Next

"When the family is small, whatever little they have they are able to share. There is peace."
Philip Njuguna, pastor, Nairobi, Kenya

- The Stingray Wind Energy System -

The Stingray began forty years ago. I was seventeen at the time. Our family lived beside a river. We used to care for it – wading in and removing any trash.

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One day as I was walking the river, I found an old waterlogged wooden sign. It was about two feet under the water about mid-river. The current was typical for that time of year and not overly strong, but when I tried to lift the sign, it took everything I had in me to hold it against the current.

I will never forget it.

The force was astonishing, and for some reason it occurred to me that we should be able to produce power from that amount of pressure.

Sometime later, my mother gave me an old grandfather clock that had not worked for years. It was the type that if you raised a weight to wind the mechanism, the clock would function for days.

I found that the mechanism was broken. As I was working with the chain and weight, I noticed that if I pulled hard on the chain, the mechanism would spin extremely fast.

That is when I remembered the river... There it was.

Pressure to energy.

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There is a story behind my going back to high school when I was twenty-six. The short version starts with the fact that I had already graduated high school eight years prior. But I had a dream of going to university and becoming an engineer.

I used to drive after work in filthy factory clothes and work boots to stare at the university campus – the students and wonder, *why them and not me*? Think of the movie about Rudy and Notre Dame and you will get the idea.

The only way to apply and be accepted at the University of Waterloo was to meet their current academic standards which were astonishingly high. I did it though. I would work on my courses from sunrise until midnight every night without a single day off. But I made it and I certainly remember the first step I took on the campus.

During my days studying engineering, the idea never left me.

After graduating, I found an old clock repair man who had some larger clock mechanisms that I could test my idea with. I also purchased an old parachute from an army surplus store.

It was a winter day in February with a foot of snow on the ground and quite windy. I had fastened the parachute lines to the mechanism and went out to test how much pull I

could get from the parachute, and it nearly pulled me down the street. The cock mechanism held and spun incredibly fast under the wind power. There it was again.

The difficulty was creating a sail shape that could be easily controlled, withstand extreme weather around the world, be cyclic and be programmed to be intelligent in terms of wind direction, safety, communications. It all took many years of consideration as one iteration led to another and another. Simply put, 1. Use large pressure for power production for a time period. 2. Reduce the surface area significantly as well as the angle of attack at the end of the extension phase of the cycle to 3. Retract the sail and reset the power generating component of the entire cycle. 4. Do that for a fraction of the cost of wind turbines.

Another way of thinking about it is to consider a bucket filled with sand attached to a pulley that is attached by a cable to the shaft of a generator. Let the heavy bucket slowly fall and generate power while the weight does its work. At the bottom, empty the bucket and retract the cable

and the empty bucket. This requires a small fraction of the power that was generated as it descended. Fill the bucket at the top and let it fall again. Repeat. Now, change the word sand for the word wind and you get the next generation of wind energy.

It is surprising how heavy air is.

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I didn't believe it until I did some research and then I still had a hard time accepting it. But the fact is the surface of the Stingray will have approximately 408kg (900lb) of air moving at 5.5m/s (12.3 mph) against it. That is one heavy bucket of sand moving quickly.

There is another analogy though. In motors there is something called stall torque. If you have ever tried to drive a large screw into a thick piece of wood and it stalls the drill and the screw does not move. That is stall torque. It is the power required to try to overcome or maintain a very uncomfortable power equilibrium. In this case think of the size of a motor that would be required to hold back 900lb of anything travelling at 12.3 miles per hour and you will get a rough idea of the power needed to produce such a stall torque and the power that will be generated by the Stingray. For free.

The energy in the wind is free.

The Stingray is the result of decades of design and testing. 5kW of electricity on average every hour year-round. One stingray per acre.

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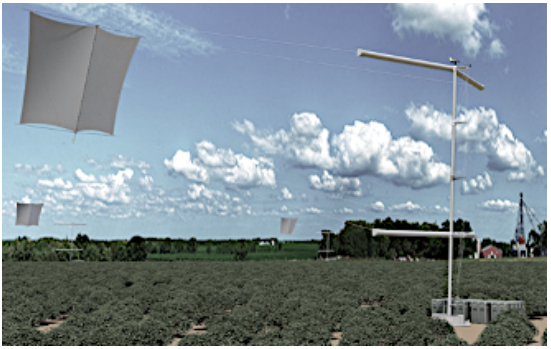
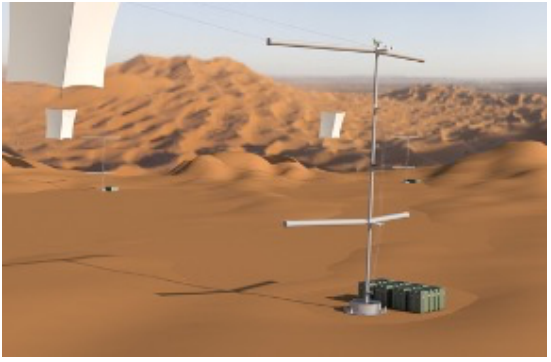


Here are Stingrays operating. Complete details can be found on our website *www.jamespmoore.com.*



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Energy is essential for so much but especially for clean water. **7,000 children die every day due to the lack of the basic necessity – clean water**. The Stingray is going to help change that.

5kW of electricity used in a reverse osmosis system can produce over 40,000 litres of clean water per day from oceans, lakes, ponds, rivers, aquifers, and wells.

Yet it goes beyond lives saved. The applications in agriculture and land regeneration will be an essential and extensive reality. Small, simple, continuous, distributed power generation where and when it is required is a global necessity that will be solved with the Stingray.

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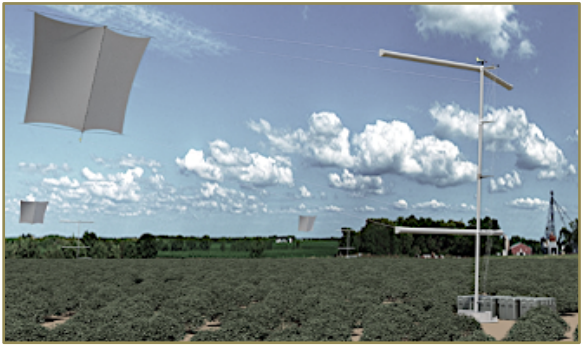
20 years ago, this would not have been possible.
Now it is a certain future.

As you will see the clean water and clean energy potential is unexpected. Nearly every country can have the equivalent of Niagara Falls and, in most countries, the performance of Niagara many times over. But, not from water. From wind.

Next

This next generation of wind energy technology diverges from wind turbines and instead embraces thousands of years of engineering and design experience in the sailing industry, capturing wind energy much more efficiently at average wind speeds around the world and at a fraction of the cost of wind turbines. Due to modern advances in carbon fibre, fabric science, and the computer-controlled precision of modern drone systems, any available land with low to moderate wind conditions can now become an exceptionally lucrative investment vehicle providing nation-wide sources of revenue, while delivering clean energy, clean water, and with it all the related extraordinary agricultural opportunities and impacts. Technological and financial, both are new industry vectors.



Stingray Wind Energy and Clean Water System Systems
5kW per unit. 48,000 liters of clean water per day.
CO_2 offset of 168 Fully grown trees each year.

Next

These clean energy and clean water systems will be installed at an unprecedented pace, inexpensively, and globally beginning in 2023.

On a national scale, the financial opportunities lend themselves to the adoption of the proven, exceptional financial implementation of Norway's 1.4 trillion-dollar Government Pension Fund Global system. This will create and ensure untapped, continuous, and guaranteed revenue that will secure and expand a country's financial capabilities and requirements for generations to come. Like Niagara's water, the wind is a free energy resource that will never stop.

The global applications are incalculable.

The Stingray Wind Energy System will produce the least expensive electricity in the world. This will lead to new land expansion, city development, increased land valuation, new manufacturing, commerce, etc., with true economic competitive advantage and extraordinary wealth for generations to come.

Nikola Tesla

Since he was a young boy, Nikola Tesla dreamed of harnessing the power of Niagara Falls. Seeing it in person for

the first time led him to build the first hydroelectric generating plant in the world. At times we are blessed with a moment when history meets modernization and new applications. Flight meets engine. Engines meet wheels. Electricity meets everything eventually. Perhaps the same wisdom and insight that led him to the moment he turned on the main switch, let him see far beyond his years to how it would touch every aspect of our lives. Today his legacy continues and brings to the world this new, unique combination of Nikola Tesla's genius and a world of new Niagara Falls.

Advances in technology continue to create new opportunities opening new financial vectors with necessary and practical solutions that are engineered to create them. When done properly, the solution opens markets that are so much larger than expected.

In 2005 two scientists, Archer and Jacobson (1) estimated that **20%** of the global total wind power potential could account for as much as 123 petawatt-hours (PWh) of electricity.

This is equal to over 5 times the total current global consumption of electricity. With the average electricity cost per kWh of 13 cents globally, this figure represents $16 trillion. NREL (2) recently clarified this with advances in and distribution of more data sites. The 2017 estimate is

a total global wind generation potential of 560PWh for terrestrial wind with 90% of resource classified as low-to-

mid quality. A $73 trillion potential.

Promising, yet there is a reality to consider. The average wind speed around the world is 5.5m/s. Wind turbines only generate 1/8th of their rated capacity under these conditions making their design and large-scale implementation technically and financially impracticable throughout the vast majority of the world. At this average wind speed, to generate 100kW with wind turbines, requires an investment in eight wind turbines plus storage. The Stingray has no such limitations producing full power at the average wind speed around the world.

(1) CL Archer, MZ Jacobson, Evaluation of global wind power. J Geophys Res 110, D12110 (2005).
(2) NREL. https://www.nrel.gov/docs/fy17osti/65323.pdf

Next

The Financial Breakthrough

The 5kW Stingray system is designed for universal application and affordability. Compared to wind turbines the Stingray system is 1/8th of the cost. The system is simply shipped by FedEx, UPS or any other overland carrier. The majority of the components come preassembled and is operational within one to two days. All maintenance is done on the ground. It will be installed individually, in small groups, and en masse anywhere land is available. It is the perfect union of wind energy, clean water, agriculture, and revenue production. Each unit requires only one acre of land. Its flight height is 40-50ft.

Norway's Financial Genius

Considering only the electricity revenues (there are 22 additional revenue streams created) from 5kW of power production on average per hour, at the average electricity cost globally of 13 cents per kW, one system will provide revenue of nearly $5,700 US per year. At an installed cost of $10,000 US, the payback period is 20 months. For regions and countries with higher electricity rates the payback period decreases accordingly. In the Solomon Islands, for instance with electricity rates of over 90 cents per kWh the payback period is approximately 90 days. No government incentives are required. Within two

years it will have paid for itself. If we adapt the investment model from Norway and invest the revenue into a Stingray Fund instead of spending it, within the next two years there will be enough revenue in the fund to purchase and install a second Stingray system. If we dedicate the revenue from the first Stingray to purchasing and installing subsequent Stingrays every two years, within 20 years there will be 10 Stingrays operational, each producing $5,700 in revenue for the investment cost of just the initial Stingray - $10,000 US.

If we invest the revenue produced from the 10 Stingrays using Norway's average return on investment of 6.2%, the Stingray fund will be worth more than $600,000 over the first 20-year period, all the while producing clean water; creating and/or accelerating agriculture where installed. When these ten Stingrays have been contributing to the investment fund for an entire 20-year period, their investment fund contribution increases to over $2 million. All for only $10,000 US. At year 20, a second Stingray is installed with the goal of it copying this financial model for the next generation. After two generations, there will be 30 Stingrays operational and generating revenue. The financial genius from Norway becomes truly exceptional. Consider investing in 10 Stingrays for $100,000 US. Within three generations (60 years), there will be 700 Stingrays producing 3.5MW having contributed $130

Each year 700 Stingrays can produce the equivalent clean water of 78 minutes of flow over Niagara Falls.

million to the Stingray fund. Over 1TWh of clean electricity will have been produced with an annual revenue of just under $4 million.

All for only an initial investment in only 10 Stingrays at $100,000 US. The Stingray Wind Energy System is the absolute answer to so many problems.

For consideration, an investment in 1587 Stingrays will result in a Stingray Investment Fund of $1 Billion dollars in 20 years. It is a linear relationship. Consider an investment in 10,000 Stingrays that results in 100,000 Stingrays in the first 20 years. From the initial investment of $100,000,000 this is created:

- **100,000 Stingrays – 20 years.**
- $6.3 billion in 20 years.
- 500MW capacity

- **300,000 Stingrays – 40 years.**
- $40 Billion over 40 years.
- 1.5GW capacity

- **700,000 Stingrays – 60 years.**
- $130 billion over 60 years.
- 3.5 GW capacity

- Total returns in years 0-60: $130,045,090,000

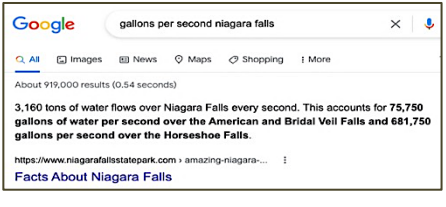
Next

The Stingray is also the only clean technology that can apply this financial model to such success.

As for the water side of production of desalinated water, like Niagara, wind is a unique expression of inexhaustible wealth freely given. Consider these extraordinary facts. From just 700 Stingrays:

48,000	litres/day from one Stingray
17,520,000	litres per year
12,264,000,000	litres/year for 700 Stingrays
3,188,640,000	gallons per year from 700 Stingrays
681,750	gallons per second flow over Niagara Falls - Google
4677	seconds of flow per year equivalent of Niagra Falls from 700 Stingrays
	(3,188,640,000 gallons per year Stingrays/ gallons per second Niagara)
78	**minutes of flow of Niagara Falls from 700 Stingrays (seconds / 60)**
1.30	hours of flow per year
8760	hours per year
6743	Need this times 700 Stingrays to equal one Niagara Falls all year
4,719,808	This many Stingrays to equal one Niagara Falls
247	acres per square km - Google
19,109	19,000 square km
138	Length and Width in km
392	Number of Niagara falls equivalent
5.3	Five of them is a Three Gorges Dam

One Stingray can produce 48,000 litres per day. 700 can produce over 3 million gallons per year. Niagara Falls flow rate is 681,750 gallons per second:



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What the numbers tell you in terms of water is that 700 Stingrays can provide the equivalent clean water production of 78 minutes of flow from Niagara Falls **each year.** To create the equivalent of a continual flow from Niagara Falls requires 4.7 million Stingrays. That may seem like a lot but in terms of square kilometers, it is only 19,109 square km in a country of 7.7 million.

STATE/TERRITORY	%	(square kilometres)		
		MAINLAND AREA	ISLAND AREA	TOTAL AREA
Western Australia	32.9	2 523 924	3089	2 527 013
Queensland	22.5	1 723 030	6712	1 729 742
Northern Territory	17.5	1 334 404	13 387	1 347 791
South Australia	12.8	979 651	4670	984 321
New South Wales	10.4	801 137	13	801 150
Victoria	3.0	227 038	406	227 444
Tasmania	0.9	64 519	3882	68 401
Australian Capital Territory	< 1	2358	—	2358
Jervis Bay Territory (*)	< 1	66	1	67
AUSTRALIA	—	**7 656 127**	**32 160**	**7 688 287**

Imagine what that is going to do for agriculture and expansion in all areas of commerce and society. The numbers are simply exceptional regardless of application.

In terms of electricity production, the numbers are equally astonishing:

Next

700	Stingrays
5kWh	per hour per Stingray
43,800	kWh per Stingray per year (5*24*365)
30,660,000	kWh from 700 Stingrays per year
30.66	GWh from 700 Stingrays per year

Revenue per year from 30GWh at an average global rate of 13 cents per kWh is $4 million.

All of this from an initial investment in just 10 Stingrays at a cost of $100,000 and using Norway's reinvestment model to install 700 total for this one investment.

*

Clearly the Stingray Wind Energy System is designed to create new global solutions and generational opportunities. For individuals – freedoms, care, prosperity, health, futures. For nations, a celebration of promises fulfilled, honour applied and entrusted to those at the highest levels requiring the wisdom and foresight to govern generations present and those to come. The calculations provided do not even come close to the expansive impact of economic opportunity the Stingray electrical and water resources will certainly provide. How do you measure the value of future cities for generations to come?

Next

In truth this is a unique future that is now a matter of course with gratitude and respect for all who have come before us to make it all possible.

NikolaTesla and those like him continue to teach us all.

Their legacy continues.