CLAIMS

1. Method of design, construction and manufacture for a turbo, propeller, reactor (THR) wheel, for all fluids in which:

the skeleton of the wheel is built between three washers (Fig 3, R1 -R2- R3),

the three washers (Fig 3, R1 -R2- R3) being concentric with the axis of rotation and axially spaced from one another in the general axial direction of flow,

the wheel comprises 3 zones, where the upstream side (Fig 3, AV) of the wheel seen from a meridional plane containing the axis of rotation constituting a first zone (1) of the fluid inlet, where the propeller (Fig 5, 2) constitutes a second zone (2), and where a chamber (Fig 5, 3) under the wheel constitutes a third zone (3), which chamber acts, through peripheral circular slots, like a reactor,

the first zone (1) extending axially from the first washer (R1) to the second washer (R2), the second zone (2) extending axially from the second washer (R2) to the third washer (R3), and the third zone (3) extending axially from the third washer (R3) in the downstream direction,

in the first zone (1) the blades extend axially between the first washer (R1) and the second washer (R2), in the second zone (2) the hollow blades of the propeller extend axially between the second washer (R2) and the third washer (R3), the interior of each of these hollow blades having an entrance located in the plane of the second washer (R2),
a certain geometry of the skeleton is defined by continuously using the “CARPYZ” principle known as the 5 parameters (FIG 1) for the configuration of the constituent elements of hollow helical wheels or of their cages, which is based on the use of geometric figures the centres of which serve as a reference for building them and defining their areas, the values of angles, offsets from the centres and pitch, making it possible to control said constituent elements and to marry curves at will between them by superimposing the centres between them,

- the first zone (Fig 5, 1) favours penetration of the fluid into the inlet of the hollow blades of the propeller (Fig 4, A R2),
- the profile of these blades of the first zone (Fig 5, 1) being designed on the

downstream face of a first washer placed upstream of the wheel (Fig 3, R1), the diameters of which are provided by default, positioned on the axis upstream of the wheel (Fig 4, R1 and Fig 2, R1),

- another blade profile similar to the previous one is projected with the 5 parameters (Fig 4, R2) on the upstream face of the second washer (Fig 4, R2 A),

- each blade is generated between the profiles of the two washers with the 5 parameters, values being given, for the distance which separates the two washers and for the angular offset between the two washers which allows the blades to twist, positively or negatively, are provided by default and are corrected by the designer, the blades are then said to be neutral, or advancing or retreating,

- the upper surface (Fig 4, R2 Ext) of the inlet of the propeller blade is also subject to the 5 parameters,

- the rotational drive of the wheel, is made by a shaft secured with the centre downstream from the wheel in the meridional plane containing the axis of rotation, and rotates according to the chosen direction of rotation, which is reversible (Fig 4 , Rot), from which is built the upstream of the wheel which is inseparable from the downstream of the wheel (Fig 5,1-2-3),

characterised in that:
(i) - the skeleton of the wheel which is made in one piece is built between 3 washers (Fig 3, R1 - R2- R3) using a specific software package, which provides a basic image of the skeleton (Fig 5) where all the constituent elements of the wheel are cited with numerical and arithmetic values which are provided in a non-limiting manner by default, this image of the skeleton being created arbitrarily by the software package,

- with the image of the skeleton displayed on the screen, intuitively determined values are provided, according to wheels already produced but which can evolve ad infinitum according to the expected use of the wheel designed (example: diameters, number of blades, shape of the blades, profile of the chambers, etc.), by continuously using the “CARPYZ” principle known as the 5 parameters (FIG 1) for the configuration of the skeleton of the wheel,

- this basic image of the skeleton shows the blades of the first zone (Fig 5, 1), and the geometry of the blade is computer generated between the profiles of the two washers

using the 5 parameters,

(ii) - if the wheel is viewed in a direction parallel to the axis of rotation and rotates clockwise (Fig 4, Rot), the upstream edge of the blade is placed on the large diameter of the washer and the downstream edge of the blade is placed on the small diameter of the washer and is angularly offset,

- the angular offset values between the upstream and downstream edges of the blade and its camber, are values provided by default, with the 5 parameters and are corrected on demand by the designer of the wheel,

(iii) the large profile of the introduction blade on the second washer (Fig 4, R2) connects and is preferably coincident with that of the upper surface (Fig 4, R2 Ext) of the inlet of the propeller blade,

(iv) - the skeleton of the wheel is in one piece,

- The upstream of the wheel is inseparable from the downstream side of the wheel which is preferably in one piece (Fig 5,1-2-3),

- the second washer (Fig 4, R2 A) defines the lower surface (Fig 4, R2 Int) and the upper surface (Fig 4, R2 Ext) of the blade inlet,

(v) in that:

at their largest diameter, the propeller blades arriving on the third washer have their lower surface and upper surface blades which solidify with this washer when passing through it, the propeller blades distribute at least one fluid in at least one peripheral chamber into which they open, at least one peripheral circular chamber being formed by the circular spaces contained between the circular circle portions defined by the designer (Fig 3, C), and

(vi) in that, seen from a meridional plane containing the axis of rotation:

- straight lines which serve as references as the support length for the 5 parameters, are drawn starting from points placed on the edge of the large and small diameter of the third washer (Fig 6, L1, L2), and they are continued towards the centre of the wheel at an angular value (Fig 6, a) of 0 to 90° with respect to the face of the third washer which are supplied by default like the other values of the 5 parameters which can also be

corrected on demand,

- in the centre of these lines are placed perpendicular lines (Fig 6, P1, P2) on which the designer places the centres of the circle portions which join the two ends of the lines, a circular groove is hollowed out on an enlarged edge of the small diameter of the third washer whose values and position (Fig 6, Y) are chosen by the designer, and
- between the circle portions (Fig 8) are positioned profiled and oriented spacers in order to let the fluid flow in the same direction as the wheel wants to turn (FIG4, Rot), and radial spacers are placed between the second portion of the circle and the small semicircle.

2. Method of design, construction and manufacture of a turbo, propeller, reactor (THR) wheel according to the preceding claim, characterised in that:
on the downstream face of the second washer is positioned the entry of the hollow blades of the propeller which constitute the second zone (2) of the wheel, the blades of the first zone are brought into line with the blades of the upper surface (Fig 4, R2 Ext) of the blades (FIG 4, A) which are also adapted to the 5 parameters,

the fluid inlet is at the small diameter of the blades and the fluid outlet is at the large diameter of the blades,

the blades consist of 2 blades and open at their large diameter into a circular chamber located at the rear, which is the third zone (FIG. 5, 3).

the upper surface foil (Fig 4, R2 Ext) of the blade, seen axially on an orthoaxial section plane, is convex at the inlet of the blade and at the outlet of the blade (FIG 4 R3 A), and

the lower surface foil (Fig 4 R2 Int) of the blade, seen axially on an orthoaxial section plane, is concave at the inlet of the blade and convex at the outlet of the blade (Fig 4, R3 Int).

3. Method of design, construction and manufacture of a turbo, propeller, reactor (THR) wheel according to one of the preceding claims, characterised in that:
the blades of the propeller open onto the upstream face of the third washer (Fig 3, R3) which they pass through,
the right edge of the blade (Fig4, R3 ABCD), seen axially on an orthoaxial section plane, is placed on the large diameter of the washer and the left edge of the blade (Fig 4, R3

ACD), seen axially on a orthoaxial section plane, is placed on the small diameter of the washer,

the length of the blades is given by the angular portion of the washers in which they fit, this portion is in principle determined by the value of the 360° of the circumference of the wheel, divided by the number of blades, because preferably the blades adjoin edge to edge and do not overlap with each other at the edges, this value however being able to be modified knowingly by the designer.

4. Method of design, construction and manufacture of a turbo, propeller, reactor (THR) wheel which conveys ambient fluids, the wheel being a THRE hybrid wheel, which uses a very energetic fluid in addition, according to one of the preceding claims, characterised in that:

the hybrid THRE wheel uses in addition to the turbo reactor of the wheel which acts with the ambient fluid, a very energetic fluid which is introduced by the central shaft of the wheel which is hollow,

this fluid enters the hollow shaft downstream of the impeller and then it is led to the inlet of the propeller blades which are hollow and which are divided into two separate parts (Fig 3, Ps1, Ps2) with a radial vertical partition, or by a circular partition, which are continued along the entire length inside the blade,

the second washer of the wheel, sees its small diameter decrease towards the centre of the wheel all the way until it becomes integral with the outside of the tube of the hollow shaft which is cut at this place and which provides the fluid with high potential energy,

a disc is placed upstream of the wheel, a little upstream of the second washer (FIG3 d), this disc starts from the axis of the wheel and creates between the two a space which is closed by a cylindrical ring (FIG3, b) which continues the circular partition or caps said radial vertical partitions which are shared by the hollow propeller blades,

radial spacers are placed between the two of said space.

5. Method of design, construction and manufacture of a hybrid turbo, propeller, reactor (THRE) wheel which employs an additional energetic fluid which passes through

the hollow blades, according to claim 4, characterised in that:

a first large portion of a circle is constructed with the image of the 5 parameters, the end of the straight line of which becomes a centre which is positioned on the large diameter of the third washer (Fig3, C),
an angle (α) of a chosen value which goes from 0 to 90°, is written between the aforementioned reference straight line and the straight line of the given blade length with all the values of the 5 parameters which are provided by default and which can be corrected on demand by the designer,

a second portion of a circle is constructed with the image of the 5 parameters in the same way with the end of the straight line which becomes a centre which is positioned on the small diameter of the third washer (Fig 6 C),
an angle (α) of a chosen value which goes from 0 to 90°, is written between the aforementioned reference straight line and the straight line of the given blade length with all the values of the 5 parameters which are provided by default and which can be corrected on demand by the designer,

another portion of a circle is constructed with the image of the 5 parameters in the same way with the end of the straight line, which becomes a centre which is positioned on the arrival of the aforementioned partition, on the third washer (Fig 7).

an angle (α) of a chosen value which goes from 0 to 90°, is written between the aforementioned reference straight line and the straight line of the given blade length with all the values of the 5 parameters which are provided by default and which can be corrected on demand by the designer,

between the circle portions are positioned profiled and oriented spacers in order to make the fluid flow in the same direction in which the wheel turns (FIG 8), and radial spacers are placed between the second and the third circle portion.

6. Method of design, construction and manufacture of a hybrid turbo, propeller, reactor (THRE) wheel which employs an energetic fluid in addition, according to claim 4 or 5, characterised in that:
Starting from the hollow of the shaft, the energetic fluid is introduced into tubes which follow the path described which passes through the hollow blades of the propeller and ends in the circular chambers located between the second and the third circle portion

adapted by the designer to receive fluids.

7. Method of design, construction and manufacture of a hybrid turbo, propeller, reactor (THRE) wheel which uses an energetic fluid in addition, according to one of claims 4 to 6, characterised in that:

through the conduits usually reserved for the flow of fluids with high energy potential are passed electrical conductors which end at the level of the peripheral chambers and are positioned to deliver the energy necessary to initiate an electric arc and/or illuminate a light emitting diode.

8. Method of design, construction and manufacture of a turbo, propeller, reactor, (THR) wheel according to one of the preceding claims, characterised in that:

the whole wheel including the washers (Fig 4, R1 R2 R3) is built using the principle of 5 parameters in its entirety and allows obtaining, by using values of infinitely small circles, the cutting edges necessary for the penetration of the blades and slats into the products, from where by using circles of all diameters (Fig1, 1,2,3) and straight lines (4,5) it is possible to give the material any thickness for the blades and slats, the camber can also be reversed and be positive or negative.