Sustainable environmental design is a social duty of world institutions. Mini domestic water purification system with hydroelectric energy production

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(Thirteenth open letter to International Court of Justice and the United Nations)

This year (2018) I participated for the second time at the "European Competition for Social Innovation" http://eusic.challenges.org/, although this competition only awards three winners and there will be at least one thousand five hundred participants. Moreover, in past editions, they did not reward environmental projects, but initiatives for assistance to the elderly and disabled people. In other words, environmental protection and sustainable energy is not considered a social innovation. In a sense, the organizers of the competition are right. To protect the environment and produce sustainable energy there are the governments of the 196 sovereign states with the world public ministries of the environment and economic development, scientific research bodies, universities, regions, municipal administrations, multinational companies, the commission European Union, the United Nations. However, current intellectual property laws, excluding inventors of copyright, force inventors to also

participate in these lottery contests to look for interlocutors, who do not find among the world institutions and entrepreneurs, above all, if the object of the invention is an environmental or energy solution. In fact, in this sector, the legislators have shown their own sadism towards private inventors, so that they do not interfere in matters concerning large governmental and business institutions. However, for me, these great institutions are the classic mountains that give birth to little mice. He is having failed, since the beginning of the industrial age, both energy systems and those purifying, by mutual agreement, governments and multinationals, ignore the inventions of little individuals that analyzing the current state of the art and the organization of global work, not being bound to any system of scientific and economic political power, correct these errors with solutions that are transversal to the scientific specializations to which even today public bodies and multinationals. In other words, the world institutions, public and private, have underestimated the power of transversal reasoning that can put in place people who in working life have put together the plants designed by others: industrial, manufacturing, purifying, water, energy, public and private. Those who have done this kind of work can not fail to know the work organization of the individual sectors and cannot fail to notice the absence of links between one sector and another. The search for these links that no one has sought in the public and private sectors has characterized my work as a after having worked as an installer of public and private installations. In other words, the work of the environmental inventor starts from the point where public and private plants stop to complete the interrupted cycles. Unfortunately, in most cases these cycles cannot be closed without substantially modifying the plants and dispose them differently in industry, in urban activities, in agricultural activities and in public services. I can not deny that as I progressed in this work my distrust grew, especially with regard to world public science and legislators. How could generations of public scientists

have thought that the chimneys could be simple pipes facing the sky, that the sewers could transport mud together, that the purifiers could be placed tens of kilometers from pollution, that the thermal power stations could produce thousands of Kw / h without closing the carbon cycle also from the chemical and alkaline point of view? If these problems have not been solved on the millions of fixed energy plants, how could they be solved on the billions of mobile plants, including means of transport? Government institutions and multinationals could not have committed these errors without the consent of labor and environmental legislators and the acceptance of the shortcomings of the state of the art, clearly insufficient in the protection of the environment. Government institutions and multinationals could not have committed these errors without the consent of labor and environmental legislators and the acceptance of the shortcomings of the state of the art, clearly insufficient in the protection of the environment. Today, faced with concrete proposals to overcome the state of the art by private inventors, we must ask ourselves why even international legislators and judges are silent? Today, although these solutions are only theoretical because no one has financed them, they still represent an alternative to be evaluated worldwide. Someone must take responsibility for officially saying if they work or do not work. I, as an inventor, I am sure that they work otherwise I would not have proposed them. Today we are in the paradoxical situation that legislators force inventors to look for lenders at all costs, in the times and in the ways they have legislated; otherwise they will lose their rights on patent deposits. The inability of legislators to distinguish the difference between a commercial invention and an environmental one is at the basis of the current degradation of the environment and global warming. In fact, environmental invention cannot be bound by the times, to bureaucratic procedures, the fees payable for patent protection, for the simple fact that the invention should not be protected but spread globally, to the inventors recognizing

the merit of having found a solution of public utility with a complete and impartial reasoning. Theoretically, with the current laws, public research bodies are advantaged in the search for such solutions for several reasons, among which is the fact that the cost of international patent deposits is paid by governments At the same time, public researchers, can not deny the solutions that the public research and governments have been pursuing since the advent of the industrial era both in the energy field that cleansing. But at the same time, public researchers can not deny the solutions that public research, governments and multinationals have been pursuing since the advent of the industrial age in the energy, purification and industrial fields. In modern society the collapses on the stock exchange would be inevitable. The new solutions must improve the state of the art of the previous ones in the sign of continuity, not demolish them, showing that the fundamental principles of purification and energy production have been wrong. Unfortunately this is the truth. The history of this patent, born with the first version in 2006, and other patents born subsequently with the same organizational logic of environmental work, show that if you put together in the same environmental plants more active principles of energy saving and purification and if you take advantage rationally together the characteristics of the incompressible water and compressible air, the pressures of the latter, and able to produce the most powerful sustainable and clean energy ever produced on planet Earth. In addition, dissolving free oxygen in the water that is equivalent to the most powerful purification system invented by man. The dissolution of oxygen takes place at the static pressure of the air, while the incompressible water, which produces electricity in an alternator turbine, exits the autoclave by transferring outside the kinetic energy due to the principle of Torricelli, also the oxygen due to the principles of Henry and Dalton, without the current unsustainable costs of the energy and purification systems in use. In fact, the state of the art of this mini domestic plant (which has never been

realized anywhere in the world because public researchers obey the orders of the powerful rulers of the Earth) is advanced only virtually, because in the original version, it performed functions limited water savings and purification and no energy function. However, it could already perform very important environmental functions, as written in these articles http://www.lexambiente.it/acque/183/5100-Acque.%20La%20flocculazione%20in%20casa.html, http://www.lexambiente.it/materie/acque/183-dottrina183/5014-Acque.Idrogeno%20solforato%20nella%20rete%20fognaria.html, http://www.lexambiente.it/acque/183-dottrina183/4814-La%20rivolta%20dei%20sindaci%20per%20la%20gestione%20dell, http://lexambiente.it/acque/183-Dottrina183/5020-Acque.%20Undici%20ragioni%20per%20rivalutare%20le%20fosse%20Imhoff.html. These articles are propaedeutic to the subsequent inventions that led to subsequent inventions, to which no world authority of the environment and energy could arrive, which are the global purification systems and the interactive energy between water and air. In fact, no world authority has ever ordered the realization of the things described in these articles, and therefore none could reach these solutions, which today pretend that they do not exist so as not to have to demolish everything. In 2018 the domestic water saving system designed in 2006 and never realized, it became a more efficient plant in terms of water saving and purification, but in the meantime it also became an energy producer. To realize this evolution it is sufficient to compare the previous version described in http://www.spawhe.eu/european-patent-for-water-saving-and-preparation-for-sewage-treatment/ with the new version described in this presentation, also reported on http://www.spawhe.eu. With hindsight, it can be said that it was good that the 2006 version was not financed by anyone, having to be modified and improved by the version of 2018. But the real problem is the fact that current environmental systems and These problems have never been addressed, both to save water resources or to start sewage treatment, or to produce sustainable energy combined with sustainable water management in the world.

Humanity has suffered immense economic and environmental damage to have a rapid development, where above all, public science has failed its role, not having been able to make global reasoning in small and large public facilities that should have also driven industrial development. Today, it is all to be redone because the fundamental principles of energy and purification have been wrong, both in public and private plants, both in fixed and mobile plants. Above all, in world transport. The energetic and depurative palliatives that are carrying out the world authorities to save the salvable will only produce further delays to the salvation of humanity because in the meantime nuclear and astronomical disasters can occur, such as the reversal of the magnetic poles or being invested by an asteroid, which will not find us ready for survival on planet earth or abandon it en masse (http://www.spawhe.eu/the-lost-civilizations-einstein-s-thought-and-survival-energy/). For myself, the most evident proof of the failure of world science is that of not having identified the interactivity between the physics of water and air. Suffice it to say that in the current purification systems we neglected the principle of Henry to purify, preferring to waste energy by blowing air into the water instead of statically exploiting the pressure and circulating the incomprehensible one-way water that absorbs oxygen for free.

In the same way, it was preferred to use thermal energy to produce electricity even though it is known that it is not heat producing energy but pressure for the flow rate and density of the fluid passing through; despite knowing that the combustion gases are about 830 times less dense than water and knowing that the pressure in a combustion chamber is hundreds of times lower than the pressure that we can reach with the compressed air used statically.

The simple concept of performance creates confusion among those who apply science without reasoning globally. Someone says that it can not exceed one or 100% value otherwise it

becomes perpetual motion. But for me the question is much simpler and should be solved practically, not just mathematically. The yield is also the ratio between the energy spent and the energy rendered. Therefore, it depends above all on when we pay for energy. If energy does not cost anything, as it is derived directly from the environment, as in the case of renewable, solar, wind, hydroelectric, the yield is always higher than 100% of the energy consumed. In the case of renewables, we must not speak of yield but of the timing of amortization of capital invested to build the plants and their duration, as they wear out over time. There is also a huge difference in the choices of renewables, because even the renewable ones that have been chosen have wrong energy sources because the time of capital amortization does not return in relation to the amount of energy produced compared to the investments required and the duration of the installations. Science has not considered that if we pressurize a tank of water with compressed air and recycle the water with a pump at low prevalence, we can let water enter into low pressure in the central eye of the pump impeller as long as we open a valve which releases the same amount of pressurized water. Therefore, we have a multiplication of the energy because the water enters low pressure and exits in high pressure. If this has not happened until now, it is only because the way to make the pumps work and the way to design the plants was wrong. In fact, today the pumps raise the water making it enter all the suction side with the unbalanced pressures in the impeller: low in suction and high at the outlet of the impeller. It would have been more logical to balance the pressures in the pump impeller by recycling the water of a pressurized tank with compressed air in one direction and insert the water to be lifted into the rotating impeller, so that this water is raised, not from the pump but from the hydrostatic pressure of the compressed air that if it is not expanded, making the system work at constant volume. We only need to make pumps with the double power supply separate to the impeller and use the autoclave systems with the one-way water circulation, so

as to exploit the pressure statically, since each expansion of the air cushion involves a subsequent compression and therefore an absorption of energy that cancels the energy advantage. If the current pumps are working in the current way, they raise the water, more so they will raise it with lower energy consumption if the water is inserted in a circuit with balanced pressures. A circuit with balanced pressures in the impeller absorbs only the energy due to pressure losses, not the one necessary for lifting, provided that the autoclave system is always full and only the excess water that can enter the recycling circuit. It is obvious that by operating the implants in this way, although the size of the circulation pump increases, the energy advantages are immense. Just think, for example, that recycling 100 L / s in an open circuit with an equivalent length of 1000 meters requires a pump head of 1.5 meters without raising the water. In a pressurized circuit with compressed air supplied with a pump with the double power supply separated to the impeller, with the same pump head (1.5 m) we can raise the same water flow at any height, because it is not the pump which raises the water but the compressed air. But this can be achieved with an energy advantage only by statically yielding the pressure by recycling a flow of water in the autoclave sufficient to maintain the volume and pressure of the autoclave constant while introducing through the same recycling pump, with a separate supply, the 100 L / s to be lifted.

It is obvious that the capacity of the total pump must at least double, so that in addition to adding the flow rates, the impeller can also have pressure expansion (according to the Pascal principle). In fact, the pushing force for lifting water is given by the pressure for the passage section. Statically exploited pressure requires space in the cross-section, not energy, so the energy cost for compressed air lifting done through one-way recycling in the autoclave is hundreds of times cheaper than lifting done with current pumps alone, where the energy must provide the motor coupled to the

pump and the pressure is increased through different impellers arranged in series in the same body of the pump. Moreover, this system eliminates the water hammer in the delivery pipes that occurs today when the pumps stop, since the water, no longer receiving the lifting thrust, tends to go back due to the gravitational force, causing the perturbations of motion varied, not be dampened by the air cushion.

But even more important applications of pumps with double separate power supply up to the impeller coupled to the one-way pressurized autoclaves are energy and purifying ones. In fact, the same plant can be used by recycling the water through a hydraulic turbine connected to a current generator, which drains the water into an open tank that, through the same pump with the separate power supply until to the impeller, feeds the the autoclave is infinite. Each passage of water recycled through the autoclave involves an absorption of oxygen by the water due to the laws of Henry and Dalton, therefore the water increases its oxygenation state. If we consider that the air can compress even thousands of bars if it does not fall below the critical pressure (-146.6 °C). choosing the right materials and improving the quality of mechanical work, we can create simple, small, clean and very powerful systems that can also be used on transport vehicles.

But all this does not exist because the world’s environmental authorities, the world’s public research bodies, the multinationals, prefer to produce energy with fuels, which not only pollute the environment and are paid, have an average yield and 35%, or with nuclear that has even greater problems. While wind and solar energy have high costs, high overall dimensions, low yields and a discontinuous energy production that requires energy accumulators We do not talk about traditional hydropower, which involves large investments in hydraulic and civil works to make one-way use of water, without giving it time to purify in biological ponds and alkalize in contact with limestone minerals and without the

possibility of recycling.I the principles of Pascal, Torricelli and Henry for science are only academic. No one has put them together to statically exploit the pressure of the air cushion for energy and purification purposes. The undersigned, who has made these proposals, is isolated as a terrorist from the institutional bodies and entrepreneurs. Yet, it did nothing but modify the hydraulic systems and the power supply of a centrifugal pump without changing the normal operation of the same. This intuition science could have it even in the early twentieth century, when those who produced the first cars scientifically studied the movements of men and machines to optimize industrial production. The optimization of environmental work was to be done by studying the optimal air water and fumes routes to identify the best solutions to save water, energy and chemical additives. Unfortunately, the organization of environmental work has never happened in one hundred and fifty years of development of electricity production and purification, which has been proven in recent years. they can become one process. . Public science, like the private one, has focused on single scientific principles without ever organizing the work rationally, as I tried to do myself, starting from the year 2006, starting from the first version of the water saving patent, which goes beyond saving water also had the ambitious goal of facilitating subsequent treatment.

The lack of growth in environmental systems did not lead to the identification of the interactive energies extracted directly from water and air, which public research, through legislators had to impose on private companies, for which they built the means of transport, focusing on thermal energy, which as I have shown is not only polluting but also uneconomical. Time will show that it is also cumbersome. Today redoing everything is painful but necessary. However, world legislators and international judges do not intervene. They hide their inertia behind the state of the art of science, while science hides behind the screen of individual

specializations. Why do international judges, where it is possible, do not order experimentation and global application of science? Which would bring as the best sustainable solution, both in purifying plants and in fixed and mobile energy, to the interactive energy between water and compressed air?

Obviously, a single invention could not suffice to demonstrate these things, but the undersigned has always wondered why, he had to see all his thirty-four patent deposits ignored by environmental authorities, energy, and by entrepreneurs working in such sectors? It was also asked why, above all, public science did not look for these solutions? And asked how can legislators properly legislate for the environment if science is not applied globally in any environmental and energy plant worldwide? The undersigned has tried to comply with international patent deposit laws. But how could he respect them? Current international patent laws do not legislate how environmental and energy facilities must be designed to be environmentally friendly and not even protective and interactive and with high yields. Lawmakers only claim that the plants are innovative, inventive and industrially applicable. In addition, they legislate how to pay filing and patent maintenance fees in all countries that are members of international treaties, without distinguishing whether the patent has commercial or social purposes. The undersigned, who filed protective public utility patents of the environment not yet legislated by the legislators, paid the fees due on patent deposits, enough to demonstrate that the current international patent laws must be modified because they are an obstacle to protection environment. Until the construction of the energy and purification plants is not correctly established, environmental protection can not take place and sustainable energy can not be produced. Lawmakers cannot keep hiding behind a world science that does not have the courage to admit that it has done everything wrong in terms of the environment and energy. The international

conferences on politics, economics, science and technology are taking on a tragicomic aspect, keeping silent about the sustainable energy of compressed hydro. Men who truly believe in freedom in science and justice cannot participate in it.

The undersigned asks International Judges for the recognition of copyrights of their patent deposits, ignored by these conferences, which will prove to be exact in the near future, regardless of the current laws that bind intel ectual property to industrial property. Patents on environmental protection and sustainable energy production must be made available to everyone, as intellectual works. If these rights are recognized to writers, musicians, painters, sculptors, architects, what are the reasons why inventors must be considered as entrepreneurs? Where do the capitals take if the patents are not understood by the centers of power? Why can not inventors wait like other authors for their work to be understood by future generations? If after one hundred and fifty years of industrial development there are no sewage sewers, overlapping biological ponds, limestone greenhouses, submerged hydropower, compressed hydroelectric power and pumps with separate double feed up to the impeller, it can mean that the world does not have need these inventions, but it can also mean that these inventions are unwanted by those who based the development on other solutions.

In the 2018 European social competition, very similar to a lottery, the organizers of the competition, together with the disability assistance proposals, for the second time, will find twenty-one innovative environmental and energy projects, never realized anywhere in the world (In the 2015 I presented only fifteen projects). Obviously, I did not win the 2015 competition and I do not expect to win the 2018 competition. What I wonder is: “What are the world reference bodies for private inventors who deal with the environment and energy?” their inventions are trashed by public institutional bodies, which should make them viable.

Obviously, public legislators can not issue regulations that go beyond the state of the art. National and international judges can not condemn environmental crimes, except those that demonstrate negligence in law enforcement. But the problem for me is mainly laws that can not protect the environment if public and private facilities are wrong. The proof that they are wrong is that they are not connected to each other and can not be connected to close the cycles they open. How to design the connected environmental and energy plants has been published on http://www.spawhe.eu. But on this website it is also published how to design powerful energy plants that do not open thermal, chemical, biological or nuclear cycles. Could it ever be that these plants never betrayed interlocutors internationally? For this reason, the undersigned, continues to write to the courts of International Justice and the United Nations, to do their job. First the public facilities and then the private ones are adapted.

I think it is necessary to tell the story of the original version of domestic water saving. It was established in 2006 in Italy by the undersigned to demonstrate the possibility of achieving water savings with an alternative solution to that proposed by ENEA (National Energy and Environment Agency) which can be found on http: //www.bologna .enea.it / ambtd / aquasave-doc / aquas-ita.htm. This solution, financed with European funds, had shown that saving water in civil homes is not appropriate for the high costs it entailed. The undersigned criticized the solution adopted by ENEA which concentrated the water saving on rainwater collection, which involved a complex system of collection, filtration, storage, disinfection of water and pumping in a separate network only for to feed the waters of the washing machines and toilet flushes of the individual apartments. The prototype of the ENEA plant occupied the entire ground floor of a three-story building and cost about two billion old lire. My solution, on the other hand, was much more practical and inexpensive since it recovered a part of the water used inside the same

apartments and used it a second time in the same apartment after a simple filtration, only for cleaning the toilets. But this solution, having been proposed by a private inventor, despite receiving the patent recognition with the number 0001373397 registered on 26/04/2010, did not find lenders despite having also received the European patent recognition EP1860072 registered on 28.11.2007.

Some of my solutions pleased the former president of ENEA Luigi Paganetto, who with the letter ENEA / 2009/370587 / PRES dated 02/07/2009, invited me to a meeting in their Bologna office, writing to me: “In order to deepen the technical aspects and the economic implications of the systems and technologies you have proposed, please contact the Dr ……., in charge of the Anthropic Risk Analysis Methods and Prevention Section, who can organize a meeting with the industry experts”. Immediately after this invitation, I do not know for what reason, Professor Paganetto declined from the post of president of ENEA and the institution did not cooperate with the undersigned and has never collaborated even in the following years. But the thing is general. It is not just about Enea.

What is the meaning of Italy and Europe to grant a patent to a private inventor on water saving and chemical preparation for purification treatment, if they finance and realize only the prototypes of public researchers? Do not the national, European and world public officials know it and the legislators that the social installations must be financed, incentivized and imposed on civil and industrial constructors with specific laws and public regulations? Private inventors working on such solutions can not be left alone, in addition to paying the filing and patent maintenance fees, which should be exempt. It is obvious that the undersigned, not receiving any legislative aid and no collaboration from public research bodies, has decided to renounce the payment of the national and European patent maintenance fees. The facts have shown

that Europe has financed the prototype of ENEA only because it was proposed by a public body, not because it was really interested in saving water. If it had been really interested in saving water, it would have legislated and included in the civil construction regulations the way to save water in a rational way, which was the project of the undersigned, who was also preparing for sewage treatment.

However, if the ideas are good, the state of the art can also be improved virtually, whereas if they are wrong, only taxpayers' money is wasted. Making the right choice, at the right time, in the right place, with the right process and the most up-to-date technology, should be the main rule of global growth, but in reality no one complies with this rule for the inability to think globally that they should have at least some categories of people: the men of government who guide the other men and the designers of public facilities and industrial production that bring together the most up-to-date technologies. Today, however, we are witnessing political, ethnic and religious corporatism; scientific and technological corporatisms that try to defend the privileges acquired by certain categories of people and countries, when it was not possible to reason globally due to the absence of in-depth scientific and technological knowledge. Today, we can say that the world is no longer guided by the communist or capitalist class struggles, today it is provisionally led by the global economy, which is even worse than the class struggle, as the economy is a single, imperfect and partial science like all the sciences.

Perfect growth is not possible but we can get very close to it if we globally apply the scientific organization of work in every corner of the earth by doing the right things in the right place. Today, we can ascertain with absolute precision what is the best way to produce a car, a washing machine, a television, what is the best way to purify water and air and to produce energy at low cost, without polluting the

environment but protecting it. We can also ascertain which is the best way to produce power from land and sea without damaging the land and the sea (the examples are reported on http://www.spawhe.eu) if we do this and update the state of the art that continually advances also in a transversal sense to the individual sectors. The world can be governed globally scientifically avoiding the errors of political, economic, physical, chemical, biological, astronomical sciences. How can the right things be done in the right place if today we are governed by partisan politicians who base their choices on the partial advice of economists, scientists and technicians who never face problems globally? Who has to put things together? They certainly can not take the politicians alone on the basis of the information they receive from the various parties. The sum of the solutions is never automatic but it is a puzzle, where everything is stuck in another and if the different pieces do not go to the right place the whole picture is not composed. The undersigned is well aware that for a whole lifetime he has installed industrial, energy and environmental plants, which all considered complete and efficient, while for myself they were not. He could only prove it if he had the strength and patience of a retired man.

Someone should wonder why the purification and energy plants reported on http://www.spawhe.eu, are different from the existing ones in the world. The reason is simple: the existing purification and energy plants do not close all the cycles they open. If they did, the undersigned would not modify them. But the change must be impartial and multidisciplinary because before designing an environmental or energy system it is necessary to check if you can not do without opening the cycles that are difficult to close. Just think of the thermal and nuclear cycles. It is necessary to verify how much it costs to produce one-way hydroelectric energy with the hydraulic jump and what are the side effects, which also must be corrected. It is necessary to understand what happens chemically to the water and the mud that circulate in the

sewers and to correct the effects or prevent them. All of this has not been done by the world's public research bodies that are advisers to those who go to the world's top to fight global warming.

The idea of the domestic water purification of the undersigned has remained firm for twelve years without anyone realizing it. I admit that it was not perfect due to the state of the art not advanced of the domestic purification and energy systems, which still do not exist. But today, after the virtual inventions, reported on http://www.spawhe.eu/pressurized-domestic-hydraulic-energy-system/ you can resume and rationalize this invention without starting from scratch, eliminating the chemical dosage of calcium and the max boxes that also acted as sewage treatment contact tanks. The project becomes more efficient from the purifying point of view by exploiting Henry's law and becomes also energetic thanks to the invention of pressurized hydroelectric energy, which can also advance sewage purification simplifying the purification tasks that the undersigned had assigned him in 2006, according to the old state of global art. Therefore, this patent also falls within the logic of the scientific organization of environmental work, which has never been organized even in the most advanced countries. The undersigned in other articles has called this way of reasoning "environmental Taylorism", unfortunately, never born. Il quale, avrebbe dovuto affiancare il Taylorismo industriale, nato nel 1911, grazie a Frederick Taylor. In fact, environmental Taylorism requires that the right systems be installed in the right place so that they perform more functions simultaneously in order to save economic and energy resources, so these mini plants, in addition to saving water, also carried out preparations for subsequent depurations. Even today, after twelve years, the world public bodies have not understood that the patent for small domestic plants was not just about saving water (like the ENEA project) but the entire urban purification process of water and air, that must be one

thing with the production of energy. In fact, the water purification can not be done in distant purifiers but must start in our homes, continue in sewage systems and end in the final purifiers. The final purifiers must not be activated sludge because water and sludge must be separated at the origin. The global study of environmental solutions must also guide industrial development, because most industrial inventions are not compatible with the environment precisely because of environmental legislative deficiencies, which cannot be adequate if the first are the world's public facilities to be wrong. If environmental work had been organized scientifically, gradually, all the nodes would come to a head and in addition to solving the problems of industrial productivity, in parallel, the environmental problems would be solved, not only concerning the way of purifying the water or the air. Making the right choice, in the right place, at the right time, from the scientific, technical and economic point of view, inevitably, would have led to the same conclusions to which the undersigned came. That is to the individuation of interactive energies, of which the most powerful is the compressed hydroelectric one, which purifies the free environment. It is no coincidence that the system can also be installed on all transport systems including submarines and space vehicles.

Today, by zeroing the energy costs for raising water using compressed hydropower, we can prevent the formation of hydrogen sulphide in the sewers, alkalizing the cold waters in the lower layers of the atmosphere in mini limestone greenhouses, subtracting CO2 to environment. With current energy costs, current pumps and current system solutions, this solution can not even be hypothesized. So the state of the art must change globally. It can not be done if the inventors are not encouraged to reason with their own heads without the conditioning of the power systems that not only isolate them, but even would force them to pay taxes on filing and maintaining patents that nobody wants to achieve to defend

interests that would be considered illicit if everyone had done their social duty. Today, at least for patents of public utility, the concept of industrial property must be overcome, otherwise environmental protection and sustainable energy will continue to be a mirage, although they are at your fingertips after the inventions of myself, which for lawmakers and judges are not worth anything from a legal point of view, because it is not enough to file patents it is also necessary to become entrepreneurs and above all to find money. This is the best way to kill progress and sustainable growth.

Today, as Stephen Hawking wrote shortly before his death, the human race will be ready to colonize other planets not before the twenty-second century; only that the problem, according to Hawking himself, the Earth would have at most only another 100 years to solve the energy problems and prepare a mass exodus. This can not happen without the interactive energy between the water and the compressed air that does not emerge for petty maneuvers of science and world legislators, while the judges are watching. But what are the dangers we are facing at an alarming rate? Stephen Hawking argued that, if anything, the human race would survive global warming, which is increasing dramatically, would then have to deal with epidemics and overpopulation; not to mention a possible collision with an asteroid, the inversion of the magnetic poles of the planet.

The undersigned does not care much about the increase in the world population because he puts a lot of hope in a practical invention such as http://www.spawhe.eu/artificial-welling-files/, but agrees on the urgency of preparing a mass exodus to leave our planet, if necessary. For Hawking, the future of the human species will be linked to decisions that will have to be taken quickly. A new space program is urgent, the result of shared choices among all countries, so as to rekindle the interest and enthusiasm of young people towards astrophysics and cosmology. For myself, no space program can be made if we do not build

the natural habitat of man in future spaceships, which must also include the production of water and atmospheric air, recycling both water and air, producing energy and human nutrition as described in http://www.spawhe.eu/le-civilta-perdute-il-pensiero-di-einstein-el-energia-di-sopravvivenza/, http://www.spawhe.eu/aerospatial-pressurized-hydroelectric-transport-system/. The energies that NASA is developing will also be welcome if they do not produce side effects. But today even NASA is silent on compressed interactive energy, which, unlike those of NASA, do not even cost a hundredth of a dollar to the world taxpayers. Obviously the system described below also serves to rationalize the space required on the spaceships and the production of energy on board the same. The sum of all the energies produced on board the spaceships will allow you to leave the planet and explore the space. For the moment, the only efficient and sustainable energy is that which has never been produced on planet Earth, of which only the undersigned speaks. World science also waits for prototypes while legislators do not grant exemptions: they would like me to pay in advance even patent taxes, subtracting them from my pension income of 1750 euros per month. There is not even a shadow of author rights to free inventors from centers of economic power.

In the following pages, I publish the new patent filing.

MINI DOMESTIC WATER PURIFICATION SYSTEM WITH HYDROELECTRIC ENERGY PRODUCTION

ABSTRACT

In homes and public places we can endlessly recycle unpolluted water from oils and greases, such as the one we use for personal hygiene and the rinse of the washing machine and dishwasher. This is recovered through a collection plant in the floor, which filters and lifts it. Poi, per mezzo di una pompa con la doppia alimentazione separata fino alla girante,

è introdotta in un serbatoio autoclave pressurizzato con aria compressa che funziona da depuratore dissolvendo ossigeno nell'acqua per mezzo dei principi di Henry e Dalton. The water that comes out feeds a hydraulic turbine producing electrical energy returning to the autoclave, or feeding the washing machine and the toilets. This system will allow us to save almost 50% of the drinking water we consume, moreover, producing energy in our homes. It is possible thanks to the invention of pressurized hydroelectric energy that exploits the physical principles of water and air differently: the autoclave tank is inserted in series in the flow of water, which is one-way. The water enters from the bottom of the pressurized tank and exits sideways while the air cushion statically exerts pressure on the surface of the water, without making it expand, since the circuit is designed so that the water that enters is perfectly equal to the one that goes out. In fact, it is much cheaper to circulate the incompressible water to keep the pressure constant that allow the expansion of the volume of air and then compress it again, absorbing energy. The entry of water takes place despite the low prevalence of the circulation pump, thanks to the pressure stability that takes place in the impeller by means of the second feed which, at the same time, recycles the water of the autoclave. Obviously, the same amount of water introduced in this way is expelled at the same time as the tank is already full. But the expulsion of water takes place under high pressure without relieving the pressure of the air cushion, since it is stabilized by the same water that enters the same amount in low pressure. The water expelled from the autoclave by a separate outlet equipped with a pressure reducer feeds the domestic washing machine or flushes the toilets. Only this last is definitively discharged in sewer. This system will also be very useful on trains, campers, planes, ships, boats, submarines, airplanes, space ships.

DESCRIPTION

The current state of the art of environmental protection is not satisfactory for many reasons, but above all because there is no continuity of water and air treatment in all environments. For myself, water purification and water saving must start in our own homes by recycling the water that can be recycled. Trying tenaciously these solutions has also come to produce electricity while recycling and purifying water, both in homes, both in sewage systems, both in water distribution, both in purification, both in desalination, instead of consuming electricity. The existing sewage and purification systems were born when there was no talk of CO2 emissions nor oceanic acidification and despite the improvement of the purification machines, under these very important aspects, they remained at zero year. Current sewer systems in long anaerobic routes develop hydrogen sulfide and sulfuric acid, making septic sewage. The purifiers to remedy, with enormous energy waste, space, plant costs, etc. oxidising and aerating in open open tanks emit CO2, CH4, H2S, SOx, NOx emissions in industrial quantities, if all goes well. If it goes wrong, in case of excessive rains, the degenerate waters are discharged into the water bodies receptors in far worse conditions than when they were received in the sewers. When the plants work, the last of the problems that arise is precisely that of acidity and CO2 emissions. Since the state of the art is not adequate, the laws allow plants to discharge water with pH 5.5, regardless of the pH of the river, lake or sea that receives them, (except in special cases where the laws come to prescribe PH 6.5). With what we see around these values, clearly insufficient, are not even respected, while the current reference value of the sea is PH 8.1, which should tend to arrive to combat oceanic acidification as the waters discharge and storms approach the sea. In fact, before the industrial age the average oceanic PH was 8.25. Oceanic acidification starts from the coastal areas and spreads to the oceans. The simple impact between waters with different PH even in the absence of a true pollution is precisely produces CO2 emissions by increasing the amount of carbonic acid to the

detriment of bicarbonates present in water. So, purifiers that are already conceptually wrong, do not even do what little they could do to mitigate the problems. Therefore, in addition to the CO2 emissions of the heating systems we also have those produced by bad depuration and water management.

With this patent filing and many other precedents, the undersigned wants to show that by insisting on the current purification systems, oceanic acidification and global warming are not to be combated. Lawmakers and judges can not wait for the science of environment and energy to solve problems spontaneously. This will not happen because no one applies science globally. As long as science is biased, global environmental protection solutions will never emerge. Lawmakers and judges must prevent the sale of public patents to private companies, especially in the areas of the environment and energy.

Since 2006, with the filing of patent CE2006A000014 dated 22/05/2006 it would have been possible to avoid using the toilet flushing water, recovering it inside the apartment without buried tanks and without structural changes to the manufactured. But the solution I proposed with that patent was too socially demanding for users. In fact, I proposed to add a mini lime metering unit to each apartment to prevent the formation of hydrogen sulfide in the sewers by dosing in a capillary way to each discharge about 70 mg / l of lime. This solution was not an idea of the undersigned but an operation recommended about 50 years ago by the authoritative “Water Pollution Research Laboratory” by Stevenage (U K) (Esther-Ribaldone-Bianucci and Hoepli). This solution has never been realized due to the indolence of the world environmental authorities, who have never studied the way to spread the capillary lime in all the sewer branches. Even when the undersigned published this solution the world environmental authorities were silent and did not issue public regulations to facilitate these facilities.

Today, after twelve years from that proposal, having invented the compressed hydropower energy, which is small and does not cost anything, apart from the wear and tear of the machines, we can achieve complete decarbonisation of energy in fixed and mobile plants (including transport). However, the world's environmental authorities are also showing indolence towards compressed hydropower. Today, the problem of hydrogen sulphide in the sewers can be solved simply by making the sewage sewage and equipped with mini limestone greenhouses that without energy costs, make the alkaline waters, subtracting CO2 from the lower layers of the atmosphere while oxidizing the water by means of pressurization in an autoclave (Henry's law) and small artificial rains that run on the calcareous materials purposely accumulated near the depuration pits, cold-produce carbonates in the purified wastewater in the same urban centers. Hence, hydrogen sulphide can be prevented at the source, together with all the degeneration of the sludge that is currently occurring, but also the pollution from fumes and fine dust is eliminated.

With the hydroelectric compressed even domestic water saving becomes easier and more efficient, also allowing a considerable energy production, even much higher than the needs of users.

FIG.1 proposes the layout of an apartment with a washing machine, sink, shower, sink and two toilets, excluding only the kitchen waters, which contain greases to be treated in external purification tanks, together with the toilet drains.

It can be seen that the discharged water collects in standard tubular elements (fig.4) which can be cut to size and coupled by gluing to the other components to form the underground collection and storage network upstream of the lifting well; the standard section of the tubular plant will be used to establish a common system modularity principle among all the plants of this type made in the world.

Figure 4 shows the standard PVC elements:

(a) standard tubular collector element;

(b) 45 ° discharge connection element, provided with two φ 40 muffs;

(c) drain connection element at 90 °, provided with muffs φ 40, which allows the discharge in the collector and the parallel connection of the collectors themselves:

(d) end element allowing: closing the manifold by placing a commercial plug in the muff φ 40; or the series connection of two lifting sumps, using the appropriate matching muff on the same sump;

(E) anti return the door to swing with load-bearing frame of the same size of the collector section, cashable into the slot inside the sump fig 5 and fig inside the sump 6 (a) in domestic installations. The leaf occupies only half of the frame because the other half is closed to allow the passage of the recirculation pipe into the wells assigned to this function.

(f) The anti-return flap with a supporting frame of the same size as the recirculation sump connection holes (domestic 40 x 40 mm or public 63 x 63), which will have four important functions on the overflow drain:

– establish the overflow threshold of the overflow discharge, determined by the fixed part of the containment frame;

– avoid the passage of unpleasant odors from the sewer side;

– act as a calibrated support for the passage of the sand extraction ejector;

Both the doors (e) and those (f) are only recessed in the seat, stabilized by a stop set in the seat and locked by a spacer applied to the foam guard cylinder.

(g) coupling muff of the tubular glued elements;

FIG. 5 – already mentioned before. It reports the whole mounting of the “lifting sumps” in longitudinal and horizontal sections. Following the water flows, the following elements appear clear: (a) the collector and a non-return door (W) mounted on its ends. Its gravity function avoids a water return in the collector during the flushing phases, as above described; (b) the foam shield cylinder allows the sump to divide the floating substances, just like the Imhoff tanks. Its circumference enters partially the closing sump cap and compresses the gasket avoiding the coming of water within the cylinder; (c) a 200 micron filtering net in polyethylene; (d) flushing rings, particulars b and e, rectangular section, on the top and on the bottom of the net, each one having 32 holes oriented with a 30° inclination toward the same net. (e) motor – driven pump for clean water with the following technical data: delivery l/min. 100, discharge head 3.7 m, nominal power KW. 0.5, feeding 220 V mono phase, adsorbed current 1.43 A; (e/l) floating switch for the motor – driven regulation; (f) conveyor point for the sediments in the extraction point. It also avoids that water coming from the bottom could open and not close the non –return door; (g) flexible pipe for the delivery of the pump with rubber holder ¾’’; (h) flexible pipe for flushing water, filtering net φ16 x 2 mm; (i) flexible pipe for the feeding the ejector used for the sand extraction φ 14 x 2 mm; (j) flexible pipe for sand extraction φ 8 x 1 mm; (k) ejector for sand extraction fig. 6; (l9) connection to the sewage discharge; (m) submergible cable for the pump feeding; (n) neoprene gasket c shaped 16 x 12 x 4; (o) gasket compression cap; (o/l) gasket foam shield cylinder; (p) expansion screw for the cap closing; (q) traction disk φ 138 mm; (r) sump cap and anchor base for tile holder support fig. 10 (the other important functions later described); (s) pile holder support fig. 11; (t) floor pile; (u) serial connection coupling of lifting sumps; (v) smell protection door; (w) non – return door to the collector (a) with frame; (x) closing

cap.

Having described the sump functioning we can state that it is “self – cleaner”. It does not need manual cleaning. This condition allows him to be camouflaged into a room and to be placed under floor piles, as in fig. 5. The accessibility is granted by the extraction of the pile (t) and by its relative support (s) by means of the spread commercial suckers.

This solution allows a camouflage with a pile 30×30 cm, or with a pile composition of smaller dimensions. They could be cut and glued on the support (s) or reach a higher format of 33×33 cm with a light lateral sharp rise.

The FIG. 6 proposes a lifting sump on a home plant updated with the newest renovations. As for the layout the description is not reported because the component and references correspond to the fig. 5. Only the following details are added:

for economic reasons, only a feeding pipe has been used for the filtering net flushing and for the feeding of the sand extraction ejector. As a consequence all the operation will be effected contemporarily with only one solenoid valve (separate solenoid valves or manual valves can be used as well); a bracket has been provided (z) for the fixing of the mini motor – driven pump of the level gauge. They could be subject to undesired movements in the flushing phase if they were not fixed, as they are very light;

n.3 motor – driven pumps with 12 V. c.c. feeding have been selected. They have light different characteristics and are interchangeable in the sump. Here follow the single performances:

current (A h) 09 – 1.7 A 2.0 – 2.5 A 2.1 – 2.9

max delivery (l(min)

10 12
18

max prevalence (m)
6 6
10;

In FIGS. 5 and 6 it is possible to notice the particular ejector of extraction that will be used for the extraction of sand and mud from the well: it is based on the Bernoulli principle which establishes that the sum of the energy forms of a moving fluid in a closed circuit it is constant, so that a speed increase corresponds to a decrease in pressure and vice versa. In the case of a substantial section reduction, there will be an increase in speed and a large drop in pressure until generating a vacuum, the degree of which is proportional to the amount of energy transformed in the section variation; this vacuum allows the lifting of sludge and sand. You can also see the position of the pump (e) and of the level regulator (e / 1).

Fig.7 shows the detail of the sump in which the lifting pump, the filter, the level regulator and the hydraulic ejector for automatic cleaning of the sump are installed.

FIG. 2 shows the rough layout of the pressurized hydroelectric plant, where in particular the technical measures that have made it possible to reduce the overall dimensions to a minimum are visible. In particular, it is important to use a well pump used as a turbine, feeding it in the opposite way to the way in which the pump is used (all the pumps fed in reverse can be used as turbines), but, in this case, a submerged pump saves a lot of space being inserted directly into the tank where you have to drain the water to be recycled. Another arrangement is the angle arrangement of the alternating current generator, placed above, after extending the pump shaft until it exits through the supply curve by means of a bush containing a mechanical seal ring or a packing ring. Even for the entry of

water into the pressurized tank using a pump with a double separate supply obtained from a single-stage pump for well, which allows it to be installed in the water, coupled at an angle, by means of a referral to bevel gears 90 degrees, to an AC motor, placed below, after shaft extension through the double feed curve by means of a bushing with a mechanical seal ring or packing. To make the hydroelectric plant, the choices can be many, but suppose we use an air cushion pressure of 120 m of water column and an electropump used as a turbine with a capacity of 12.5 L / s. Assuming the yield is 0.70, applying the formula Pu = η * Q * Hu / 102, we have an energy production of 10.29 Kw (0.70 * 12.5 * 120/102). By assigning to the pump with double separate power supply a head of 1.0 m and a yield of 0.6, the power absorbed by it, which carries a double flow rate of that passing in the turbine, calculated with the formula 1 * 25/102 * 0, 6 = 0.40 KW. While the additional circulation pump (3.6), with a flow rate equal to half, assumed with the same efficiency and prevalence absorbs half of the energy calculated for the dual-fuel pump (0.20 Kw). In this case the ratio between the energy spent and the yield is 17.15 (10.29 / 0.60). In fact, the pressure drops in the valves, in the turbine, the special parts and the leakages at the outlet, are all absorbed by the dynamic pressures that develop in the pipes that feed the pump under a positive head, on both sides, while on delivery we have appreciable load losses, not exceeding the water level (which is incompressible). It is no wonder this result, considering that compressed gases are more powerful, flexible and economical energy accumulators than electric energy accumulators.

FIG. 3 shows a section of the pump with double separate supply until the impeller which allows energy miracle connecting two different hydraulic systems: One is generous in energy production that uses the energy of the compressed air on water and one thrifty in the phase of recovery of the same water (lp = low pressure), which is inserted directly into the impeller in rotation, of the pressurized water recycling circuit (hp =

high pressure) without the opposition affected by the hydrostatic pressure.

Legend FIG. 2 e 3:

(1) autoclave pressurized tank; (1.1) level regulator with capacitive probes; (1.2) safety valve; (1.3) manometer with shut-off valve; (1.4) motorized valve flow control with position transmitter; (1.5) pressure reducer; (1.6) minimum level probe in the start system; (2) pump used as a turbine (pat); (2.1) alternating current generator; (2.1.1) bushing with sealing ring; (2.1.2) angle diverter with conical gears; (2.1.3) transmission shaft; (2.1.4) transmission shaft protection tube (2.1.5) double curve with septa crossed separators in low pressure (LP) and high pressure (hp); (2.1.6) septa separators of flow; (2.1.7) closed type; (2.1.8) Diffuser of the pump; (2.2) motorized valve to supply turbine with flow adjustment; (3) water transit tank at atmospheric pressure and containment pat; (3.1) floating valve to feed low level; (3.3) air valves; (3.4) Water level control with capacitance probes; (3.5) motorized valve for water supply at low pressure; (3.6) maximum level probe in the start system; (4) electric pump to supply in low pressure (5) electric pump with double separate supply until the impeller; (6) pump drive motor, with variable speed, controlled by an inverter; (7) double curve with septa crossed separators in low pressure (LP) and high pressure (hp); (7.1) septa to flow separators; (8) check valve. (9) flow diverter stub pipe; (10) electrocompressor.

To understand how the double pumps with separate power supply until the impeller Fig.3, it can be seen FIG. 2, and imagine the center of the impeller powered by four sectors separated by a 90-degree cruise. Two are supplied in low pressure and two in high pressure, possibly arranged diagonally to balance the hydraulic thrusts on the bearings. Furthermore, by observing FIG. 2, a distinction must be made between the static and dynamic pressure of the implant. The static

pressure is the one provided by the compressed air cushion and with the valve (1.4) open, it spreads on the right side of the pump with a separate dual power supply and also enters the impeller. The dynamic pressure, or kinetic energy, is that which circulates the water inside the tubes and the autoclave. In the open circuit on the left side of the autoclave to circulate the water it is sufficient to open the valve (2.2) and the air pressure circulates the water in the turbine, but the air pressure decreases as it expands volume of air and water comes out of the circuit. While to circulate the water on the right side of the pump with the double separate supply until to the impeller, it is necessary to open the valve (1.4) and run the pump as the static pressure already fills the entire circuit, also arriving in the impeller, but without the pump the water does not circulate for obvious reasons. However, it is sufficient to supply the pump with a few inches of water column to overcome the pressure drop of the check valve, since the static pressure does not oppose the kinetic energy developed internally to the volume of stored water. So we can have a static pressure of 12 bar and a dynamic pressure of 0.25 bar. But the circulation on the right side (observing Fig. 2) does not produce energy, being only a recycling inside the volume of stored water. To produce energy we must use the circuit on the left side of the autoclave passing through the pump used as turbine (2) and insert the water without static pressure into the autoclave tank with a low energy cost, which at the current state of the art requires a pump with a prevalence that overcomes the static pressure and the loss of load, therefore a prevalence higher than 12.5 bar. This is the reason why hydropower with water recycling has never been produced. With the pump with double separate power supply up to the impeller we can realize with an extremely low energy cost this application that seems impossible, because entering from the suction side of the pump which is already full of water statically pressurized by the autoclave, we bypass the opposition of the pressure hydrostatic, as if it were a circulation inside the volume of pressurized water. In fact,

the suction line of the pump, which comes from the left side (open) and the right side (closed) is divided into four fixed and separate sectors (as seen in FIG.3), therefore, when the impeller rotates, it advances towards the autoclave the water present in the impeller and produces in each quarter of the sector of the feeding tube a depression which favors the entry of water into the impeller both from the right side and from the left side. As soon as the water enters, it is involved by the centrifugal acceleration towards the periphery, produced by the fins of the impeller which is proportional to the square of the angular velocity, and the rotation radius, according to coefficients that depend on the type of impeller. But the important characteristic of the pump with the separate double feed is that the rotation forces the impeller to receive in succession in the same quarter of impeller, the water drawn from the four separate sectors. Non contemporaneamente, come avviene con le pompe che hanno una sola alimentazione. Pertanto, l'acqua del circuito aperto (priva di pressione statica) e l'acqua del circuito chiuso (dotata della pressione statica dell'autoclave), si alterna nella stessa posizione e con la stessa direzione (verso l'uscita della girante). The flow rates add up, while the total pressure (more dynamic static) spreads over the entire output section, according to the Pascal principle. Obviously, since the static pressure is transmitted only from the right side of the system, in order not to have pressure drops in the pump with the double separate power supply, the passage sections must be sized, for the transmission of the entire flow rate and of the entire pressure. This simple modification of the pump allows us to recover with infinitesimal costs the water that produced energy in the pump used as a hydraulic turbine on the left side of the system and to reinsert it in the recycle circuit of the pressurized water of the tank, without the pressure drop occurs due to the expansion of the air cushion, which occurs in the normal autoclaves, the restoration of which would require energy from both the pumps and the compressors. In fact, the autoclave system was not

born to produce energy but to limit the number of pump motor starts, providing for a few minutes to the hydraulic system, which consumes water, the volume of water stored by means of the expansion of the cushion of air. It is obvious that the same system can be used to produce energy if the water gets out of the autoclave circuit (to produce energy) and let it come in at the same time from another input, without changing the internal volume. Obviously, the return to the pressurized autoclave should not take place with the strength of a multistage pump, which consumes more energy than the one produced, giving reason to the skeptics who ironically call “hydropower” the hydroelectric energy with the recycling of water. The skeptics were only right because they lacked the invention of the pump with a separate double feed up to the impeller. In fact, if the flow separation does not get inside the impeller and if it is not rotating, the system does not work, relying on dynamic pressure to circumvent the static pressure. In the hydroelectric plant, the valve (2.2), which supplies the pump used as a turbine, must be strictly closed when it is not in operation, otherwise the conditions for starting the plant are lost. Those who talk about perpetual motion do not know how multi disciplinary plants are designed. In the hydroelectric plant in question we make the air cushion expand only during the start-up phase of the hydraulic motor, to reduce the costs of the starter battery and the eventual three-phase UPS group. During normal operation, the water coming out of the autoclave must be perfectly equal in quantity to the one that enters the left mouth of the pump with the double feed, without remaining in the tank (3) and without accelerating the flow, while the mouth on the right it is used only to recycle the pressurized water from the air cushion (the recycle pump works with a very low prevalence, limiting itself to recycling the water within the same volume without lifting it or overcoming the pressure of the compressed air cushion). Today these adjustments are possible by establishing a priori the limit of oscillation of the water level in the two side-by-side tanks, both by means of the

valve settings and the speed of the pump motors, while the pressure drop of the compressed air is regulated by a pressure switch which activates the compressor at the slightest change. Therefore, under the nominal operating conditions, when the volume variation of water in the pressurized tank does not occur, the expansion of the air cushion does not occur, therefore, no energy is consumed to compress the air cushion. However, the water leaving the autoclave still receives the pressure needed to produce energy in the turbine. Obviously, the energy absorption can not be completely eliminated, but only a very small percentage of the current energies absorbing the hydraulic systems that need to lift the water or compress the air cushions are consumed. Obviously, this system produces the maximum electricity when there is no withdrawal from the water supply network, which in our case is very limited, having to feed only occasional withdrawals such as toilet drains, the washing machine, the water to wash the floors and hand laundry. Consequently, the water recovered from the drains has all the time to purify for free producing energy in quantities much higher than the needs of a common apartment. Obviously, smaller plants can be built or the excess energy transferred to the public network. It should also be noted that these systems have a very high performance also with regard to the management of compressed air, as opposed to the current waste management that is used in water purifiers, through air blowers and submerged porous diffusers. In fact, it does not even consume compressed air, apart from the one released in the atmosphere when the water is discharged to the atmospheric pressure in the tank (3), but this phenomenon is quantifiable in milligrams per liter of gas water (nitrogen, oxygen, CO2) according to Dalton’s law of which is provided below the main formulas (extracted from the scientific literature) and personal considerations that explain the concepts, without considering the merits of the calculations:

In fact, in a mixture of ideal gases contained in a volume V and the temperature T, the molecules of each gas molecules

behave independently from the other gases; as a consequence of this is that the pressure exerted by the gaseous mixture on the walls of the container and on the water surface is given by: where, R is a constant equal to 0.0821; , … represent the number of moles of each component of the mixture. This law is valid under the conditions by which it is valid the ideal gas law is approximated at moderate pressures, but becomes more and more accurate as the pressure is lowered. By defining the molar fraction as the ratio between the number of moles of the ith component and the number Total of moles present: It is obtained that in a mixture of ideal gases, the partial pressure of each component is given by the total pressure multiplied by the mole fraction of that component: .

In essence, for each gas present in the air is possible to calculate what percentage is solubilized in water at the working pressure, but for practical purposes, the energy that will spend to compress the air will be a small expense, since the air compressed, not ever coming out from the volume of the tank (1) has only small pressure fluctuations, and once it reached the saturation point not dissolves more air. One that is consumed is due to the lower water solubilisation of the gas, at atmospheric pressure. In fact, when the water passes through the tank (3), provided with air vents, releases a small portion of air, which becomes insoluble to the atmospheric pressure, which comes through the vent (3.3). But, obviously, the transit times in this tank are very narrow and the complete air expulsion process can not occur, because, immediately falls into the water tank (1) where the gas can not escape from the surface of ‘water, returning again to the maximum solubilization conditions.

MINI DOMESTIC WATER PURIFICATION SYSTEM WITH HYDROELECTRIC ENERGY PRODUCTION

Italian patent application no. 102018000004864 of 04/26/2018

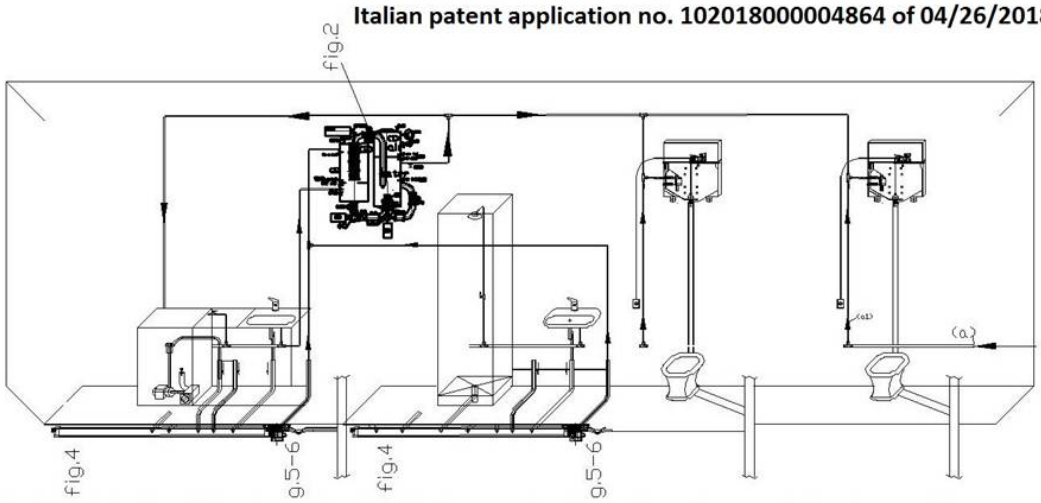

FIG.1

In homes and public places we can endlessly recycle unpolluted water from oils and greases, such as the one we use for personal hygiene and the rinse of the washing machine and dishwasher. This is recovered through a collection plant in the floor, which filters and lifts it. Poi, per mezzo di una pompa con la doppia alimentazione separata fino alla girante, è introdotta in un serbatoio autoclave pressurizzato con aria compressa che funziona da depuratore dissolvendo ossigeno nell'acqua per mezzo dei principi di Henry e Dalton. The water that comes out feeds a hydraulic turbine producing electrical energy returning to the autoclave, or feeding the washing machine and the toilets. This system will allow us to save almost 50% of the drinking water we consume, moreover, producing energy in our homes. It is possible thanks to the invention of pressurized hydroelectric energy that exploits the physical principles of water and air differently: the autoclave tank is inserted in series in the flow of water, which is one-way. The water enters from the bottom of the pressurized tank and exits sideways while the air cushion statically exerts pressure on the surface of the water, without making it expand, since the circuit is designed so that the water that enters is perfectly equal to the one that goes out. In fact, it is much cheaper to circulate the incompressible water to keep the pressure constant that allow the expansion of the volume of air and then compress it again, absorbing energy. The entry of water takes place despite the low prevalence of the circulation pump, thanks to the pressure stability that takes place in the impeller by means of the second feed which, at the same time, recycles the water of the autoclave. Obviously, the same amount of water introduced in this way is expelled at the same time as the tank is already full. But the expulsion of water takes place under high pressure without relieving the pressure of the air cushion, since it is stabilized by the same water that enters the same amount in low pressure. The water expelled from the autoclave by a separate outlet equipped with a pressure reducer feeds the domestic washing machine or flushes the toilets. Only this last is definitively discharged in sewer. This system will also be very useful on trains, campers, planes, ships, boats, submarines, airplanes, space ships,where the energy produced will also be used to power the vehicle.

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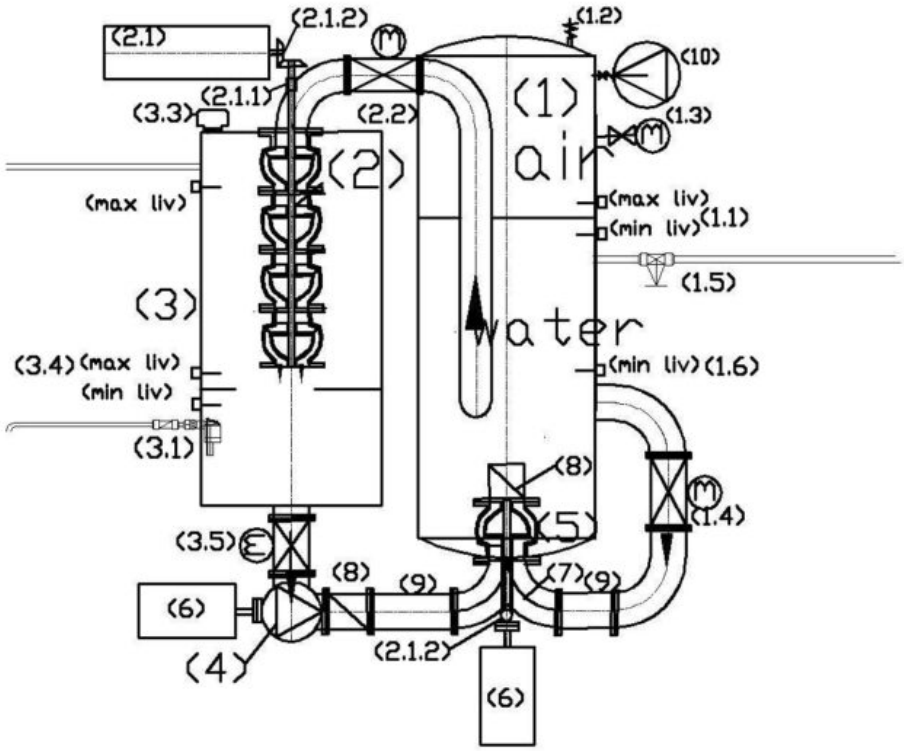
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FIG. 2

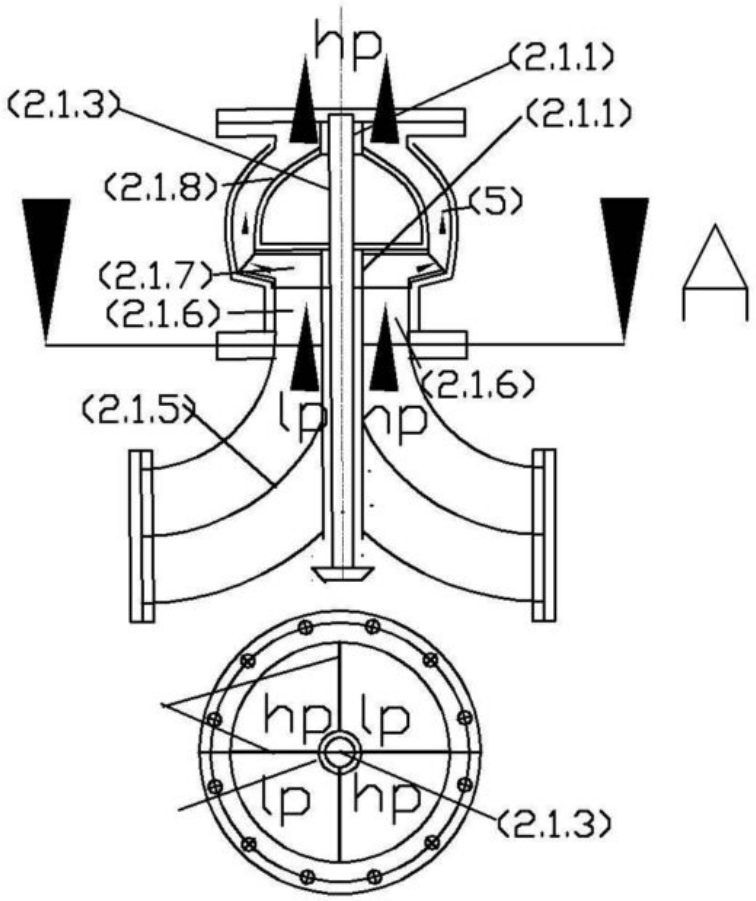

FIG.3