Applications of a Schauberger Vortex, with the Tesla Turbine

(some fresh air for a dying planet)

Dynamic Hydropower

The suction turbine or jet turbine of Viktor Schauberger

Hydropower engineering, up to this day, is almost exclusively concerned with two variables, one being the altitude differential between head water and turbine and the other the quantity of water that can be brought to flow through the turbines. ***This page was originally created by, and is used with exclusive permission from Josef Hasslberger.*** It has been edited for content. You may visit the original webpage at http://www.hasslberger.com, where you will find even more documentation on the vortex theories proposed by Viktor Schauberger. It is a ver well laid out site.

A third important variable, the velocity of flow of water, is generally not thought to be important. It is taken into consideration only as the veloc resulting from the release of water pressure connected to and dependent on altitude differential but not as an important factor in its own right In fact, current design of hydropower facilities normally excludes utilization of the dynamic energy potential inherent in the free flow of water. dam destroys this natural energy potential by bringing the water from its dynamic state of flow to a static state, a complete absence of motior

If we study the writings of Viktor Schauberger and Ludwig Herbrand, we find that the energy inherent in the free and unhindered flow of wate may be potentially much greater than that obtainable from the exclusive use of pressure resulting from altitude differential. A normal flow of water rather than an altitude-induced pressure, has been used in mills and old blacksmith hammer works of the pre-industrial era.

Viktor Schauberger

In recent times, it was Viktor Schauberger, the Austrian inventor and genial observer of nature's ways who first advocated the use of increas water velocity rather than water pressure for the production of hydroelectric power. He obtained a patent for what he termed a jet turbine (Strahlturbine) as early as the year 1930.

The principles used by Schauberger in order to increase water velocity were the jet configuration of the water inlet pipe and the promotion, b spiral ribbings on the inside of the jet, of a vortex motion of the water.

Schauberger's patent actually gives us two very important clues to innovative changes in hydropower technology. The first one is, that a pipe configured as a funnel or jet will increase the velocity of the water's flow by restricting the space available in which the water may flow. This increase in velocity is especially great if the funnel or jet allows the water to form a characteristic flow pattern known as a vortex. This vortex pattern itself has a tendency, quite separate from the jet-effect, to increase the velocity of the water, to decrease its temperature and to augment the water's density.

The second innovation proposed by Schauberger is a revolutionary design of the turbine, obtaining rotation at very high speeds and at the same time avoiding the usual difficulties of cavitations found in normal high speed turbine designs. In fact Schauberger's turbine wheel is of conical shape, with blades spiraling down the surface of the cone in a corkscrew pattern, and it is located in the center of the jet of water. The corkscrew turbine wheel parts the flow of water, takes up the water's dynamic energy and lets the flow continue without major disruption. Turbines of current design , hacks the water into thousands of destructive counter flows and cross vortices, thus wasting much of the availab energy and causing the common problem of cavitations, a super fast corrosion and destruction of turbine blade material.

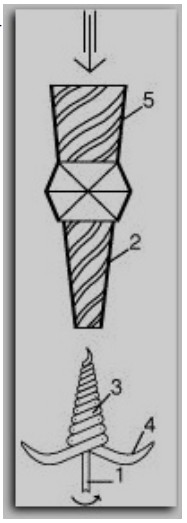
Here is the description of this new type of turbine as given in Schauberger's patent number 117 749: The subject of the invention is a hydropower machine, which utilizes the living energy of a jet of water for the purpose of power generation.

According to the invention, the turbine wheel is a cone with corkscrew-like blades. The cone is aligned with its axis in the direction of the axis the jet. In this way the jet of water is split and diverted out of its course and thus gives its whole living energy to the spinning cone in a way th providing the length of the cone and the width of its base are in a correct relation to each other and provided the blades are set at the correct angle, these parameters depending on the speed of the water jet, the water will flow out of the machine without agitation.

The illustration is an approximate schematic representation of the invention.

The spinning cone, which is aligned with its axis (1) in the direction of the water jet leaving the jet pipe (2), is made up of blades (3) in the for of a corkscrew.

The ends (4) of these blades (3) are bent somewhat upwards against the direction of the arriving water jet in order to cause a diversion of the jet and to transfer as much as possible of the living energy of the jet to the spinning cone.



On the inside of the jet pipe (2) there are screw-like ribs (5) promoting a spin, which according to actual observations increase the speed of the water jet and the efficiency of the machine.

PATENT CLAIMS:

A jet turbine, distinguished by the fact that in the path of the water jet and aligned with its axis so as to split the jet, there is a turbine wheel in the form of a cone, the surface of which is formed of corkscrew-like blades.

A jet turbine according to claim 1, distinguished by a jet pipe (2) with ribs (5) slanted in the direction of spin of the turbine wheel's.

This patent was applied for in 1926 and granted in 1930. It seems that Schauberger actually used a small turbine of this design in a stream of water near the forest wardens' building during those years, but no reliable records are available.

Herbrand

Another instance of the use of the dynamic powers of flowing water has been documented by Ludwig Herbrand, a German engineer who as student in the mid 1930's was called to evaluate and calculate the parameters of some generators and exciter units that had recently been installed in the Rheinfelden power station, as well as to design electrical overload protection and relevant switching mechanisms for these generators. He was also required to compare the generators with those of another power station that had been described in an article of a specialized magazine.

Much to the dismay of the then young and inquisitive engineering student, it seemed that the generators under examination were supplying more electrical energy than they should have, according to accepted theory. One of the generators of the Rheinfelden power plant, with 50 cubic meters of water per second and an altitude differential of only one meter supplied just as much power as a generator in near Ryburg-Schwsrstadt, which had a capacity of 250 cubic meters of water per second and an altitude differential from head waters to turbine of 12 meters!

That fact was confirmed by prof. Finzi, the designer of the turbines and generators, saying to young Herbrand:

"Do not worry about this. It is correct. The generator has been working without problems for some time now. Make the calculations backward and you will see for yourself. We are electrical engineers. Why, those other problems are not ours to solve, we leave them to the water peopl We have repeated our measurements and the generator's yield of power is exactly as specified. The only thing is - no one knows about this."

Herbrand was soon drafted into the army and World War II did not allow him to pursue the matter further. Only much later, in the 1970s and 1980s, Herbrand came back to the calculations made for his engineering exams and tried- so far without success - to interest industry and government in this different and more efficient use of hydropower.

Technical facts

I shall attempt to delineate here the technical facts, using calculations that are based on accepted formulas and physical considerations confirmed by actual experiment, to show that with a different approach to hydropower engineering, we could obtain significantly more electric power than is being extracted from hydro resources today, with simpler machinery and less expenditure, as well as less disturbance to the environment.

As mentioned above, current hydropower engineering works with water pressure, obtained as a result of the altitude differential between hea waters and location of the turbine. This pressure, when released through the turbine, results in a momentary acceleration of the water and th in a certain velocity of the water jet. This velocity is calculated with the formula

$$v = \sqrt{2 g h}$$

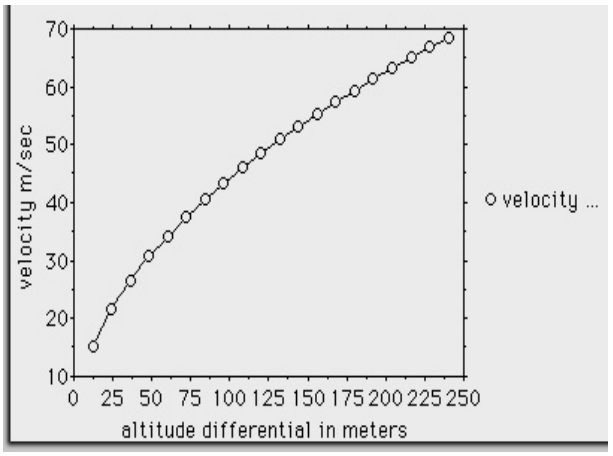
v being the velocity, g the gravitational acceleration of the earth (9.81 m/sec2) and h the altitude differential measured in meters.

Example: An altitude of 12 m results in a velocity of Ã 2 . 9.81 . 12 = 15.3 m/sec.

The progression of velocity in relation to altitude differential is shown in the following table.

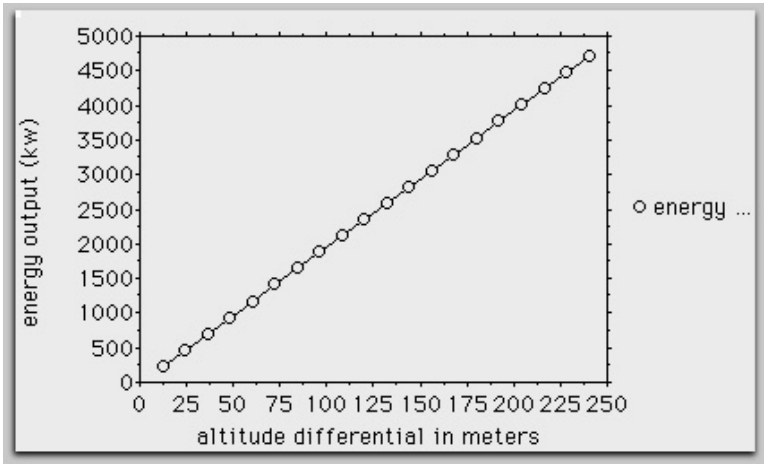
altitude diff.	12 m	24 m	36 m	8 m	60 m
velocity	15.3 m/sec	21.7 m/sec	26.6 m/sec	30.7 m/sec	34.3 m/sec
altitude diff.	72 m	84 m	96 m	108 m	120 m
velocity	37.6 m/sec	40.6 m/sec	43.4 m/sec	46 m/sec	48.5 m/sec
altitude diff.	132 m	144 m	156 m	168 m	180 m
velocity	50.9 m/sec	53.15 m/sec	55.3 m/sec	57.4 m/sec	59.4 m/sec
altitude diff.	192 m	204 m	216 m	228 m	240 m
velocity	61.4 m/sec	63.3 m/sec	65.1 m/sec	66.9 m/sec	68.6 m/sec

These values are rendered graphically below.



We see that the curve of velocity at first increases more steeply and then tends to flatten with higher altitude differentials

Let us now examine the energy output in kilowatt with increasing altitude differential.



The increase of energy output is linear, as shown in the graphic above.

Calculation

The electric energy that can be obtained from water is calculated on the basis of the velocity of flow and the mass of the water, i.e. magnitud of flow measured in cubic meters per second, according to the formula

E kin = . v 2 (kw)

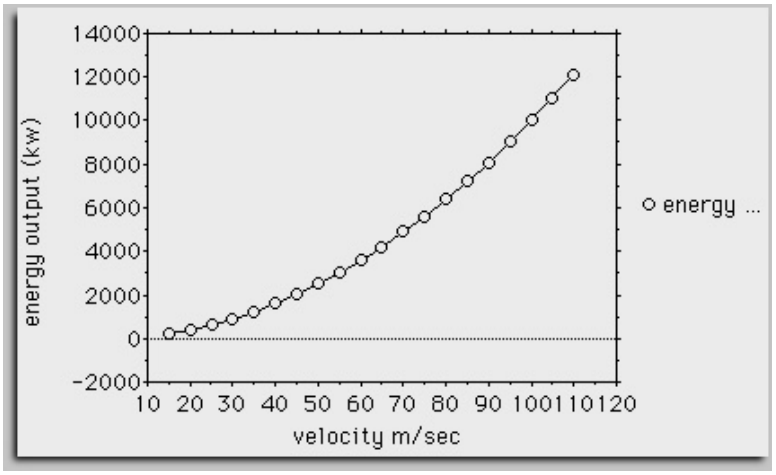
An example, assuming a velocity of 25 m/sec and a mass of 5 cubic meters per second:

5 : 2 = 2.5 . 25 . 25 = 1562.5 kw

For the purpose of comparison, here are some further examples (assuming a small constant flow of water, only 2 cubic meters per second):

velocity	15 m/sec	20 m/sec	25 m/sec	30 m/sec	35 m/sec
energy	225 kw	400 kw	625 kw	900 kw	1225 kw
velocity	40 m/sec	45 m/sec	50 m/sec	55 m/sec	60 m/sec
energy	1600 kw	2025 kw	2500 kw	3025 kw	3600 kw
velocity	65 m/sec	70 m/sec	75 m/sec	80 m/sec	85 m/sec
energy	4225 kw	4900 kw	5625 kw	6400 kw	7225 kw
velocity	90 m/sec	95 m/sec	100 m/sec	105 m/sec	110 m/sec
energy	8100 kw	9025 kw	10000 kw	11025 kw	12100 kw

These figures show, that a doubling of velocity quadruples the power output, a threefold increase of velocity leads to a nine fold increase of power output. In other words, we have an exponential increase. The curve of energy increase plotted against water velocity is shown in this third graphic.



The graphic representation makes it clear, that a velocity increase brings progressively larger increases of energy. Therefore, the higher the velocity of the water, the greater the overall efficiency of the power plant!

For the purpose of utilizing hydropower for generating electrical energy, it is however quite irrelevant whether the velocity of the water is the result of pressure obtained through altitude differential or whether it is obtained in some other way, such as encouraging the natural tendency of water to flow. And it seems that we can increase the velocity of flow of water almost at will.

How to increase electrical output

There are two basic variables in hydropower engineering that determine electrical output. They are the amount of water available and the velocity of flow. The first variable, the amount of water available, depends very much on location and is generally not subject to increase by human intervention.

It is the second variable, the velocity of the water's flow, which can be manipulated in many ways. Apart from increasing water pressure, whic is a comparatively inefficient way to increase flow velocity, this parameter can be influenced by other, more simple and more cost effective engineering solutions.

It is a common principle in rocketry to increase the velocity of flow of the hot exhaust gases by a restriction of the path of flow of these gases This is called the jet principle and has been used successfully for decades.

The same principle can be used to increase the velocity of a flow of water, such as a river. In fact, where a river is forced, by the natural configuration of terrain, to flow through a narrow gorge, the velocity at the narrowest point is much higher than it is before and after the rivers passage through the gorge. This effect can be utilized by finding a natural gorge or by artificially narrowing a river's bed so as to bring about increase in water velocity.

Another way to increase velocity of flow in water is to promote the formation of a longitudinal vortex. This is a rolling or spinning motion, the axis of which coincides with the direction of flow of the water. Such vortices have the property of causing an increase of the velocity of flow, and a contraction of the diameter of the space needed by the body of water. They also cause a lowering of the water's temperature and thus increase in its density. (The highest specific density of water is reached at a temperature of + 4 C.)

Water has a natural tendency to form vortices, especially if its flow is accelerated by some external influence such as gravity. We can observ this by noting the swirl with which a full bathtub or sink or any other container full of water empties, if the water is forced to flow through a pip

connected to a hole in the bottom of the container. But even a simple water faucet, releasing a flow of water, will show this same phenomenc if the water flows relatively undisturbed, without bubbles or agitation. As the water picks up speed, it forms a distinctly funnel-shaped vortex right before our eyes.

A confirmation of this tendency of vortices to increase water velocity (or in other words to decrease resistance to the water's flow) comes fror experiments performed in 1952 at the Technical College in Stuttgart by Prof. Franz Pspel and Viktor Schauberger.

The experiments were performed with pipes of different materials and different shapes, to determine if either materials or shapes had an influence on the resistance of the flow of water in pipes.

It seems that best results were achieved with copper pipes, and that this material caused less resistance to the water's flow than even the smooth glass pipes used as comparison. But the most important datum emerging from these experiments is, that by using a certain spiral configured pipe, based on the form of the kudu antelope's horn, the friction in this pipe decreased with an increase in velocity and at a certai point, the water flowed with a negative resistance.

Theory and practice

The best theory is not worth the paper it is written on, if it cannot be put into practice. We shall therefore examine the practical utilization of these principles in hydropower engineering.

The object is to increase the velocity of the flow of water to such a degree that the resulting jet will release more kinetic energy than conventional utilization of water pressure achieved with comparable means.

Step 1:

As a first step, a river's normal flow is brought to higher velocity by the expedient of a wall that gradually restricts the river's bed. This will increase the normal velocity of flow of 2- 5 m/sec to a sizeable 10 - 15 m/sec.

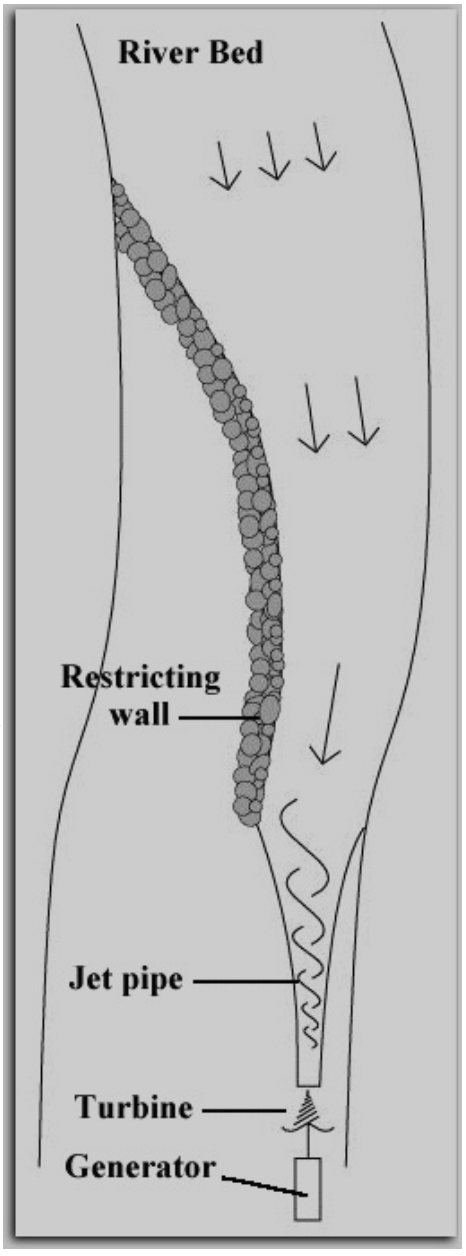
Step 2:

At this point, in order to further increase velocity, we must provide a channel of flow that more closely resembles the shape of a natural vortex. We do this by channeling the already swiftly flowing water at the narrowest point of the river bed into an approximately round funnel or jet-pipe, which gradually further restricts the diameter of the water's channel of flow and thereby causes a further increase in velocity.

In order to aid this process, we can promote the formation of a vortex in the funnel or jet-pipe which will ensure that the water exits the jet at a considerable velocity. This is done either by spiral ribs on the inside of the jet-pipe as proposed by Schauberger, or by forming the whole pipe in a slightly corkscrew configuration.

Installing a turbine and generator at the release point of the water jet, of the design proposed by Schauberger, although, HERE is where I would like to substitute a TESLA Bladeless Boundary Disk Turbine (a "multi-stage" unit), will now provide an output of electrical power much higher than that achieved by comparable means in the conventional way.

Where step 1 is not practicable because of the river being too small, or where we simply want to adapt existing power plants to utilize the dynamic energy of water flow, step 2 can still be profitably combined with current small hydropower plant design, by altering the shape of the penstock to a funnel or jet-pipe configuration, thus obtaining part of the velocity increase from normal use of gravity and another part through the specific action of the jet effect and the vortex flow.



No theoretical limitation

Are there limits to how fast a water-jet can be made to flow? This is a question we should obviously ask ourselves before embarking on this kind of project.

It seems that theoretically there are no limitations, as long as the vortex mode of flow is used. If water is forced to flow in straight pipes, resistance increases with the increase of velocity. Not so when we allow the water to flow at its natural mode, accommodating the resulting vortex in our pipe design. In this case, resistance can be very low and even negative, as shown by the experiments performed in Stuttgart.

For purposes of estimating the potential benefits of using the dynamic powers inherent in the flow of water, we can conservatively assume th we should be able to obtain, without particular difficulties, velocities between 40 and 50 m/sec. This is an estimation based on the observatio of Herbrand that at the Rheinfelden power plant a velocity of 35 m/sec was achieved.

We can see from the above statistical tables that 45 m/sec of velocity are equivalent to an altitude differential of more than 100 meters. And assuming that we have a flow of water of 10 cfm/sec, we can predict (at v = 45 m/sec) an energy output of 10 megawatt. This is a considerab amount of power and it can be obtained almost anywhere along the normal course of a river, without the costly and environmentally questionable practice of constructing a dam and a man made lake to obtain 100 meters of altitude differential.

If it is true that the water's velocity of flow can be increased almost at will and with comparatively simple means at a fraction of the cost of current hydropower designs, someone might ask: Why are we not using this obviously superior method?

Let's look to Nikola Tesla's fantastic speech, as recorded to the Manufacturers Record; September 9th, 1915."The Wonder World To Be Created By Electricity." for some insight.

THE POWER OF THE FUTURE

"We have at our disposal three main sources of life-sustaining energy - fuel, water-power and the heat of the sun's rays. Engineers often spea of harnessing the tides, but the discouraging truth is that the tidewater over one acre of ground will, on the average, develop only one horse-power. Thousands of mechanics and inventors have spent their best efforts in trying to perfect wave motors, not realizing that the power so obtained could never compete with that derived from other sources. The force of wind offers much better chances and is valuable in special instances, but is by far inadequate. Moreover, the tides, waves and winds furnish only periodic and often uncertain power and necessitate the employment of large and expensive storage plants. Of course, there are other possibilities, but they are remote, and we must depend on the first of three resources."

"If we use fuel to get our power, we are living on our capital and exhausting it rapidly. This method is barbarous and wantonly wasteful, and w have to be stopped in the interest of coming generations. The heat of the sun's rays represents an immense amount of energy vastly in exce of water-power. The earth receives an equivalent of 83 foot-pounds per second for each square foot on which the rays fall perpendicularly. From simple geometrical rules applying to a spherical body it follows that the mean rate per square foot of the earth's surface is one-quarter o that, or 20 3/4 foot-pounds. This is to say over one million horse-power per square mile, or 250 times the water-power for the same area. But that is only true in theory; the practical facts put this in a different aspect."

"For instance, considering the United States, and taking into account the mean latitude, the daily variation, the diurnal changes, the seasona variations and casual changes, this power of the sun's rays reduces to about one-tenth, or 100,00 horse-power per square mile, of which we might be able to recover in high-speed low-pressure turbines 10,000 horse-power. To do this would mean the installment of apparatus and storage plants so large and expensive that such a project is beyond the pale of the practical. The inevitable conclusion is that water-power is by far our most valuable resource. On this humanity must build its hopes for the future. With its full development and a perfect system of wireless transmission of the energy to any distance man will be able to solve all the problems of material existence. Distance, which is the ch impediment to human progress, will be completely annihilated in thought, word and action. Humanity will be united, wars will be made impossible and peace will reign supreme." ***Nikola Tesla, September 9, 1915***

Fixed ideas and the law of conservation of energy

It is very hard to un-learn something one studied and especially if what was learned was then needed to pass an examination. The weight of called natural laws brought to bear to support these doctrines makes it even more difficult for any one person to stand up and say hey, we ha overlooked something here!

Of course everybody knows that water has to be pressurized if we are to use it for hydroelectric power generation. And everybody knows as well, that the technology of hydropower engineering has been well in hand since the turn of the century. So why bother to look any further?

Not so Ludwig Herbrand. He has fought an unceasing battle for more than 20 years now, to obtain recognition for this new technology. Litera hundreds of letters to government and industry, as well as international institutions with just so many negative replies, more or less politely telling him that his proposals are not welcome.

It is difficult to break through this barrier of knowledge, especially when the experts think they see a violation of the law of conservation of energy. Conservation of energy is invoked when calculations do not seem to permit a higher energy output. But in this case we have a factor that has been neglected in our calculations, not a violation of conservation laws

Water is an accumulator of energy

There is some evidence that the decrease of water temperature that is a consequence of vortex motion provides the energy to the water that we then see as kinetic energy in the form of increased water velocity. In this way a vortex would transform heat (which is random molecular motion) into dynamic energy (which is motion in a certain direction). Schauberger stressed the fact that water could store enormous amounts energy by being heated up. He states in an article about the Danube river that in order to warm up 1 cubic meter of water by only 0.1 degree one needs about 42,700 kgm of energy, saying that this goes to show the enormous energies that are bound when water is heated up and a released when water cools down.

Thermodynamics, as taught in our schools and universities does not allow for such a two-way transformation of heat at low temperature differentials. Thermodynamics is based on observation of steam machines and has little to do with nature, although some insist that the so-

called laws of thermodynamics are natural laws. Nevertheless, thermodynamics is not able to explain certain natural phenomena.

In calculations of electrical power yield, velocity is not considered separately but as a result only and exclusively of altitude differential. That i like saying, there is no other way of achieving water velocity than pressure. It may be the way the experts calculate, but physical reality is different. Water velocity, as we have seen, is not exclusively linked to pressure but may be achieved with different means.

Thus the correct way to calculate is to start from velocity and arrive at the power output. Altitude differential and the velocity equivalent as calculated in the formula given above are a special case, not the general rule.

We must distinguish between the pressure-induced velocity equivalent and the natural velocity of flowing water. That is to say we must distinguish between gravity and inertia. These two forces are similar in their effects but they are nevertheless two distinctly different forces. This article does not allow a detailed examination of the physical forces involved.

I hope that this article may contribute to overcoming the knowledge barrier, the various everybody know in the field of hydro engineering. To anyone wishing to utilize the dynamic powers of water I recommend a study of the writings of Viktor Schauberger, the great master of hydro engineering who remained an outsider to official science all of his life, because his views were so radically different from those of the professors of his time.

With the union of the Tesla Bladeless Boundary Turbine/Pump, with the theories of Victor Schauberger...a true step towards "non-polluting, free energy", derived from our nation's rivers, would result. I offer another concept of vortex and water power, in the form of an invention from Mr. David Dennard (May God Bless his soul) - **WHIRLPOWER** the power from tapping a whirlpool and its precession.

So What's The Problem?!

Well, the problem is not the technology...it's the ***implementation*** of the technology. I'll be very brief with an explanation. In the United States, you need to get an **F.E.R.C. License** to install a hydro electric plant. In order to get a License you need to coordinate the installation with **DEC Fish & Wildlife, Stream Encroachment, SPEDES, The US Army Corp of Engineers** (if navigable), **Dam Safety, National & State Historical Society** and every other "Tom, Dick & Harry" out there. ***Furthermore***, in order to obtain the license, you need to ***compete***, which means you need to develop the project at a 75-80% of maximum flow. This is done to insure the site is beneficial. The long & short of this is, although you spend all this money to maximize the hydraulic turbines, they only run 20 % of the year at the maximum design capacity. Combine this with hydraulic flows' peak in the spring and fall (not peak times during summer & winter) when there is a glut of power on the market and you are lucky to get ***2 cents per kWh***. That's the short and simple of it. Until the American people get "fed up" enough to ***initiate*** changes in the political make-up of the system...we get it right up the "you know what" in regards to being able to have virtually non-polluting, environmentally sound electrical energy production. Think about this - we could easily implement all of the technology presented on this webpage quite easily. From a company standpoint, i.e.: profitability and sustainability, we simply could not afford to do so...that is, as long as these license restrictions are kept in place. All of this is up to the American people to decide. Eventually, I'm sure we will be forced into findin environmentally sensible and sustainable power generation...until then...we wait.

So, to "re-quote" Nikola Tesla from one of the above paragraphs - ***" The inevitable conclusion is that water-power is, by far, our most valuable resource. On this, humanity must build its hopes for the future. With its full development and a perfect system of wireless transmission of the energy to any distance, man will be able to solve all the problems of material existence. Distance, which is the chief impediment to human progress, will be completely annihilated in thought, word and action. Humanity will be united, wars will be made impossible, and peace will reign supreme." Nikola Tesla, September 9, 1915***

If only that were true. Thank you for your time

Frank Germano, President, International Turbine And Power, LLC.

For a complete, technical description of this technology - WATER POWER - click here.

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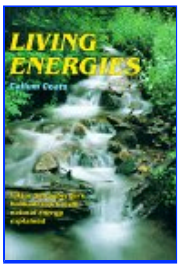
Suggested book: **"Living Energies "** by Callum Coats. Viktor Schauberger's Brilliant Work with Natural Energies, explained (ISBN: 0-946551-97-9)

The original translation of Viktor Schauberger's work, "Living Water", by Olof Alexanderrson...start here, and get each one in order. This is an excellent, brief introduction to the thought of Viktor Schauberger, and I hope it inspires works which are more complete. Callum Coates' books reach in this direction, but what i really needed are more people to read these books, synthesize their information, and come up with new and original books

which take us further into depth in these areas. This will probably involve synthesizing the work of Schauberger, Grander, Bienveniste, and others. An understanding of Schauberger is very important for those attempting to reconstruct an Indigenous European Perspective. Schauberger has the elements of a modern water shaman, and his shamanic / intuitive techniques of letting his body float with t water should be closely correlated with what Hans Peter Duerr has to say about "out of body" experience in his tome "Dreamtime". Although Schauberger lived in the 20th Century, his perspective allows us to imagine back what earlier indigenous practitioners may have been like. T Colonial, Imperialist Europe is only one side of the coin of Europe. We must also include the suppressed indigenous, pagan, and green sides Significantly, the Inquisition represents a watershed in European history where a great deal of the indigenous healers and theorists were wip out in holocaust proportions. An understanding of Schauberger, coupled with an appreciation of Steiner, Hildegard of Bingen, Hans Peter Duerr, and others, will allow us to reconstruct what a noncolonial, nonimperialist Europe was like. Understanding water's nature is essential i this regard, for water forms the basis of our understandings of flow. Furthermore, understanding water's energetic qualities will help us understand how it interacts with the body. Traditional Chinese Medicine, for example, would benefit from an accurate and holistic understanding of water's qualities. In short, this book is an excellent appetizer.

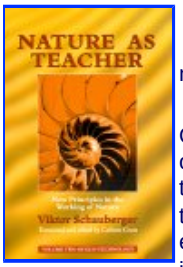


The book that started it all...Living Energies , Callum Coats first Viktor Schauberger book. you only buy one book, this would be the one to get. Fantastic. Living Energies, May 23, 2001

Reviewer: Frank D Germano, from Tafton, PA United States: This book started it all! Callum Coats basically brought to "ligh the resurgence of interest in Viktor Schauberger's theories. This is truly a brilliant work. Water as a carrier of vital energy information, trees as bio-condensers of energy between the deep earth and the sun, how self-cleansing rivers nourish the landscape, how the future of the earth depends on the replanting of natural forests, revolutionary agricultural implements, fr energy heater-coolers, jet engines and gravity defying machines invented by Schauberger in the 30's and 40's, home powe generators...it's pretty much all here. It was a hard book for me to put down once I started reading, and I go back to it continually for reference. This book pretty much sums up Schauberger's work, which Coats then compartmentalized and expanded in the "Ec Technology" series with four other books. I would highly advise getting this book, first, and reading it thoroughly, before moving on to the series, as it is a fascinating preface into discovering who Viktor Schauberger WAS, and learning just how far-reaching his theories were, and applicable to us, today. FDG.

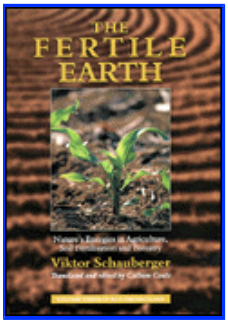
1,) The first book of the "Eco-Technology series" - The Water Wizard - This book gives a lot of history on Schauberger. The nature of water, May 23, 2001

Reviewer: Frank D Germano, from Tafton, PA United States: This is the first book of the "Eco-Technology" series, and as s gives you the foundation of the theories presented by Viktor Schauberger, and amplified by Callum Coats. It DOES contain quite allot of previous information written in Living Energies (Coat's first Schauberger book), however, the discussion and th text is much more thoroughly covered. The substance of water, water supply, deep-sea water, the consequences of drinking purely mechanically treated water, notes on the secrets of water, high-frequency water, the pulsation and healing power of water, river regulation, groundwater tables, temperature and movement of water...notice my use of the word WATER. Yes, this book is about water, but, by reading it, just wait until you discover what you DID NOT know about "water". It is a very good start, and as I said, a foundation for understanding the theories of Viktor Schauberger. FDG.



2.) Part two of the "Eco-Technology series" Nature As Teacher, A great book on living wi nature. A very nice read.

Our Senseless Toil, May 23, 2001: Reviewer: Frank D Germano, from Tafton, PA United States: I had to use a title from on of the books' opening chapters. This book is going to annoy some people. Callum Coats presents Viktor Schauberger's theories in a modern light. The laws of Nature, Questions for Science, Nature as Teacher, the fish-eagle, the swing, the trou the ox, dancing logs and stones, the Genesis of water, the coming bio-technical age, the secret of the egg form...these are elucidated...then comes the fun stuff... the age-old secret of the atom, implosive breathing, life-force and animated breathing is there perpetual motion (?), organic syntheses, the false world view, the mechanical equivalent of heat, plasmolytic motion this volume gives tremendous insight into what is happening in the world, today, and practical solutions on HOW we may yet save our world. Most telling is Schauberger's inane gut feelings on the powers at work in the environment, and living water. Hey, it's only volume two of the series. Get all four, and see how these books will influence YOU to change the way we look at the earth . FDG



3.) The Fertile Earth , part three of the "Eco-Technology series. Pure drinking water, how to make it, the benefits produced in the body...the natural flow and paths of rivers, and how man has disturbed nature...organic, natural farming...trees as the life giving force on the earth...it's all hear! Are you trying to save Mother Earth?, May 23, 2001

Reviewer: Frank D Germano, from Tafton, PA United States: If you are in any way interested in the environment, then this book will appeal to you. This is the third book in the highly acclaimed "Eco-Technology" series by Callum Coats. No only does the book delve into what man is doing to harm the environment, it also offers "fresh" ideas on what we can a should DO about it. I can't believe "Green Peace" or some other pro-environmental group doesn't have this book as par of their by-laws! Fascinating. Of coarse, the entire book is based on the revolutionary work of Viktor Schauberger. This one, if you are into farming, just have a back-yard garden, or are a hard core pro-earth person, will keep you reading till the end...and want to read the entire series. A very well written and inspiring book. A different view of natural phenomena, the influence of temperature and water movement, forestry, agriculture, the energy industry, the dying forest, timber and water in the building industry, soil fertilization, increased productivity...wow! Again, whether you are just into learning what's happening to the earth, and why, or you are seriou about trying to DO something to stop the damage already done, this book will open your eyes. FDG