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Docket No 125974

Anuj Raturi Gyananand Bhawan, Kalinka Vihar,
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Sr. No.	Ref. No./Application No.	App. Number	Amount Paid	C.B.R. No.	Form Name	Fee Payment	Remarks
1	E-12/5841/2022/DEL	202211064395	2500	43669	FORM 9	Full	
2	E-106/7049/2022/DEL	202211064395	0	-1	FORM28	Full	
3	202211064395	TEMP/E-1/74269/2022-DEL	1600	43669	FORM 1	Full	TURBULENCE GENERATOR

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N-0001050772	Online Bank Transfer	1011220031748	4100.00	1475001020000001

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(57) Abstract :

The present invention relates to a turbulence generator specifically for the automobiles. Said invention comprising a turbulence generator hose, an axial turbulence rod to provide required turbulence, a plurality mounting around the intake and exit side of the turbulence generator hose to provide retrofitting option using a nut & bolt assembly.

No. of Pages : 18 No. of Claims : 8

FORM 1 THE PATENTS ACT 1970 (39 of 1970) and THE PATENTS RULES, 2003 APPLICATION FOR GRANT OF PATENT (See section 7, 54 and 135 and sub-rule (1) of rule 20)				(FOR OFFICE USE ONLY)	
				Application No.	
				Filing date:	
				Amount of Fee paid:	
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1. APPLICANT'S 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 in Full		Nationality	Country of Residence	Address of the Applicant	
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3B. CATEGORY OF APPLICANT [Please tick (✓) at the appropriate category]					
Natural Person ()		Other than Natural Person			
		Small Entity ()	Startup ()	Educational Institution (✓)	Others ()
4. INVENTOR(S) [Please tick (✓) at the appropriate category]					
Are all the inventor(s) same as the applicant(s) named above?		Yes ()		No (✓)	
If "No", furnish the details of the inventor(s)					
Name in Full		Nationality	Country of Residence	Address of the Inventor	
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Sumit Sangwan	Indian	India	Department of Mechanical Engineering, J B Institute of Technology, Dehradun.		
5. TITLE OF THE INVENTION					
“TURBULENCE GENERATOR”					
6. AUTHORISED REGISTERED PATENT AGENT(S)			IN/PA No.	IN/PA: 4266	
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8. IN CASE OF APPLICATION CLAIMING PRIORITY OF APPLICATION FILED IN CONVENTION COUNTRY, PARTICULARS OF CONVENTION APPLICATION					
Country	Application Number	Filing date	Name of the applicant	Title of the	IPC (as classified in the convention country)
Nil	Nil	Nil	Nil	Nil	Nil
9. IN CASE OF PCT NATIONAL PHASE APPLICATION, PARTICULARS OF INTERNATIONAL APPLICATION FILED UNDER PATENT CO-OPERATION TREATY (PCT)					
International application number			International filing date		
Nil			Nil		
10. IN CASE OF DIVISIONAL APPLICATION FILED UNDER SECTION 16, PARTICULARS OF ORIGINAL (FIRST) APPLICATION					
Original (first) application No.			Date of filing of original (first) application		
Nil			Nil		
11. IN CASE OF PATENT OF ADDITION FILED UNDER SECTION 54, PARTICULARS OF MAIN APPLICATION OR PATENT					
Main application/patent No.			Date of filing of main application		
12. DECLARATIONS					

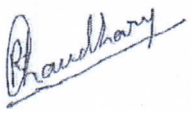
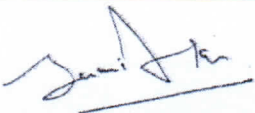
(i) Declaration by the inventor(s)

(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).

I/We, the above named inventor(s) is/are the true & first inventor(s) for this Invention and declare that the applicant(s) herein is/are my/our assignee or legal representative.

Dated this: 10th Day of November 2022.

Signature(s)
Name(s) of the signatory

	
Dr. Pitamber Kumar Cháudhary	Sumit Sangwan

(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 applicant(s) herein is/are my/our assignee or legal representative.

Dated this

- a) Signature(s) Not applicable.
b) Name(s) of the signatory

(iii) Declaration by the applicant(s)

I/We the applicant(s) hereby declare(s) that: -

- I am/ We are in possession of the above-mentioned invention.
- The complete specification relating to the invention is filed with this application.
- ~~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 me/us before the grant of patent to me/us.~~
- There is no lawful ground of objection(s) to the grant of the Patent to me/us.
- ~~I am/we are the true & first inventor(s).~~
- I am/we are the assignee or legal representative of true & first inventor(s).
- ~~The application or each of the applications, particulars of which are given in Paragraph 8, was the first application in convention country/countries in respect of my/our invention(s).~~
- ~~I/We claim the priority from the above mentioned application(s) 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 me/us or by any person from which I/We derive the title.~~
- ~~My/our application in India is based on international application under Patent Cooperation Treaty (PCT) as mentioned in Paragraph 9.~~
- ~~The application is divided out of my /our applications particulars of which is given in Paragraph 10 and pray that this application may be treated as deemed to have been filed on DD/MM/YYYY under section 16 of the Act.~~
- ~~The said invention is an improvement in or modification of the invention particulars of which are given in Paragraph 11.~~

13. FOLLOWING ARE THE ATTACHMENTS WITH THE APPLICATION

(a) Form 2

Item	Details	Fee	Remarks
Complete #	No. of pages: 12		(Total 18 pages)
No. of Claim(s)	No. of claims 08 and No. of pages 02		
Abstract	No. of pages 01		
No. of Drawing(s)	No. of drawings No. 03 of pages 03		

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.

- (b) Complete specification (in conformation with the international application)/as amended before the International Preliminary Examination Authority (IPEA), as applicable.
- (c) Drawings (in conformation with the international application)/as amended before the International Preliminary Examination Authority (IPEA), as applicable (2 copies).
- (d) Statement and Undertaking on Form 3
- (e) Declaration of Inventorship on Form 5
- (f) Power of Authority Form 26
- (g) Request for Early Publication on Form 9
- (h) Request for Examination on Form 18

**Total fee - in cash/Banker's Cheque/Bank Draft Bearing NO..... Date.....on
..... Bank**

Dated this: 10th Day of November 2022.

ON BEHALF OF APPLICANT

- a) Signature(s)
- b) Name(s) of the signatory

Signature: 

Name: Anuj Raturi [IN/PA: 4266]

(AGENT FOR THE APPLICANT)

To,
The Controller of Patents
The Patent Office, at New Delhi.

Note: -

- * Repeat boxes in case of more than one entry.
- * To be signed by the applicant(s) or by authorized registered patent agent otherwise where mentioned.
- * Tick (✓)/cross (x) whichever is applicable/not applicable in declaration in paragraph-12.
- * Name of the inventor and applicant should be given in full, family name in the beginning.
- * Strike out the portion which is/are not applicable.
- * For fee: See First ScheduleI;

FORM 2
THE PATENTS ACT, 1970
(39 of 1970)
&
The Patents Rules, 2003
COMPLETE SPECIFICATION
(See section 10 and rule 13)

Title: TURBULENCE GENERATOR

Applicants:

Name: J B INSTITUTE OF TECHNOLOGY

Nationality: Indian

Address: NH-72, VILLAGE SHANKARPUR, CHAKRATA ROAD,
DEHRADUN, UTTARAKHAND, 248197, INDIA

PREAMBLE TO THE DESCRIPTION:

The following specification particularly describes the invention and the manner in which it is to be performed.

FIELD OF INVENTION:

The present invention relates to a turbulence generator. The present invention in particular relates to a turbulence generator to suppress the pollutants of an internal combustion engine.

5

BACKGROUND OF THE INVENTION:

In an automobile exhaust pipe, the function of catalytic converter plays a vital role in reducing the harmful emissions like CO, HC and NOx by converting them to CO₂, H₂O and N₂. This involves using a two-way catalytic converter or three-way catalytic converter. But there exists a problem that the catalytic converter is not used efficiently as the exhaust gases come in contact with palladium, platinum or rhodium metal at the center passage and the ends of the catalytic converter are left out.

The pressure waves and velocity of exhaust gases in exhaust pipe generally remains very high and increases with increase of engine speed. These pressure waves pass through the exhaust pipe at a local sound speed which can be over 450 m/s in that surroundings, while the gases themselves travel at an average speed of about 90 – 130 m/s. When these gases pass through the catalytic converter, the interaction time of combustion product with catalytic material leftovers very less. Also, a major portion of combustion product do not interact with the catalytic material due to which NOx and CO does not form perfect combustion product and leads to increase of pollutants in emissions.

A number of different type of the assemblies and apparatus for removing pollutants are available in the prior art. For example, the following patents are provided for their supportive teachings and are all incorporated by reference: Prior art document, IN3675/DEL/2012 describes a system for reducing harmful emissions from the exhaust gases of an internal combustion engine. The present invention in particular relates to a system for reducing harmful emissions from an internal combustion engine by using a turbulence generator before the catalytic converter in automobile exhaust pipe.

30

Another prior art document, FR2829183 describes a depollution device comprising an exhaust gas deflector in the intake which can be controlled to direct the exhaust gases to a reduced section of the intake face of the porous body when the exhaust gases are at a low temperature and to an increasing section of the porous body as the temperature of the exhaust gases rises.

Yet another prior art document, EP2123879 describes a manufacturing process to add a deflector in a motor vehicle exhausts line for mixing and homogenizes exhaust flow in front of an exhaust gas converter which comprises a collector, an intake pipe, an exhaust converter and an outlet pipe connected in series.

Yet another prior art document, US3964875 describes a method and apparatus for deflecting or redistributing the flow of exhaust gases discharged from an exhaust pipe into a canister or housing containing a coated honeycomb monolith of a catalytic converter of larger cross-sectional area than the exhaust pipe, so as to more evenly distribute such discharge flow through such catalysed honeycomb support member within the container, and thereby optimize the treatment and removal of pollutants from said exhaust gases.

Yet another prior art document, CN201810378 provides a flow-guide energy-saving exhaust tail pipe comprising an interface, a front-mounted detector, a casing, exhaust openings, an inner pipe, a lava nozzle and an air intake.

Yet another prior art document, US4050903 describes combination muffles and catalytic converter utilizing an axial flow monolithic catalytic element to treat exhaust gases from an internal combustion engine and partially reduce their sound.

Yet another prior art document, US5397550 provides a catalytic converter suitable for heavy-duty diesel engine use, and a unique method of cleaning the accumulated carbon build-up. A ceramic exhaust trap regenerator provides a push-pull heat channeling method of transferring heat to and through the ceramic monolith with a flow of super-heated air.

Yet another prior art document, US8146708 describes an exhaust muffler with an integrated catalytic converter having a polymeric muffler body.

Yet another prior art document, US20090188246 describes a low-cost catalytic article for treating gaseous fluid streams such as exhaust streams from gasoline-powered engines. The articles contain residence chambers defined by chamber walls and for aminos catalytic elements that contain a catalyst composition for
5 converting a reactant contained in the fluid stream and deflectors which increase the residence time of the fluid stream in the residence chamber and the contact time of the fluid stream with the catalytic element.

Yet another prior art document, US20100071352 describes a variable exhaust gas flow deflector for an internal combustion engine. The deflector can include a
10 blade located at least partially within an exhaust gas flow of the engine, the blade having a first position and a second position. The blade can move between the first position and the second position as a function of at least one parameter and/or condition of the exhaust gas and/or the internal combustion engine.

Yet another prior art document, US20100101219 describes an exhaust system for
15 a vehicle with a diesel engine, having a first insert through which exhaust gas flows, a second insert through which exhaust gas flows and which is arranged downstream of the first insert in the flow direction, and an injection device arranged between the first and second inserts, for injecting a fluid. A swirling element is provided in the flow path of the exhaust gas downstream of the first
20 insert in the flow direction.

Yet another prior art document, US20120103719 provides an exhaust muffler comprising an intake in fluid communication with an outlet via an expansion chamber, the expansion chamber comprising an inner core extending in the longitudinal direction, wherein the muffler is provided with at least one accelerator
25 tube between the intake and the expansion chamber.

Yet another prior art document, DE10241898 provides an exhaust gas control system with a regenerable after treatment unit. The automotive exhaust gas filter or nitrogen oxides (NOx) regeneration holder has a feed intake for an active regeneration agent with a movable deflector plate sub-dividing the gas flow into
30 two.

All the above cited prior arts use inbuilt mechanism such as stationary detectors, variable flow deflectors or pinwheel inside the exhaust pipe before the catalytic converter. This kind of inbuilt mechanism causes problems of soot particles deposit on the surface of system which effects of the exhaust gases. The concept of
5 variable mechanism causes maintenance problems when the devices get defective or damaged which finally leads to replacement of the entire exhaust pipe of the vehicle.

Therefore, the present invention provides an automobile pollutant control system using a turbulence generator before the catalytic converter to regulate the flow of
10 exhaust gas to improve the catalytic converter workability.

OBJECTS OF THE INVENTION:

The principal object of the present invention is to provide a turbulence generator before the catalytic converter within the exhaust pipe of the vehicle which guides
15 the flow of exhaust gases over the catalytic material to improve the catalytic converter efficiency and to reduce pollutant level.

Another object of the present invention is to provide a turbulence generator which can retrofit with any exhaust pipe (of the vehicle) having catalytic converter.

Yet another object of the present invention is to provide a turbulence generator
20 which is low in cost and easy to manufacture.

Still another object of the present invention is to provide a turbulence generator which does not cause back pressure in the exhaust pipe of the vehicle.

Another object of the present invention is to provide a turbulence generator which provides ease of maintenance.

25

SUMMARY OF THE INVENTION:

In the view of the foregoing disadvantages inherent in the known assemblies and apparatus for removing pollutants are available in the prior art, the present

invention provides a pollutant reduction a turbulence generator before the catalytic converter within the exhaust pipe of the vehicle. As such, the general purpose of the present invention, which will be described subsequently in greater detail, is to provide a new and improved turbulence generator, which has all the advantages of
5 the prior art and none of the disadvantages.

It is object of the invention is to provide a turbulence generator (100) for reducing the pollutants from the exhaust gases using comprising: a turbulence generator hose (101); guide rod (102); a plurality of mountings (103); and a plurality nut & bolt assembly (104).

10 It is another object of the present invention is to provide the turbulence generator for reducing the pollutants from the exhaust gases using turbulence generator, wherein said guide rod (102) oppositely positioned around the inner circumference of the turbulence generator and located towards the exit side (107) of turbulence generator hose.

15 Yet another object of the present invention is to provide the turbulence generator for reducing the pollutants from the exhaust gases using turbulence generator, wherein said plurality mountings (103) provided around the external circumference of the turbulence generator hose at intake side (106) & exit side (107) for providing retrofitting.

20 Yet another object of the present invention is to provide the turbulence generator for reducing the pollutants from the exhaust gases using turbulence generator, wherein said plurality holes (104) provided on the plurality mountings for inserting the nut & bolt assembly (105) for retrofitting of the assembly.

Yet another object of the present invention is to provide the turbulence generator
25 for reducing the pollutants from the exhaust gases using turbulence generator, wherein said turbulence generator (100) is connected with an exhaust pipe (201) and a catalytic converter (202) of the vehicle.

Yet another object of the present invention is to provide the turbulence generator for reducing the pollutants from the exhaust gases using turbulence generator,
30 wherein the diameter of turbulence generator hose (101) depends on the diameter of the exhaust pipe with whom it has to be retrofit.

Yet another object of the present invention is to provide the turbulence generator for reducing the pollutants from the exhaust gases using turbulence generator, wherein the plurality mountings (103) and nut & bolt assembly (105) also provided for the user-friendly maintenance/cleaning of the said turbulence generator hose (101).
5

In this respect, before explaining at least one embodiment of the invention in detail, it is to be understood that the invention is not limited in its application to the details of construction and to the arrangements of the components set forth in the following description or illustrated in the drawings. The invention is capable of other embodiments and of being practiced and carried out in various ways. Also, it is to be understood that the phraseology and terminology employed herein are for the purpose of description and should not be regarded as limiting.
10

These together with other objects of the invention, along with the various features of novelty which characterize the invention, are pointed out with particularity in the disclosure. For a better understanding of the invention, its operating advantages and the specific objects attained by its uses, reference should be had to the accompanying drawings and descriptive matter in which there are illustrated preferred embodiments of the invention.
15

20 **BRIEF DESCRIPTION OF THE DRAWINGS:**

It is to be noted, however, that the appended drawings illustrate only typical embodiments of this invention and are therefore not to be considered for limiting of its scope, for the invention may admit to other equally effective embodiments.

FIG. 1 depicts the sectional view of the turbulence generator according to one of the embodiment of the present invention.
25

FIG. 2 depicts the side view of the turbulence generator according to one of the embodiment of the present invention.

FIG. 3 depicts the exemplary assembly of turbulence generator with exhaust pipe and catalytic converter according to one of the embodiment of the present invention.
30

DETAILED DESCRIPTION:

In the following detailed description, reference is made to the accompanying drawings which form a part hereof, and in which is shown by way of illustration
5 specific embodiments in which the invention may be practiced. These embodiments are described in sufficient detail to enable those skilled in the art to practice the invention, and it is to be understood that the embodiments may be combined, or that other embodiments may be utilized and that structural and logical changes may be made without departing from the spirit and scope of the
10 present invention. The following detailed description is, therefore, not to be taken in a limiting sense, and the scope of the present invention is defined by the appended claims and their equivalents.

References will now be made in detail to the exemplary embodiment of the present disclosure. Before describing the detailed embodiments that are in accordance with
15 the present disclosure, it should be observed that the embodiments reside primarily in combinations arrangement of the system according to an embodiment herein and as exemplified in Figs. 1 to 3.

The present invention provides an apparatus to improve catalytic converter efficiency that incorporates a turbulence generator for directing combustion
20 product on the catalytic material so that; the maximum combustion product comes in contact with the catalytic material and helps in reducing the pollutant level.

In a preferred embodiment of the present invention it is provided, an apparatus to improve catalytic converter efficiency incorporating a turbulence generator as a retrofit unit for directing/ guiding exhausted combustion product by which a
25 directed flow is created over the catalytic material/catalytic material mesh in order to improve the efficiency of catalytic converter and reducing the pollutant level.

In another embodiment of the present invention, the turbulence generator is fitted adjacent and before the catalytic converter.

In yet another embodiment of the present invention, one end of turbulence generator is connected to the exhaust pipe and the other end is connected to the intake of the catalytic converter.

5 In still another embodiment of the present invention, the turbulence generator includes 2 to 3 and preferably 2 guide blades around the inner circumference of the turbulence generator.

In another embodiment of the present invention, the diameter of the vane chamber is exactly the same as that of exhaust pipe.

10 Fig. 1 illustrates the turbulence generator (100) comprising a turbulence generator hose (101) having guide rod (102) around the inner circumference and towards the exit of the turbulence generator; plurality mountings (103) around the external circumference of the turbulence generator hose, located at intake & exit and; plurality nut & bolt assembly (104). (106) and (107) is representing intake and exit opening of the turbulence generator hose.

15 Fig. 2 depicts the side view of the turbulence generator (100) from the exit side wherein, turbulence generator hose (101) having oppositely mounted guide rod (102) around the inner circumference of the turbulence generator. Plurality mountings (103) are welded around the circumference of the turbulence generator hose at an angular distance of 120° wherein plurality holes (104) are provided for
20 inserting the bolts for the retrofitting of the apparatus.

Fig. 3 depicts an exemplary assembly (200) of the turbulence generator (100) along with the exhaust pipe (201) and catalytic converter (202) of the vehicle, wherein, turbulence generator positioned in between the exhaust pipe and catalytic converter of the vehicle. The intake side of the turbulence generator attached with
25 the exhaust pipe using the mountings around the circumference of the intake side of turbulence generator wherein identical and same numbers of mountings achieved over the exhaust pipe by welding for assembly. Similarly, exit side of the turbulence generator attached with the catalytic converter intake hose using the mountings around the circumference of the intake side of turbulence generator

wherein identical and same numbers of mountings achieved over the catalytic converter intake hose by welding for assembly.

5 The main determination of using turbulence generator in the present invention is to provide such a flow that can help maximum portion of exhaust gas particulate matter to interact with the catalytic material to improve catalytic reaction.

10 The exhausted combustion product from engine at high temperature and velocity passes through the exhaust pipe and enters into the catalytic converter wherein, the retrofitted turbulence generator in between the exhaust pipe and catalytic converter guides the flow of high velocity exhaust gases over the catalytic material. The linear flow of exhaust gases inside the exhaust pipe further being swirled by the turbulence generator and this guided swirled flow further enters inside the catalytic converter to improve the combustion product and catalytic material interaction. The guide blades of turbulence generator are responsible for producing the previously described guided flow with swirl also, it helps to minimize the back
15 flow & back pressure of exhaust gases due to the catalytic converter.

20 The said turbulence generator can be retrofit with any exhaust pipe of the vehicle having catalytic converter just by cutting the desired length of exhaust pipe before the catalytic converter which is equivalent to the length of turbulence generator hose. Few modifications have to be done with the exhaust pipe and the intake pipe of catalytic converter so that turbulence generator can be integrating in between exhaust pipe and catalytic converter.

25 The mounting around the intake & outlet sides of the turbulence generator hose and nut & bolt assemblies are also being provided for the user-friendly maintenance/cleaning of the turbulence generator hose. Due to use for several kilometers of vehicle run; guide blades may have solid exhaust particulate deposition over the guide blade surface. Such deposition may affect the curvature of the guide blades and can affect the desired guided flow of exhaust gases over the catalytic material.

30 For example, an experimental setup having exhaust pipe of the vehicle diameter 1.5 inches and similar diameter turbulence generator hose have been used wherein

the length of the hose is 4 inches. Two guide blades are fixed around the inner circumference of the turbulence generator hose wherein guide blades are oppositely positioned towards the exit side of the turbulence generator hose. If we observe the cross section of the turbulence generator hose in Fig. 1, the guide blades are fixed on the inner circumference wherein, guide blade tail starts from the center of hose and ends at the exit side. The remaining half portion of the turbulence generator having no guide blade part on the surface which is towards intake side. The plurality mountings around the external circumference of the turbulence generator hose are positioned at 120° from each other and more mountings can be used as per the diameter of the exhaust pipe with positioning at different angles. The length of the guide blade at the turbulence generator hose is around 3.98 inches, wherein the curve of guide blade from the center of hose to the exit side of hose ranges from 5° to 12° respectively. At an engine speed of 2500 to 4000 R.P.M a reduction of 0.5 to 2 % have been recorded for CO emission.

15 The vane chamber creates turbulence and thereby increases the reaction time as well as the surface area for the reaction in the catalytic converter. Also it is easy to maintain it as the vane chamber can be easily removed and after carrying out the maintenance it can be reinstalled. This not only makes it cost effective but also prevents damage to the entire exhaust line.

20 Numerous modifications and adaptations of the system of the present invention will be apparent to those skilled in the art, and thus it is intended by the appended claims to cover all such modifications and adaptations which fall within the true spirit and scope of this invention.

25 In the following description, for the purpose of explanation, numerous specific details are set forth in order to provide a thorough understanding of the arrangement of the system according to an embodiment herein. It will be apparent, however, to one skilled in the art, that the present embodiment can be practiced without these specific details. In other instances, structures are shown in block diagram form only in order to avoid obscuring the present invention.

It is to be understood that the above description is intended to be illustrative, and not restrictive. For example, the above-discussed embodiments may be used in combination with each other. Many other embodiments will be apparent to those of skill in the art upon reviewing the above description.

- 5 The benefits and advantages which may be provided by the present invention have been described above with regard to specific embodiments. These benefits and advantages, and any elements or limitations that may cause them to occur or to become more pronounced are not to be construed as critical, required, or essential features of any or all of the embodiments.
- 10 While the present invention has been described with reference to particular embodiments, it should be understood that the embodiments are illustrative and that the scope of the invention is not limited to these embodiments. Many variations, modifications, additions and improvements to the embodiments described above are possible. It is contemplated that these variations,
- 15 modifications, additions and improvements fall within the scope of the invention.

ON BEHALF OF APPLICANT

Dated: 10th Day of November, 2022.

Signature: 

Name: Anuj Raturi [IN/PA: 4266]

(AGENT FOR THE APPLICANT)

CLAIM(S):

We Claim:

1. A turbulence generator (100) for reducing the pollutants from the exhaust gases using comprising:
 - 5 a turbulence generator hose (101);
 - guide rod (102);
 - A plurality of mountings (103); and
 - A plurality nut & bolt assembly (104).
- 10 2. The turbulence generator of present invention as claimed in claim 1, wherein said guide rod (102) oppositely positioned around the inner circumference of the turbulence generator and located towards the exit side (107) of turbulence generator hose.
- 15 3. The turbulence generator of present invention as claimed in claim 2, wherein said guide blades provides a guided swirled flow.
4. The turbulence generator of present invention as claimed in claim 1, wherein said plurality mountings (103), provided around the external circumference of the turbulence generator hose at intake side (106) & exit side (107) for providing retrofitting.
- 20 5. The turbulence generator of present invention as claimed in claim 3, wherein said plurality holes (104) provided on the plurality mountings for inserting the nut & bolt assembly (105) for retrofitting of the assembly.
- 25 6. The turbulence generator of present invention as claimed in claim 1, wherein said turbulence generator (100) is connected with an exhaust pipe (201) and a catalytic converter (202) of the vehicle.
7. The turbulence generator of present invention as claimed in claim 1, wherein the diameter of turbulence generator hose (101) depends on the diameter of the exhaust pipe with whom it has to be retrofit.
- 30 8. The turbulence generator of present invention as claimed in claim 1, wherein the plurality mountings (103) and nut & bolt assembly (105)

also provided for the user-friendly maintenance/cleaning of the said turbulence generator hose (101).

5

ON BEHALF OF APPLICANT

Dated: 10th Day of November, 2022.

Signature: 

Name: Anuj Raturi [IN/PA: 4266]

(AGENT FOR THE APPLICANT)

ABSTRACT

Title: "A TURBULENCE GENERATOR"

The present invention relates to a turbulence generator specifically for the automobiles. Said invention comprising a turbulence generator hose, an axial turbulence rod to provide required turbulence, a plurality mounting around the intake and exit side of the turbulence generator hose to provide retrofitting option using a nut & bolt assembly.

ON BEHALF OF APPLICANT

Dated: 10th Day of November, 2022.

Signature: 

Name: Anuj Raturi [IN/PA: 4266]

(AGENT FOR THE APPLICANT)

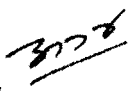
FORM 3
THE PATENTS ACT,
1970 (39 of 1970)
and
THE PATENTS RULES, 2003
STATEMENT AND UNDERTAKING UNDER
SECTION 8
(See section 8; Rule 12)

1. Name & address of the applicant(s).	<p>We, J B INSTITUTE OF TECHNOLOGY of the address NH-72, VILLAGE SHANKARPUR, CHAKRATA ROAD, DEHRADUN, Uttarakhand, 248197, India hereby declare:</p> <p>(i) that we who have made this Application No. 202211_____ dated 10/11/2022 alone, made for the same/ substantially same invention, application(s) for patent in the other countries, the particulars of which are given below:</p>
--	---

Name of the Country	Date of Application	Application No.	Status of Application	Date of publication	Date of Grant
---------------------	---------------------	-----------------	-----------------------	---------------------	---------------

Details attached as ANNEXURE

2. Name of the assignee	<p>(ii) that the rights in the application(s) has/have been assigned to J B INSTITUTE OF TECHNOLOGY that we undertake that up to the date of grant of the patent by the Controller, we would keep him informed in writing the details regarding corresponding applications for patents filed outside India within six months from the date of filing of such application.</p> <p>Dated this 10th day of November, 2022</p>
-------------------------	---

3. To be signed by the applicant or his authorized registered patent agent.	<p>Signature: </p> <p>Name: Anuj Raturi [IN/PA: 4266] (AGENT FOR THE APPLICANT)</p>
---	---

4. Name of the natural person who has signed.	Anuj Raturi
---	--------------------

	<p>To, The Controller of Patents, The Patent Office, Delhi</p>
--	---

Note.- Strike out whichever is not applicable;

ANNEXURE TO FORM-3

Title of Invention: TURBULENCE GENERATOR

Application No. 202211_____ Filed on: 10/11/2022.

Applicant(s): J B INSTITUTE OF TECHNOLOGY

Country	Application date	Application No.	Status of the Application	Date of Pub. / Pub. Number	Date of grant / Grant Number
N/F	N/F	N/F	N/F	N/F	N/F

*N/A (Not Filed)

Signature: 

Name: Anuj Raturi [IN/PA: 4266]

(AGENT FOR THE APPLICANT)

FORM 5

**THE PATENTS ACT, 1970
(39 of 1970)
&
THE PATENT RULES, 2003
DECLARATION AS TO INVENTORSHIP**

[See Section 10(6) and Rule 13(6)]

We, **J B INSTITUTE OF TECHNOLOGY** having institution address at **NH-72, VILLAGE SHANKARPUR, CHAKRATA ROAD, DEHRADUN, UTTARAKHAND, 248197, INDIA**, hereby declare that the true and first inventors of the invention disclosed in the complete specification filed in pursuance of our Application Titled "**TURBULENCE GENERATOR**" are:

Name: Dr. Pitamber Kumar Chaudhary

Nationality: Indian

Address: Department of Mechanical Engineering, J B Institute of Technology, Dehradun.

Name: Sumit Sangwan

Nationality: Indian

Address: Department of Mechanical Engineering, J B Institute of Technology, Dehradun.

Dated this: 10th day of November, 2022.

Signature & Name:



Registrar

J B Institute of Technology

To,
The Controller of Patents
The Patent Office, at Delhi.

FORM 9

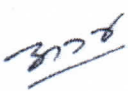
The Patent ACT, 1970 (39 of 1970)

&

The Patents Rule, 2003

Request for Publication

[See section 11A (2), Rule 24A]

1. Name, address and nationality of the applicants:	We, J B INSTITUTE OF TECHNOLOGY Address: NH-72, VILLAGE SHANKARPUR, CHAKRATA ROAD, DEHRADUN, Uttarakhand, 248197 India. Nationality: Indian
2. To be signed by the applicant or his authorized registered patent agent	Hereby request for early publication of our application Titled: "TURBULENCE GENERATOR" filed herewith under section 11A(2) of the Act.
3. Name of the natural person who signed. Dated: November 10, 2022.	Signature:  Name: Anuj Raturi [IN/PA: 4266] (AGENT FOR THE APPLICANT)

To,
The Controller of Patents
The Patent Office, New Delhi.

FORM 28

THE PATENT ACT, 1970 (39 OF 1970)

&

THE PATENTS RULES, 2003

TO BE SUBMITTED BY AN EDUCATIONAL INSTITUTION

[See rules 2 (ca) and 7]

We, J B INSTITUTE OF TECHNOLOGY having Nationality of India of the address-
NH-72, VILLAGE SHANKARPUR, CHAKRATA ROAD, DEHRADUN,
Uttarakhand, 248197, India. Applicant in respect of the patent application titled
"TURBULENCE GENERATOR" & application no.202211 _____,

hereby declare that we are an educational institution in accordance with rule 2(ca) and
submit the following document(s) as proof;

i) Certificate/proof of university recognized under/Central/State government.

The information provided herein is correct to the best of our knowledge and belief.

Dated this: 10th day of November, 2022.

Signature: 

Name: Anuj Raturi [IN/PA: 4266]

(AGENT FOR THE APPLICANT)

To,

The Controller of Patents,

The Patent Office, at Delhi.

FORM 28

THE PATENT ACT, 1970 (39 OF 1970)

&

THE PATENTS RULES, 2003

TO BE SUBMITTED BY AN EDUCATIONAL INSTITUTION

[See rules 2 (ca) and 7]

We, J B INSTITUTE OF TECHNOLOGY having Nationality of India of the address-
NH-72, VILLAGE SHANKARPUR, CHAKRATA ROAD, DEHRADUN,
Uttarakhand, 248197, India. Applicant in respect of the patent application titled
"TURBULENCE GENERATOR" & application no.202211_____.

hereby declare that we are an educational institution in accordance with rule 2(ca) and
submit the following document(s) as proof;

i) Certificate/proof of university recognized under/Central/State government.

The information provided herein is correct to the best of our knowledge and belief.

Dated this: 10th day of November, 2022.

Signature: 

Name: Anuj Raturi [IN/PA: 4266]

(AGENT FOR THE APPLICANT)

To,

The Controller of Patents,

The Patent Office, at Delhi.

All India Council for Technical Education

(A Statutory body under Ministry of Education, Govt. of India)

Nelson Mandela Marg, Vasant Kunj, New Delhi-110070 Website: www.aicte-india.org



APPROVAL PROCESS 2022-23

Extension of Approval (EOA)

F.No. Northern/1-10968838042/2022/EOA

Date: 29-Jul-2022

To,

The Secretary(Technical Education)
Govt. of Uttarakhand, Dehradun Sectt.,
4 Subhash Road, Dehradun-248001

Sub: Extension of Approval for the Academic Year 2022-23

Ref: Application of the Institution for Extension of Approval for the Academic Year 2022-23

Sir/Madam,

In terms of the provisions under the All India Council for Technical Education (Grant of Approvals for Technical Institutions) Regulations, 2022 Notified on 4th February, 2022 and amended on 24th February 2022 and norms standards, procedures and conditions prescribed by the Council from time to time, I am directed to convey the approval to

Permanent Id	1-8461364	Application Id	1-10968838042
Name of the Institution	J B INSTITUTE OF TECHNOLOGY	Name of the Society/Trust	JAI BHAGWAN EDUCATIONAL SOCIETY
Institution Address	NH-72, VILLAGE SHANKARPUR, CHAKRATA ROAD, DEHRADUN, DEHRADUN, Uttarakhand, 248197	Society/Trust Address	17 MANDIR MARG, VASANT VIHAR ENCLAVE DEHRADUN, DEHRADUN, DEHRADUN, Uttarakhand, 248001
Institution Type	Private-Self Financing	Region	Northern
Year of Establishment	2009		

Opted for Introduction of New Program/Level	Yes	Introduction of Program/Level Approved or Not	Approved
--	-----	--	----------

To conduct following Courses with the Intake indicated below for the Academic Year 2022-23

Level	Program	Course	Affiliating Body (University /Body)	Intake Approved for 2021-22	Intake Approved for 2022-23	NRI Approval Status	FN / Gulf quota/ OCI/ Approval Status
DIPLOMA	ENGINEERING AND TECHNOLOGY	CIVIL ENGINEERING	Directorate Of Technical Education, Srinagar(Garhwal)	60	60	No	No
DIPLOMA	ENGINEERING AND TECHNOLOGY	ELECTRICAL ENGINEERING	Directorate Of Technical Education, Srinagar(Garhwal)	60	60	No	No

Level	Program	Course	Affiliating Body (University /Body)	Intake Approved for 2021-22	Intake Approved for 2022-23	NRI Approval Status	FN / Gulf quota/ OCI/ Approval Status
DIPLOMA	ENGINEERING AND TECHNOLOGY	MECHANICAL ENGINEERING	Directorate Of Technical Education, Srinagar(Garhwal)	60	60	No	No
UNDER GRADUATE	ENGINEERING AND TECHNOLOGY	ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING	Uttarakhand Technical University, Dehradun	60	30	NA	NA
UNDER GRADUATE	ENGINEERING AND TECHNOLOGY	CIVIL ENGINEERING	Uttarakhand Technical University, Dehradun	60	60	No	No
UNDER GRADUATE	ENGINEERING AND TECHNOLOGY	COMPUTER SCIENCE & ENGINEERING	Uttarakhand Technical University, Dehradun	60	90	NA	NA
UNDER GRADUATE	ENGINEERING AND TECHNOLOGY	ELECTRICAL ENGINEERING	Uttarakhand Technical University, Dehradun	30	30	No	No
UNDER GRADUATE	ENGINEERING AND TECHNOLOGY	ELECTRONICS & COMMUNICATION ENGG	Uttarakhand Technical University, Dehradun	30	30	No	No
UNDER GRADUATE	ENGINEERING AND TECHNOLOGY	MECHANICAL ENGINEERING	Uttarakhand Technical University, Dehradun	60	60	No	No
POST GRADUATE	ENGINEERING AND TECHNOLOGY	COMPUTER SCIENCE & ENGINEERING	Uttarakhand Technical University, Dehradun	24	24	No	No
POST GRADUATE	MANAGEMENT	MBA	Uttarakhand Technical University, Dehradun	0	60##	No	No

Approved New Course(s)

It is mandatory to comply with all the essential requirements as given in APH 2022-23 (Appendix 6)

Important Instructions

1. The State Government/ UT/ Directorate of Technical Education/ Directorate of Medical Education shall ensure that 10% of reservation for Economically Weaker Section (EWS) as per the reservation policy for admission, operational from the Academic year 2019-20 is implemented without affecting the reservation percentages of SC/ ST/ OBC (NCL)/ General. However, this would not be applicable in the case of Minority Institutions referred to the Clause (1) of Article 30 of Constitution of India. Such Institution shall be permitted to increase in annual permitted strength over a maximum period of two years.
2. The Institution offering courses earlier in the Regular Shift, First Shift, Second Shift/Part Time are now amalgamated as total intake and shall have to fulfil all facilities such as Infrastructure, Faculty and other requirements as per the norms specified in the Approval Process Handbook 2022-23 for the Total Approved Intake. Further, the Institutions Deemed to be Universities/ Institutions having Accreditation/ Autonomy status shall have to maintain the Faculty: Student ratio as specified in the Approval Process Handbook. All such Institutions/ Universities shall have to create the necessary Faculty, Infrastructure and other facilities WITHIN 2 YEARS to fulfil the norms based on the Affidavit submitted to AICTE beginning with the Academic Year 2022-23
3. Strict compliance of Anti-Ragging Regulation, Establishment of Committee for SC/ ST, Establishment of Internal Complaint Committee (ICC), Establishment of Online Grievance Redressal Mechanism, Barrier Free Built Environment for disabled and elderly persons, Fire and Safety Certificate should be maintained as Approval Process Handbook and provisions made in AICTE Regulation notified from time to time.
4. In case of any differences in content in this Computer generated Extension of Approval Letter, the content/information as approved by the Executive Council / General Council as available on the record of AICTE shall be final and binding.

Pharmacy Institute: In compliance with the order dated 05.03.2020 passed by the Hon'ble Supreme Court of India in Transferred Petitions (CIVIL) No 87-101 of 2014, for the existing institutions offering courses in Pharmacy Programme, approval of Pharmacy Council of India (PCI) is mandatory and AICTE approval is NOT required. The requirements for running the Programme (Diploma / UG / PG) such as Land & Build-up Area, Student-faculty ratio, Intake etc. will be as per the respective regulatory body (PCI). In case of any inconsistency in the course name and intake for EoA issued by AICTE and the approval by PCI, the approval of PCI shall prevail.

Architecture Institute: In compliance with the order dated 08.11.2019 passed by the Hon'ble Supreme Court of Indian CA No.364/ 2005, for the existing Institutions offering Courses in Architecture Programme, approval by the Council of Architecture (CoA) is mandatory and AICTE approval is NOT required. The requirements for running the Programme (Diploma / UG / PG) such as Land & Build-up Area, Student-faculty ratio, Intake etc. will be as per respective regulatory body (CoA). In case of any inconsistency in the course name and intake for EoA issued by AICTE and the approval by CoA, the approval of CoA shall prevail.

Deemed to be University: Institutions Deemed to be Universities (Running Technical Education Programmes), it is mandatory to have AICTE approval from the Academic Year 2018-19 in compliance of the Hon'ble Supreme Court Order dated 03-11-2017 passed in CA No.17869- 17870 /2017.

Prof.Rajive Kumar
Member Secretary, AICTE

Copy to:

1. **The Director Of Technical Education**, Uttarakhand**
2. **The Registrar****,
Directorate Of Technical Education, Srinagar(Garhwal)
3. **The Principal / Director**,
J B INSTITUTE OF TECHNOLOGY
Nh-72, Village Shankarpur, Chakrata Road, Dehradun,
Dehradun,Dehradun,
Uttarakhand,248197
4. **The Secretary / Chairman**,
17 MANDIR MARG, VASANT VIHAR ENCLAVE
DEHARDUN
DEHRADUN,DEHRADUN

Uttarakhand,248001

5. **The Regional Officer,**
All India Council for Technical Education
Govt. Polytechnic Campus
Adjoining Directorate of Technical Education
Vikas Nagar, Kanpur-208 002, Uttar Pradesh

6. **Guard File(AICTE)**

Note: Validity of the Course details may be verified at <http://www.aicte-india.org/>

** Individual Approval letter copy will not be communicated through Post/Email. However, consolidated list of Approved Institutions(bulk) will be shared through official Email Address to the concerned Authorities mentioned above.

This is a computer generated Statement. No signature Required



प्रेषक,

डा० रंजीत कुमार सिन्हा
सचिव श्री राज्यपाल/कुलाधिपति।

सेवा में,

कुलपति,
बीर माधो सिंह भण्डारी उत्तराखण्ड प्रौद्योगिकी विश्वविद्यालय,
सुझोवाला, देहरादून।

राज्यपाल/कुलाधिपति सचिवालय उत्तराखण्ड :

देहरादून : दिनांक : 3 अक्टूबर, 2022

महोदय,

कृपया विश्वविद्यालय के पत्र सं०-2052 व 2055, दिनांक 07-01-2022 का सन्दर्भ ग्रहण करने का कष्ट करें।

2. उपरोक्त सन्दर्भ के सम्बन्ध में मुझे यह कहने का निदेश हुआ है कि नियामक संस्था, निरीक्षण मण्डल, कुलपति व कुलसचिव, पी०मा०सि०भ० उत्तराखण्ड प्रौद्योगिकी विश्वविद्यालय द्वारा प्रदत्त सत्तुति के दृष्टिगत विश्वविद्यालय अधिनियम, 2005 (ग्रथा अद्यतन संशोधित) की धारा-24(2) के अधीन निम्नपत्र संस्थान को उराके साम्मुख वर्णित पाठ्यक्रम, सीटों एवं अधि की अस्थाई सम्बद्धता विस्तारण हेतु छात्रहित में मा० कुलाधिपति द्वारा पूर्वानुमोदन निम्नवत् उपबन्धों के साथ प्रदान किया गया है :-

संस्थान का नाम	पाठ्यक्रम	सीट संख्या प्रति सत्र	शैक्षिक सत्र
1	2	3	4
जे०बी० इंस्टीट्यूट ऑफ टेक्नोलॉजी, ग्राम-शंकरपुर, चकराता रोड, देहरादून	बी०टेक० :- 1. Civil Engg. 2. Computer Science & Engg. 3. Electrical Engg. 4. Electronics & Communication Engg. 5. Mechanical Engg. 6. Artificial Intelligence and Machine Learning (New Course-1st Affiliation)	60 60 30 30 60 60	2021-22
	एम०टेक० :- 1. Computer Science & Engg.	24	

(1) विश्वविद्यालय द्वारा संस्थान की Annual Balance Sheet सम्बन्धी साक्ष्य की सत्यापित प्रति प्राप्त कर इस सचिवालय को उपलब्ध कराई जायेगी।

(2) प्राभूति राशि अपूर्ण है। अतः उत्तराखण्ड शासन द्वारा शासनादेश दिनांक 14 दिसम्बर, 2016 द्वारा तथा व्यवसायिक पाठ्यक्रमों हेतु प्राभूति राशि के सम्बन्ध में शासन स्तर पर लिये गये निर्णय का पूर्ण रूप से अनुपालन विश्वविद्यालय व संस्थान द्वारा किया जायेगा, उराके अनुपालन की सूचना से इस सचिवालय को भी अवगत कराया जायेगा।

(3) विश्वविद्यालय द्वारा छात्र/छात्राओं की गुणवत्ता और व्यवहारिक शिक्षा में सुधार के लिए क्या कदम उठाए गये हैं, इसकी सूचना व संस्थानों द्वारा छात्रों की प्रायोगिक शिक्षा और इंटर्नशिप/विजिट के लिए किन समूहों, विभागों एवं कंपनियों के साथ समझौता (Tie-up or MoU) किया गया है, तत्सम्बन्धी अभिलेख एक माह के भीतर अनिवार्य रूप से इस सचिवालय को प्रेषित करना सुनिश्चित करें। अन्यथा की स्थिति में संस्थान की सम्बद्धता निरस्त कर दी जाएगी साथ ही अग्रेत्तर सत्रों की सम्बद्धता के सम्बन्ध में कोई विचार नहीं किया जायेगा।

(4) विश्वविद्यालय संस्थान द्वारा गोसाइती/टार फील्डिंग अधिनियम के अन्तर्गत निर्धारित Legal Obligation पूर्ण किये जाने के सम्बन्ध में राज्य सचिव आख्या एक माह के भीतर राज्यपाल सचिवालय को उपलब्ध कराया जाना सुनिश्चित किया जायेगा।

(5) यदि संस्थान द्वारा एक या एक से अधिक विश्वविद्यालय से पाठ्यक्रम की सम्बद्धता प्राप्त की गई हो तो संस्थान समस्त पाठ्यक्रमों की सम्बद्धता को एक साथ रखकर पाठ्यक्रमवार मानक पूर्ण किये जाने के सम्बन्ध में आख्या संस्थान द्वारा विश्वविद्यालय को उपलब्ध कराई जायेगी तथा संस्थान से प्राप्त आख्या का परीक्षण करते हुए विश्वविद्यालय द्वारा राज्यपाल सचिवालय को उपलब्ध कराई जायेगी।

(6) अग्रोत्तर सत्रों के सम्बद्धता प्रस्ताव नियामक संस्था, विश्वविद्यालय एवं शासन द्वारा निर्धारित मानकों के अनुरूप पूर्ण होने की दशा में ही स्वीकार किये जायेंगे अन्यथा की स्थिति में अपूर्ण प्रस्तावों पर विचार नहीं किया जायेगा, जिसका पूर्ण उत्तरदायित्व विश्वविद्यालय का होगा।

(7) विश्वविद्यालय, नियामक संस्था, विश्वविद्यालय व राज्य सरकार द्वारा निर्धारित सभी मानकों के पूर्ण होने की दशा में ही कार्यपरिपत्र के अनुमोदन से विहित शर्तों/उपबन्धों के अधीन अस्थाई सम्बद्धता विस्तारण के आदेश निर्गत कर व तत्सम्बन्धी कार्यवाही की सूचना मा० कुलाधिपति नहोदय के अवगतार्थ उपलब्ध कराये।

तदनुसार अग्रोत्तर कार्यवाही सुनिश्चित करें।

भवदीय,

(डा० रंजीत कुमार सिन्हा)
सचिव श्री राज्यपाल/कुलाधिपति।

संख्या-2852(1)/जी०एस०(शिदा)/A4-48(P-II)/2019 तददिनांकित।

प्रतिलिपि निम्नलिखित को सूचनार्थ एवं आवश्यक कार्रवाई हेतु प्रेषित -

1. सचिव, तकनीकी शिक्षा विभाग, उत्तराखण्ड शासन।
2. प्राचार्य/निदेशक, संबंधित संस्थान।
3. कम्प्यूटर प्रकोष्ठ/गार्ड फाइल हेतु।

आज्ञा से,

(स्वाति एस० नंदारिया)
अपर सचिव श्री राज्यपाल/कुलाधिपति।

FORM 26
THE PATENTS ACT 1970
(39 OF 1970)

&

The Patent Rules, 2003

**Form for Authorization of Patent Agent/ or Any Person in a matter or Proceeding under
the Act**

[See Section 127; and Rule 135]

We, J B INSTITUTE OF TECHNOLOGY having address at NH-72, VILLAGE SHANKARPUR, CHAKRATA ROAD, DEHRADUN, Uttarakhand, 248197, India, do hereby authorize **Mr. Anuj Raturi [Registered Indian Patent Agent, (IN/PA:4266)] & Adv. Ram Chandra Joshi [Reg. No.: U.A. 2638/04, U.P. 2763/94 (Advocate & Notary)]** having office address, as Gyananand Bhawan, Kalinka Vihar, Majrimafi, Lane No.3, IIP Mohkampur Kala-248005, Dehradun, Uttarakhand, India, to act on our behalf in connection with the filing and pre & post grant prosecution for the invention titled "**TURBULENCE GENERATOR**" filed in our name and request that all notices, requisitions and communication relating thereto may be sent to such person(s) at the above address unless otherwise specified.

This authorization includes the right to appoint substitutes.

We hereby revoke all previous authorizations, if any made, in respect of the same matter or proceeding.

We hereby assent to the action already taken by the said person in the above matter.

Dated this: November 10, 2022.

Signature & Name:



Registrar
J B Institute of Technology

To be stamped under the Indian Stamp Act, 1899 (2 of 1899)

To,
The Controller of Patents
The Patent Office, at Delhi.

To be stamped under the Indian Stamp, Act, 1899 (2 of 1899)

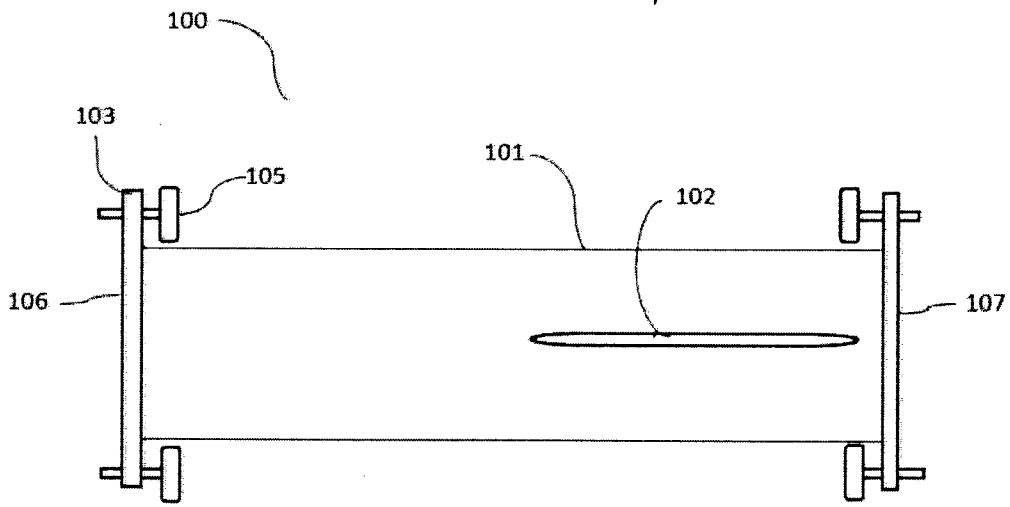


FIG. 1

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Total Sheets 03
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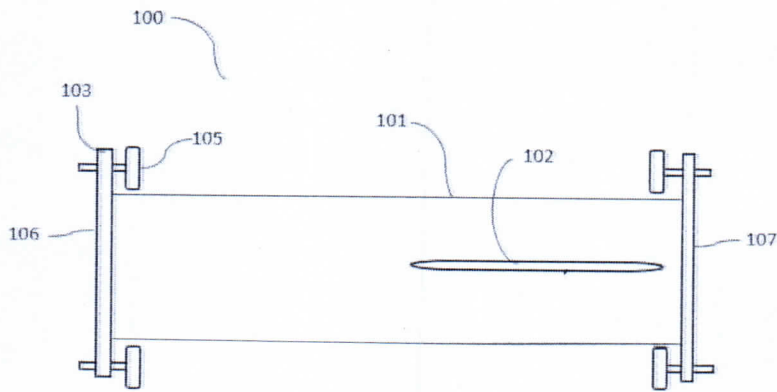


FIG. 1

Dated: 10th Day of November, 2022

ON BEHALF OF APPLICANT

Signature:

Name: Anuj Raturi [IN/PA: 4266]

(AGENT FOR THE APPLICANT)

Applicant(s): J B INSTITUTE OF TECHNOLOGY

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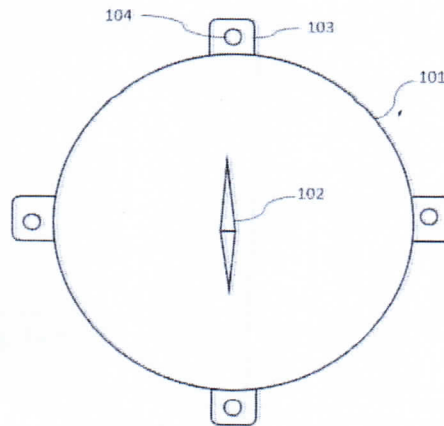


FIG. 2

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Name: Anuj Raturi [IN/PA: 4266]

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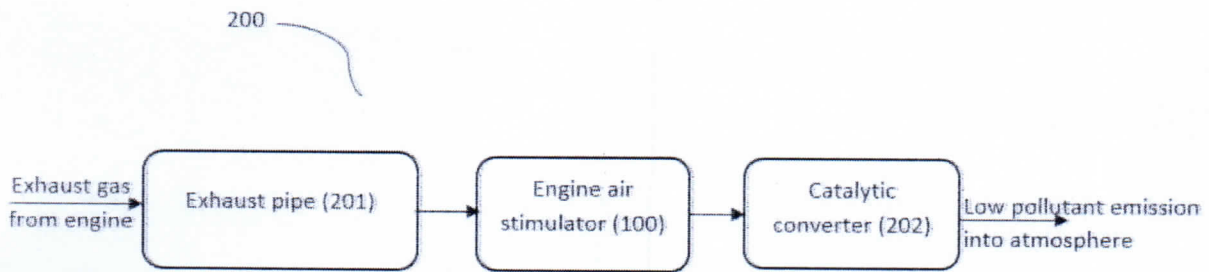


FIG. 3

ON BEHALF OF APPLICANT

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Signature:

Name: Anuj Raturi [IN/PA: 4266]

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