WILEFKO

Wave Energy

Extracting kinetic energy from ocean braking waves

GENERATE ELECTRICITY AND SEAWATER DESALINATION

Proyecto apoyado por CORFO sueña emprende crece

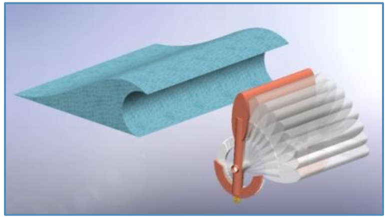
Gobierno de Chile

WILEFKO

- Our primary goal, is to develop a world-class business to meet the demand for clean and renewable energy, with high returns for our investors.
- We offer participation to one or more strategic partners for international deployment of our technology.
- Our project offers real opportunities to participate, by providing funds to develop the technology, obtaining paybacks and returns for these contributions.
- Satisfy part of the demand for water and electricity of 3500 isolated communities in Chile, with small-Size Generation.
- We seek to establish the short test term partnership, in order to build the first plant of 20 MW in Chile.
- We create for the formation of WILEFKO SPA, a joint stock company, which will be responsible for implementation and logistics to achieve adequate margins and high return over investment to our shareholders

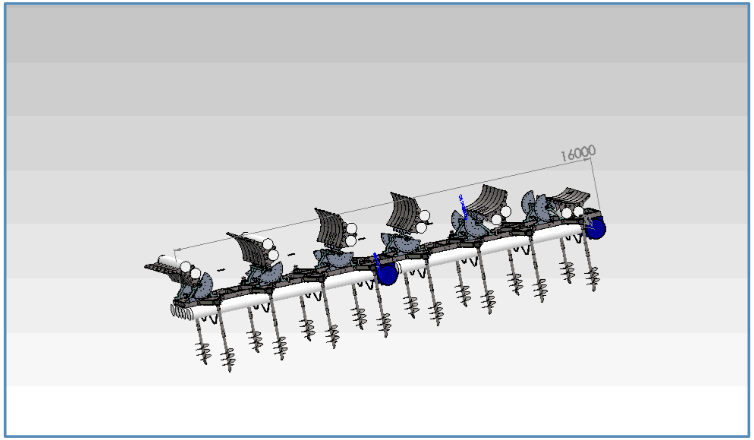
Wave system composed of oscillating bodies with an intermediate stage of accumulation of compressed air to generate electricity and seawater desalination

The estimated energy and power based on those laboratory results are as follows: for a 20 MW plant located 1000m away from the coastline, it can obtain averaged energy of 175,000 MWh/yrs in Chile, If we apply the price of cost margin at $US 140 per MWh, its generated income will be $US 35 MM per year.



Begin-2011

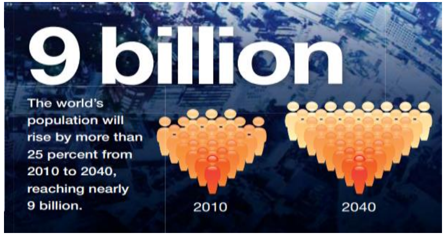
Next-2015



Exclusiveness Rights over the technology until year 2031, in Chile and Worldwide, for 27 country.

WILEFKO

MARKET



2010

- **1500 MM No electricity ****
- **800 MM waterless ***
- **2.600 MM without sanitary services**

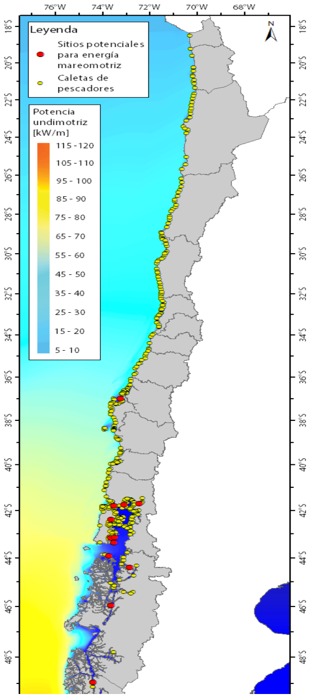
2040

- **Increase 2.400 MM ****
- **Power demand16.000 TWh/ys****
- **Residential consumption 75%****

• Source : Water Sanitation Health, WHO/UNICEF joint , monitoring report 2012. Levels & Trends in Child Mortality report written by OMS y UNICEF, 2012

Chile

- **Price: Substation Quillota average US$237 MWh , 2014**
- **20% /25 ERNC, law 20.257**
- **Location potential 3,500**
- **4200 Km coastline**
- **240.000 MW available**
- **NCRE demand, 23.000GWh/Yrs, 2025**
- **NCRE potential Market US$8.700 MM, 2025**



- Empowered citizens with higher conscience of environmental pressures are demanding clean and not contaminating sources of energy. Thus, by 2050, renewable energies will be the dominant sources of energy. Figure 8-2.
- Estimated incomes from ocean energies at commercial stages by year 2030, are shown in fig 4-2 y 4-4. Market share near 5% by year 2050, considering the worldwide energy matrix.

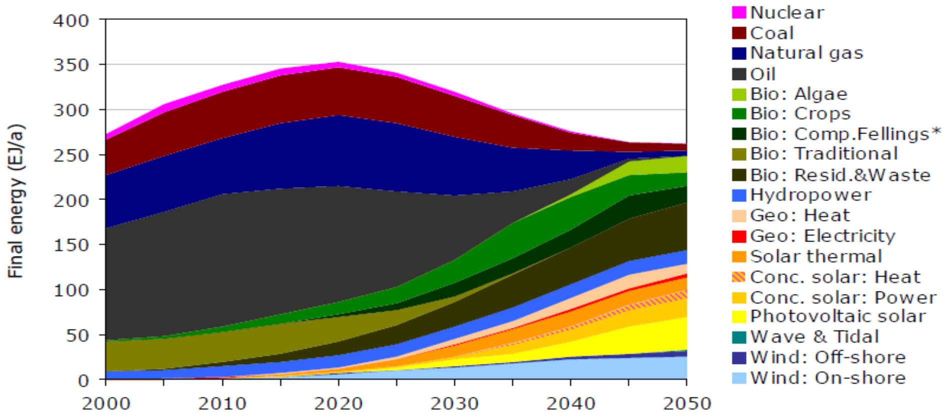


Figure 4 - 2 Global energy supply in the Scenario, split by source. (*Complementary fellings include the sustainable share of traditional biomass use.[25])

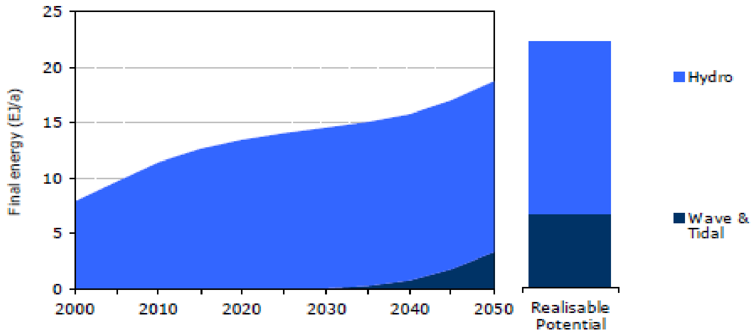


Figure 4 - 4 Global deployment potential of hydro and ocean power. (Left: Evolution of deployment potential over time, right: Maximum feasible potential)

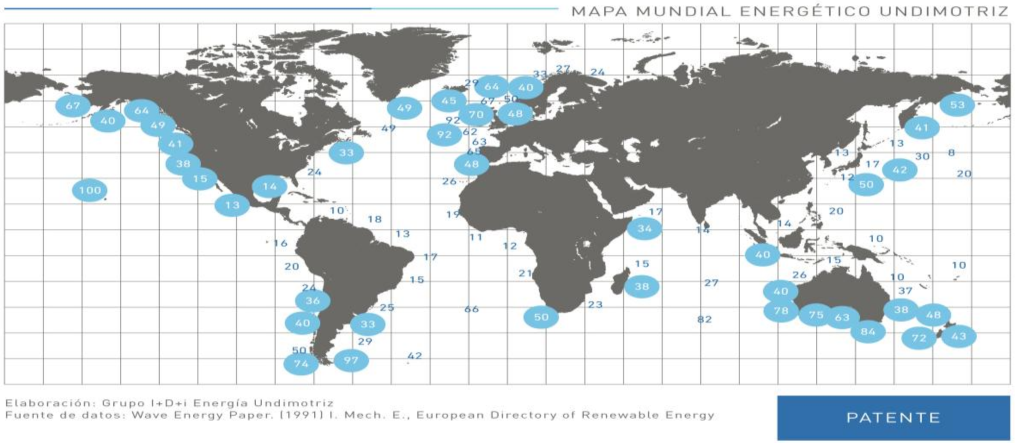
Wave & Tidal energy 2050
5% = 800 TWh/yrs

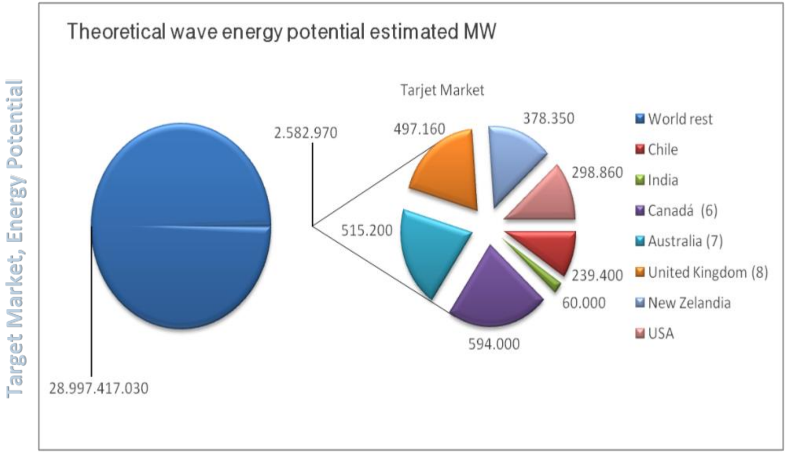
Soucer :the energy report - 100% renewable energy by 2050
WWf, this report has been produced in collaboration,with: ECOFYS, OMA ,published in january 2011 by WWF
http://awsassets.panda.org/downloads/the_energy_report_lowres_111110.pdf

- There aren't any dominant wave energy projects in the international market yet; most are at experimental stage or at early stages of commercialization
- Light blue circles identifies the international locations of economic interest, over 25 KW power per meter.

28.000 TWh/yr

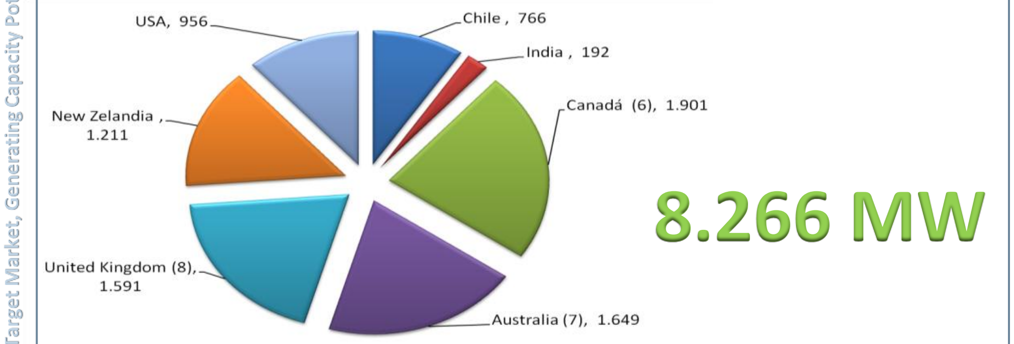
Annual net theoretical coastal power worldwide wave energy**





Installed capacity according to Wilefko efficiency **32%** de Wilefko

Calculus based on 1% of use of coastline***



meeting the energy consumption of over 8 million families and **avoiding 56 million tones of CO2 emissions per year.**

*** References

Note:** The results presented in Mork et al. (2010) regarding the overall theoretical global potential for wave energy are consistent with other studies (Cornett, 2008).

Countries, satisfy current domestic demand

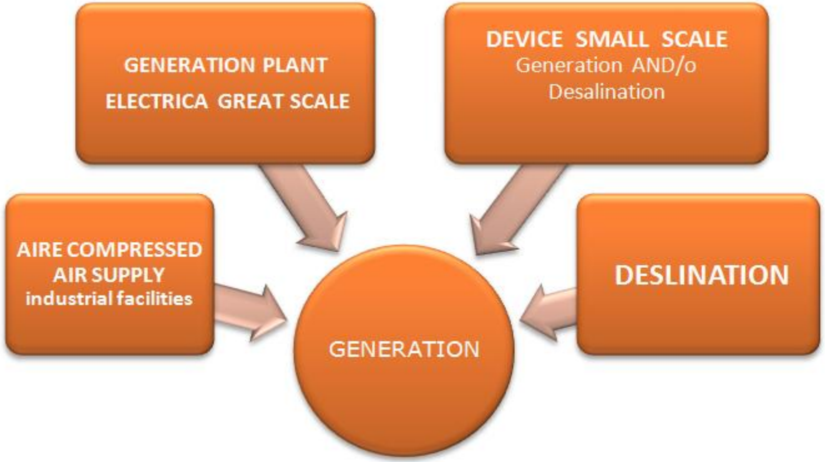
	Population total Millones (1)	Electric power consumption per capital KWh (1)	people without electricity MM 2013 (1)	Consumption GWh/yr anuales 2012 (1)	Generaction electric NO fósil % (1)	Average price US$ cent/KWh anual (2)	Electricity for industry MWh US$ (3)	Electricity for households MWh US$ (3)	Electricity demand 2025 anuales MWh/yr (11)	Electricity demand 2040 anuales MWh/yr (11)	longitud de costa Km(4)	Potencial Total annual wave energy TW/yr (12)
Target Market Electric												
Chile	17	3.568	0,10	62.316	5,47%	16	126,70	185,38	130.235	288.060	4.200	1.049
India	1.237	684	309	846.024	2,98%	19			2.009.533	5.101.624	6.000	263
Canadá (6)	35	16.406	s/d	572.239	22,87%	8			757.534	1.024.702	11.000	183
Australia (7)	8	10.720	s/d	90.717	1,85%	21			134.925	338.686	25.760	1.300
United Kingdom (8)	63	5.516	s/d	348.783	10,60%	20	134,17	220,74	439.847	564.676	12.429	230
New Zelandia	4	9.399	s/d	41.665	33,75%	22	94,34	231,76	56.035	77.098	15.134	1.657
USA	314	13.246	s/d	4.158.119	11,99%	12	66,98	118,83	5.258.468	6.771.187	19.924	950
West Coast (5)												250
Alaska (5)												620
Hawaii (5)												80
TOTAL Market				6.119.863					8.786.578	14.166.033	94.447	5.632

Source: Developed in-house

References

(1) The World bank http://www.worldbank.org/
(2) IEA International Energy Agency 2011 http://www.iea.org/
(3) Key World Energy STATISTICS 2013, International Energy Agency
(4) http://es.wikipedia.org/wiki/Anexo:Pa%C3%ADses_por_longitud_de_costa
(5) Mapping and Assessment of the USA Ocean Wave Energy Resource,EPRI, Electric powar reseach institute, 2011// Bureau of Ocean Energy Management (BOEM)
(6) BEDFORD INSTITUTE of OCEANOGRAPHY, Her Majesty the Queen in Right of Canada, 2009,pag 7
(7)Copyright Carnegie Wave Energy Limited © 2013// The potential of wave energy,Jenny Hayward and Peter Osman, CSIRO Energy Transformed Flagship,© 2011 CSIRO
(8) Carbon Trust Foreword to UK Wave Resource Study.Carbon Trust and AMEC Environment & Infrastructure UK Limited October 2012 "
(9) Nine month average value of the incident wave power is 10 kW/m and peak monsoon average is 20 kW/m, Center for th Research and Environment agement, Cochin 17, India
(10) Se aplica efciciencia del 32% de Wilefko disponibilidad recurso 50%
(11) Proyección basada en la tasa de crecimiento PIB promedio de los ultimo 10 años, Banco Mundial
(12) Recommendations for Chile´s Marine Energy Strategy – a Roadmap for Development, Aquatera Ltd, United Kingdom

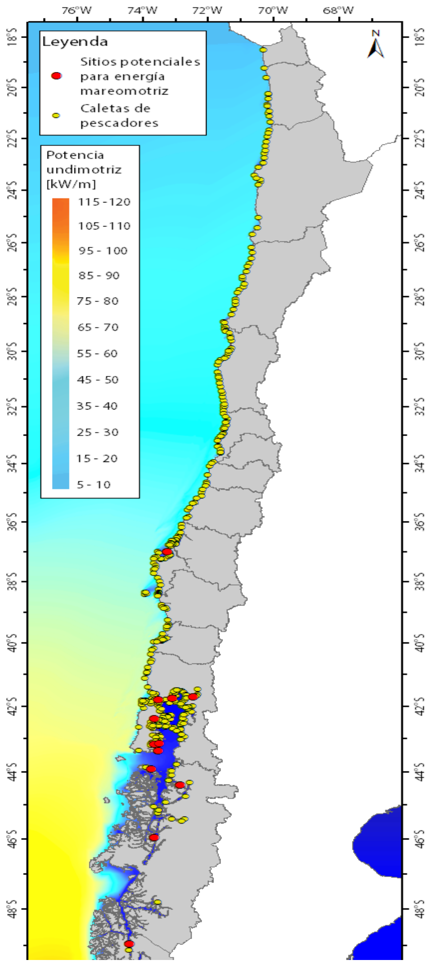
GENERATION MODEL



Generation half size

- Designed for isolated and insular Chilean areas.
- To generate electricity and / or fresh water. and / or Lighting coastline.
- Location potential 3,500
- Provide water pumping tasks at low cost for aquaculture. (salmon industry).
- coastline lighting for community

Potential Market



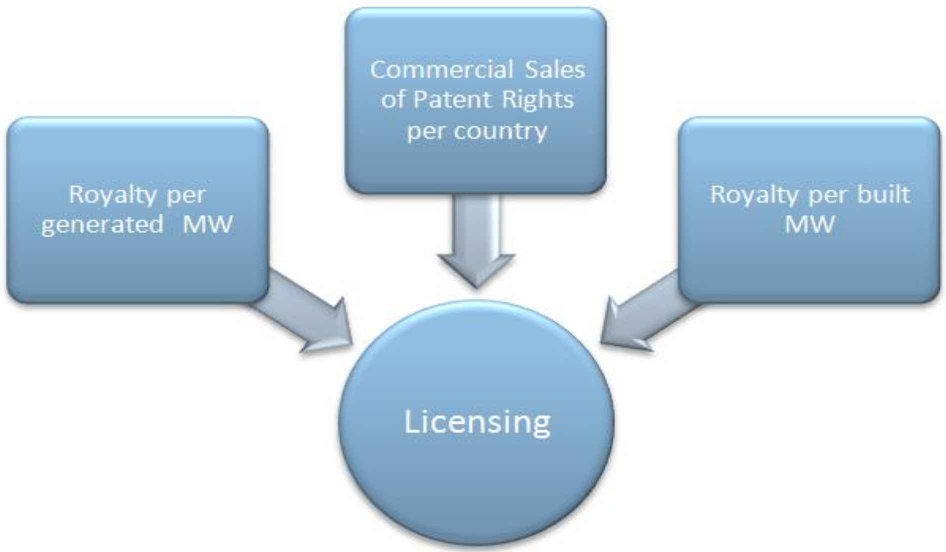
Project Generation great size, Plant to up 20 MW power

National: Free Customers, Generator business, SIC spot market or PMGD, Salmon farms, Mining attributes sale

Annual income : MMUS$ 22.000, 2010 → 5% ERNC, law 20.257 or 20/25 ~ 23.000GWh/yrs

Demand Proyection 2020 : 98.000 GWh

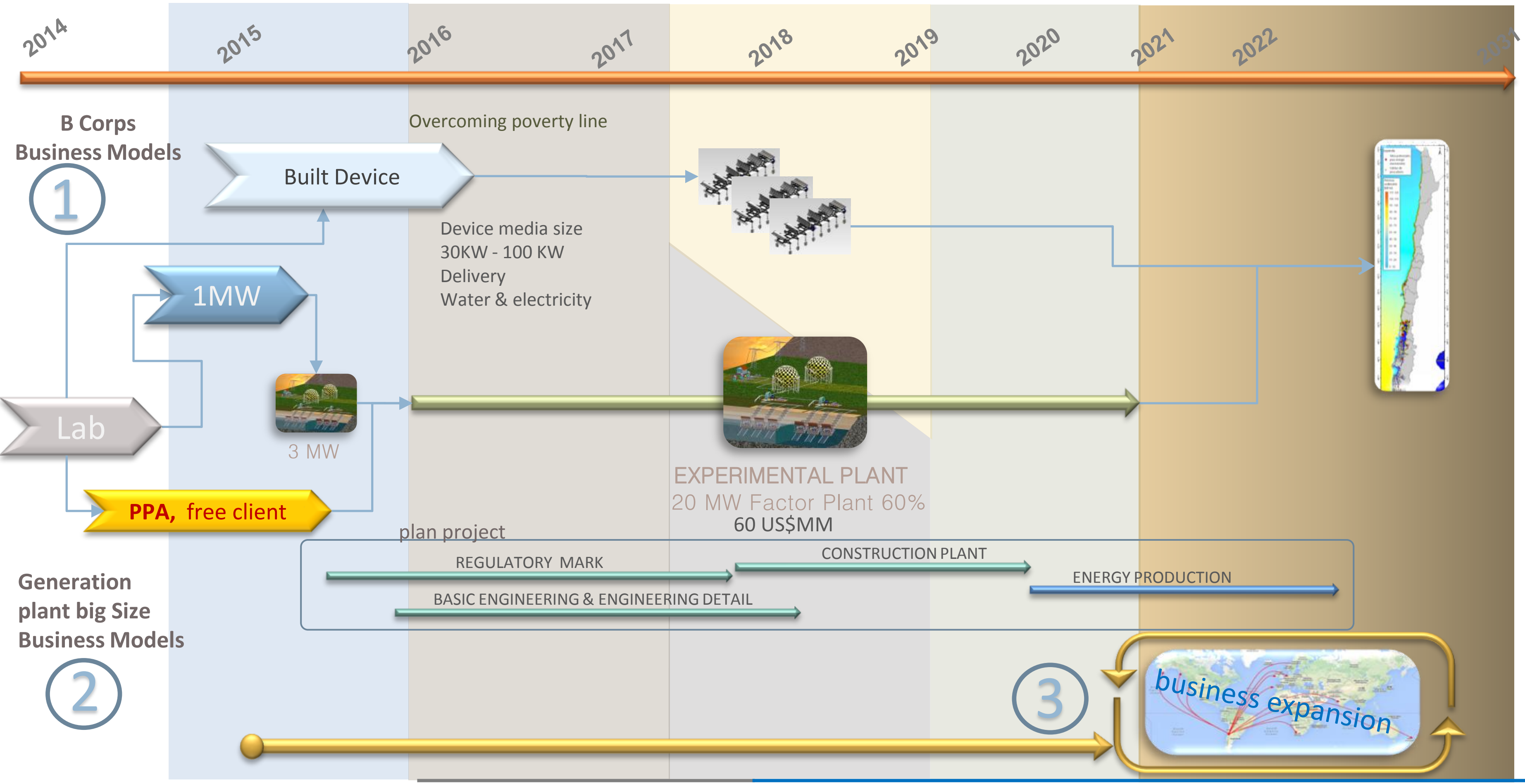
LICENSING MODEL



Knowledge is tradable !!

- Technology Package
- Patent
- Trademark Registration
- Procedures
- Another Know How
- Play, Display It, Modify It, Use It

STRATEGY PLAN IN 3 STAGES



NATIONAL ENERGY POTENTIAL

NATIONAL WAVE ENERGY POTENTIAL

12x

NATIONAL POTENTIAL INSTALLED

Tecnología ERNC	Potencial Optimista (MW)	Potencial Conservador (MW)
Undimotriz	**240.000**	**164.000**
Solar	228.000	100.000
Eólica	40.000	7.200
Hidroeléctrica	23.000	20.400
Geotermia	16.000	3.300
Biomasa	13.700	470
Minihidro	1.400	1.400
Mareomotriz	800	600
Biogás	400	400
Total	**563.300**	**297.770**

Fuente: Estudio UTFSM 2008: Estimacion de potenciales brutos al 2015, ENAP 2005, Estudio CNE-GTZ 2008, CNE-GTZ 2007, CNR y MEN 2007-2010, CNE 2009, Estudio Garrad Hassan 2009 y Baird & Asociados.

Sales equipment model

6 train sale palette 100KW power to:

- •Compressed air delivery
- •Delivery of energy storage
- •Pumping seawater
- •Energy without storage.
- •Factor plant 60%

Sale of energy and power model

- •1MW plan to sell power to the grid under the PMGD or spot market or PPA
- •Factor floor 50% -70%
- •MW built cost US $$ 3.0 MM
- •MWh annual yield for 1 km of coastline 175GWh, with 186 trains per km app.
- •Monomic sale price $ 150 MWh

Alternative products

- •Seawater desalination
- •Coastal edge lighting

WILEFKO

TECHNOLOGY

By observing nature

video link

Energy from each wave could be harvest more than once

We have 3 years of research with real tests at sea

Empirical

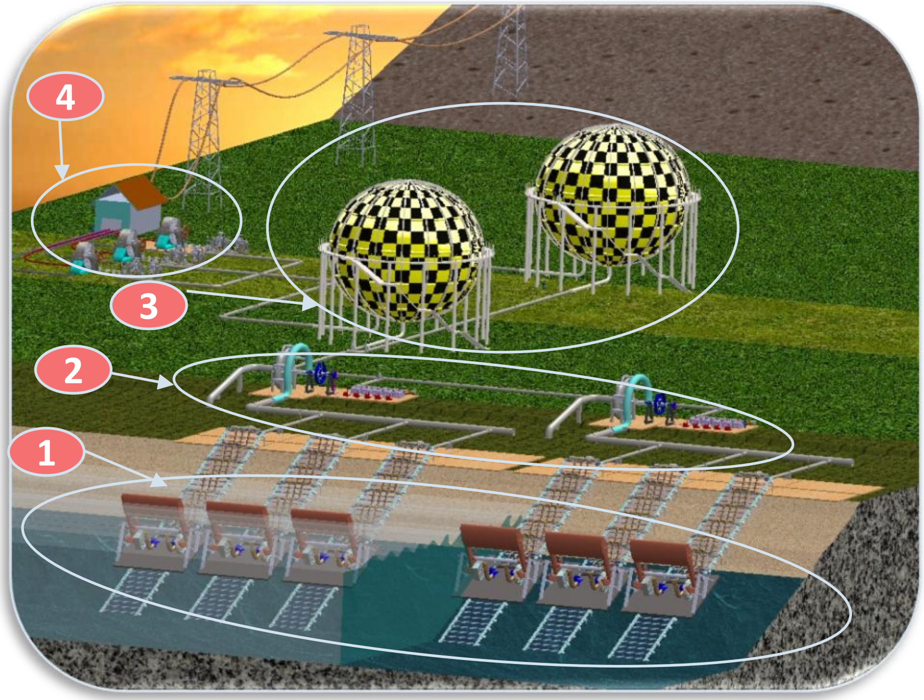
video link

Our invention was developed starting from the observation of the behavior of waves in real nature. Once a breaking wave hits an obstacle like columns of a port deck, the wave has enough energy to recover itself from that hit and continues hitting other columns, as it can be seen in any port.

So, the idea we worked on was to harvest each wave several times, with group of vertical flaps, arranged as a train facing the breaking waves coming to the coastline.

The whole generation facility is composed of 4 different stages:

1. **Harvest stage:**
   formed by the group of oscillating flaps arranged as groups of trains of flaps running over rails, in front of the coastline, facing the breaking waves. Rails allow adjusting each train to follow tide level. At this stage we just pump water to the beach.
   To simplify the figure trains of flaps are not shown in the figure.
2. **Compression Stage**
   Pumped water is used as energy source to generate compressed air, that then is use as an energy deposit of stored energy .
3. **The Storage stage**
   Compressed air is stored as a great warehouse of energy, in a similar approach of hydro electrical dam. To simplify explanation spherical big ponds are shown as part of the facility, but can be replaced in the real project just by the tube pipelines carrying the air to the final consumers.
4. **Generation/Distribution Stage** (transformation)
   Compressed air can be deliver according to commercial agreements, using a pneumatic motor and a generator.



Two direct spin offs are immediately achieved from our concept and invention:

1. Pumped water over the coastline could be used for Desalination projects, cooling application for fan purposes.
2. Compressed air can be commercialized as raw material for a wide range of applications, e.g., mining camps

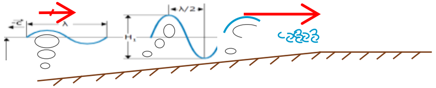
TECHNOLOGY

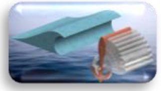
"Water wall" moving at 30 Km/h
800 times denser than air
Energy here is more concentrated

Wilefko can capture more energy because its is the nearest to the coast compared with the rest. The better power efficiency of our design is obtained from 2 m waves, who in turn are the most predominant wave sizes found in Chilean coastline

Waves

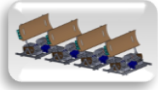
Horizontal vector
Wave compression near coastline





Concave Impact Flap With flotation

57% efficiency (CFD Star-CCM+)



Train of flaps

Successive flaps

$$\sum_{i=0}^{n} a(1-b)^i$$

a= power; b=% loss, i=number of flaps

2-3 times wave energy is captures from the same wave, improving harvest efficiency of the coastline

Storage

Available energy according to demand

Higher Firm Energy Factor

Sale price per MW raises from 30% to 200%,

Rails on coastline for the trains of flaps

Allow adjust vertical position of flaps according to tide level

Keep down maintenance costs, avoid use of vessels

Allows 10% efficiency increment

Just 18% of investments in under sea water, thus, lower investment risks

Flexible Business Model

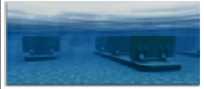
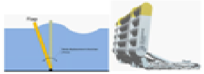
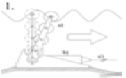
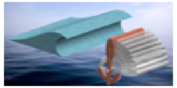
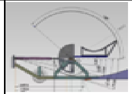
1. With Storage stage → Power Model or stabilization
2. Without Storage → Generation Model
3. Portable devices, with 300KW capacity or lower, for isolated zones or home application over the coastline
4. **Desalination of sea water**

28% of investment with direct generation

At Atacama region there are 74 isolated locations

Los Lagos region: 67 locations with higher isolated index's.

COMPARATIVE CHART

Technology Name	Images	Angular Variation	Flap Design	Surface of Impact	Deep of Operation	Declared Efficiency
Wave Roller Devices		 40°	Medium	26 m Wide, 12m high --> **1,6 KW m2 Total unit 500 Kw**	10 to 15 m	The efficiency of the hydraulic system is about 60 % (depends of operating point), so 500 kW per unit absorbs about 830 kW from the waves.
Aquamarine Oyster		 35°	Medium	26mx 12m --> **1,5 KW m2, Total unit 800Kw**	12 to 20m	Oyster 800 represents a step change in design, size and power output. The oscillator is about 50% wider (26m) in comparison to Oyster 1, but produces about 50% more energy because of the hydrodynamic design optimization (a)
Bio Power Systems		 35°	Medium	Type-B: 3mx2.5mx2.5m, 4kW --> **Total unit 1,5 KW m2**	12 to 300m	50%
WILEFKO		 135°	High	1mx1m --> **5,9 KW m2**	5 to 10m	57% according to computer aid modeling with CFD Star-CCM+ software
Comments		The type of Wilefko wave palette allows greater rotation	Our concave parabolic shape design of our flaps facing the waves allows Wilefko to concentrate energy from energies becoming a better capture method, see Fig 1.	Capture performance for 1 m² flap facing 2 m waves, is calculated. 2m wave was chosen, due to the fact that is the most common high found in Chilean coastline, see Fig. 2e, Fig. 1	Depth of the location of generating devices is a key parameter, because in deeper waters maintenance costs are higher	This values are only referential. Capture method of these technologies is unknown.

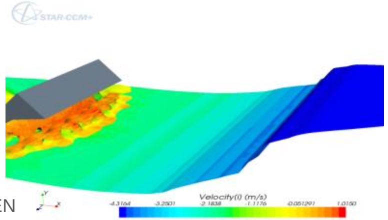
Source : house and *Energies* ***2013,*** Centre for Marine Technology and Engineering (CENTEC), Instituto Superior Técnico, Technical University of Lisbon,

WILEFKO

INVESTIGATION

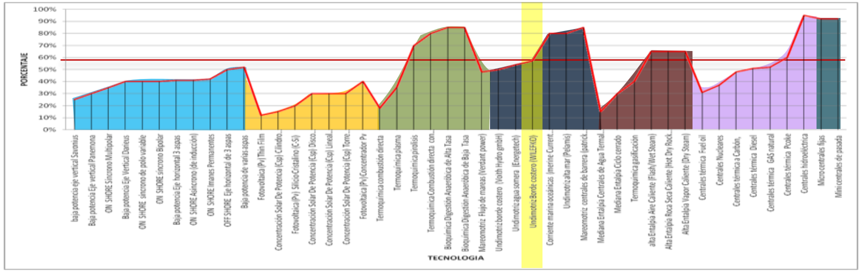
how many energy there is available in breaker zone?

Theoretical



Sourcer : TECSSEN

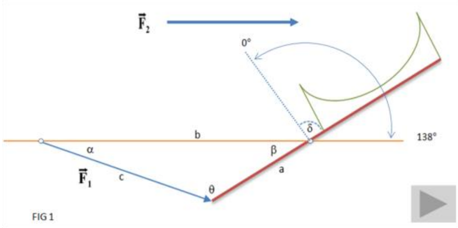
Wave Height : 2 m
Flywheel inertia Recommended : 60 kg / m2
Energy : 495 Joule
Power :52 W
Efficiency : **57%**



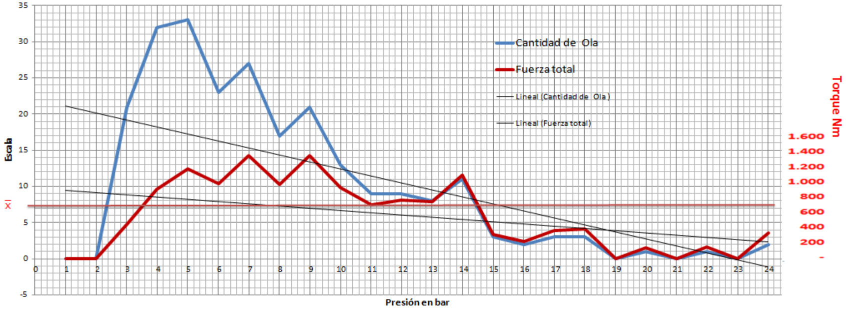
Fuente : Generación propia

Eólico	Solar	Biomasa	Oceánicas	Geotermia	Tradicional	Minihidro
40%	25%	62%	70% Marea 61% Undi.	47%	53%	92%

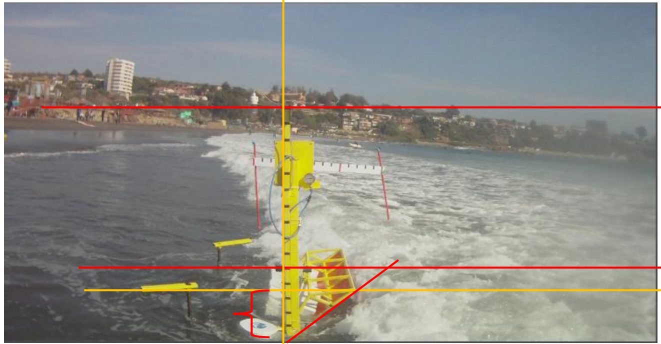
Empirical

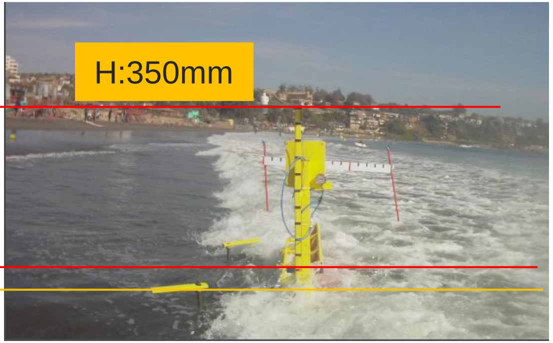


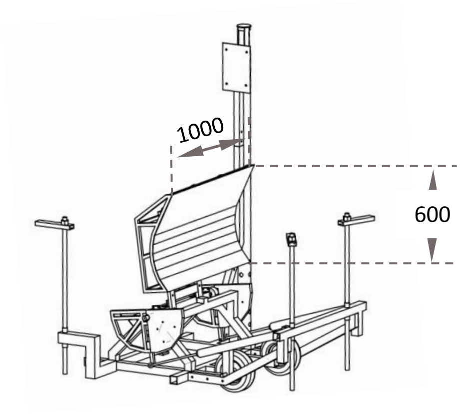
Waves / hours : 392
Period : 2.3 sec.
Frequency : 0.106
maximum Pressure : 24 Bar

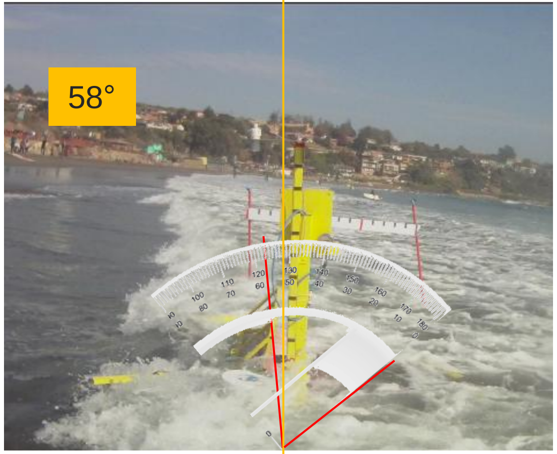


Field Test





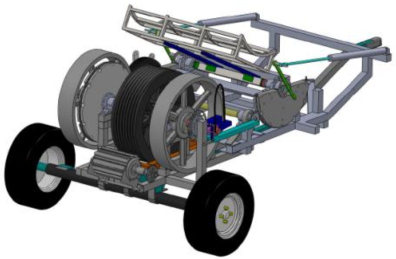




Pressure 5,08 bar

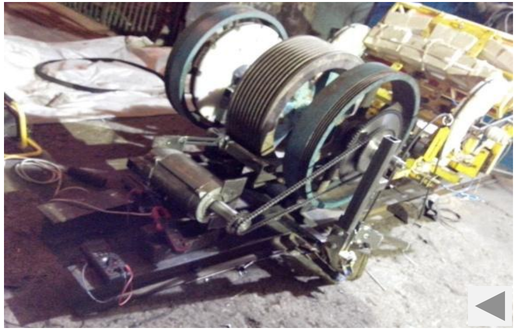
That is, for a wave height of 90 cm with a thrust of 712 kg in less than 2 seconds, and torque of 236 NM,
for an area of 100cm x 60cm and 80 cm depth

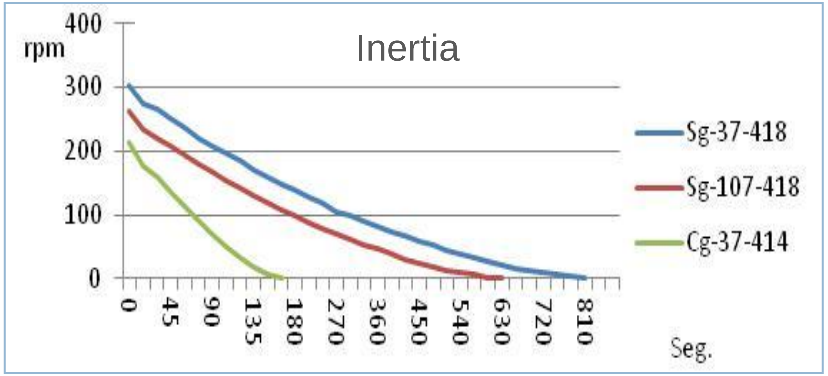
	H (cm)	bar	N	Nm
	35	**5,03**	126	38
	60	**15,88**	441	128
High power ➡ working depth 80cm	**91**	**24,19**	**712**	**213**



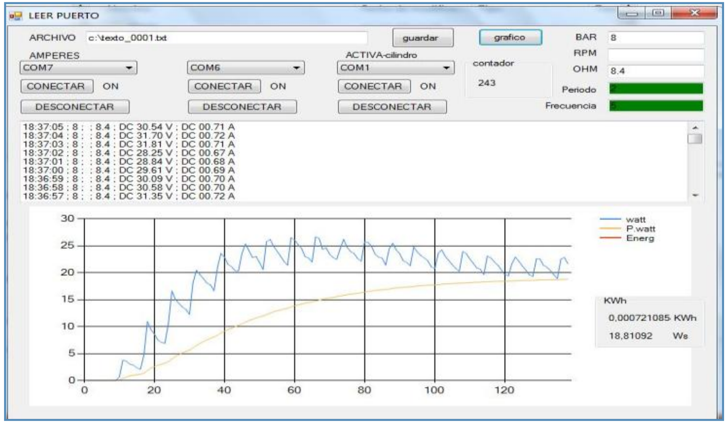
LABORATORY RESULTS

Working pressure	5-6 bar
Simulated wave height	35cm
Flywheel inertia	420 kg
	300 RPM
Power	120W
AC Generator	3kW





Power messure

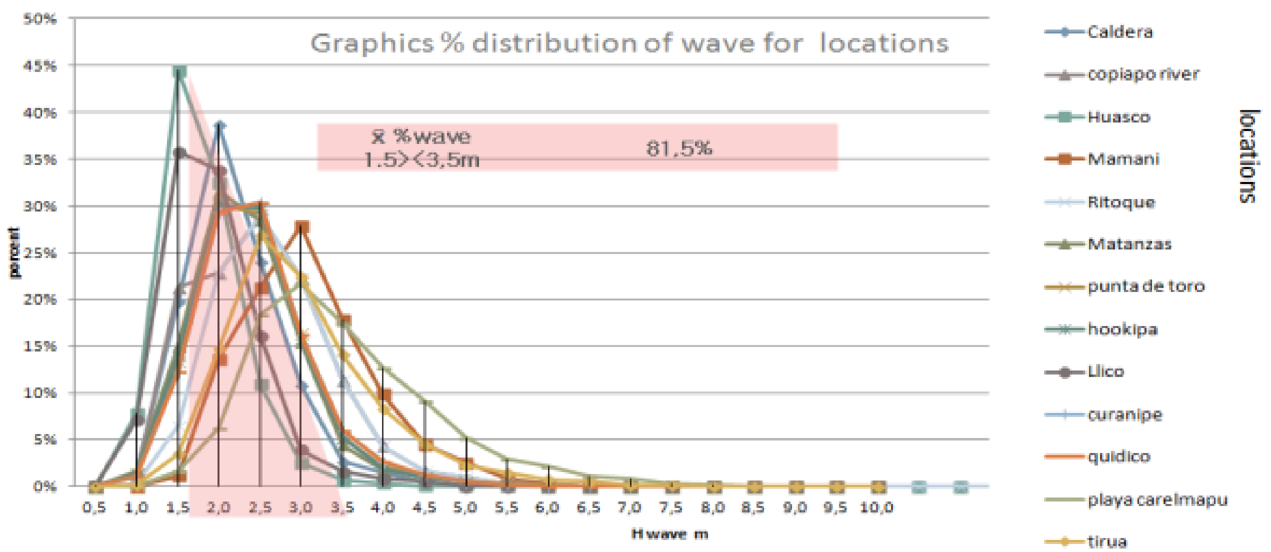


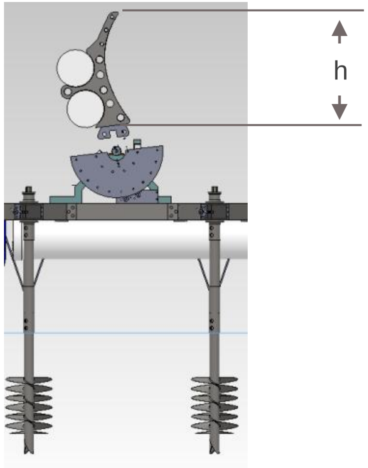
80% of waves in Chile in the range of 1.5m to 3.5m; this determines the flap size

Condition Data Wave

localities	13
Resolution	3 hours
Period	2009- 2014

source: windguru





FLAP

Height	2,5m
Width	3m

Electricity Projection Average

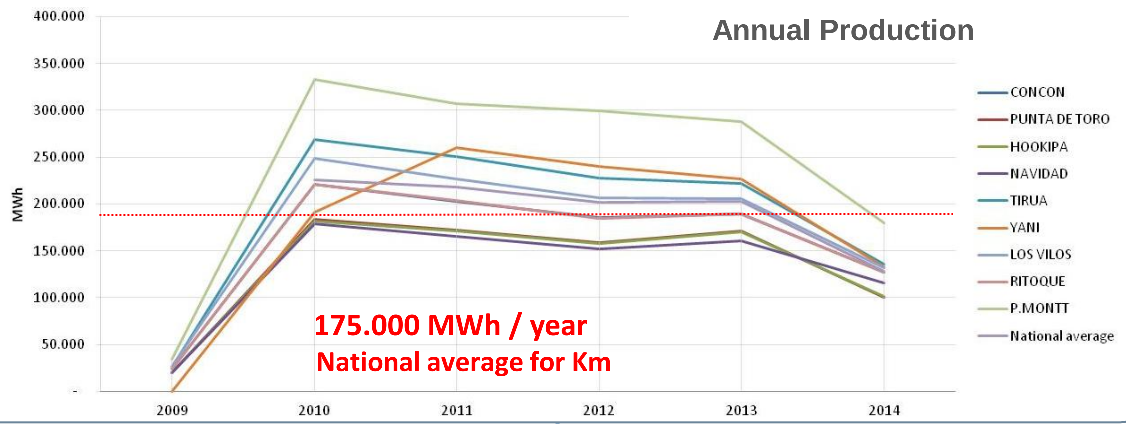
Train Power	61 KW
Energy annual	1078 MWh

WILEFKO

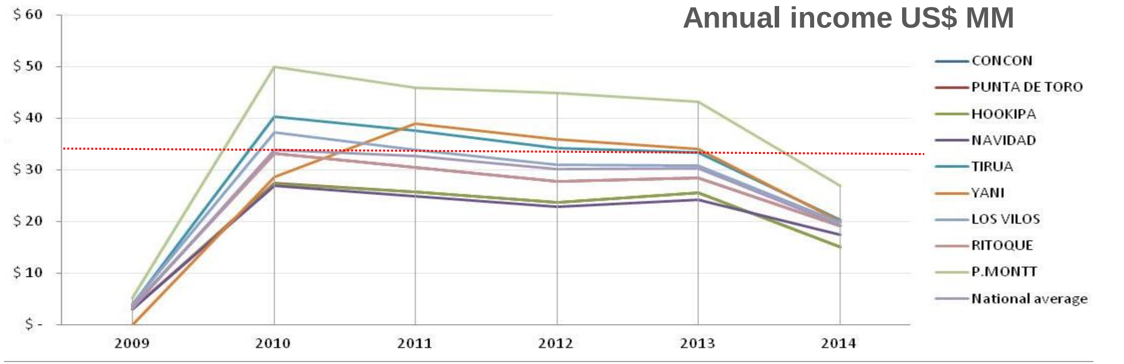
BUSNESS STRATEGY

EXPERIMENTAL PLANT 20MW

FINANCIAL VARIABLES	
Quantity	2 cluster
Cmg Price	$ 140.00 MWh
CLUSTER 500m coast	
Quantity	100 Train
Separation between trains	2m
TRAIN	
Quantity flap per train	6 Flap
Re- catch efficiency%	75%
FLAP	
Height	2.5m
Width	3m
Lab error factor.	10%



Besides applying available energy, wave forecasting global GFS (NOAA / NCEP) for the last 5 years on 9 locations, our study of wave field trials was calculated, allowing to quantify total energy production if we had 20 MW plant operating

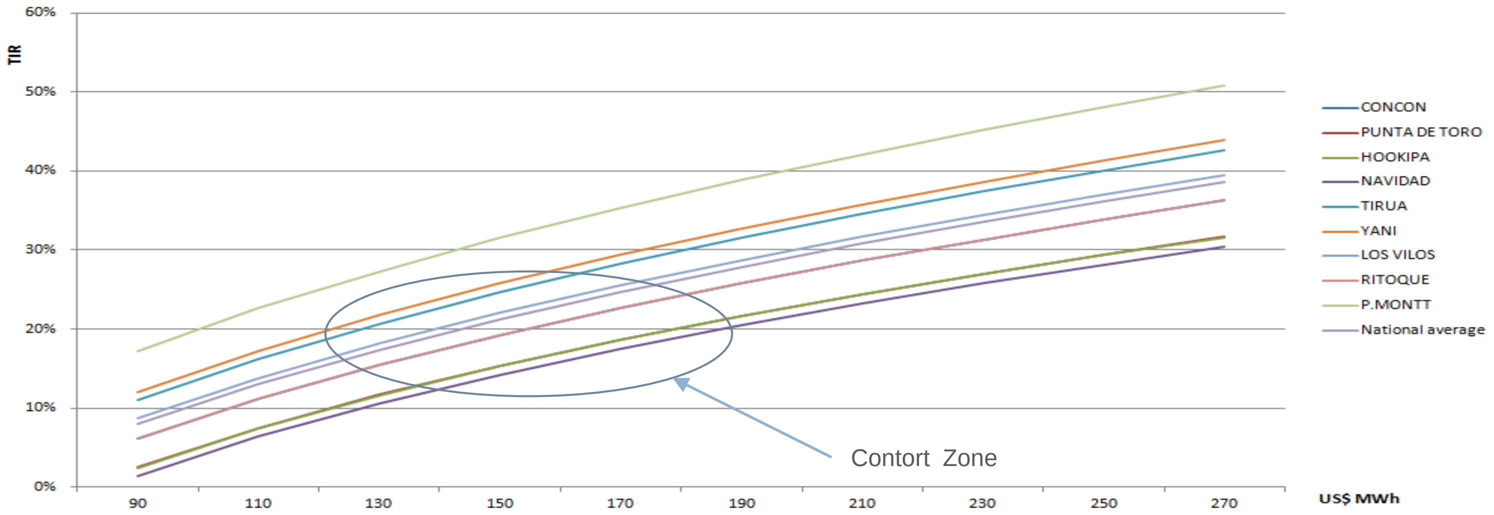


Condition Data Wave	
localities	9
Resolution	3 hours
Period	2009- 2014

source: windguru

SENSITIVITY TIR: EXPERIMENTAL PLANT 20 MW INVESTMENT

Balance Point
INVESTMENT
U $ 63 MM



To meet a required return of Business Model Generation at larger scales, 3 variables must be met

1 – ± $ 140 per MWh

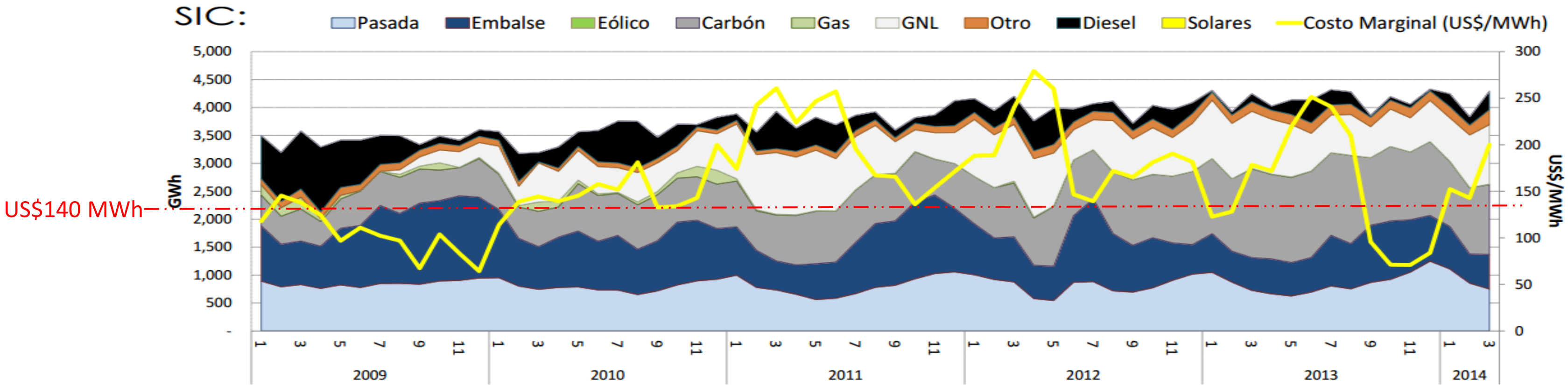
2 – Availability of power 30 kW per meter.

3 – Economies of scale, plant from 20 MW or more.

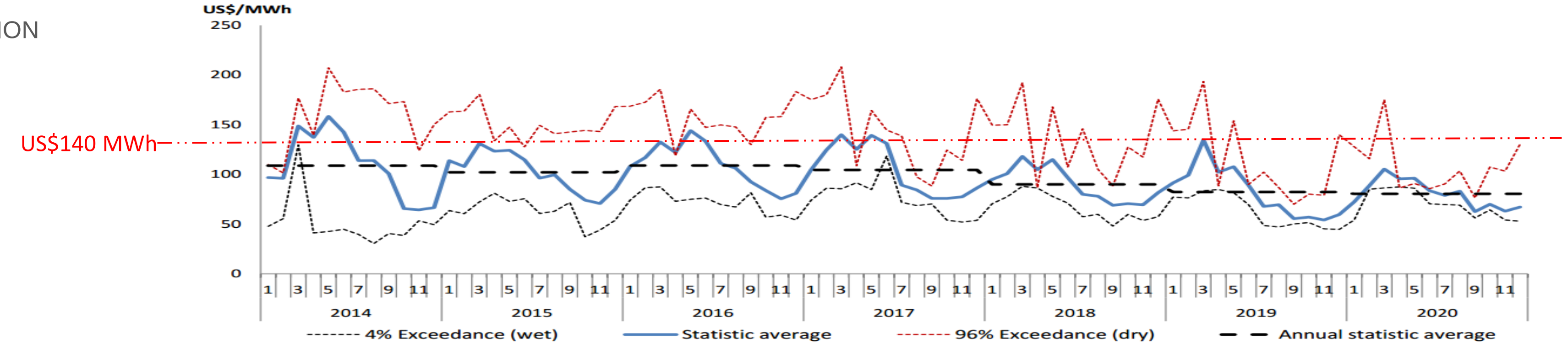
- Substation Quillota 220 kV, average US$237 MWh , 2014
- Maximum value in Chile in July 2013 US $312 MWh

CHILE : SPOT MARKET MARGINAL COST, EVOLUTION & PROYECTION

EVOLUTION



PROYECTION



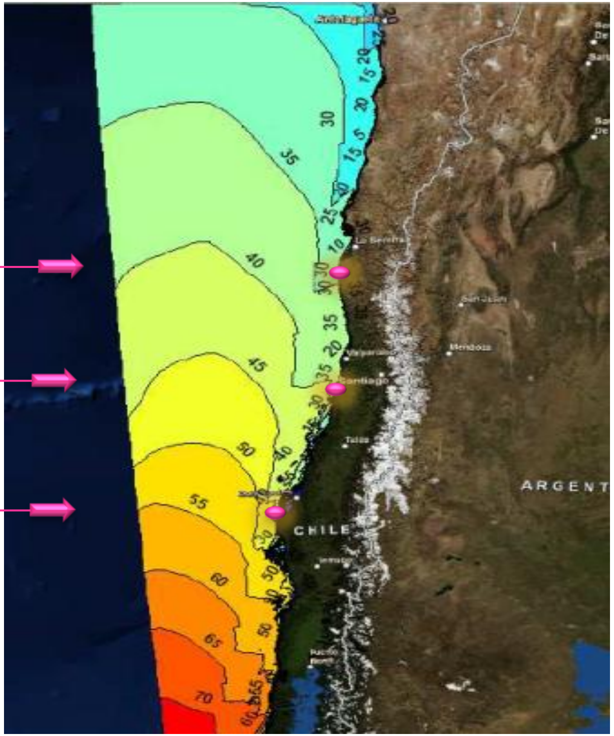
Fuente: Systep

INTEREST ZONE SELECTION CRITERIA, for Plant 20MW

- Located from Antofagasta to Puerto Montt.
- With energy potential over 35 kW per meter coastline.
- Beach not suitable for swimming, highly dangerous.
- Surf zones with a width over 100m from the beach shore up to the first breaking wave.
- Outside the urban area over 10km from city or town limits
- Inside industrial areas or ports (like mining ports)
- Maximum 30 km far from a electric power distribution plants.
- Minimum coastline front length: 1700m
- Outside of protected or ecological reserves
- Outside existing maritime concessions areas
- Maritime zone concessions available
- More than 75% of waves greater than 2.5m

PRE-SELECTION

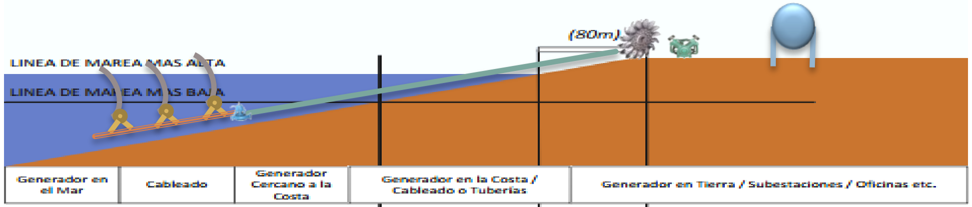
Location	Potencial
Los Vilos	→ 33 KW
Punta de toro	→ 54KW
Yani	→ 57KW
Con Con	→ 9 KW, test fields



Source Baird

Annual Energy pilot plant in MWh

	2009	2010	2011	2012	2013	2014	TOTAL	Average	Power MW
CONCON	20.206	187.490	172.149	156.609	159.900	107.723	804.079	169.037	19,30
PUNTA DE TORO	17.110	154.606	144.749	132.933	143.690	84.786	677.874	143.995	16,44
HOOKIPA	17.010	153.375	144.336	132.719	143.046	85.087	675.571	143.369	16,37
NAVIDAD	16.828	151.065	139.249	127.686	135.198	97.772	667.799	138.300	15,79
TIRUA	21.714	229.133	213.411	193.856	188.681	114.700	961.495	206.270	23,55
YANI	-	163.243	221.900	204.179	192.992	112.759	895.073	206.357	23,56
LOS VILOS	23.056	211.352	192.336	175.493	174.332	111.848	888.417	188.378	21,50
RITOQUE	20.192	187.828	172.543	156.036	160.099	107.783	804.480	169.126	19,31
P.MONTT	29.503	285.708	262.546	256.209	246.003	152.971	1.232.940	262.617	29,98
National average		191.533	184.802	170.636	171.549	108.381	845.303	180.828	20,64



ORGANISMOS RESPONSABLES:

- Ministerio de Defensa (SUBSECMAR)
- Servicio Hidrográfico Oceanográfico de la Armada de Chile (SHOA)
- Servicio de Evaluación Ambiental (SEA)
- Ministerio de Bienes Nacionales
- Autoridad Local/Municipio
- Ministerio de Salud (SEREMI)
- Ministerio de Energía (SEC)
- Departamento de Rentas y Patentes
- Dirección de Vialidad

Legislation specifies non existent
Just for approval

Average of processing 3 years

Costos y Plazos Aproximados

POTENCIALES PERMISOS REQUERIDOS:	Tiempo de Procesamiento de Aplicaciones (días)	Tasas (CLP)
Concesiones Marítimas	1 a 2 años	15,000 a 20,000
Permisos de Navegación	varios	varios
Declaración de Impacto Ambiental (DIA) o	varios	varios
Evaluación de Impacto Ambiental (EIA)	varios	varios
Permiso para arrendar o comprar inmuebles fiscales	varios	varios
Concesión para un uso intensivo de inmuebles fiscales	varios	varios
2. Permiso de Edificación	30	5,000 a 15,000
3. Aprobación De Anteproyecto de Edificación	15	<100
4.Certificado de Informaciones Previas	15	<100
5. Recepción Definitiva de Obras	7	<100
6. Patente Municipal	5	<100
7. Ocupación de caminos públicos para transporte (sobredimensión)	5	<100
8.Ocupación de caminos públicos para transporte (sobrepeso)	5	1,000 a 5,000
21. Informe sanitario	30	5,000 a 15,000
22. Autorización sanitaria para tratamiento/disposición (RISES)	60	<100
31. Autorización Almacenamiento Temporal de Residuos Sólidos	90	5,000 a 15,000
23. Calificación Industrial/Almacenamiento	60	5,000 a 15,000
24. Autorización Residuos Industriales (PAS 91)	varios	1,000 a 15,000
26. Autorización Residuos Industriales (PAS 93)	varios	5,000 a 15,000
41. Concesión Eléctrica Provisional	> 120	5,000 a 15,000
42. Concesión Eléctrica Definitiva	138 a 290	Up a 50,000
art. 138 Permiso de Aguas Residuales	varios	varios
art. 139 Permiso Residuos Industriales o Mineros	varios	varios

Nota: solo los proyectos de capacidad >3MW requieren presentar EIA para su resolución (*Resolución de Calificación Ambiental*)

Permisos del Ministerio de Salud procesados a través del SEIA (items 23, 24, 26)

Nota: La numeración se refiere al registro de permisos del Gobierno Chileno

Surcer
Aquatera Ltd / UK Foreign and Commonweath Office / P478 / Marzo 2014 / Rev 1

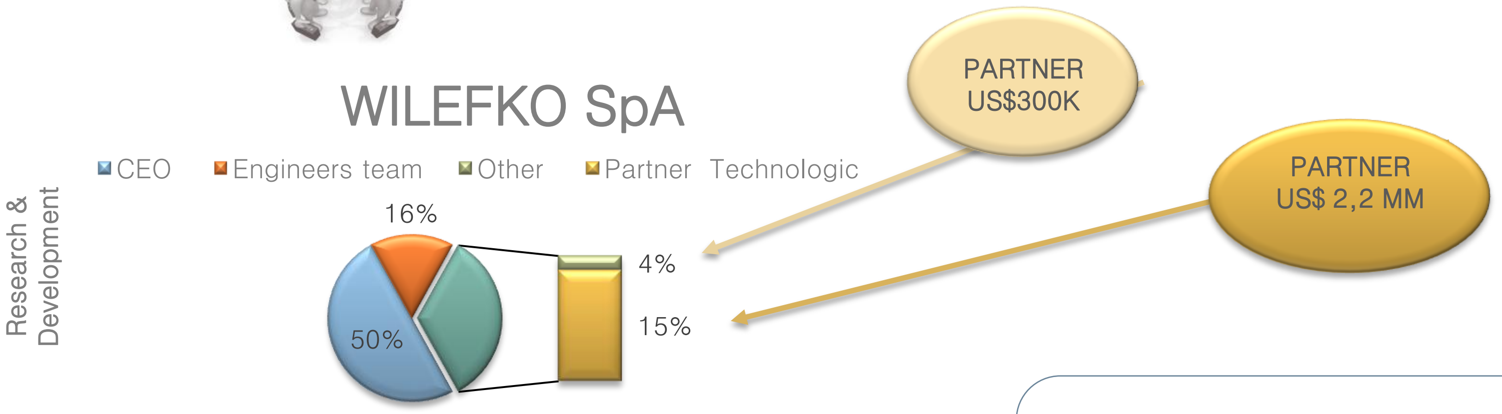
WILEFKO

INVESTMENTS

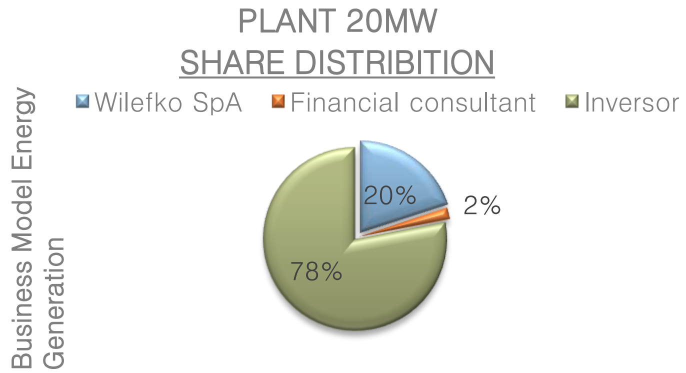
INVESTMENTS

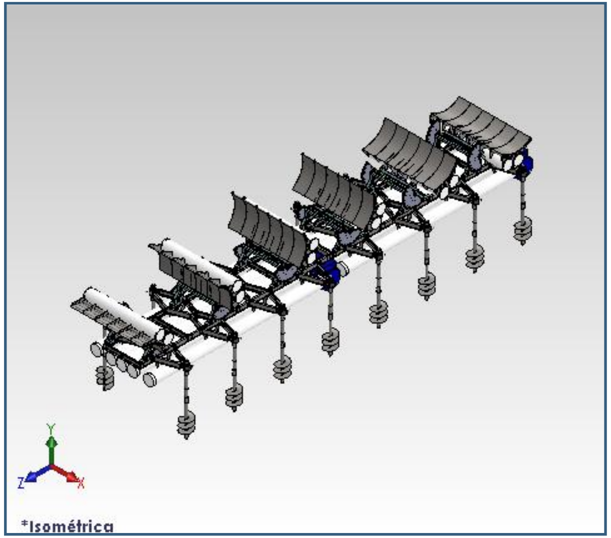
PHASES	Phase–III 30% scale model	Phase–IV Pilot model	Phase–V 20 MW Plants, Chile	Phase–VI Internationalization
COSTO PHASE	US$ 425K	US$MM 1.2	US$MM 63	
INVESTMENTS New Partner Grants	**US$K200**	**US$MM 1.2**	**US$MM 63**	
PERIOD EXECUTION	Completed 85%	18–24 month	4–5 years	
COMERCIALIZATION Intermediary sub products		PPA Local Industrial small LICENSING International Patent PORTABLE DEVICE Generation and/or desalination	PPA Local Industrial Potential join venture development of technology Cristian Peralta, Antofagasta Minerals (AMSA)	LICENCIAMIENTO International Patent GENERATION ROYALTY CONSTRUCTION ROYALTY

FIRST STEP

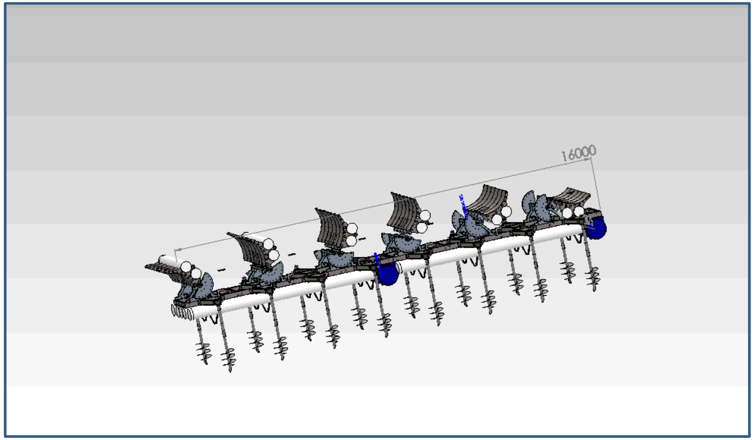


SECOND STEP





100 KW



- Mid-size generation or desalination device
- Mid-size generation device, for coastline lightning of Chilean ports, coastal counties and regional governments.

DESALINATION

PERFORMANCE		
Day	223	m3
L/seg	**2,58**	**litros**
Impacto	1.486	Personas

AIR COMPRESS

ELECTRICITY

PERFORMANCE		
Producción anual	1.078	MWh
Potencia	**61,52**	KW
Factor planta	50%	
Impacto	15	Casa 4 persona

PUBLIC ILLUMINATION

PERFORMANCE		
Potencia Led	180	W
Proyectores	**67**	**unidades**
Impacto	1,5	Km

WILEFKO

OUR COMPANY

WILEFKO, stands for "shimmering" in Mapudungun, is a wave energy project that will generate clean electricity by extracting the kinetic energy of ocean braking waves

We are an Investigation, Development, Innovation and Endeavour project (I+D+i+e). We were made up as company under the form of Society per Actions (SpA), in April 2013, with the initial contribution of 6 charter members

Vision

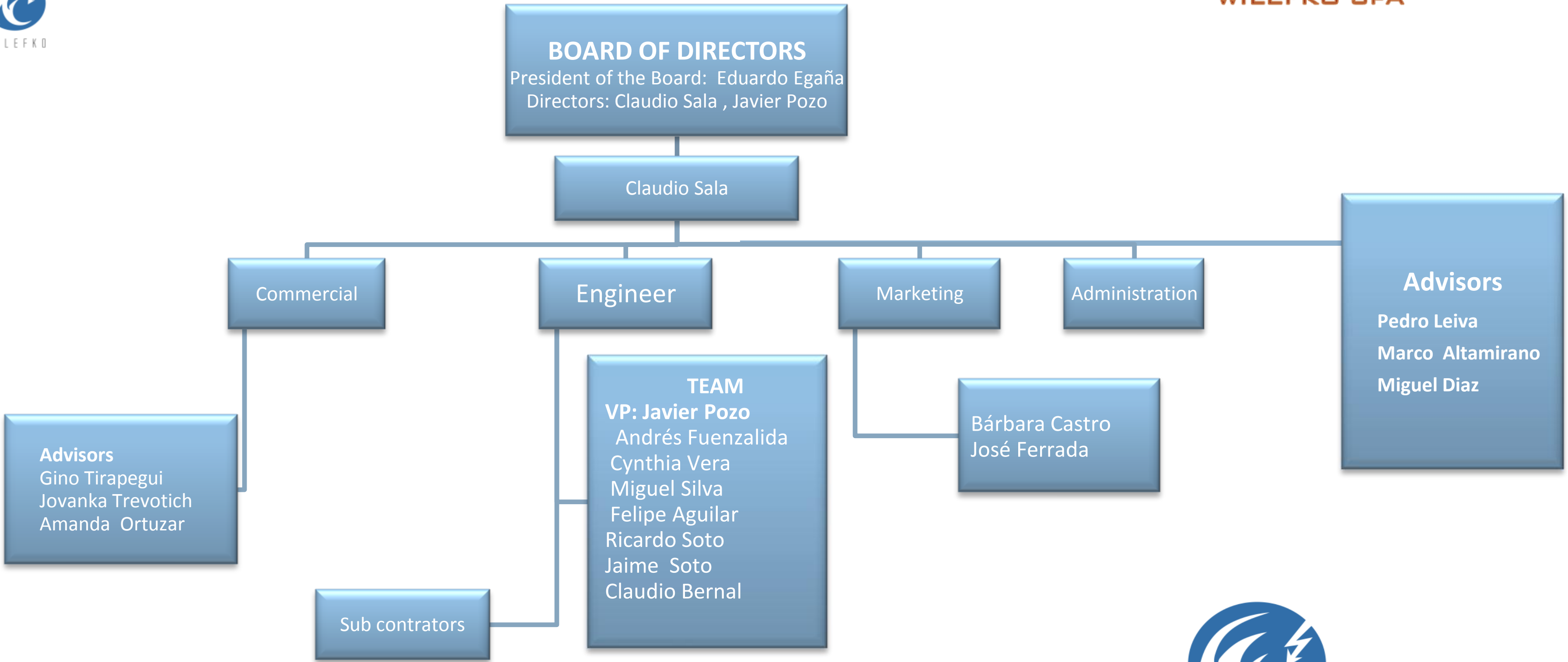
To be a company recognized because of the innovation and contribution to the clean and renewable energy, positioning the Chilean human capital in the world in this matter.

Mision

To be the first wave power technology with commercial application in the national energy matrix, and one of the leaders with real industrial application worldwide.

Brief History

- March 2011: Wilefko is born, from the very first ideas outlined with a pen in a paper napkin.
- January 2012: we got the INNOVO sponsorship, from Universidad de Santiago de Chile (USACH).
- September 2012: Consist in a team of 12 engineers and technicians, engaged with the project, sharing their specific knowledge to get success.
- October 2012: the projects won government funds from CORFO, for U$D 300.000.-
- December 2012: second international search report from World International Patent Office, WIPO, declares that Wilefko project has Novelty, Inventive Activity And Industrial Application. EXCLUSIVE RIGHT, 27 countries
- 2012,2013: three field trial at Con-Con beach, Chile,
- October 2014: Publication of laboratory results in First Workshop on Wave and Tidal Energy, organized by the University of California at Berkeley and Universidad Austral de Chile, Valdivia Chile see video



Company	WILEFKO SpA
Org. Id (RUT)	76.299.674-K
Business Area	NCRE R&D, Generation
Address	Providencia 1765, of 307, Providencia Santiago, Chile
Founded	17 abril 2013
Contact	contacto@wilefko.com
Web Site	www.wilefko.com

CHIEF EXECUTIVE OFFICER

Eduardo Egaña, Computer Engineering at Universidad del Norte, Diploma entrepreneur Universidad de Santiago, Chile. 17 years as owner/manager at DPA computer, creating and offering to the market, 16 different complex Systems, and electronic control equipment. It was pioneer in: 1) Integration of multiplatform system, 2) Developing multi-poll devices, 3) Developing a POS system based on touch-screens for Festival de Viña 4) Various products marking trends in the field of automation.

In 2011 invents and initiates the wave energy entrepreneurship project to generate energy from the sea, with the aim of contributing to clean energy. Formed a team of 18 people, including engineers and technicians, and was able to raise $ 300 of governments funds supported by CORFO INNOVO, an incubator of Universidad de Santiago, Chile.

Eduardo.egana@wilefko.com Phone : (56+9) 9884 1349

DIRECTOR & BUSINESS RELATION

Claudio Sala, Universidad Adolfo Ibáñez: MBA Executive (Management and Administration), Universidad de Chile: Civil Electrical. CIISA: System Engineer. Update seminars at Berkeley University (California) and Harvard University (Cambridge, MA.).

35 years of experience leading complex projects covering negotiation, monitoring and management of complex IT services. Relevant experience dealing with outsourced contracts with the largest IT providers from Chile, Brasil and Argentina. Extensive experience leading teams of IT in these countries, more specific treatment in Brazil, Peru and Colombia. It uses the expertise as leverage IT Business Development with strong focus to work with highly motivated teams (Human Capital Approach).

Extensive experience in complex environments internal and external political management, in hostile environments and adverse scenarios for the implementation of corporate technological changes of high impact on the organization.

Today, works as leader and responsible for the introduction of innovation environments in one of the larger universities of Chile, creating there an innovative eco-system of co-working, at Universidad San Sebastian, Santiago, Chile (30.000 students)

Claudio.sala@wilefko.com Phone : (56+9) 6728 9794

JAVIER POZO Mechanical Civil Engineer, Universidad de Santiago. 8 years of experience

8 years experience in engineering projects, he has participated as Mechanical/Piping Engineer, PDMS administrator/coordinator and 3D specialist, in steps of basic feasibility of complex projects; basic and detail engineering of projects in the fields of Bigger Mining and Pulp Camps. Strong experience EPCM mining participating in Copper, Gold and Nickel mining camps in the areas of Material Handling, Process Plant, Port-Site, and Plant Lixiaviación SX.

Experience in software management with broad domain of Aveva PDMS, Navisworks Autodesk, Aveva Review, Bentley AutoPIPE, 2D AutoCad and MicroStation V8. Experience in calculation and modeling of parts and mechanical assemblies with advanced mechanical design software 3D (Autodesk Inventor Pro, Solidworks and Solid Edge). Current job: AMEC, Manager and Coordinator PDMS 3D.

CYNTHIA VERA Mechanical Civil Engineer, Universidad de Santiago. 8 years of experience

Eight years of Mechanical Engineering experience in Engineering: pulp and paper, smelting and concentrators of copper mining; and Field experience as piping field engineer in the construction of a concentrator plant.

Performed in various technical, supervisory assignments in mechanical and piping systems design, engineering development, construction and start up projects, work with international standards as ASME, AWS, ASTM, ANSI, ISO, API, BS, EN, DIN, AWWA, Etc. Good interpersonal skills and experience of working in multi-international project teams. Actual position: Bechtel Chile and Fluor Daniels.

ANDRES FUENZALIDA, Industrial Civil Engineer, Universidad Diego Portales.10 years experience

Strong experience in the electric energy and thermal fluids fields, with experience in the areas of renewable energy, thermodynamics, electrical laws, national electricity market as energy efficiency consultant (National Standards Institute). Consultant and project manager at Energy Efficiency validated by INN. Innovation Award 2007 by Dalkia International, Paris - France 2007, for variable business model in selling industrial steam and dairy products. Achieving returns of over 15%. Development machine to generate electricity from the ocean waves. Actual position: FUENZALIDA And SANTIS LTDA.

MIGUEL SILVA CORTEZ, Industrial Mechanical Technician Universidad Técnica Del Estado. 35 years experience

Extensive experience in maintenance of equipment and machinery in Transportation, Mining and Fishing Fleet and marine vessels. Experience in mining camps at BHP Billiton (Minera Escondida Leeds), Superintendent of Maintenance Workshops Mina. (15 years)

FELIPE AGUILAR (PHD) Physic Engineer Universidad de Santiago. 6 years of experience

Doctor , Ecole Normale Supérieure de Lyon,. Academic and Investigadtor at Universidad de Santiago, Chile

CYNTHIA VERA
Mechanical Civil Engineer,
Universidad de Santiago.
8 years of experience

JAVIER POZO
Mechanical Civil Engineer,
Universidad de Santiago.
8 years of experience

CLAUDIO SALA
Electric Civil Engineer
Universidad de Chile
MBA UAI, Innovation Diploma USS
30 years of experience

ANDRES FUENZALIDA,
Industrial Civil Engineer,
Universidad Diego Portales.
10 years experience.

MIGUEL SILVA CORTEZ
Industrial Mechanical Technician
Universidad Técnica Del Estado.
35 years experience

BARBARA CASTRO
Costume Designer
Universidad Técnica Inacap
Post grade ESDI , Barcelona
12 years experience

PEDRO LEIVA
Attorney
Universidad Diego Portales .
Candidate to Master in Law,
University of California Davis
6 years experience

MARCO ALTAMIRANO
Attorney
Universidad Católica de Valparaíso.
6 years experience

FELIPE AGUILAR
(D) Physic Engineer
Universidad de Santiago.
6 years of experience

RICARDO SOTO
Electric Civil Engineer,
Universidad Austral.
20 years of experience

Third field tests

JOVANKA TREBOTICH
Biochemical
Universidad de Santiago
MSc Gestión Tecnológica
4 years of experience

CLAUDIO BERNAL
Hydrography – Oceanography
Academia Politecnica Naval
11 years of experience

JAIM E SOTO
sub official Navy
tactical diver.
20 years of experience

AMANDA ORTUZAR
Tec. Ambiental,
U. de Federal de Minas Gerais
2 años

MIGUEL DÍAZ
Attorney
Universidad del Desarrollo
Magíster en Derecho Tributario, UDD
6 years experience

DAGOBERTO CASTRO
Docente Phiysic aplic (r)
Universidad de Santiago.
30 years of experience

JOSE FERRADA
Publicist
Universidad UNIAC
3 years of experience

EDUARDO EGAÑA ,
Entrepreneur, Inventor,
Informatic UCN,
Diploma USACH
20 years experience

Collaborators

Mauricio Egaña,
Ing. eje informática

Fabiola Díaz,
Ing. en Financiero

Daniela Molina,
Actriz, ecologista

Diego Silva,
Ingeniería ambiental,
USACH

José Luis Menares
Documentalista

Carlos Wittersheim
Constructor Civil

INNOVO CENTRO DE INNOVACIÓN Y TRANSFERENCIA TECNOLÓGICA — CORFO sueña emprende crece — UdeSantiago — CLUB DE INNOVACIÓN — CORPORACIÓN incuba2 Desarrollamos tu Innovación y Emprendimiento — CIEChile Comité de Inversiones Extranjeras — ADEMAR — Parque la Boca Concón — WITTERSHEIM Molinos Industriales http://www.wittersheim.cl

Este proyecto es desarrollado con aportes del fondo de innovación para competitividad

Project supported by

MULTIPLE ACTIVITIES

http://youtu.be/CMnwzIf-yvk

EXCLUSIVENESS RIGHTS OVER THE TECHNOLOGY UNTIL YEAR 2031, IN CHILE AND WORLDWIDE

PI /CL 2011/02154 WO/2013/029195

NATIONAL AND INTERNATIONAL RESEARCH REPORT DECLARES THAT WILEFKO INVENTIONS GATHERS:

- ✓ NOVELTY
- ✓ AN INVENTIVE STEP
- ✓ INDUSTRIAL APPLICATION.

27 COUNTRY

ACTIVITIES FOR TECHNOLOGY PROMOTION

Publications

Books

TV

Participations

First Workshop on Wave & Tidal Energy
Valdivia, Chile
October 29 - 31, 2014

IFT ENERGY 2013
FERIA INTERNACIONAL DE TECNOLOGÍAS ENERGÉTICAS
17, 18 y 19 · ABRIL 2013

COLEGIO DE INGENIEROS DE CHILE A.G.

ENCUENTROS DE INNOVACION
Promoviendo la Innovación y apoyando su difusión.

International Publication

Radio

Invitations

Ministerio de Energía — Gobierno de Chile

BID

GOV.UK

Embassy of the United States of America

الإمـارات العـربيـة المتحـدة
وزارة الخارجـية

सत्यमेव जयते

Next

Discovery Channel Daily Planet

EXPONOR CHILE 2015
EXHIBICIÓN INTERNACIONAL DE LA INDUSTRIA MINERA


ENTREGAR UN MUNDO MEJOR PARA LAS FUTURAS GENERACIONES
WILEFKO
wilefko.com
Se parte de este proyecto Contacto@wilefko.com
Chile
usach
INNOVO
incuba2
CIEChile
CORFO
2015

Video

Thank very much

Eduardo.egana@wilefko.com
Claudio.sala@wilefko.com
info@wilefko.com

2015

Proyecto apoyado por CORFO sueña emprende crece

Gobierno de Chile