PiZOOM

amazing and self-sustaining

(Canada) Elite Educational Institute Richmond

Executive Summary

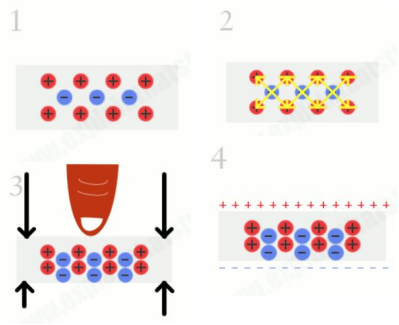
As of 2015, there are over 1.25 billion vehicles on the roads around the world. Considering that passenger vehicles contributed more than 50% of the carbon monoxide and nitrogen oxides, and almost 25% of the hydrocarbons emitted into the air in 2013, the numbers will only continue to rise as more cars are added. What if we could use the cars on the road to generate electricity to power both themselves and their city's transportation grid?

PiZOOM will bring sustainability to a whole new level by modifying roads *and* electric cars to reduce pollutant emission as well as costs of transportation. Our company provides a three part solution to the ever-increasing levels of pollution due to automotives: piezo-layered roads, modified electric cars with piezo-layered tires and wireless charging capabilities, and wireless car charging hubs. The use of our products will allow self-sustaining vehicles to some extent and possibly even self-sustaining cities in the long term.

PiZOOM will work closely with major electric car manufacturers such as Tesla, BMW, and Nissan to produce our specially modified cars. In addition, we will be working with ministries of transportation and infrastructure within each city of interest as our service will be a part of a city's infrastructure.

Product(s) and Services

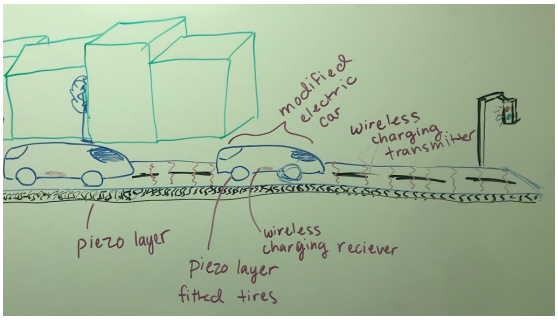
We offer three services, all of which will work together: piezo layered roads, piezo & wireless fitted cars, and wireless charging hubs. By examining traffic patterns in major cities around the world like New York City, Toronto, Shanghai, and Berlin, we will identify areas with high levels of vehicle traffic and add piezo layers to those roads. Through partnerships, we will fit existing electric cars with piezo-lined tires and wireless charging receivers. Lastly, we will be lining roads where cars stop with wireless charging transmitters. The electricity produced from the roads will first be used to charge our cars. If excess is produced, it will then go to the city's other forms of transportation (traffic lights, electric locomotives, etc.) and lastly to buildings or other processes requiring electricity in the city.



How piezoelectric material works (above)

The concept of piezoelectricity is the harvesting of mechanical energy from vibrations, pressure changes, or mechanical pulses. When pressure or impulses are applied to the piezoelectric crystals, the atoms shift, causing the structure of the atoms to be altered thus creating electrical charges. These charges can then be used as electricity to power modified cars wirelessly as they are stopped.

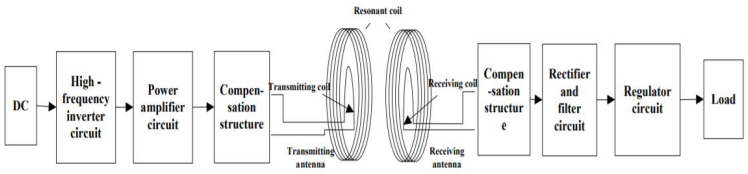
Since our vehicles are to be charged as they wait at stop lights –taking anywhere from seconds to minutes– an alternative battery is needed as a lithium ion battery takes too long to charge. With graphene as supercapacitor, present batteries can be improved to charge and release energy much faster since graphene batteries have a porous material instead of a solid insulator that exponentially increases the capacitors' effectiveness.



Product/services prototype on the road (left)

Magnetic resonant coupling is used in our products to allow receivers to use the mechanical energy produced by the piezoelectric later. A magnetic loop antenna is used to create an oscillating magnetic field which can create currents in receiver antennas. If the loops resonate at the same frequency, the amount of induced current in the receivers increases which enables more efficient power transmission at greater distances between transmitter and receiver.

Wireless charging system (below)



Operations

Initial funds will be raised through angel investments from initial team members, family, and investors as well as subsidies. Research will be carried out in our Vancouver main office and materials and part production will be outsourced to China as the costs are lower with greater production efficiency. We will supply car-specific parts to car companies like Tesla and Nissan at a 15% markup but we will not be manufacturing cars nor doing road modifications internally. Modified cars will be sold at a higher price than unmodified models and we will earn a 10% cut of their earnings. At first, we will implement our product in sections of cities, but if cities would like to expand the *PiZOOM*

network, we will offer a 10% discount if they only want an expansion but a 25% discount if they want to implement the system city-wide.

Marketing

Our target market consists of electric car manufacturers and city governments. We will rely on relationship building to gain notoriety and reach out to interested groups by email regularly to promote our products and services. To further publicize our products, we will create promotional videos and animations to attract interest and gain virality to prove traction so governments and companies will be more inclined to partner with us. In addition, we will have a website and social media accounts where we will advocate for sustainability.

Strengths: Our product is self sustainable (except replacement of broken parts is needed) and does not require additional electricity when installed properly and used as intended. Thus it is eco-friendly, sustainable, and will cut gas and electricity costs for both the city and its residents in the long run. No other companies provide a service quite like ours.

Weaknesses: Since our product will be used for entire cities, it will be extremely costly to implement. In addition, cities may not be open to having their roads under construction for weeks or months while our product is being installed as it may be too inconvenient. Also, we are selling directly to city governments and car manufacturers only.

Opportunities: The variability in car manufacturers and cities in developed countries allows us many opportunities to gain customers and partners to work with.

Threats: Pavegen uses tiles to generate usable energy exists and they have not yet expanded to utilizing cars in the way we have, but they are more established than we are.

Finance

Detail	Year 1	Note	Year 2	Note	Year 3	Note	Year 5	Note
CASH INFLOW								
Cash on Hand								
Municipal Government Sale	$800,000,000	12km2	$1,600,000,000	24km2	$3,200,000,000	48km2	$6,400,000,000	96km2
Wireless Charging Unit Sales	$960,000	2,000 Units	$4,800,000	10,000 Units	$24,000,000	50,000 Units	$96,000,000	200,000 Units
Care Sale Benefits	$10,000,000	2000 Cars	$50,000,000	10,000 Cars	$250,000,000	50,000 Cars	$1,000,000,000	200,000 Cars
TOTAL CASH INFLOW	$810,960,000		$1,654,800,000		$3,474,000,000		$7,496,000,000	
EXPENSES								
Construction cost (Road and Car Parts)	$120,000,000	12km2	$240,000,000	24km2	$480,000,000	48km2	$960,000,000	96km2
Material cost (Wireless Charging System transmitter, Piezoelectric layers)	$420,000,000	0.35/cm2	$840,000,000	0.35/cm2	1,680,000000	0.35/cm2	3,360,000,000	0.35/cm2
Cost of Wireless Charging Receiver	$800,000	2,000 Units	$4,000,000	10,000 Units	$20,000,000	50,000 Units	$80,000,000	200,000 Units
Gross Wages (Engineers, Research Team)	$2,000,000	20 Staff	$3,000,000	30 Staff	$3,500,000	$35 Staff	$5,000,000	50 Staff
Gross Wages (Marketing)	$525,000	7 Staff	$750,000	10 Staff	$900,000	12 Staff	$11,250,000	15 Staff
Advertisement	$2,000		$4,000		$10,000		$20,000	
Legal Fee	$6000		$6000		$6000		$6000	
Product Innovation	$1,000,000		$5,000,000		$10,000,000		$12,000,000	
License Fee	$330		$330		$330		$330	
TOTAL EXPENSES	$544,333,330		$1,092,760,330		$2,194,416,330		$4,428,270,330	
NET PROFIT BEFORE TAX	$266,626,670		$562,039,670		$1,279,583,670		$3,067,729,670	
TOTAL TAX	$66,656,667.5	25%	$140,509,917.5	25%	$319,895,917.5	25%	$766,932,417.5	25%
SUBTOTAL	$199,970,002.5		$421,529,752.5		$959,687,752.5		$2,300,797,252.5	

Conclusion

With the unique, eco-friendly, and greatly scaled implementation of existing technologies, PiZOOM will raise the bar for intercity sustainability and greatly reduce automotive pollution worldwide.

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