

# **TITLE OF INVENTION: VORTEX DYNAMIC PROPULSION**

## **STRUCTURE**

### **BACKGROUND OF THE INVENTION**

#### **5 a) Field of the Invention**

The present invention relates to a vortex dynamic propulsion structure, and more particularly to a combines the round pipe and the guiding tube to construct a directional vortex producer, for driving the fluid in the round pipe or applying its counterforce as a vortex dynamic propulsion  
10 device.

#### **b) Description of the Prior Art**

Conventional ships are generally propelled by the propeller, which has many problems as the following:

1. The front edge of the blade suffers persistent high pressure, and the  
15 surface of the blade suffers persistent friction, both of them consume kinetic energy.

2. The propeller exerts centrifuging force to the water and creates low pressure zone behind the hub, both of them consume kinetic energy.

3. The cavitation at the tip of the blades consumes kinetic energy also  
20 causes erosion and noise.

4. The naked propeller tend to be damaged by the drift, tangled by

the rope, or harmful to the marine life.

5. The propeller vibrates heavily and produces huge noise.

6. The propeller needs high technology and high cost for manufacturing and repairing.

5 The present invention is a revolutionary device that can replace traditional propeller and solve all above problems.

## **SUMMARY OF THE INVENTION**

The present invention provides a vortex dynamic propulsion structure, which can be used for driving the fluid inside the round pipe or applying its  
10 counterforce for propulsion of the vehicle. Such revolutionary device can fulfill the requirements of low costs, compact in structure, durable, facilitate for installation and repairing, environment friendly, energy saving and high efficiency.

In order to fulfill above requirements, the present invention adopts  
15 following technical measures:

The present invention is a vortex dynamic propulsion structure, which consists of a guiding tube that tangentially inserted into a round pipe. The guiding stream is injected through the guiding tube into the round pipe and transformed into vortex, then advances against the designated end of the  
20 pipe.

There are two measures to advance the vortex in the round pipe against

designated end: either applying round pipe with different opening sizes at the ends or applying sloped guiding tube for round pipe with the same opening size at both ends.

In the above mentioned vortex dynamic propulsion structure, the  
5 guiding stream is injected through the guiding tube into the round pipe tangentially, then transformed into vortex along the inner surface of the round pipe. For round pipe with different opening sizes at the ends, the vortex advances against the larger opening of the round pipe which is the fluid outlet. For round pipe with the same opening size at both ends,  
10 applying sloped guiding tube to produce bias vortex so that advances against designated opening of the round pipe which is the fluid outlet.

In the above mentioned vortex dynamic propulsion structure, the vortex drives the static core fluid in the round pipe and the latter becomes the mainstream. The vortex guides and accelerates the mainstream  
15 persistently.

In the above mentioned vortex dynamic propulsion structure, the mainstream merges with guiding stream and advances against the outlet of the round pipe. Meanwhile, the low pressure of the vacant core area sucks external fluid into the round pipe from opposite end which is the fluid inlet.  
20 There is directional mainstream between the fluid inlet and the fluid outlet.

In the above mentioned vortex dynamic propulsion structure, the

accelerated mainstream passes through the vortex in perpendicular, the mainstream and the vortex feedback and accelerate each other.

In the above mentioned vortex dynamic propulsion structure, the directional mainstream produces propulsion at the fluid outlet and produces suction at the fluid inlet. Manipulate the speed of the guiding stream can control the speed of the mainstream.

In the above mentioned vortex dynamic propulsion structure, connect two vortex dynamic propulsion structures reversely with inlets coupled together can transform into the combined vortex dynamic propulsion structure. Injecting guiding stream into either guiding tube can produce directional mainstream, injecting guiding stream into alternative guiding tube can produce opposite mainstream.

In the above mentioned combined vortex dynamic propulsion structure, each guiding tube can control the direction and speed of the mainstream independently. Installing the combined vortex dynamic propulsion structure on the vehicle, can control the vehicle moving ahead or astern, accelerating or decelerating, thus fulfills the requirements of compact in structure, durable, facilitate for installation and repairing, energy saving and high efficiency.

## **BRIEF DESCRIPTION OF THE DRAWINGS**

FIG. 1a is the schematic diagram of present invention that the guiding tube

is inserted tangentially into the round pipe with different opening sizes at the ends and its stream lines.

FIG. 1b is the schematic diagram of the present invention that the sloped guiding tube is inserted tangentially into the round pipe with the same opening size at the ends and its stream lines.

FIG. 2a is the schematic diagram of an example of present invention that the conical pipe is surrounded by the accelerating ring to increase the outer diameter of the vortex. The guiding tube is tangentially inserted into the accelerating ring.

FIG. 2b is the side view of FIG. 2a.

FIG. 3a is schematic diagram of another example of present invention that the combined vortex dynamic propulsion structure is pushed ahead and its stream lines.

FIG. 3b is similar to FIG. 3a but applies alternative guiding tube to push the structure astern and its stream lines.

FIG. 4 is the schematic diagram of present invention that installing a rudder at the outlet of the round pipe to control the direction of the exhaust flow.

FIG. 5a is the schematic appearance of present invention that the turning axis is installed to control the direction of the vortex dynamic propulsion structure.

FIG. 5b is the schematic appearance of present invention that the turning

axis is installed to control the direction of the combined vortex dynamic propulsion structure.

## **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS**

5 Please refer to FIG. 1a which is the embodiment of present invention.

The guiding stream 21 is injected into the round (conical) pipe 1 through guiding tube 2 and transformed into vortex 22 in the round (conical) pipe 1.

The vortex 22 advances against the larger opening which is the fluid outlet

12. Please refer to FIG. 1b that the sloped guiding tube 2 is inserted

10 tangentially into the round pipe 1. The guiding stream 21 is injected into

the round pipe 1 through sloped guiding tube 2 and transformed into bias

vortex 22 in round pipe 1. The bias vortex 22 advances against designated

opening which is the fluid outlet 12. The fluid outlet 12 can be polygon

shape to transform the vortex into longitudinal flow, so that can increase

15 the overall flow speed.

Please refer to FIGS. 1a and 1b. During the vortex 22 flows along the

inner surface of the round pipe 1, it will drive the static core fluid in round

pipe 1 and the latter becomes the main stream 14. The vortex 22 drives and

accelerates the main stream 14. The vortex 22 merges with the main stream

20 14 and advances against the fluid outlet 12 while external fluid 13 is sucked

in from the fluid inlet 11. The vortex dynamic propulsion structure can be

installed on the vehicle (such as ship). In such case, the counterforce of the main stream 14 in the round pipe 1 is to serve as thrust to the vehicle.

Please refer to FIGS. 2a and 2b, which an accelerating ring 3 is installed around the round pipe 1 of the vortex dynamic propulsion structure to increase the outer diameter of the vortex 22. The guiding tube is tangentially inserted into the accelerating ring.

Please refer to FIGS. 3a and 3b which are the stream lines of another embodiments of the present invention. The embodiment can be applied on the ship for her moving ahead or astern. Connects two vortex dynamic propulsion structures 1、1' reversely with inlets 11 coupled together can transform them into the combined vortex dynamic propulsion structure. Please refer to Figures 3a. Injecting guiding stream 21 into guiding tube 2 can produce vortex 22. Please refer to Figures 3b. Injecting guiding stream 21' into guiding tube 2' can produce vortex 22'. Manipulate guiding stream 21 and 21' through guiding tube 2 and 2' can control the direction and speed of the mainstream 14 and 14' in the combined vortex dynamic propulsion structure, so that can push the ship ahead or astern, accelerating or decelerating.

Please refer to FIGS. 3a and 3b that installing the combined vortex dynamic propulsion structure on the vehicle (such as ship). Connecting the stream tube 2 and stream tube 2' with a pump, to suck guiding stream 21

from guiding tube 2 and inject into guiding tube 2', or reversely, to suck guiding stream 21' from guiding tube 2' and inject into guiding tube 2, both methods can improve the overall efficiency of the system.

Please refer to FIG. 4 which is the diagram of another embodiments of present invention that used for turning of the vehicle (such as ship). Please refer to Figure 1a, 1b of vortex dynamic propulsion structure and FIGS. 3a and 3b of combined vortex dynamic propulsion structure. The rudder 4 is installed at the fluid outlet 12 of the vortex dynamic propulsion structure or combined vortex dynamic propulsion structure to adjust the direction of the exhaust flow, so that can control the turning of the vehicle (such as ship).

Please refer to FIGS. 5a and 5b which are the schematic appearance of another embodiments of present invention that used for turning of the vehicle (such as ship). Please refer to FIGS. 1a and 1b of vortex dynamic propulsion structure and FIGS. 3a and 3b of combined vortex dynamic propulsion structure. The perpendicular turning axis 5 is installed on the round pipe 1, so that the vortex dynamic propulsion structure or the combined vortex dynamic propulsion structure can turn freely to adjust their direction and control the direction of the vehicle.

In summary. The present invention of vortex dynamic propulsion structure is a revolutionary propulsion device which has averted from the problems on traditional propeller. The structure includes the guiding tube

and the round pipe. The round pipe has the fluid inlet and the fluid outlet while the outlet is the larger end of the round pipe or the sloped side of the guiding tube. The fluid inlet is at the opposite end of the fluid outlet. The guiding stream is injected tangentially through the guiding tube into the  
5 round pipe and transformed into vortex, then drives the core flow to advance against the fluid outlet. The external fluid is sucked in from the fluid inlet, merged with the vortex and advances toward the fluid outlet. The present invention has fulfilled the requirements of compact in structure, durable, easy for installation, facilitate for repairing, low energy  
10 consumption but high efficiency.

It is of course to be understood that the embodiments described herein are merely illustrative of the principles of the invention and that a wide variety of modifications thereto may be effected by persons skilled in the art without departing from the spirit and scope of the invention as set forth  
15 in the following claims.

**What is claimed is:**

[Claim 1] A vortex dynamic propulsion structure, comprising:

a round pipe, which one end of the round pipe is the fluid inlet and the other end of the round pipe is the fluid outlet, said fluid outlet can be larger than or the same as the fluid inlet in size ; and

a guiding tube, said guiding tube is inserted tangentially into said round pipe, the guiding stream is injected into the round pipe through guiding tube and transformed into vortex, said vortex advances along the inner surface of the round pipe, accelerates the core static fluid in the round pipe which becomes the mainstream, said mainstream merges with the vortex and sucks in external fluid from the fluid inlet, thus constructs the fluid dynamic propulsion structure.

[Claim 2] The vortex dynamic propulsion structure according to claim 1, wherein the fluid inlet and the fluid outlet at the ends of said round pipe has different opening sizes, the guiding tube is perpendicular to the round pipe, the smaller opening of said round pipe is the fluid inlet and the larger opening of said round pipe is the fluid outlet.

[Claim 3] The vortex dynamic propulsion structure according to claim 1, wherein said round pipe has the same opening size at both ends, said guiding tube is sloped to the round pipe to transform injected guiding stream into bias vortex in the round pipe.

[Claim 4] The vortex dynamic propulsion structure according to claim 1, wherein an accelerating ring is installed around the round pipe, said guiding stream is injected through the guiding tube into the accelerating ring tangentially.

5 [Claim 5] The vortex dynamic propulsion structure according to claim 1, wherein connect two vortex dynamic propulsion structure reversely with fluid inlets coupled together to construct the combined vortex dynamic propulsion structure, injecting the guiding stream into the guiding tube separately to change the flow direction and speed in said round pipe.

10 [Claim 6] The vortex dynamic propulsion structure according to claim 1 or 5, wherein installing the vortex dynamic propulsion structure on the vehicle to push the vehicle by the counterforce of the mainstream in the round pipe.

[Claim 7] The vortex dynamic propulsion structure according to claim 1  
15 or 6, wherein installing a rudder at the fluid outlet of said round pipe to control the direction of the exhaust flow.

[Claim 8] The vortex dynamic propulsion structure according to claim 1  
or 6, wherein installing a vertical turning axis on the said round pipe to turn  
the vortex dynamic propulsion structure or the combined vortex dynamic  
20 propulsion structure and control the direction of the vehicle.

[Claim 9] The combined vortex dynamic propulsion structure according

to claim 5, wherein connects both guiding tubes of said combined vortex dynamic propulsion structure with a pump, sucks in guiding stream from the fore guiding tube and injects the same into the rear guiding tube to improve the overall efficiency.

- 5 [Claim 10] The vortex dynamic propulsion structure according to claim 1, wherein the fluid outlet of the round pipe can be polygon shape to transform the vortex into longitudinal flow, so that can increase the overall flow speed.