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# Differences Between Quasiturbine And Conventional Engines (Draft Of An Engineering Essay)

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## **1. INTRODUCTION**

In Quasiturbine (Qurbine or QT) we get lower temps on combustion stroke, in this engine motor the expansion heart stroke time is little bit earlier than the other motors though this reason we get the all the at the power stroke and that all energy we can copy in mechanized manner. as a result of earlier gas combustion, the cylinder brain is cooled very quickly because all high temperature they copy by exhaust heart stroke and lastly, we are certain to get the lower temps with continuous working of engine.

## 2. QT CONSTRUCTIONAL DETAILS

The system of the Quasiturbine consist of four carriages which provide the support the pivot of four element, and it support the various shaped rotor this all parts enclosed in a chamber which includes shape of Saint-Hilaire skating molded rink account. this account makes the engine unit bigger because of the rotary element of the engine motor, and it offers the ongoing radial course and it incapable the maximum torque is produced than the which we produce in the normal combustion. It includes two cover dish which cover the engine and take it close at end. The rotor has four pivoting blades which playing the same role that they performed in the piston and in turbine blades. In the assembly each pivots be seated into carriages and each rocking carriages is absolve to turn at same pivot in same ways ongoing and throughout in touch with the housing middle. In the system of the Quasiturbine there is not required of central shaft for operating engine. The engine can be operated by way of a coupling arm which is attached with the blades which has slots and by making use of arm brackets which is linked to the central shaft, moreover in this mechanism central shaft of the Quasiturbine will be modified without wide open the engine motor.

In the Quasiturbine design the pivoting blades are given with the filler tip which permit the control of residual volume level at the top and underlying part chamber with maximum pressure and the carriage wheels design should be wide enough to lessen the contact pressure with the counter wall. For soft procedure roller bearing is provided at the blades connect pivots.

The layout of the spark plug, intake and exhaust ports are either radically in enclosure and axially on the side of the cover or both types. The moving way of the flame (It's called the ignition fire transfer slot) which are employing for the combustion of the energy continuous in the engine motor which located along the inner part of the wall structure and aspect of the spark plug enables flow back of the hot gases to the combustion chamber which is preparing to open fire. The spark plug will not change the move of by screwing or unscrewing. And this agreement called the ignition transfer cavity. we can change the ignition timing advanced by changing the positioning of the spark plug or the channel also.

For the air conditioning and to reduce the lubrication one part of the engine has large gap is provided which shows the connection between the pivoting blades and the middle area of the rotor that's why all exterior and internal parts of the motors are in good thermal contact with the casing contour. And for the reduced amount of the lubrication by the using of the optimal choice of anti-frictional material.

Metal, ceramics or plastics are being used for the making of property, carriages and the pivoting blades and later most of the materials are being used for pump, compressor and for hydraulic equipment.

According to the photo-detonation engine idea it has a combination of homogenous demand and compression ignition, it is also known as HCCI engine unit. HCCI (Homogeneous fee Compression Ignition) will improve the fuel efficiency no emission. It occurs because in the image detonating process completely combustion of the petrol that's why it produced less hydro-carbon as compared to traditional engine. Through the image detonation process higher pressure is necessary so in this process significant amount of pressure on the engine unit. If we discussing the piston engine unit it can’t tolerate against the higher amount of pressure of detonation. and in traditional rotary engine (Wankel engine unit) has an extended combustion chamber so that it won't create that amount of push of detonation.

Even though in Quasiturbine, design of the carriages is strong and compact enough to withstand against the increased pressure which is create during the photo-detonation.

## 3. THE WORKING OF A STRAIGHTFORWARD QUASITURBINE

### 3.A Basic casing of Quasiturbine engine

From the looks smart Quasiturbine model similar like a traditional rotary engine unit, A rotor is enclosed in to the oval-shaped housing. In the Quasiturbine has four elements in place of the three which is generally we see in the traditional engine. The medial side part of the rotor is sealed against the medial side of the cover and part is also covered from the periphery of the internal side. This layout divided into four chambers.

In the regular piston engine when one complete four-stroke cycle is done it produces two complete revolutions of the cranks shaft. this means result of the piston is half of the heart stroke per revolution. Within the Quasiturbine you don't have of the piston because rather than the four-heart stroke engine it has set up of sequentially round oval housing. Despite the fact that there is no need of the crankshaft for undertaking rotary movement

### 3.B The four cycles of the internal combustion engine are:

Intake:
In this process it attracts the combination of petrol and air

Compression:
The combination of air and gas is compressed in the smaller volume

Combustion:
In this process spark plug produce the spark and it ignites the air-fuel mixture.

Exhaust:
The waste products gases produce during the ignition of the energy will expels from the engine motor.

## 4. WORKING OF QUASITURBINE WITH CARRIAGES

Quasiturbine carriage engine unit internal mechanism il somewhat strange.

In a Quasiturbine, when rotor blades turn it will change the quantity of the chambers charge. initially volume rise, which allows the combination of energy and air expand in the chamber. When the quantity increases rise, that allows the fuel air-mixture to increase. That sequentially size is decreases, double this amount decreases the combination of air-gasoline mix is compressed into small space.

From the working mechanism we get that when one combustion heart stroke is done than next combustion stroke is ready to fire. in the Quasiturbine development there is one set up of small route it's called Ignition Fire Transfer slot machine game which is along the internal housing wall structure next to the spark plug. this slot machine game helps to allowed the hot gases flow back again to the combustion chamber for next prepared to fire when each carriage seals to go over the channel due to this manner combustion is become continuous. these results of ongoing combustion like the aircraft gas turbine like Lycoming engine which is utilized in air hawk.

These are all parameters which enhance the efficiency and the performance of the Quasiturbine. In the engineering of the Quasiturbine four chamber which is created by the carriage mechanism produce two consecutive circuits. Inside the first circuit used for compression and increase during the combustion. and the second circuit is employed for the exhaust and intake air. In Quasiturbine one revolution of the rotor must produce one electricity heart stroke which is eight times more than traditional engine unit. Even though in Wankel engine unit one revolution of the rotor produce the three power strokes but can`t beat the performance of the Quasiturbine.

Sparkplug… not in principle needed…

## 5. DISTINGUISHING WANKEL - QUASITURBINE

In mechanism of the Wankel engine rotor has three encounters with crankshaft The Quasiturbine has four faces of rotor without Crankshaft.

The crankshaft of the Wankel engine turns three times the rotor RPM. In the Quasiturbine rotor and crankshaft run at same RPM.

In Wankel engine through the combustion it fires only once per revolution. whereas through the procedure for Quasiturbine, it fires four times per revolution.

When the rotor of the Wankel engine runs from T. D. C. to the next, it will increase the torque up to its maximum value and then start decreasing gradually. in other side. Quasiturbine generate the torque instantly at the dish and continue to be maximum for long length of time before decreasing, that will give better mechanized energy.

The Wankel engine is unavailable in the diesel method because in this function excess growth of volume level is arises which is adiabatically cool down the combustion. In the case of Quasiturbine there is no excessive volume and it can run also on diesel method.

Due to its hearth once in each crankshaft revolution and Wankel engine unit has dead time to that's why Wankel engine requires a flywheel, whereas Quasiturbine has no deceased time because of consecutive strokes.

## 6. APPLICATIONS

### 6.A Quasiturbine aviation

For propeller aircraft decrease in the weight which allows a more substantial payload, saving in the space is one of the most desirable advantages of aerodynamic move, even in working of the Quasiturbine there is absolutely no vibration that's why it will raise the comfort and ease and trustworthiness of the machine also, moreover decrease in the noise will give discretion level. Quasiturbine produced the high torque that is clearly a reason it found in the multi blades propeller.

Even though in system of the helicopter, large size Quasiturbine produced the higher rate of torque without any gearbox and it will make less sound.

Quasiturbine gives the high power density, low mix section area and most favorable thing is intake characteristics these are the parameters on which we be prepared to use in aircraft engine.

### 6.B Quasiturbine pneumatique engine

Quasiturbine has a real enlargement of the air-fuel blend through the combustion so it is called the 100 % pure expansion engine unit. even Wankel and almost all of the rotary engine motor is not pure expansion engine. it works on the compressed fluid as well on the air engine also.

### 6.C Quasiturbine rushing car

in the concept of the sporting car Quasiturbine principles is more suitable and appropriate also because it generate more vitality density than the piston engine motor. For example, in a single Quasiturbine diameter of rotor is 50 cm and width is 20 cm produce 1000 H. P. at 3000 RPM. Even in Quasiturbine does not have any flywheel that`s because it allows higher acceleration.

### 6.D Quasiturbine hydrogen engine unit model

The best way to store hydrogen is to bond with the carbon atom. Quasiturbine used hydrogen safe-keeping in the carbon atom. these techniques are safe and good and it's been turned out by the hydrocarbon fuels.

### 6.E Quasiturbine pumps

According to the mechanism of the Quasiturbine it's very simple and light device minus the crankshaft and flywheel. it will allow the top size because in the pump method it has two intake and two exits.

## 7. QUASITURBINE SPECIFICATION

SHAFT POWER

ROTOR DIAMETER

ROTOR THICK

SHAFT POWER

70 HP

530 HP

4000 HP

ROTOR DIAMETERE

10 cm

25cm

53 cm

ROTOR THICKNESS

5 cm

10 cm

20cm

## 8. Lycoming specification

As a matter of comparison:

Lycoming IO-360-L2A
172 Rated Hp at 2400 RPM 160

172S\* Rated Horsepower at 2700 RPM 180

Number of Cylinder 4 Horizontally opposed

Displacement 361. 0 Cubic Inches

Bore 5. 125

Stroke 4. 375

Compression Percentage 8:5:1

Firing Order 1-3-2-4

Magnetos:

Right Magneto Slick Model NO. 4371 (fires at 25 BTDC)

Left Magneto Slick Model No. (fires at 25 BTDC)

Spark Plugs 18MM

Torque: 420 In lbs.

Valve Rocker Clearance

(hydraulic tappets collapsed) 0. 028 to 0. 080 inch

Fuel injector RSA-5Advertising1

Tachometer Mechanical Drive

Oil Capacity 8. 0 Quarts

Oil Pressure

Minimum Idling 20 PSI

Normal 50 to 90 PSI

Maximum 115 PSI

oil Temperature

Normal 100 F to 245 F

Maximum 245 F

Dry Weight -without alternator or 278 Lbs.

Vacuum pumps

## 9. DIFFERENCE BETWEEN QUASITURBINE AND TRADITIONAL TURBINE

### 9.A TRADITIONAL TURBINE

In the conventional turbine movement of air -fuel combination is ongoing at absorption and exhaust. regular turbine not convert the pressure causes but it'll convert the kinetic energy of move of the gas. It's necessary to convert the pressure causes into high-speed movement by the channeling or by enlargement. These types of conversion are intricate. During this time period some amount of energy will be lost because of turbulence, viscosity and thermal conductivity of the hot gases.

In the original turbine is put where the circulation of gasoline is fast. even complete alteration of the kinetic energy directly into mechanized energy is not possible in the traditional turbine.

### 9.B QUASITURBINE NEW CONCEPT As per the traditional turbine, Quasiturbine is a continuing flow of the gas at the absorption. even at the exhaust under the effect of the static causes and the additionally it doesn't use the aerodynamics stream properties. It will change the potential push into mechanical energy. Because under the result of the static pushes Quasiturbine won't ruin the turbine by the heavy steam pressure and liquid impurities.

## 10. QUASITURBINE TECHNICAL CONCLUSION

### 10.A Higher Rate of Torque and Acceleration

In the mechanism of the Quasiturbine we getting the bigger rate of torque without need of the flywheel. Flywheel resist acceleration of engine because flywheel ingest more energy in motion. Thus, Quasiturbine does not have any flywheel still we get higher acceleration.

### 10.B Transfer POWER from Rotation to Mechanical

In this engine motor all assembled parts are symmetric using one axis and the all parts are rotates on same axis however we will get good mechanical energy because of symmetric design of engine. according to on the shape the periphery of the band is owl condition and the displacement of all stroke focus on different position on same periphery because we can convert more rotation energy to mechanical energy.

### 10.C Multiple gas engine

We may use Quasiturbine on different type of gas like gas, hydrogen steam, pneumatic, etc. but as per the all results the gas fuel is the most compatible fuel because of this engine

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