



d3appliedtech

CARBONIX BROCHURE 2021

NEXT  
GENERATION  
DRONE  
TECHNOLOGY



## OUR PRODUCTS

Carbonix is proudly Australian Made & Owned. All Carbonix products are regulated by the Australian Competition & Consumer Commission. The ACCC is an independent Commonwealth statutory authority that aims to protect the interests and safety of customers. When you buy an Australian Made product, the ACCC provides independent, legally enforceable guarantee that you are treated fairly. When you shop with Carbonix, you shop with confidence knowing your consumer rights are protected every step of the way.



Australian  
Competition &  
Consumer  
Commission



Carbonix is a team of highly experienced aeronautical engineers, electrical engineers and composite technicians with a history of building innovative machines. With our manufacturing workshop and head office in North Sydney, Carbonix products are produced and tested in-house by our team of experts. With onsite design, engineering and manufacturing capabilities, Carbonix customers know they are getting a premium product with quality standards managed at every stage. From customising your RPAS for your specific mission requirements before it leaves our workshop, to conducting onsite system maintenance at your facilities. We have got you covered.

Here at Carbonix, we understand that high quality products should be met with high quality service for all customers. Whether you are new to Remotely Piloted Aircraft Systems (RPAS) or you were there at its inception, we can't wait to welcome you as a Carbonix customer. Carbonix offers a range of payload sensors depending on your intended application. We can even integrate your existing sensors onto your new RPAS solution. From helping you find an air frame that performs to your business requirements, to sensors that would best suit your needs. We train your pilots to manage those specifications. In addition to this, we can support you with mission planning, help with certification and approvals, provide support when you need it and service and maintain your aircraft. We want you to shop with confidence knowing that all your needs are taken care of and integrating your new Carbonix RPAS solution into your business is seamless. Your return on investment will come sooner than you thought possible.

MAINTENANCE  
PACKAGES



PILOT  
TRAINING



SERVICE  
SUPPORT



PRODUCT  
CUSTOMISATION



TURNKEY SOLUTION



SPARE  
PARTS



PAYLOAD  
OPTIONS



MISSION  
SUPPORT



CERTIFICATION &  
DOCUMENTATION

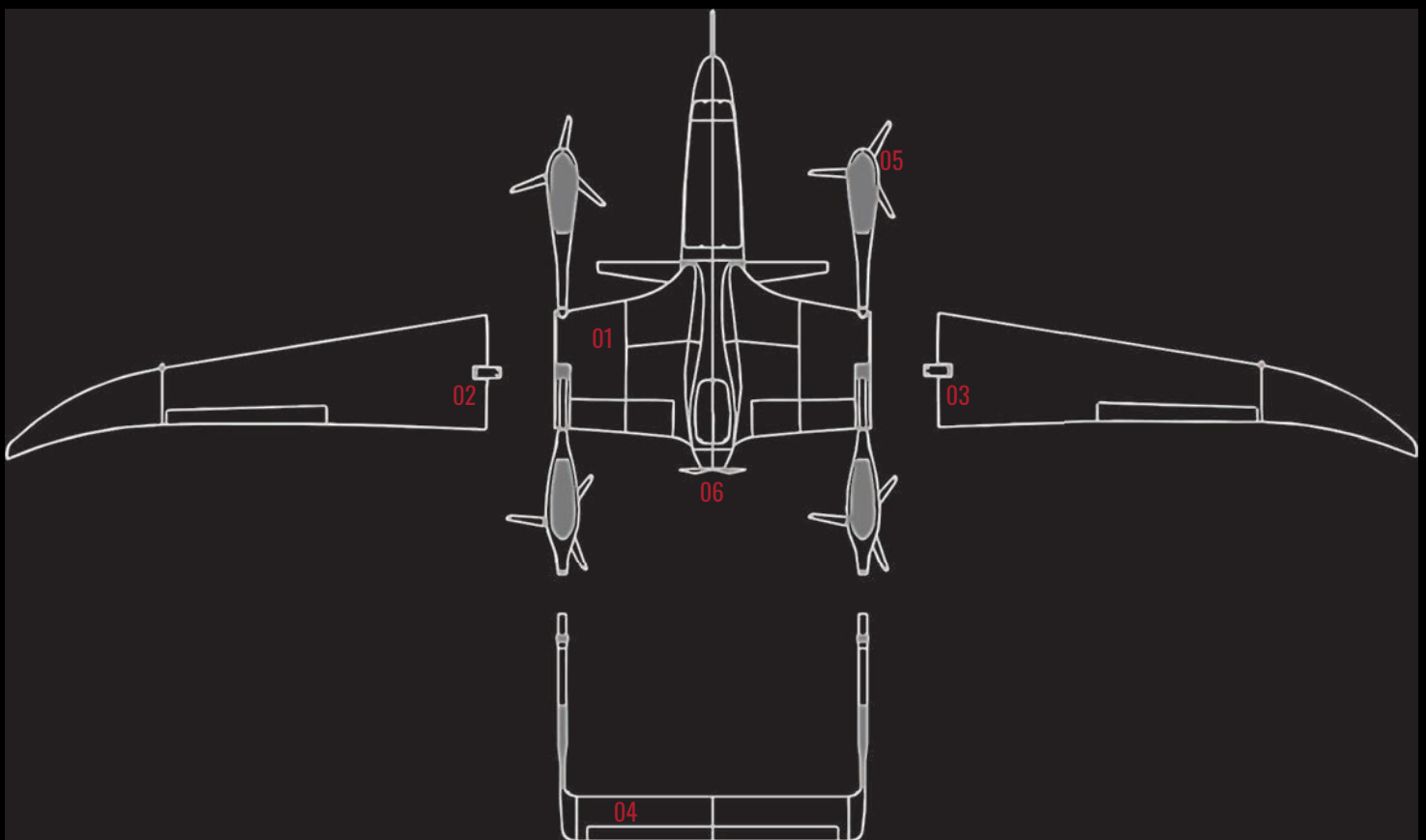


*Volanti-3e*



*Romani-3f*





- 01 Advanced composite wingbox with supporting spar, houses the electronics and the VTOL motors
- 02 Fixed-wing capabilities means our RPAS uses less power when in forward flight, enabling longer endurance
- 03 Detachable wings and tail means our RPAS are easily transported and stored
- 04 Tail offers additional strength, support and aerodynamics for optimised flight
- 05 Four multi-rotors enable vertical lift for take-off and landing anywhere
- 06 Our RPAS transitions to the rear pusher motor inflight to move into smooth horizontal flight

Fixed-wing pusher for longer endurance



Optimised carbon fibre airframe



Electric motors for vertical take-off and landing from all terrain





evolution



electric



endurance



# Volanti-3e

Volanti is the latest and most advanced all-electric fixed-wing RPAS developed by Carbonix. This 3.6m wingspan Power Lift drone is capable of rapid aerial surveys across vast and difficult terrain with high accuracy and high confidence. It can be set up in minutes and, with VTOL (Vertical Take-Off and Landing) capability, deployed from small unprepared areas with no need for a runway or bulky launching and retrieval equipment. You can order Volanti fitted with a choice of proven standard sensor payloads for photogrammetry, multispectral imaging, or ISR (Intelligence, Surveillance, Reconnaissance) observation. Alternatively, we can customise it to suit your requirements, integrating your preferred payloads. Volanti has been carefully optimised and tested for the rigours of commercial operations – An evolution tracing back to the Cometa airframe. Volanti's highly efficient airframe made from America's Cup derived carbon fibre composites, combined with carefully engineered custom avionics hardware and software, ensure maximum return on investment for your business's aerial sensing needs.



- ✓ Proven to withstand adverse winds and bird attacks
- ✓ Fully-autonomous operation
- ✓ Optical and multispectral sensors available
- ✓ Fully electric
- ✓ Easy to assemble and transportable

**1kg**

Sensor Payload\*

**2hrs**

Flight Time\*

**16kg**

MTWO

**1,000ha**

Area Coverage

Download Volanti Data  
Sheet





Carbonix developed Domani to have the longest range and heaviest payload capability possible in a compact transportable package. This 4.5m Power Lift drone is capable of rapid aerial surveys across vast and difficult terrain with high accuracy and high confidence. Domani's unparalleled ability to carry payloads of up to 5kg for several hours puts this aircraft into a class of its own. Domani harnesses all the benefits of the smaller Volanti with added flight time and increased payload capacity. It can be set up in minutes and, with VTOL (Vertical Take-Off and Landing) capability, deployed from small unprepared areas with no need for a runway or bulky launching and retrieval equipment. Domani can carry various sensors depending on your requirements, including high-end LiDAR and 100mp+ photogrammetry sensors for highly accurate imagery. We can customise it to suit your requirements, integrating your preferred payloads.



- Fully-autonomous operation ✓
- Gimballed ISR and LiDAR sensors available ✓
- Hybrid system, with petrol range extender upgrade ✓
- Optical, NDIR, thermal and HD video streaming available ✓
- Modular and transportable ✓

**5kg**

Sensor Payload\*

**5hrs**

Flight Time\*

**32kg**

MTWO

**3,000ha**

Area Coverage

Download Domani Data  
Sheet

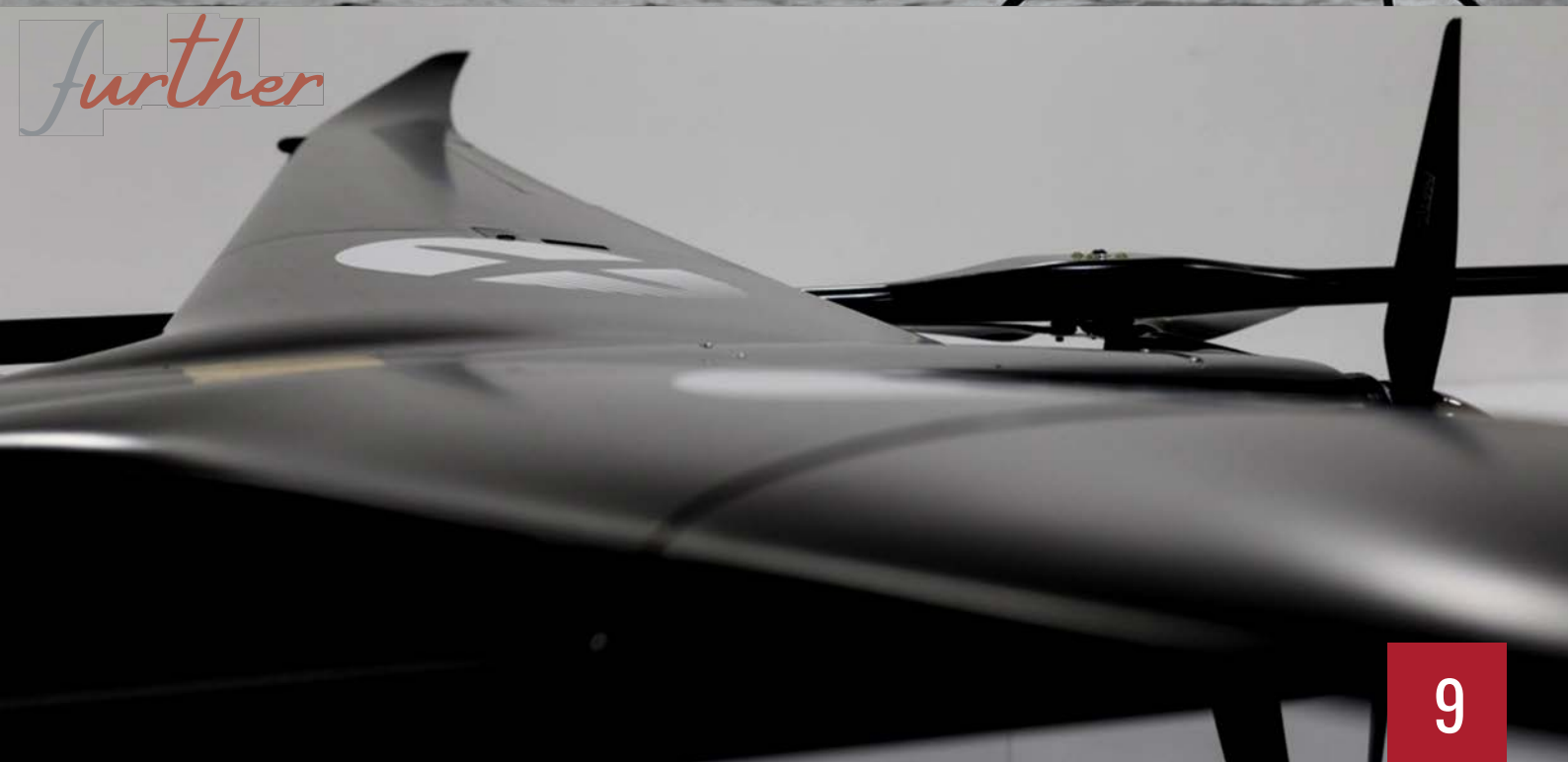
future



fuel



further





# What is included?

Here at Carbonix we understand that your new RPAS is an investment. We want this investment to last for as long as you do. Which is why we have developed our bespoke and robust transport case with hard foam inserts to give you piece of mind that your new Carbonix RPAS will be safe in transport and storage for years to come. Our Carbonix Ground Control System is no different, the Pelican Air Case enclosing our GCS has also been selected to last the test of time to ensure your investment is as safe as can be.



## Ground Control Station

Ground Control Software	QGroundControl or Mission Planner
Radio Link	Doodle Labs Smart Radio RM915
Computer Operating System	Windows 10 Pro
Rugged Case	Pelican Air 1605 (internal: 66 x 35.6 x 21.3cm)
GCS Computer	Laptop (15.6" FHD screen, 250 NITS)
Power	20V 6.5A (135W) (laptop power requirement)
Controls	Single-axis Throttle APEM 4P18-2F1E-01-00 & 3-axis APEM HS45S10 Analog Joystick
Peripherals	1 x key switch & 2 x toggle switches
Weight (kg)	5.0 (including 15.6" laptop)

## Transportation Box

All Carbonix RPAS come with a bespoke hard transport case with hard foam inserts for piece of mind that your Carbonix RPAS will be safe and secure during transit and storage and last the test of time.



# Extras

## Customisable Payloads

In addition to an array of payload sensors readily available to Carbonix customers, we understand that you may have a specific payload you'd like us to integrate for you. Carbonix prides itself on being one of the only commercial fixed-wing RPAS companies who offer this level of customisation to our customers. If this is something you'd like to know more about or if you have a payload in mind, please contact your Carbonix sales representative at your earliest possible convenience.

## Extended Telemetry

As standard, Carbonix offers a telemetry range of 40km. For most operations, this should be enough to ensure you get the most out of your Carbonix RPAS for BVLOS in even the toughest terrain. However, there are a number of operations where this range may not be sufficient. Carbonix RPAS solutions can be integrated with SatComms functionality to cover you in the event that 40km isn't enough.

## Extra Secure Links

Here at Carbonix, we don't take privacy for granted and neither should you. Our standard radio links from Doodle Labs RM 915 offer AES 256 and 128 bit encryption; FIPS-2, Level 2 compliant as standard. This should give the majority of our customers the confidence that your links are safe from hacking and any unwarranted attention. However, we know that for highly sensitive operations, that extra layer of encryption isn't only desirable but it is necessary to maintain the highest possible security from start to finish. For this increased security need, we are pleased to offer our customers the Silvus StreamCaster 4200, this ruggedised military spec. radio link offers DES Standard, AES/GCM 128 or 256 bit encryption; FIPS 140-2, Suite B. When you shop with Carbonix, you shop with confidence.

## BVLOS Compliance

Depending where in the world you'd like to operate your new Carbonix RPAS solution, depends on what additional systems you may need to gain the necessary approvals for EVLOS, BVLOS and operations above 400ft. First-person view (FPV) cameras aren't required by some Aviation Authorities around the world and by others. The same can be said about detect and avoid systems. To ensure a seamless and easy integration of a Carbonix RPAS system into your business no matter where you are in the world, we have you covered.







## Intelligence, Surveillance and Reconnaissance

# ISR

### Industries that benefit from using an ISR sensor

- ✓ Disaster Management
- ✓ Military & Defence
- ✓ Law Enforcement
- ✓ Search & Rescue
- ✓ Security & Boarder Control
- ✓ Mining
- ✓ Oil & Gas
- ✓ Livestock Agriculture

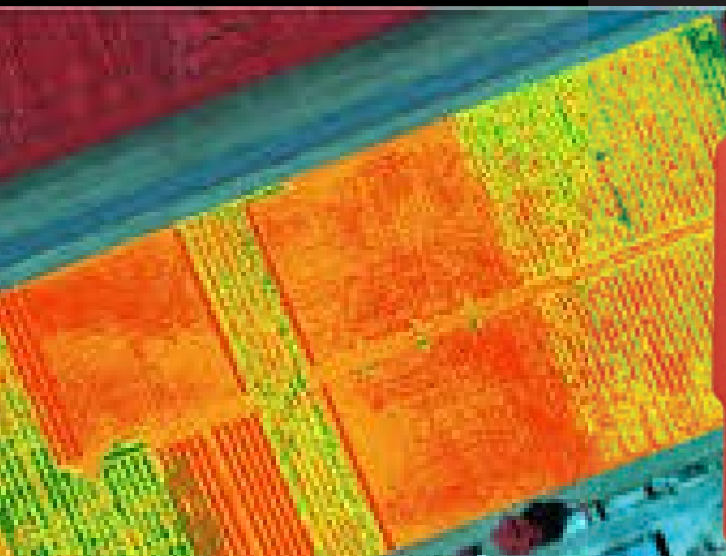
ISR is the coordinated and integrated acquisition, processing and provision of timely and accurate information and intelligence to support command and control management of live events in real time. ISR encompasses multiple activities related to the planning and operation of systems that collect, process, and disseminate data in support of current and future operations. ISR gimbals provide you with 360° coverage of any domain you are operating for PNG and usually Infrared and or thermal imagery.

A multispectral sensor is one that captures several images within specific wavelength ranges across the electromagnetic spectrum i.e. infrared and ultra-violet. Spectral imaging can allow extraction of additional information the human eye fails to capture with its visible receptors for red, green and blue.

### Industries that benefit from using a Multispectral sensor

- ✓ Agriculture
- ✓ Oil & Gas
- ✓ Mining
- ✓ Wildlife & Conservation
- ✓ Civil Engineering

# Multispectral







# Photogrammetry

Photogrammetry is the science and technology of obtaining reliable information about physical objects and the environment through the process of recording, measuring and interpreting photographic images and patterns of electromagnetic radiant imagery and other phenomena.

**Industries that benefit from using Photogrammetry sensors**

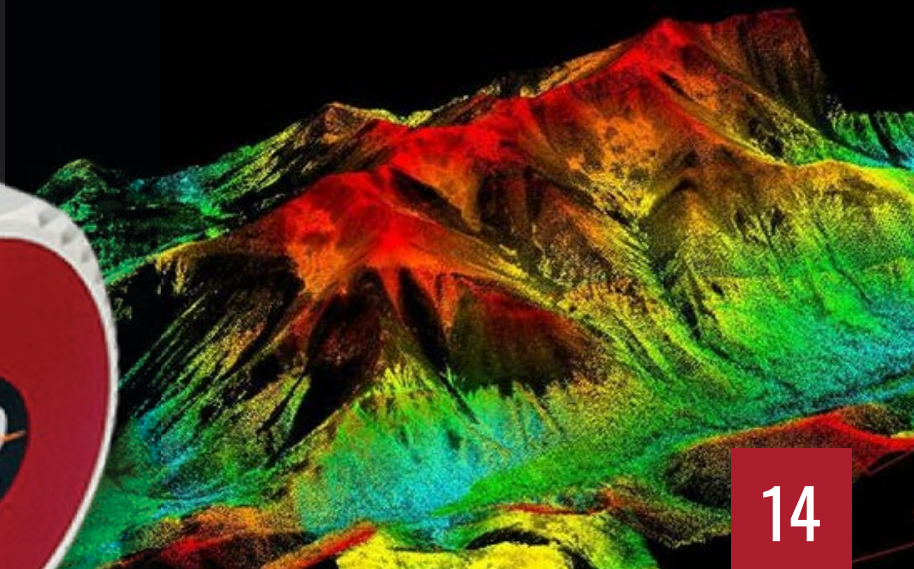
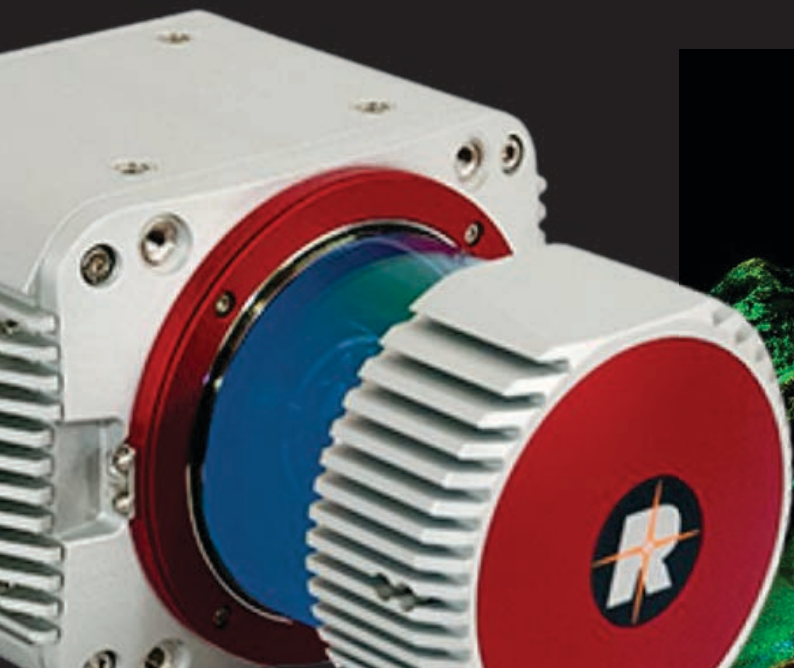
- ✓ Precision Mapping & Surveying
- ✓ Disaster Management
- ✓ Military & Defence
- ✓ Forestry
- ✓ Civil Engineering

**Industries that benefit from using LiDAR sensors**

- Disaster Management ✓
- Wildlife & Conservation ✓
- Forestry ✓
- Oil & Gas ✓
- Mining ✓
- Renewable Energy ✓
- Civil Engineering & Transport ✓

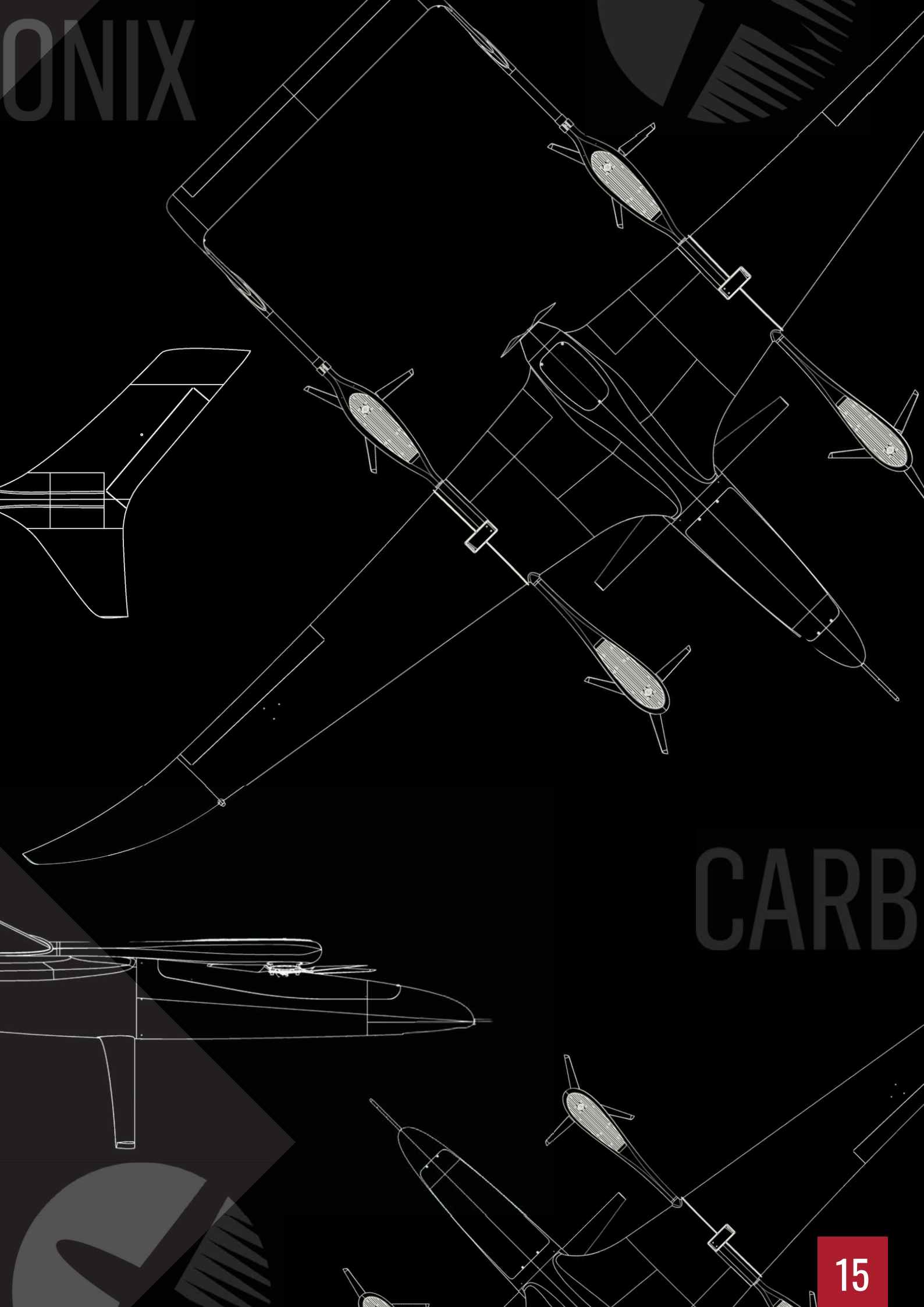
LiDAR is a method for measuring distances (ranging) by illuminating the target with laser light and measuring the reflection with a sensor. Differences in laser return times and wavelengths can then be used to make digital 3-D representations of the target.

# LiDAR





# ONIX



# CARB

# WHY BUY CARBONIX?

**Aside from the technical specifications, the avionics, value for money, the customisability and our slick hair cuts...**

## WE ARE AUSTRALIAN MADE & OWNED

Built with durability and reliability in mind for a fast return on your investment. Our supply chain is secure in times of uncertainty. Our data links are fully secure and Carbonix has no government associations. We won't compromise your security or privacy unlike other drone manufacturers.

## BUILT FROM 95% PRE-PREG CARBON FIBRE

Handmade using advanced pre-impregnated carbon fibre techniques. Built for maximum strength properties and with manufacturing consistency in mind. We pride ourselves on being a fully optimised system for optimised performance. Carbonix is built to last.

## VERTICAL TAKE-OFF AND LANDING CAPABLE

With Carbonix you can take-off and land from anywhere, in any terrain. You will never have to use or transport clumsy and bulky catapult systems. You will never have to perform clumsy belly flop landings that damage sensors. VTOL gives more redundancies, on the off chance any problems arise. Land anywhere, safely.

## ALL OUR AIR FRAMES ARE FIXED-WING

Our forward propulsion systems give higher endurance than multi-rotors. They are very stable both aerodynamically and in higher than average winds. They use less power, giving increased flight time and sensor power draw. Carbonix RPAS can perform loiter manoeuvres to stick with a subject for longer.

## BUILT FOR RAPID DEPLOYMENT

Carbonix RPAS can be assembled and deployed in minutes. VTOL capable and fast assembly makes our UAVs perfect quick reaction assets. Carbonix RPAS give you more agility than most conventional fixed-wing alternatives. Where time is of the essence and every second counts, you can count on Carbonix.

## BUILT WITH TRANSPORT IN MIND

Our RPAS and our Ground Control Station are enclosed in rugged transport boxes. The rugged transport case was developed to maintain safe transport and storage. The Pelican 1605 case has been selected for safe transport and storage of your GCS. Carbonix air frames pack into a transport case that fits in all modern vans.

## HIGHLY ACCURATE AND USABLE DATA

Compared to manned flights, our sensors record highly accurate data points. Your data will give you accurate comparisons and identify trends with confidence. Reduce false positive occurrences with images that can be checked over and over. This data can be distributed to anyone in your business within seconds.

## CHEAPER AND MORE ENVIRONMENTALLY FRIENDLY

Manned flights can cost up to \$3,000/hr, leaving little room for error. Carbonix allows more customers an aerial capability at a greatly reduced price. Manned flights aren't fuel efficient and are detrimental to the environment. Our systems are designed to reduce your carbon footprint while maintaining results.

## WE WILL NEVER CLAIM ANYTHING WE ARE NOT

We will never claim to be 'the best' or the 'highest performance in our class'. We will never claim to 'fly longer and further' than any other systems on the market. We will never bolster our performance capabilities, we maximise your expectations. We remain humble & hard working throughout for lasting partnerships.

## WE PUT TRANSPARENCY & INTEGRITY AT THE FOREFRONT

We are passionate about what we do. We want to share that passion with like-minded people. We believe transparency, & consistency create productive partnerships. We are accountable for our promises & we pride ourselves on delivering real value.

**REQUEST A QUOTE FOR MORE INFORMATION**





**WE SUPPORT YOUR INDUSTRY**











# Search and Rescue



# Disaster Management





# Military and Defence



# Law Enforcement











# Precision Agriculture



# Livestock Agriculture





Wildlife & Conservation



Forestry



# From Sea to Air

## Carbonicboats Pty Ltd was founded

Following a successful career in professional race boat campaigns, including Amercia's Cup challenges, Dario Valenza founded Carbonix (then CarbonicBoats) to develop and produce competitive radio controlled yachts and A-Class Catamarans.



## Carbonix manufacturing and design methods take the world stage.

By 2013 Carbonicboats was producing the world's first fully foiling A Class catamaran and the business was featured in Australian Sailing Magazine.



## Carbonix marine systems make the Olympics

Carbonix developed and supplied advanced control systems for Moth customers, including Olympic Gold Medal winners of the Australian Sailing Team.

Dec, 2011



## Development started of all-new A-Class catamaran platform

Dario and his team of composite technicians started in-house design and product development operations. Carbonicboats started the development of an all-new A Class catamaran platform and foil system.

Jan, 2013



## Development started of all-new A-Class catamaran platform

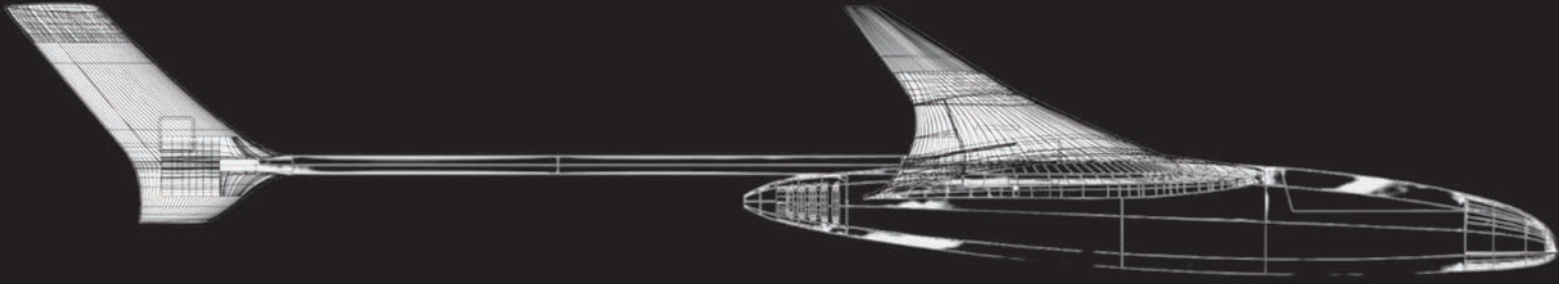
A-Class catamarans of the New Zealand America's Cup Team were fitted with Carbonix appendages and took four of the top five places in the World Championships, as well as winning the junior category.

Apr, 2015



# Cometa

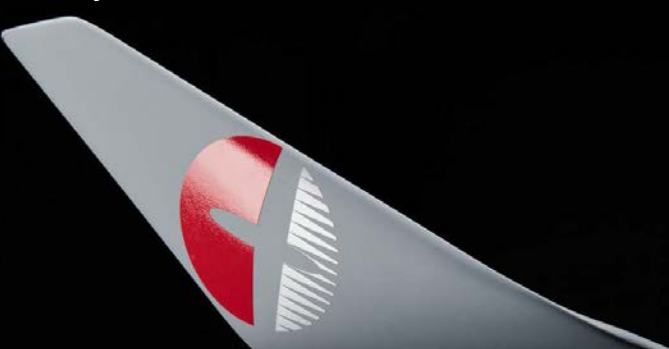
In March, 2014 Carbonix started its RPAS journey, designing tooling and building their first UAV, Cometa, in a workshop situated on the historic Cockatoo Island in Sydney's famous harbour.



The inspiration behind both the Volanti and the Domani aircraft, came from this earlier CTOL UAV. With the help of their design partners at D3 Applied Technologies in Spain, Carbonix turned this conceptual design into a reality and over time evolved in to what they are today. Volanti and her big sister, Domani. These UAVs are almost unrecognisable from the early days of Cometa but the high quality and optimised engineering coupled with high engineering standards, remain the same.



Since the first Volanti design, Carbonix have greatly improved the aerodynamic performance by changing the old fashioned canted winglet to the modern blended wingtip for reduced drag. The wings grew to increase the lift surfaces further improving flight time and performance. VTOL motors were added for improved functionality and deployment and the payload bay grew in size to accommodate larger sensors. This increased functionality makes both Volanti and Domani an attractive RPAS solution for customers looking to achieve a high performing aerial sensor capability for years to come.





ONIX



[WWW.CARBONIX.COM.AU](http://WWW.CARBONIX.COM.AU)

CARB

