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## Patent Search

Invention Title	SURROGATED FLOW PASSAGE BY NON-WINGLET ARRANGEMENT
Publication Number	06/2020
Publication Date	07/02/2020
Publication Type	INA
Application Number	202041003252
Application Filing Date	24/01/2020
Priority Number	
Priority Country	
Priority Date	
Field Of Invention	BIO-MEDICAL ENGINEERING
Classification (IPC)	A61M5/3015

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MR. K. VASIMKHAN	1/17, ABUBAKKAR SITHIK STREET, OPPILAN, RAMANATHAPURAM, KADALADI TALUK- 623120, TAMIL NADU, INDIA.	India	India
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### Abstract:

An aerodynamic system providing an aircraft wing having chord length, span, leading edge and trailing edge. The aircraft wing is further including the surrogated coordinated flow passage with holes in top and bottom of the root section of the aircraft wing and holes in top and bottom of the tip section of the aircraft wing and the upper and lower surrogated passage are interconnected. The micropumps are placed in the leading edge of the root section of the wing, trailing edge of the tip section, mid-way of the span of the upper most region of the wing and the mid-way of the span of the lower most region of the wing. Employing a pressurized fluid source, which may include upstream external air flow enters into the upper root side by suction created by the micropump placed in leading edge of the root and delivers through the surrogated passage and it is again partially transmitted at the lower tip side by suction to lower surrogated passage and recovery slot. The tangential blowing occurred from upper root side to lower tip side through surrogated passage. In the same way the tangential blowing occurred from upper tip side to lower root side through surrogated passage. On the whole, the circulation of the flow inside the surrogated flow passage could limit the tangential velocity that creates vortex in the wing tips and guided for reducing the induced drag through this circulation control in the surrogated passage.

**Complete Specification****FIELD OF THE INVENTION**

[20] The present invention related to aircraft wing, aerodynamic performance and vortex flow control.

**BACKGROUND OF THE INVENTION**

[30] Selected airframe, wing and control surface configurations; propulsion,

control and guidance systems; and material properties combine to allow an aircraft to take flight and directly affect how the aircraft interacts with and moves through its atmospheric environment. As the aircraft moves through the atmosphere, the wings, fuselage, engines and engine nacelles, control Surfaces, pylons, and antennae create and encounter a wide range of airflow patterns and pressures. Control of the airflow over, under, around and through the above aircraft structures has been the subject of constant study and refinement since the earliest days of flight. Often, even seemingly small changes in configuration have a dramatic effect on aircraft performance.

[40] Various schemes for controlling airflow with respect to the wings have been developed in an attempt to enhance lift and reduce drag. Exemplary schemes include provision of a rotating cylinder at the leading and trailing edge of the wing, circulation control using tangential blowing at the leading and trailing edges, multi-element airfoils, pulsed jet separation control, mechanically generated supplemented laminar airflow, discrete co-flow jet model, co-flow jet model, winglets and the like. However, the penalty to the propulsion system (power loss) is often significant for some of the prior art flow control methods. For example, injecting or blowing air into the air flowing over a wing usually uses engine compressor bleed air. The mass flow rate of the engine bleed is directly proportional to the reduction of the thrust, i.e. the engine will suffer 1% thrust reduction for 1% blow rate used for wing flow control and suffer 1-3% fuel consumption increase depending on whether the bleed is from the compressor front

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Policy and Promotion**  
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Government of India

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#### Application Details

APPLICATION NUMBER	202041003252
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	24/01/2020
APPLICANT NAME	1 . MR. G. MADHAN KUMAR (ASSISTANT PROFESSOR, DEPT. OF AERONAUTICAL ENGINEERING) 2 . DR. P. BOOMA DEVI (ASSISTANT PROFESSOR, DEPT. OF AERONAUTICAL ENGINEERING) 3 . DR. S. PRAKASH (PROFESSOR & DEAN, SCHOOL OF MECHANICAL ENGINEERING) 4 . DR. T. SASIPRABHA (PRO VICE CHANCELLOR) 5 . MR. R. DHANUSH KUMAR 6 . MR. K. VASIMKHAN 7 . MR. J SHEIK UMAR
TITLE OF INVENTION	SURROGATED FLOW PASSAGE BY NON-WINGLET ARRANGEMENT
FIELD OF INVENTION	MECHANICAL ENGINEERING
E-MAIL (As Per Record)	
ADDITIONAL-EMAIL (As Per Record)	madhanaero.20@gmail.com
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	--
PUBLICATION DATE (U/S 11A)	07/02/2020

#### Application Status

APPLICATION STATUS	<b>Awaiting Request for Examination</b>
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➡ Filed ➡ Published ➡ RQ Filed ➡ Under Examination ➡ Disposed

In case of any discrepancy in status, kindly contact [ipo-helpdesk@nic.in](mailto:ipo-helpdesk@nic.in)



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<b>FORM 1</b> THE PATENTS ACT 1970 (39 of 1970) & The Patents Rules, 2003 APPLICATION FOR GRANT OF PATENT	<b>(FOR OFFICE USE ONLY)</b> Application No: 202041003252 Filing Date 24/01/2020 Amount of Fees Paid: 4900/- CBR NO: 2601
(See sections 7, 54 & 135 and rule 20(1))	Signature: <i>[Signature]</i> 24/1/2020
1. APPLICANTS REFERENCE / IDENTIFICATION NO. (AS ALLOTTED BY OFFICE)	

**2. TYPE OF APPLICATION [Please tick (✓) at the appropriate category]**

Ordinary (✓)		Convention ( )		PCT-NP ( )	
Divisional	Patent of Addition ( )	Divisional	Patent of Addition ( )	Divisional	Patent of Addition ( )
( )	( )	( )	( )	( )	( )

**3A. APPLICANT(S):**

Name	Country of Residence	Nationality	Address
MR. G. MADHAN KUMAR (ASSISTANT PROFESSOR, DEPT. OF AERONAUTICAL ENGINEERING)	INDIA	AN INDIAN NATIONAL	SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY (DEEMED TO BE UNIVERSITY) JEPPIAAR NAGAR, RAJIV GANDHI SALAI, CHENNAI - 600119, TAMILNADU, INDIA.
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MR. K VASIMKHAN	INDIA	AN INDIAN NATIONAL	1/17, ABUBAKKAR SITHIK STREET, OPPILAN, RAMANATHAPURAM, KADALADI TALUK - 623120, TAMILNADU, INDIA.
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**3B. CATEGORY OF APPLICANT [Please tick (✓) at the appropriate category]**

Natural Person (✓)	Other than Natural Person ( )
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	Small Entity ( )	Startup ( )	Others ( )
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**4. INVENTOR(S): [Please tick (✓) at the appropriate category]**

Are all the inventor(s) same as the applicant(s) named above?	Yes (✓)	No ( )
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If "No", furnish the details of the inventor(s) N.A

Name	Nationality	Country of Residence	Address
NA	NA	NA	NA

**5. TITLE OF THE INVENTION:**

AN AIRCRAFT WING: SURROGATED FLOW PASSAGE BY NON-WINGLET ARRANGEMENT

<b>6. AUTHORISED REGISTERED PATENT AGENT(S)</b>	NA
<b>ADDITIONAL PATENT AGENTS</b>	NA

<b>7. ADDRESS FOR SERVICE OF APPLICANT/ PATENT AGENT(S) IN INDIA</b>	Mobile No.: 8056853680 E-mail: madhanaero.20@gmail.com
MR. G. MADHAN KUMAR (ASSISTANT PROFESSOR, AERO DEPT.) Address: SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY (DEEMED TO BE UNIVERSITY) JEPPIAAR NAGAR, RAJIV GANDHI SALAI, CHENNAI - 600119, TAMILNADU, INDIA.	

**8. IN CASE OF APPLICATION CLAIMING PRIORITY OF APPLICATION FILED IN CONVENTION COUNTRY, PARTICULARS OF CONVENTION APPLICATION: N.A**

Country	Appln. Number	Filing Date	Name of the Applicant	Title of the Invention	IPC (as classified in the convention country)
NA	NA	NA	NA	NA	NA

**9. IN CASE OF PCT NATIONAL PHASE APPLICATION, PARTICULARS OF INTERNATIONAL APPLICATION FILED UNDER PATENT CO-OPERATION TREATY (PCT):**

International application number	NA	International filing date as allotted by the receiving office.	NA
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**10. IN CASE OF DIVISIONAL APPLICATION FILED UNDER SECTION 16,  
PARTICULARS OF ORIGINAL (FIRST) APPLICATION : N.A**

Original (first) application number	Date of filing of Original (first)
N.A.	application N.A.

**11. IN CASE OF PATENT OF ADDITION FILED UNDER SECTION  
54, PARTICULARS OF MAIN APPLICATION OR PATENT: N.A**

Main application / patent Number	Date of filing of main application
N.A.	N.A.

**12. DECLARATIONS:**

**(i) Declaration by the Inventor:**

(In case the applicant is an assignee: the inventor(s) may sign herein below or the applicant may upload the assignment or enclose the assignment with this application for patent or send the assignment by post/electronic transmission duly authenticated within the prescribed period).

We, the above named inventor are the true & first inventor for this invention and declare that the applicant herein is my assignee or legal representative:

NA

**(ii) Declaration by the applicant/s in the convention country:**

(In case the applicant in India is different than the applicant in the convention country: the applicant in the convention country may sign herein below or applicant in India may upload the assignment from the applicant in the convention country or enclose the said assignment with this application for patent or send the assignment by post/electronic transmission duly authenticated within the prescribed period)

I/We, the applicant(s) in the convention country declare that the N.A. applicant(s) herein is/are my/our assignee or legal representative. :

**(iii) Declaration by the applicants:**

We, the applicants hereby declare that: -

1. We are in possession of the above-mentioned invention.
2. The **Complete Specification** relating to the invention is filed with this application.
3. The invention as disclosed in the specification uses the biological material from India and the necessary permission from the competent authority shall be submitted by us before the grant of patent to us: N.A.
4. There is no lawful ground of objection to the grant of the patent to me/ us.
5. We are the assignees or legal representatives of true and first inventors:
6. The application or each of the applications, particulars of which are given in Para - 8 was the first application in convention country/countries in respect of our invention: N.A.

7. We claim the priority from the above-mentioned application filed in convention country/countries and state that no application for protection in respect of the invention had been made in a convention country before that date by us or by any person from which we derive the title: **YES**
8. Our application in India is based on international application under Patent Cooperation Treaty (PCT) as mentioned in Para-9: **N.A.**
9. The application is divided out of our application particulars of which is given in Para-10 and prays that this application may be treated as deemed to have been filed on N.A. Under sec.16 of the Act: **N.A.**
10. The said invention is an improvement in or modification of the invention particulars of which are given in Para-11: **N.A.**

**FOLLOWING ARE THE ATTACHMENTS WITH THE APPLICATION**

**(a) Form 2**

Item	Details	Fee	Remarks
Complete	No. of pages:		
specification) #	No. of claims:		
Claim(s)	No. of pages:		
Abstract	No. of pages:		
Drawing(s)	No. of drawings:		
	No. of pages:		

# In case of a complete specification, if the applicant desires to adopt the drawings filed with his provisional specification as the drawings or part of the drawings for the complete specification under rule 13(4), the number of such pages filed with the provisional specification are required to be mentioned here.

1. Complete specification (in conformation with the international application)/as amended before the International Preliminary Examination Authority (IPEA), as applicable (2 copies) **N.A**
2. Sequence listing in electronic form **N.A**
3. Drawings (in conformation with the international application)/as amended before the International Preliminary Examination Authority (IPEA), as applicable (2 copies) **N.A**
4. Statement and Undertaking on Form-3
5. Declaration of inventor ship on Form-5
6. Request For Publication Form 9, 2750.Rs
7. Form18 Examination Request, 4400.Rs
8. Power of Authority
9. Other Form 4 to 31 According to needed can fill.

Total fee Rs ...../- **in Cash/ Banker's Cheque /Bank Draft bearing**  
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We hereby declare that to the best of my knowledge, information and belief the facts and matters stated herein are correct and I request that a patent may be granted to me for the said invention.

Dated this day of.....24/01/2020

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DR. P. BOOMA DEVI (ASSOCIATE PROFESSOR, DEPT. OF AERONAUTICAL ENGINEERING) *P.Booma Devi*

DR. S. PRAKASH (PROFESSOR & DEAN, SCHOOL OF MECHANICAL ENGINEERING) *S.P.*

DR. T. SASIPRABHA (PRO VICE CHANCELLOR) *S.P.*

MR. R DHANUSH KUMAR *R. Dhanush Kumar*

MR. K VASIMKHAN *K. Vasim Khan*

MR. J SHEIK UMAR *Sheik Umar*

To,

The Controller of Patent,  
The Patent Office, at .....

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