

## B-KOO “Inspiration” RTW Journey 2016



### Introduction

“*Inspiration*” is the first-ever homebuilt aircraft certified and accepted to fly under Hong Kong registration “B-KOO”. For seven years, local secondary school students, pilots and engineers in the aviation industry worked closely to build *Inspiration*, which successfully took off from the Hong Kong International Airport on 15 November 2015. Once *Inspiration* completes the series of flight tests, it will embark on a Round-the-world (RTW) journey with Hong Kong as the departure and destination.

Until 2015, there are 203<sup>1</sup> single engine aircraft flown around the world. *Inspiration* will be the first Hong Kong registered homebuilt aircraft to complete a RTW journey.

Currently in Hong Kong, there are very limited activities related to general aviation. Hong Kong’s aviation industry has been growing significantly over the past years, and is expected to grow continuously in the coming years, playing a very important role in supporting Hong Kong’s international status as a financial center. This is why we value the importance of encouraging and nurturing the younger generations’ interests in aviation.

In this journey, “*Inspiration*” Team will work with a group of local student from Hong Kong Youth Aviation Academy (HKYAA) on the actual planning and executing of the RTW trip. The opportunity of involving students in a real time, real life flight operation is an excellent way to inspire today’s youth through experience.

A RTW journey in a single engine aircraft is never an easy task, there are many hurdles before and throughout the journey; at the same time, this is what makes such trip special, it is a learning opportunity for all those involve, and an inspiration to every one who witness the resulting success of teamwork and dedication.

<sup>1</sup> <http://www.earthrounders.com/singles.php> (As of 7 Mar 2016)

## **About the B-KOO “Inspiration” Project**

### **Vision**

To promote aviation by building and flying the first amateur-built aircraft in Hong Kong

### **Mission**

- Build and certify the first amateur-built aircraft in Hong Kong by local students and aviation enthusiasts;
- To be the first Hong Kong registered amateur-built aircraft to take flight under Hong Kong airspace;
- Circumnavigate the aircraft to promote the spirit of Hong Kong; and
- Educate and inspire the Hong Kong public's interest in aviation.

### **The “Inspiration” Team**

**Hank Cheng** studied Aerospace Engineering at Embry-Riddle Aeronautical University (ERAU) and joined Cathay Pacific in 2001 as a Second Officer upon graduating from the airline's Cadet Pilot Programme. He is currently a Captain on Boeing 777 fleet. Hank will be piloting B-KOO during this RTW journey.

**Gary Tat** has a degree in Mechanical Engineering, and he obtained his Private Pilot Licence (PPL) while studying at ERAU. He is a Hong Kong Aircraft Maintenance Licensed Engineer. He currently works in the aviation quality assurance area.

**Andrew Herbert** has extensive experience flying turbine aircraft in South Africa. Andrew worked on 4 RVs and numerous homebuilt aircraft with his father in South Africa, and completed his own RV7 just before joining Cathay Pacific as a second office in 2015.

Also from Cathay Pacific, Engineers **Crystal Tse, Geoffrey Hung, Sally Wong and Wingwing Cheung** and Associate Engineer **Ken Cheng** gave up a lot of their personal time for the project over the last four to five years, while Associate Engineer **Donald Ip**, Graduate Engineers **Alex Lo, Kelvin Chan and Michelle Lee**, and Technical Assistant **Cyril Li** have been actively involved for the past years. They will be responsible for various area of the operation, and will be joining the support aircraft along the way.

**Students from St. Paul Convent School** (Secondary Section) spent 5 years constructed the majority of the RV8 airframe. They learnt various subjects related to aviation, from engineering to hands on building experience with tools and aircraft components. Unlike model aircraft, their workmanship has to reach an airworthy standard, recognised by the HKCAD. In the RTW journey, students will engage in various part of the journey, from flight planning, to flight dispatch, route selection and ordering fuel. Pending approval, students will have the opportunity to be part of the flight crew, take up responsibilities as part of the flight crew team member on this historical journey.

### **Timeline (Flight Operation)**

The journey will cover more than 40,000km in 3 months period. Consideration on the planned flight period is based on safety, weather, wind, fuel arrangement and scheduled maintenance on both aircraft. Preparation prior to the journey includes completing the flight test program for B-KOO, fuel tank modification, route planning and flight clearance approval, fuel arrangement and many other factors.

<b>Date / Deadline</b>	<b>Task</b>	<b>Notes</b>
15 <sup>th</sup> April, 2016	Confirm relocation to Brisbane, Australia	
18 <sup>th</sup> April, 2016	Wings removal and preparation for crating	
30 <sup>th</sup> April, 2016	Deadline for shipping the RV8 to BNE	
7 <sup>th</sup> May, 2016	Flight test program and fuel system modification begins	
31 <sup>st</sup> May, 2016	Deadline for support aircraft lease agreement, payment due for aircraft lease  Confirm support aircraft ferry route and submit clearance applications.  Payment due for support aircraft ferry route clearances and GHA.	Route confirmation due 2 months prior departure date
1 <sup>st</sup> July, 2016	Route confirmation and deadline for clearance applications.  Payment due for clearance applications and GHA.	Route confirmation due 2 months prior departure date
31 <sup>th</sup> July, 2016	RV8 flight test program completes.	
1 <sup>st</sup> August, 2016	Support aircraft departs for HKG  RV8 departs for HKG	Purchase and install HF radio and survival equipment for support aircraft prior to departure
15 <sup>th</sup> Aug, 2016	Aircraft arrives at HKG; prepares for RTW	
31 <sup>st</sup> August, 2016	Departure	
31 <sup>st</sup> November, 2016	End of RTW Journey	

## The Route

To be qualified for circumnavigation in a powered aircraft, the course of a RTW record must start and finish at the same point and cross all meridians, in a distance exceeding 36,788km, outside the Arctic and Antarctic circles.



The proposed route\* for our journey is as followed:

Airport / City	Country	ICAO Code	Great Circle Distance (nm)	Flight Time**	ET**
Hong Kong	China	VHHH			
Xiamen	China	ZSAM	268	1.8	1.8
Shanghai	China	ZSPD	433	2.9	4.7
Beijing	China	ZBAA	575	3.9	8.6
Harbin	China	ZYRB	552	3.7	12.3
Obihiro, Hokkaido	Japan	RJCB	751	5.0	17.3
Adak, Alaska	USA	PADK	1703	11.4	28.7
Cold Bay, Alaska	USA	PACD	536	3.6	32.3
Anchorage, Alaska [50]	USA	PANC	539	3.4	35.7
Juneau, Alaska	USA	PAJN	496	3.3	39
Everett, Washington	USA	KPAE	882	6.0	45
Aurora, Oregon	USA	KUAO	185	1.1	46.1
Jackson, California	USA	KJAQ	485	4.3	50.4
USA 1(2 stops)	USA				50.4
USA 2	USA				50.4
Oshkosh, Wisconsin [100]	USA	KOSH	1559	10.4	60.8
Toronto	Canada	CYTZ	398	2.7	63.5
Caldwell, New Jersey	USA	KCDW	281	1.9	65.4
Morristown, New Jersey	USA	KMMU	8	0.5	65.9
Boston	USA	KBOS	180	1.2	67.1
Moncton, NB	Canada	CYQM	354	2.2	69.3
Goose Bay	Canada	CYYR	463	3.1	72.4
Iqaluit, NU	Canada	CYFB	677	4.6	77
Strømfjord	Greenland	BGSF	487	3.3	80.3
Kukusuk	Greenland	BGKK	339	2.3	82.6
Egilsstaðir	Iceland	BIEG	567	3.8	86.4
Wick	England	EGPC	520	3.5	89.9
Ashford, London [50]	England	EGMD	472	3.2	93.1
Bordeaux	France	LFBD	374	2.5	95.6
Toulouse	France	LFBO	115	0.8	96.4
Rome	Italy	LIRF	493	3.3	99.7
Iraklion	Greece	LGIR	720	4.8	104.5
Aqaba	Jordan	OJAQ	605	4.1	108.6
Abu Dhabi	UAE	OMAA	1095	7.3	115.9
Mumbai	India	VABB	1065	7.1	123
Colombo	Sri Lanka	VCBI	821	5.5	128.5
Bangkok [100]	Thailand	VTBD	1288	8.6	137.1
Hong Kong	China	VHHH	910	6.1	143.2**
<b>TOTAL</b>			<b>20924nm / 38752km</b>	<b>143.2**</b>	

\* The route is subject to approval from each overflying country and availability of fuel for piston engine aircraft, which is 100LL AVGAS

\*\* Flight time does not include ground run and taxi time, approximately additional 50 hours to the total time.

[50] = 50 hours maintenance

[100] = 100 hours inspection and maintenance

## The Aircraft

**Inspiration** (Registration B-KOO) is a kit-built RV-8 single-engine aircraft was designed by Van's Aircraft Inc. in Oregon, U.S.A., and it's one of the most popular amateur-built planes in the world. RV-8's fuel-efficient airframe is able to provide for long-range flights at high cruise speeds of 156 knots. To date, more than 9,000 RV models have been certified around the world.



### Exterior Dimensions

Span	24 ft
Length	21 ft
Height	5 ft 7 in
Wing Area	116 sq ft

### Crew

1 Pilot + 1 passenger

### Weights

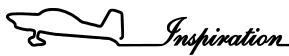
Empty Weight	1101 lbs
Gross Weight	1800 lbs

### Powerplant/Systems

Engine	Titan IOX-360
Propeller	Catto three blades fixed pitch propeller
Fuel Capacity	42 US gal (main tanks) 60 US gal (Auxiliary tank)

### Speed - Gross Weight

Top Speed	185 kts
Cruise [75% @ 8000 ft]	176 kts



Cruise [55% @ 8000 ft] 156 kts  
Stall Speed 51 kts

#### Ground Performance - Gross Weight

Takeoff Distance 575 ft  
Landing Distance 500 ft

#### Climb/Ceiling - Gross Weight

Rate of Climb 1,650 fpm  
Ceiling 20,500 ft

#### Range

Range [55% @ 8000 ft] 819 nm  
1989 nm (with Auxiliary tank)



*Inspiration*

## Support Aircraft

The proposed support aircraft is the Pilatus PC-12. It will carry the necessary 100LL AVGAS (Fuel for B-KOO), tools and maintenance equipment. The PC-12 is capable of carrying additional 3 passengers with a range of 1845nm + 45 minutes reserve fuel. The PT6 turbine engine on the PC-12 uses Jet fuel and does not require AVGAS in area where AVGAS is not available. The large cargo door allows easy loading and unloading of fuel and other aircraft parts, tools and equipment. It's the ideal aircraft for the mission.



## **Flight Clearance**

White Rose Aviation based in the U.K. and PetAir Inc. will be handling the project's overflight and landing clearances and ground handling, fuel, CIQ at stops along the route.

## **Fuel**

100LL AVGAS is known to be difficult to obtain at some of the locations. Prior arrangement will be made to ensure AVGAS is available upon landing. The support aircraft will be carrying AVGAS for locations where AVGAS is not available and can't be arranged.

## **Crew Composition**

B-KOO:                   1 Pilot and 1 Passenger (on sectors that does not require auxiliary fuel tank)

Support ACFT:           1 Pilot (2 pilots for long range operation) - Essential  
                             1 Engineer- Essential  
                             1 Media - Optional  
                             1 Passenger - Optional

## **Base Support Crew**

A selection of volunteers from the aviation industry and students from HKYAA will monitor the flight progress 24/7 and provide supports when needed. Airborne communication is available via satellite communication, provides the fleet with flight information when requested.

Both aircraft will be fitted with satellite tracker with location update to base support crew at 10 minutes interval.



Delorme inReach Satellite tracker with messaging function

## **Engineering Support**

50 and 100 hours scheduled maintenance will be conducted in 4 locations along the route. Non-scheduled maintenance and engineering support is provided by on board engineer and mechanic. Tools and consumables will be carried on board the support aircraft.

Aircraft, avionics, powerplant manufacturers are fully supportive and will provide necessary parts via airfreight or carry on board the support aircraft. A network of RV builders/owners around the world is aware of the RTW trip, and will be supporting the journey throughout.