace's position within the domestic and global aerospace ecosystems. By accelerating the development of a green rocket engine, the Green Fund has enabled NordSpace to gain a competitive advantage in the emerging market for sustainable propulsion technologies. This has also positioned the company as a critical enabler of the Canadian government's net-zero aviation commitments, providing a clear pathway toward carbon-neutral space launches. Importantly, the Green Fund's investment has indirectly stimulated job creation, upskilling opportunities and collaboration with Canadian suppliers, strengthening the local aerospace manufacturing base.

Derrick Chow
Director of Operations at NordSpace



COMPANY BIO: RAMPF Composite Solutions Inc. specializes on the development, design and manufacturing of high-performance composites. We design and manufacture parts mainly for aerospace, surveillance and medical sectors.

TITLE:
Advanced Composite Development: Utilizing TFP Technology for Integrating Electro-Thermal Features and Structural Optimization in Composites

PROJECT: This project aims to pioneer a revolutionary approach in composite design by developing a lightweight composite structure integrated with an electro-thermal deicing/heating system, leveraging Tailored Fibre Placement (TFP) technology.

SUSTAINABILITY GOAL: Reduction of energy consumption and improving component life span.

TESTIMONIAL: Our current Green Fund project, Advanced Composite Development: Utilizing TFP Technology for Integrating Electro-Thermal Features and Structural Optimization in Composites, is progressing on schedule with encouraging early results. Initial prototypes and coupon

testing have validated the feasibility of integrating heating elements into composite structures while achieving weight optimization and energy efficiency. We expect this project to demonstrate reductions in energy consumption and manufacturing waste, and to deliver

safer, high-performance components for next-generation aerospace simulators and related applications.

Atefeh Nabavi
Director of Engineering and Quality at RAMPF



COMPANY BIO: Solid UltraBattery Inc. is a subsidiary of Volt Carbon Technologies Inc. (Volt), which is a public company, and a high-tech enterprise focused on design and production of low-cost, high-energy, solid-state lithium-ion batteries.

TITLE:
Advancements in Low-Temperature Performance of Lithium-Ion Batteries

PROJECT: The primary objective of this project is to enhance the low-temperature performance of lithium-ion batteries for small, unmanned, fixed-wing drones.

SUSTAINABILITY GOAL: These improved batteries aim to reduce reliance on fossil fuels, promote energy efficiency and renewable energy, and support efforts to achieve net-zero aviation goals by reducing greenhouse gas (GHG) emissions.

TESTIMONIAL: Our current DAIR Green Fund project is advancing Li-metal batteries with enhanced low-temperature performance, targeting aerospace and energy security applications in extreme cold regions where traditional lithium-ion batteries suffer substantial capacity loss. Mid-project results confirm our technical direction, with preliminary tests showing

strong performance under sub-zero conditions. The additional capacity ensures a critical margin of safety for UAV operations, enabling longer missions and more reliable performance. We are on track to deliver a high-energy-density Li-metal battery capable of dependable cold-weather

operation, expanding the capabilities of high-altitude drones and other critical systems in the harshest environments.

Hey Woong Park
Head of Battery Development at Solid UltraBattery Inc.



SUPERWAKE

COMPANY BIO: Superwake builds and operates solar-powered, remotely-piloted aerial (RPA) systems. Our objective is to provide scalable access to high-quality Earth observation (EO) data, primarily aerial imagery and video.

TITLE:
Scalable Remote Sensing with Ultra Endurance Solar Electric Drones

PROJECT: Superwake is focused solely on developing an improved powertrain for the new ultra-range drone.

SUSTAINABILITY GOAL: Our pure solar electric platform emits zero greenhouse gases and directly eliminates the use of gasoline-burning single- and twin-engine aircraft. Small-crewed aircraft emit approximately 90-500 kg CO₂ per hour (fixed-wing and helicopter). Over 180 M gallons of AVGAS are burned annually worldwide, which produces 1.5 M tonnes of CO₂. A single Superwake drone operating 2,000 hr/year eliminates 180 tonnes of CO₂.

TESTIMONIAL: The DAIR Green Fund has played a pivotal role in accelerating Superwake's mission to develop and deploy solar-electric fixed-wing drones. With their support, we have



been able to advance our sustainable aviation technology, conduct critical flight testing and expand our operational capabilities. This funding has enabled us to move faster toward delivering zero-emission drone operations for government and commercial clients. We're grateful for DAIR's commitment to supporting clean, innovative aerospace solutions in Canada. Superwake's Green Fund project is progressing well. We have down-selected motors and propellers of interest for our new electric powertrain and the conceptual design of the twin-motor SW117, and are preparing for wind tunnel testing of these configurations with support from Toronto Metropolitan

University. In parallel, we are advancing the development of improved autopilot control algorithms, particularly in motor control, to enable more efficient flight. Performance flight tests are currently being planned to establish a baseline for comparison and to validate predicted gains. Through these developments, we aim to achieve a 5-10% reduction in overall power consumption. These efforts represent important steps toward enhancing the performance, efficiency and sustainability of our zero-emission drone systems.

Michael Melville
COO of Superwake



COMPANY BIO: Volatus brings a rich history and experience in manned aircraft operations, safety, compliance and innovation to the evolving unmanned aircraft market – developing all aspects of this new aviation reality. As global aviation authorities work towards future-proofing regulations and operating ecosystems, Volatus is positioned to be relied upon as a strong commercial partner.

TITLE:
Integration and Testing of Onboard Detect and Avoid (DAA) for Beyond Visual Line of Sight (BVLOS) Canary Remotely Piloted Aircraft (RPA) Operations

PROJECT: This project will evaluate the capability of an onboard optical DAA system integrated on the Canary drone, which alleviates the fixed nature of ground-based systems.

SUSTAINABILITY GOAL: The DAA system will allow the drone to advance remote delivery service in far less complex air spaces, heavily reducing the carbon footprint for delivery companies and supporting the expansion of a time-sensitive medical delivery system.



TESTIMONIAL: This initiative addresses one of the most critical barriers to scaling drone logistics safe, cost-effective Beyond Visual Line of Sight (BVLOS) operations. By integrating a next-generation onboard Detect-and-Avoid (DAA) system into our Canary Remotely Piloted Aircraft, Volatus is moving away from fixed ground-based monitoring toward a flexible, redeployable solution. This capability not only reduces operational costs but also represents a breakthrough toward scalable, net-zero aviation logistics in Canada.

Thanks to the Green Fund, we have successfully advanced the project from bench testing to full prototype demonstration. The DAA system has been integrated and

verified in a Simulation-in-the-Hardware environment, installed on the Canary platform, and is now undergoing controlled flight testing at our test site. Our technology readiness level has progressed from TRL 6 to TRL 7, with promising results. Importantly, the Halton Healthcare Network has joined as a key partner, validating the real-world health-care applications of this technology for inter-hospital logistics. We extend our sincere gratitude to DAIR Green Fund and FedDev Ontario for enabling this progress. Without your support, Canada would not be on the verge of demonstrating one of the first cargo drones with a fully integrated onboard DAA capability. This project exemplifies how targeted innovation funding accelerates commercialization, strengthens Canadian competitiveness and drives sustainable real-world applications.

Greg Colacetti
COO at Volatus Aerospace



COMPANY BIO: Volt Carbon Technologies Inc. functions as a junior resource company with a strong focus on innovations in energy storage and green energy technologies. The company holds mining rights for graphite, lithium and rare earth minerals across the Canadian provinces of Ontario, Quebec and British Columbia. The company is ramping up graphite production at its mineral processing and research facility in Scarborough using its exclusively developed dry separation technology.



TITLE:
Development of high-performance carbon materials for aerospace industries

PROJECT: The objective of this project is to develop high-performance carbon-based materials for the aerospace industry using expandable graphite and graphene made from natural flake graphite.

SUSTAINABILITY GOAL: Graphene composites offer higher strength-to-weight ratios compared to metals and plastics, enabling the production of efficient, aerodynamically optimized designs, improving aircraft fuel efficiency and performance. Graphite's excellent thermal conductivity

is crucial for thermal management systems in the electrification of aircraft, supporting the drive towards net-zero emissions.

TESTIMONIAL: This has been our first DAIR-supported project in carbon sciences, and the Green Fund has allowed us to make meaningful progress. Through this support, we have successfully synthesized graphene composites, fabricated graphite foils and developed expandable graphite. These outcomes have already attracted commercial interest from companies exploring applications for these materials, opening doors for future partnerships.

The project has positioned us to build on this momentum and expand our role in advanced carbon materials. We see strong potential for applying these innovations to aerospace and related industries, which aligns directly with DAIR's mission to advance sustainable aeronautics.

We are grateful for DAIR's support – it has been instrumental in advancing our work and creating opportunities for continued growth.

V-Bond Lee
President and CEO of Volt Carbon Technologies



Appendices

Appendix A

List of Regions Included in Southern Ontario

The applicant must be located in Southern Ontario, which includes the following regions:

- Stormont, Dundas and Glengarry
- Prescott and Russell
- Ottawa
- Leeds and Grenville
- Lanark
- Frontenac
- Lennox and Addington
- Hastings
- Prince Edward
- Northumberland
- Peterborough
- Kawartha Lakes
- Durham
- York
- Toronto
- Peel
- Dufferin
- Wellington
- Halton
- Hamilton
- Niagara
- Haldimand-Norfolk
- Brant
- Waterloo
- Perth
- Oxford
- Elgin
- Chatham-Kent
- Essex
- Lambton
- Middlesex
- Huron
- Bruce
- Grey
- Simcoe
- Haliburton
- Renfrew

Appendix B

Definitions for under-represented groups

Definitions provided by FedDev Ontario

Group	Definition
Women	Women are defined as persons who identify with the female gender.
Youth	Youth are defined as persons being between the ages of 15 and 30.
Racialized Communities	Groups that have socially constructed as races – other than Indigenous Peoples and Black communities, who identify as being non-Caucasian in race or non-white colour – based on characteristics such as ethnicity, language, economics, religion, culture and/or politics.
Persons with Disabilities	Persons with disabilities includes persons who identify as having a long-term or recurring physical, mental, sensory, psychiatric or learning impairment and: <ul style="list-style-type: none"> • Consider themselves to be disadvantaged in employment by reason of that impairment; or • Believe that an employer or potential employer is likely to consider them to be disadvantaged in employment by reason of that impairment. This also includes persons whose functional limitations owing to their impairment may have been accommodated in situations of employment.

Group	Definition
Official Language Minority Communities (OLMC)	Groups of Canadians whose first or preferred language is French or English and who live in a province where that language is in a minority.
Immigrants and Newcomers to Canada (last 5 years)	Persons who identify as being newcomers to Canada, or immigrants. <ul style="list-style-type: none"> • Immigrants are persons who are, or who have ever been, a landed immigrant or permanent resident. Such a person has been granted the right to live in Canada permanently by immigration authorities. Immigrants who have obtained Canadian citizenship by naturalization are included in this group. • Newcomers are considered recent landed immigrants who arrived in Canada within the last five years.

Group	Definition
Indigenous Peoples	Refers to individuals identifying themselves as First Nations people, Métis or Inuit.
Black community	This term is a designation used for people of full or partial descent from over 200 ethnic or cultural origins, including sub-Saharan African descent, who are citizens or permanent residents of Canada.
2SLGBTQI+	Persons who identify as Two-Spirit, lesbian, gay, bisexual, transgender, queer, intersex, and additional people who identify as part of sexual and gender-diverse communities who used additional terminologies.



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DAIR

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