

# SAVE SEA WORLD LIFE PROJECT

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Global summary of the project.

	<b>C</b>	<b>P</b>	<b>G</b>	<b>A</b>	<b>P</b>	<b>D</b>	<b>W</b>	<b>D</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>c</b>
	Transmitter	Work or application domain		Document's nature		State	Chronological number		Rév.				



## A.P.G. Clean-up

### A. Project's general explanation.

The aim of this project is to get all the plastics floating on the surface of plastic continents.

We are expecting from this ecological and humanitarian plan to use ships which were patented.

This kind of ship (D.A.P.G) has been conceived for collecting petroleum after disasters as Erika, Prestige and others.

Indeed, this kind of ship is able to collect, in record time every floating thing of ocean's surfaces.

We wish to use that kind of boat to get all that plastic but especially operating it and recycling it to get a noble matter in the form of soundproofing materials and heat insulators similar to mineral or wood wool or fiberglass, with an additional advantage cause that insulation (the RE-PLAST-CYCL), is rot-resistant and water-resistant too, with a lifespan superior to 200 years.

The cost is twice cheaper for this whole thing than actual propositions, including superior features.

500 years are necessary for the degradation of a plastic bottle. If the sunlight can slowly turn waste into smaller pieces, this kind of process only multiply the problem. These little wastes will get easier into food chain without being digestible at all.

We'll announce below every facet of this pollution in 9 chapters.

- A – Consequences of this plastic concentration in the sea,
- B – Means used, efficacy and pressures for collecting this pollution,
- C – Use of these wastes,
- D - Transformation, use of this new noble matter, knowing that other applications are possible,
- E – Typical organizational diagram of a trash complex.
- F – Commercial values of the trash complex products.
- G – Number of jobs created, Payroll.
- H – Organization chart of A.P.G Clean-up.
- I – The rivalry of this project.

## A.P.G. Clean-up

### **A – Consequence of this plastic concentration in the sea.**

#### **1 – Explanation of gyres.**

**An oceanic gyre is a huge whirlwind formed by the whole of ocean currents. Gyres are provoked by the Coriolis strength. Those ocean currents finally form a vortex that makes swirl floating pollutants, and become plastic continents.**

Released wastes are taken away by the current and drift around hundreds and sometimes thousand kilometers. They join gigantic **oceanic gyres** and spread themselves over millions square kilometers and get stuck in there.

Slabs of plastic fragments get formed in this way into the surface of oceans, and are destined for staying there.

Each year, some researchers have quantified plastic waste poured in oceans and warn against a possible **tenfold increase in the next 10 years.**

#### **2 – Plastic continents.**

Waste pile up in five oceanic regions.

**Gyres : North and south Atlantic, North and south Pacific, Indian Ocean,**

**A sixth is about to rise in Mediterranean sea.**

In 2009, scientific studies quantified this pollution.

On average 7,5 Millions of tons in one gyre.

Revaluation done by the United States towards the end of the 2015 year : On the North Pacific gyre, we get to 100 millions of tons. 400 kilograms of plastic are joining the sea every second.

The average time of transfer of a plastic piece thrown into the sea to a gyre is about 3 years.

#### **3 – Plastic mixture.**

Time seems to be counted. While, trash pile up. Some plastics melt by 160 degrees, and others by 450 degrees. The mixture of those plastics, at high temperature, produce an unusable plastic magma. Some companies worked about this subject and gave up because of adversity.

#### **4 – Plastic fragmentation.**

By the transit time into sea water, as ultra-violets, plastic wastes are breaking up. Fishes think that those pieces are food and eat that plastic which stays as a mass into their stomach without being digested. The digestive system, post stomach, full of plastic blocks those fragments, the anus being smaller. Fishes die. Plastic wastes are becoming more and more invading and seriously threatens marine ecosystem. 90 % of waste floating on oceans are plastics.

Each year, 1,5 million of animals die because of indigestion after having mistaken trash with food. From smaller fishes to marine birds, 300 species at least are concerned. Albatrosses have been discovered with the stomach full of plastic plugs. Seals choke themselves with nets, turtles suffocate because of plastic bags. A study from 2013 showed that **30 % of North Pacific fishes already ate plastic waste in their lives.**

#### **5 – Food chain heavily disturbed.**

Everywhere, studies show that the **food chain is disturbed.** In the North Atlantic, microbial life develops itself because of **plastic soap. This material getting around by currents is eaten by marine organisms to contaminate the whole food chain.**

#### **6 – Invasive colony below jellyfishes sea level.**

In plastic continents, (with the quiet waters and the absence of predators), jellyfishes are developing in huge amounts. Indeed, and for example, tunas and turtles getting around the plastic continent don't dare entering into an opaque environment, dangerous and possibly hiding an important predator. They guess being near a potential menace of a bigger predator, so potentially threatening for the species. In that context, jellyfishes, unconsciously « protected », are free to reproduce themselves, and produce way more proliferation, creating a dizziness of the ecosystem.

#### **7 – Invasive colony on the surface.**

In the Pacific, a species of water spider, Halobates or sea skaters, proliferate because of the trash.

Females lay their eggs on the plastic waste, which are the perfect incubators. The species grows and proliferate by eating zooplankton, competing with local species. A plastic pitcher covered in 70.000 eggs has been picked up right in the Pacific, so the posterity of some 7000 females.

This is just one example, other species could invade this new ecosystem as a result our bins.

## **A.P.G. Clean-up**

### **8 – Size of plastic continents.**

We describe them as a huge trash slab having the size Europe's area, on a plastic thickness between 10 and 30 meters.

### **B – Ways deployed, efficacy and pressure to eliminate this pollution.**

### **9 – Explanation of the ship with several chapters and details on what helped us to select this technical in the event of oil pollution.**

Oceans and seas are not always calm and quiet. During the elaboration of the project, the CEPOL (Pollution department of the French Navy and according an accurate bill of specifications), précised us that for fighting against every kind of floating pollution, it was imperative to have a ship which is able to work in seas of F5 to F6 strength.

Knowing that the average length between two waves is 32 meters, a multihull ship should be considered. We've finally chosen a trimaran with a length of 92 meters and wide of 72 meters, like this, the vessel can always be on two waves and conserve a base, even when the weather is rough. The central hull is designed as the heart of the salvage process and lateral floats are used as ship's life foundation.

### **10 – Other possibilities of the ship (petroleum and other floating pollutants on the top of oceans).**

This kind of boat belongs to the category of supply vessels, able to do other lucrative works, aside from oil pollution periods.

During the knowledge of plastic continents, we worked on the possibility to catch those plastic waste. We finally decided to modify the first concept, to give it compatibility but mainly a total complementarity.

Indeed this kind of ship is able to collect the whole floating plastics. However, if it should have petroleum pollution, this one would leave the plastic continent, to gather some petroleum, before that the continent is polluted.

The ship has in its holds, the oil salvage materials to struggle against oil slicks, to soak around 110.000 tons of petroleum.

### **11 - Collecting's technical of floating waste.**

The front part of the ship opens itself, as two cases which get to lock themselves against lateral floats. This system allows a pickup on the width of 72 meters.

The ship is provided with ballasts to descend the water line and can get pollutants into the segregation spiral.

Five pumps can transfer collected pollutants towards the treatment's process.

### **12 – Separation of plastic waste in pumped waters.**

The amount of pumped water is a way to transport pollutants. A thin filtering can separate those pollutants (wood, insects, jellyfishes, plastics and other floating things). The exceeding filtered water is thrown on the sea.

The concentration of those pollutants will be squeezed, in that way, we'll increase the temporary capacity of storage in the ship.

The filtering of the water will let enter planktons and zooplanktons in the aim to avoid the exhaustion of the first wealth necessary to the sea life.

### **13 - Precautions to take with jellyfishes and surface's insects.**

Letting on the spot (jellyfishes and floating insects recovery), would increase the risk which is already huge, of disruption of the ecosystem. They will be part of the waste to get treated there later.

### **14 – Storage buffer on the ship.**

An hopper is predicted to temporarily hoard waste, before transferring them on a kind of tanker ship to direct them to the waste complex. The waste transfer will get through the intermediary of a sort of floating umbilical cord in the back of the collecting ship. Waste will be stocked in the tanker's hold. Once the tanker's full, another one will replace it.

You can notice that at this stage of the storage, none waste will stay in the sea, and the waters of this collecting process are all reprocessed, filtered to get thrown overboard.

### **C - What to do with these waste.**

#### **15 – Waste's transfer on tankers, precautions, transports, ship's unloading.**

Jellyfishes included into these waste have a reproduction's way by nodules.

Each nodule is potentially a jellyfish. It is imperative not to move jellyfishes' pieces without precautions, to put them to the tanker's unloading places, which would disturb an healthy local ecosystem. Same for the insects.

Precautions will be taken to avoid that situation.

#### **16 - Transport to the waste complex, precautions on place.**

Trucks expected for the transfer from the port to the waste complex will be clean vehicles. Odor nuisances could annoy habitations when dirty trucks will drive in front of them. That's why we want a clean transport, respectful for the environment.

#### **17 – Two kind of waste are treated on the waste complex :**

- 1- Waste from plastic continents,
- 2- Waste from household garbages.

In the household garbage, there is almost 10% of plastics that we can recycle. For example, Some options could be considered, as tires, waste from industry, vegetables, etc.

The list is not exhaustive.

### **D – Transformation, utilisation of this new noble matter, knowing that others applications are possible.**

The utilization of this new generation of micro fiber, will allow for recycling the whole plastic waste from plastic continents.

This guarantees in terms of longevity a better holding of all researched properties, (phonic, thermal, and moisture resistant).

Unrivaled compared to what already exists, but especially rot-resistant.

Because the materials used, as fiber glasses, mineral wools, and others, are much more expensive in terms of realization and require some raw material while plastic waste, from plastic continents are dangerous for the ecology.

Recycling those waste would be beneficial for the ecosystem's recovery.

The principle of this project is to recovering all the waste brought by ships to get treated into factories, but especially to recycle them into noble matters.

We conceived this system, to recover not only all the plastic waste, but also, what I am calling the muds, in other words jellyfishes and others surface's insects. Those muds will be evacuated of the place because they'll serve as substitution combustibles for the factory's recycling oven.

Other terrestrial waste could be, the burnt rest on the site. I think about all the wood waste from sawmills, etc. The list of alternative fuels is not so long. Ovens will produce some steam, useful for the recycling process, and will make turn a turbo alternator, necessary for the electric consumption of the transformation process engines.

With this technology as its plastics recycling process, a continent (North and South America) would be able to treat 80% of the worldwide pollution composed by plastic continents.

Indeed on the five plastic continents as,

North Atlantic

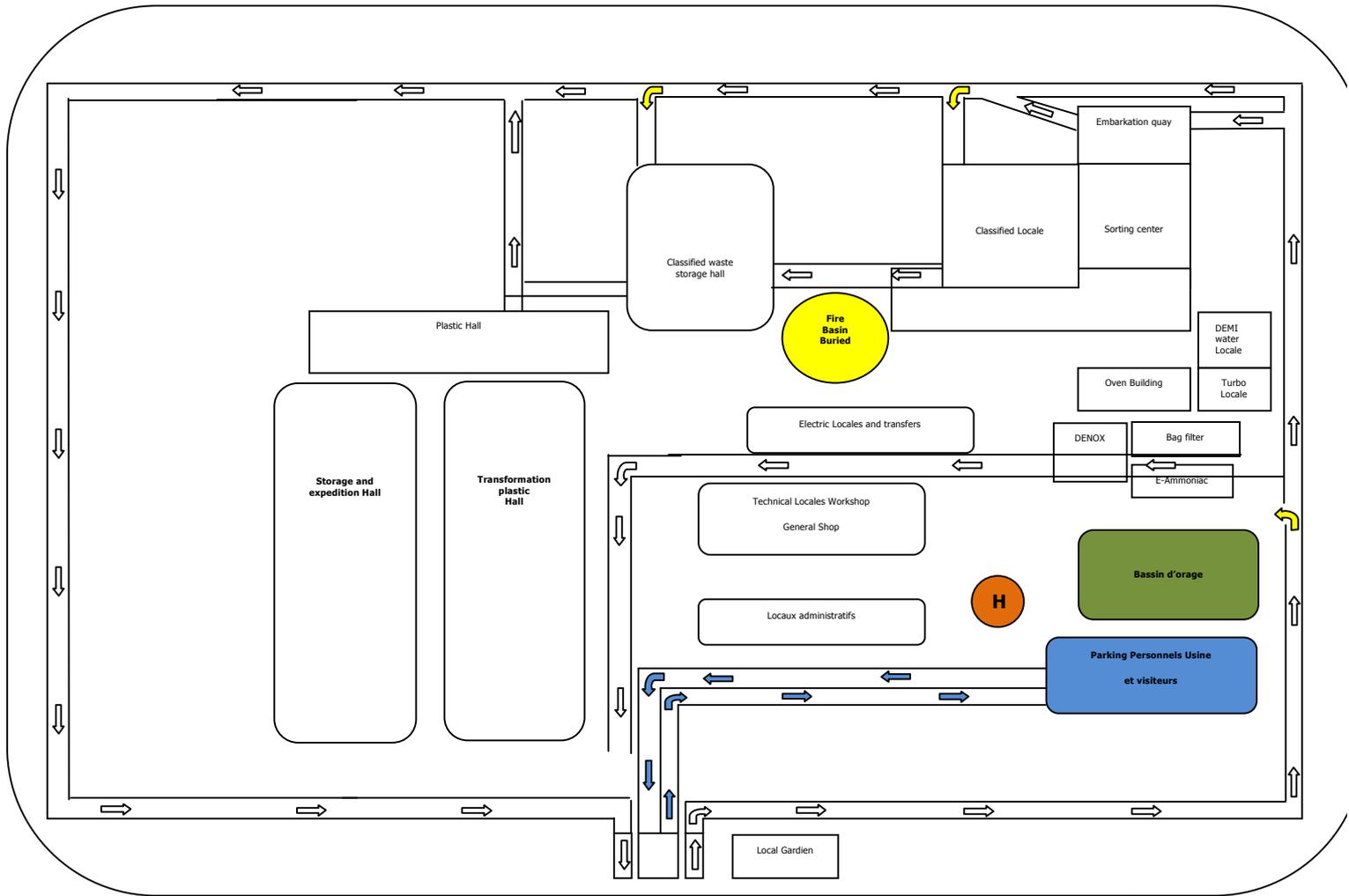
South Atlantic

North Pacific

South Pacific,

Those four are geographically concentrated on both sides of the two Americas, wich is perfect to clean four fifth of this major pollution.

**E – Organizational plan of a waste complex.**



**Waste Complex's aera, estimated between 12 and 15 Hectares.**

**E – Trading values of products from waste complex.**

Every ton of plastic could be transformed in microfibers of several densities by several dosages.

For example :

With a dosage of 800 Grams/sq m

1000 Kilograms/0,8 Kilograms = 1250 sq m

Average price of 5 € by sq m so  $1250 \times 5 = 6250 \text{ € /To}$

Marine plastics, terrestrial plastics :	6250 € the ton
Wood transformed into pellets :	250 € the ton
Broken glasses :	150 € the ton
Iron metals :	145 € the ton
Non Iron metals :	700 € the ton
Burnt household garbage :	90 € the ton
Clinkers :	105 € the ton

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Compost : 35 € the ton

The energy spread by the ovens can produce some high pressure steam. This steam gets into an alternator turbo which transforms this energy into electricity. This new electrical energy is the key to make the whole waste complex work with a great autonomy.

The excess of electricity is commercialized to the electrical supplier as EDF, and this resale of mega watts is a way to make more profitable the project.

The hot water produced is used for the process, the excess will survive to the community (resale of urban heating or collective).

In options, because of an investment supplementary needed (not foreseen to the project studies)

Industrial tip, Vegetables, Rubber from pneumatics.

### G – Number of jobs created, Payroll.

On the 2 factories : 1370 persons,  
On the 5 ships : 450 persons.  
Total : 1820 persons.

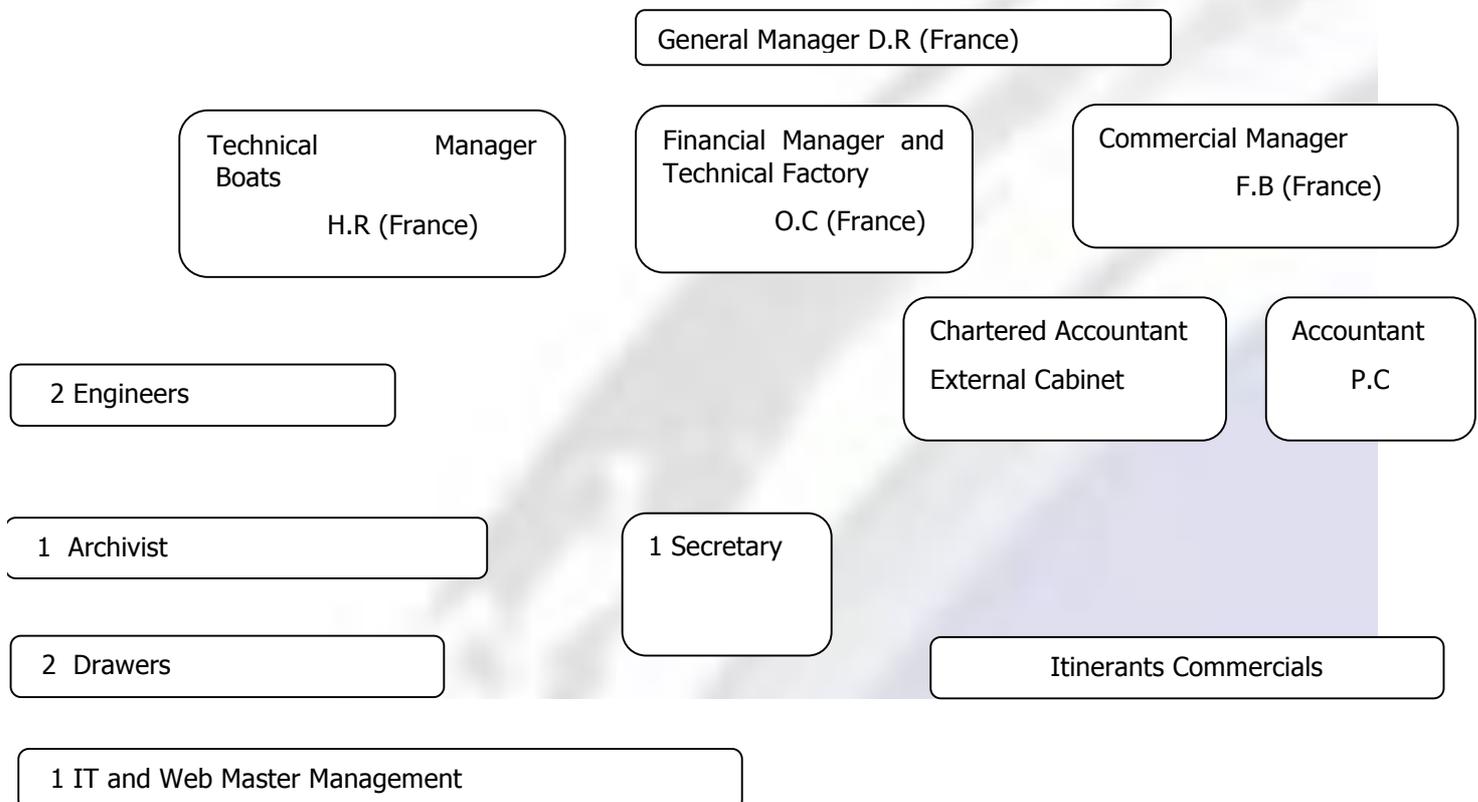
Without counting subcontractors as : Truck drivers, les rippers etc.

Payroll : In the process of refining. € / month

However, the payroll will be offset by the simple fact of treating household garbage, because burning centers already make some profits.

The plastic recycling will be a good thing.

### H – Organization chart of A.P.G. Clean-up.



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## A.P.G. Clean-up

### I – Project's Rivalry.

Several projects have been proposed for picking up in situ waste.

Manta Project : Recovery 400 tons/month Recycling in fuel (expensive process) for weak results. The Manta can store inside its tanks to 300 square meters of plastics, collecting campaigns will last from few days to several weeks.

#### The Ocean Cleanup27

Concept using marine currents to bring waste to recovery platforms. (No recycling is foreseen). The most broadcasted. This one has the aim to build a kind of floating dam in the middle of oceans.

Barriers will hold plastics back and conduct them to an extraction platform. The feasibility in itself of the project is criticized, as the one of numerous others : The recurrent problem is to consider sea life, which can develop itself on or around infrastructures.

Last new, an attempt with a floating dam of 100 meters long broke and the Medias said nothing about it.

