



Project

Creation of a plant for the production of very high-efficiency atmospheric water generators and their derivatives

Water, a threatened resource

The main sources of fresh water are being overexploited by dams, boreholes, withdrawals and massive pumping, with dramatic consequences for the environment. By 2030, around 470 million people will be affected by water shortages. This situation leads to health threats, famine and sometimes even armed conflict for the control of water resources.

Our key team

Comprised of three 50-year-old entrepreneurs with complementary roles

Jean is the team's manager and IT specialist. He is the founder of a medical software and medical imaging management company, which is the leader in France and Switzerland in this sector.

Colin is the salesman, American by origin, multicultural and speaks French, Spanish and English, he is a co-shareholder in a company specialising in water treatment and organic cleaning products that are distributed worldwide.

Franck is the thermal engineer and the patent holder, he has in the past managed the utilities of world-famous industrial sites, in parallel with our project, he works daily on pilot processes for the chemical industry, the space industry or the armament industry.

A team of engineers is ready to come and support us in our development as soon as we can start recruiting.

Our Advantages

Our technology is without competition, our generators and their derivatives are multi-energy, modular and allow us to serenely attack other markets such as bottling, electricity or disinfectant production.

Our technology allows us to set up multiple sites even when energy sources are non-existent.

Concurrence

It consists of generators with lower water production capacities because they are very energy consuming and run only on electricity.

Boreholes when they can be drilled and the water collected is not polluted.

Desalination plant if the location is coastal.

Marché

In 2018, the sale of industrial generators represented a market of more than 200 units.

It was about 300 in 2019, The number of wells is difficult to quantify, but they are getting deeper and deeper and more and more expensive. In 2018, there were 17,400 desalination plants in the world, this figure is increasing every year, our production of aquatethys energy is positioned as a direct competitor to the small desalination units.

Our sales prices, despite our more efficient technology, are at market prices

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1 Project

Creation of an atmospheric water generator with very high energy efficiency.

2 Water, a threatened resource

The main sources of fresh water are being overexploited by dams, drillings, withdrawals and massive pumping, with dramatic consequences for the environment:

- Soil damages;
- Sanitation treatment generating chemical residues;
- Accumulation of brine due to desalination, impacting flora and fauna.

The average daily water consumption per person is between 100 and 350 litres in the most advantaged regions.

In the less advantaged regions, it varies from 70 litres to a total shortage.

This situation is the cause of health threats, famine and sometimes even armed conflicts for the control of water resources.

The planet is heading towards a major water shortage.

By 2030 approximately 470 million people will be affected by water shortage, with consequent impacts on public health but also political and social tensions.

The atmospheric water generator solution we propose can be easily installed anywhere in the world thanks to the various energy sources that can be consumed by the device and its low consumption.

3 Our solution

The amount of water produced depends on the air volume treated, the temperature and humidity of air. The water is obtained thanks to the extreme optimisation of the generator's functional components, whose parameters are controlled by an automated system management.

The unit produces pure, natural, drinking water with a low chemical content.

It is autonomous, compact and the water can be drunk on the production site.

The first atmospheric water generators were energy-intensive, and recent solutions using the same technology also seemed to us to be unsuitable for technical development and marketing.

It is by studying a solution for industrial process dehumidification that our solution appeared to be sustainable. We indirectly had the same specifications as for the design of a high-performance generator, because we had to remove water from the ambient air in an economical and ecological way very quickly with a regulation adapting to the meteorological constraints

4 Key Advantages

This invention could be summed up by these four main points:

1/ Scientists estimate that it requires 350 Watts to condense 1 liter of water, our productions only consume an average of 50 Watts for the same result.

2/ The COP and the ESEER of industrial cold productions are rarely higher than 4, our productions have ratios on these same measures higher than 8;

3/ Our technical solution allows our generators to operate with different energy sources (gas, solar, electric, thermic...);

4/ Our technology allows us to be the only manufacturer to produce generators with totally autonomous industrial capacities.

Its low consumption is a considerable advantage, making it possible to envisage multiple locations with high water production capacities.

The operation with different energy sources is a second advantage since it allows geographical implantation where there is no electricity; our generators, depending on the option chosen, operate with solar thermal energy and/or gas.

This solution makes it possible to combine the energy consumed to produce electricity. This solution has been the subject of a Soleau letter and a patent application under the name AQUATÉTHYS Energy (currently being validated). To put it in a nutshell, our units will be able to simultaneously produce water and electricity, as an autonomous solution developed for makeshift camps and military camps on a larger scale.

5 Project team presentation

The company Fluides-concept was created in 2016, it was originally a consulting and engineering agency specializing in assisting companies in the development of their manufacturing processes and more specifically those of temperature control.

It supports many engineering companies on projects involving the treatment of liquid or gaseous effluents, the treatment of brine, air and biogas dehumidification and the thermic control of test benches for the aerospace industry.

If Fluides-concept is at the initiative of this generator construction project, we will be accompanied by the companies we already answered on the industrial projects mentioned.

The first atmospheric water generators were very energy consuming, the recent solutions which have the same technology as well, they seemed to us not very favorable to a technical development and commercialization.

It is by studying a solution for a dehumidification of industrial process that our solution appeared durable to us, we had indirectly the same specifications as for the design of a performing generator, because we had to remove the water from the ambient air in an economic and ecological way very quickly with a regulation adapting to the meteorological constraints.

The company Fluides-concept is made up of a single associate: Franck LEGRAS.

Its legal form is the SASU status and a capital of 3000€.

It is up to date with its social and fiscal contributions.

Its head office is in TARGON (33760) France.

It is the owner of the registered trademark of atmospheric generator.



It holds a patent entitled: Very High Efficiency Atmospheric Water Generator, which was registered at INPI on 18 April 2020 under number FR20032.

Its disclosure and commercialization authorization were granted on May 19, 2020.

The patent consists of a major invention supplemented by 15 different claims.

6 Comparative analysis and benchmarking

Our production solution is in a little-exploited intermediate niche market. Alternative water production, excluding drilling and collection, can be divided into two main categories: small-scale production, which is often developed locally but only produces about ten or even a hundred litres of water per day, and industrial production, most of which are desalination units. They must be located by the sea, as they consume a lot of energy and pollute.

Drilling water tends to rarefy, so you have to drill deeper and deeper.

Catchment waters are also becoming polluted.

Artisanal water production provides for a family's water consumption.

Industrial production, even if its prices have become more democratic, remains expensive and requires meticulous maintenance.

The AQUATETHYS solution we mentioned in the previous statement has four advantages:

1 its low energy consumption

The average consumption of the direct competitors is between 280 and 800w/litre.

The consumption of our productions of 50 Watt per litre enables us to respond to a wide range of demands and situations.

2 Its large production volumes

Only a few companies offer units producing more than 5000 litres/day.

3 Its multi-energy technology (To date, no competitor company offers water generators that run on solar, gas or hot source recovery ...)

4 Plug in Play installation compared to a classic industrial solution.

The excessive energy consumption of atmospheric generators built by competitors makes it impossible to install them in regions of the world where there are not enough energy supplies and limits their water production capacity. This factor has a negative impact on the cost price of the water produced. The selling prices of our generators are similar to those of much less efficient Asian units. Moreover, these products are systematically marketed by a network of distributors, which in this case gives us a financial advantage.

Desalination factories are heavily polluting, but this solution is not very expensive because it has been democratized. Our AQUATETHYS energy solution targets this concurrence. It combines several utilities whose combination offers a technically and financially interesting alternative. It is unequalled in a location outside of coastal areas.

Our mini autonomous generators are possible solutions for artisanal water production, on the scale of a village or a district. They can provide a distribution network, a micro-sanitation, a conditioning...

Plusieurs armées et des ONG sont intéressées par ce type de matériel, leur philosophie et leur conception fiable, robuste et économe avec peu de contraintes de fonctionnement est un réel atout pour leur type d'utilisation

The market of water generators coupled with bottling units is a market occupied today by industrialists who represent important investments.

Or craftsmen who resell jerry cans individually

Our target markets are therefore multiple

-1 Autonomous generators for armies, NGOs, emergency facilities

-2 Generators installed in fixed stations for long-term use

-3 Aquatethys energy units for larger applications or surrounding infrastructures require a large production of water coupled with the production of other various utilities

-4 bottling units

These various markets are all split in two, namely :

Markets for water-intensive industries (agro-food, textiles, extraction, irrigation, etc.).

Markets for human consumption

7 Project management approach

1/ Construction of three Size 1 demonstrators.

One electric model, one autonomous model (AQUATETHYS) and one tri-generation model (AQUATETHYS Energy).

2/ Obtaining innovative company status (tax exemption)

3/ Obtaining the research tax credit (exemption from social security charges on salaries)

4/ Obtaining the innovation tax credit (exemption from social security charges on salaries)

5/ Submission of grant applications (matching contribution from the region up to 50% of the committed equity capital up to a maximum of €500,000)

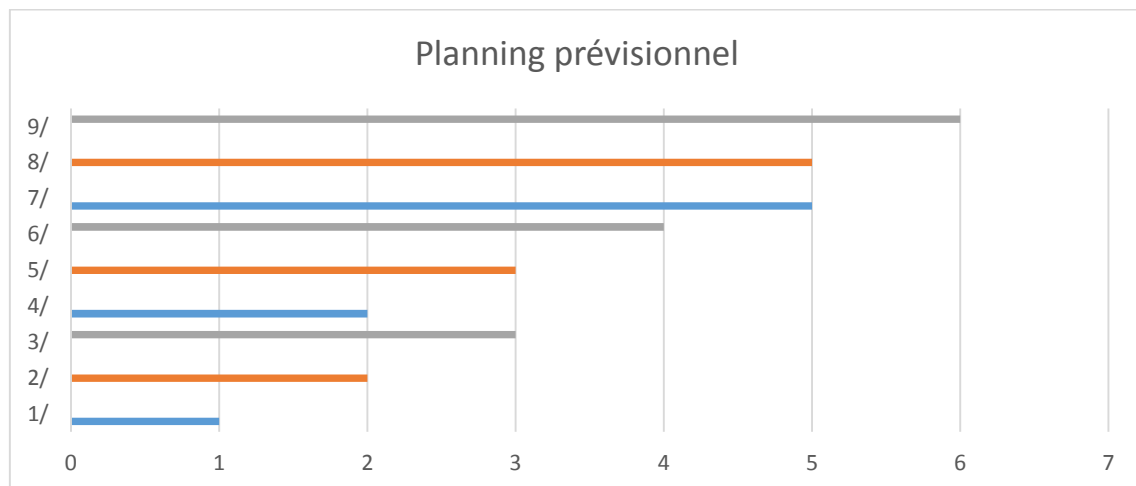
6/ Application for a subsidised loan to the Investment Bank (BPI)

7/ Launching production

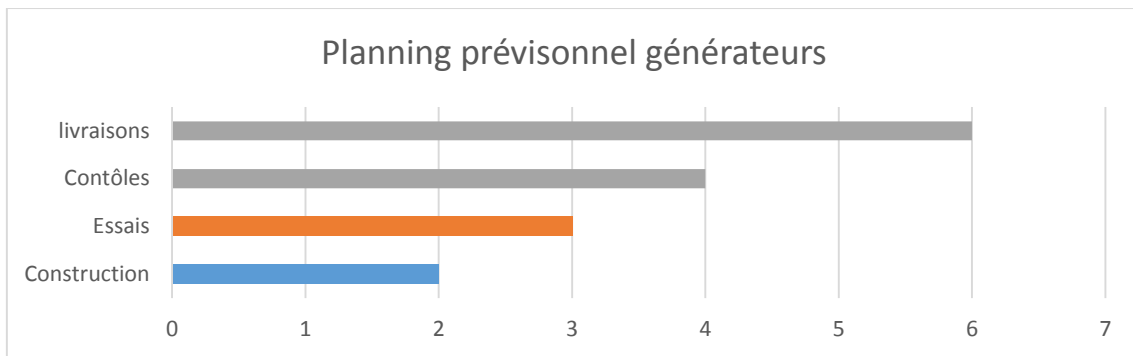
8/ Launch of marketing

9/ first deliveries

8 /a Provisional monthly administrative planning



8/b Monthly forecast generator construction schedule



- Construction of pilot generators
- Generator tests in climatic chambers (simulation of production on 200 measurement points, temperatures and hygrometry, performance validation).
- Checks and dismantling, validation of component reliability
- Delivery and installation of generators at the demonstration sites

9 Demonstrator or prototype

We produce prototypes for special industrial applications with our technical partners, as we mentioned in paragraph 4, these projects are very often one-off projects and represent considerable financial and technical stakes, our core business for this type of request concerns exclusively projects in aeronautics, aerospace or innovative processes, these prototypes must be functional from their first use.

Our demonstrators are studied and will be assembled with the same care, technically they are complete and functional and are ready for mass production; their parts lists and components are listed and tested; we approach the production of our generators more confidently than for the prototypes described above.

10 Economic impact on the territory

Initially we wanted to locate our production in the Entre-deux-Mers region, but there are very few offers for industrial buildings and land in this area. We felt that the time between the feasibility study, the application for building permit of the project was too long, so we oriented our researches around the city of LANGON. The industrial space included and quantified in our forecasts would enable us to produce 40 to 60 units per year, the workshop, offices and secondary areas would support this activity, the social space has been studied for 25 full-time equivalent jobs (mixed).

The proximity of a highway exit is an important geographical advantage.

Few industrial enterprises exist in this territory.

There exist other industrial locations available if our activity should strongly develop.

Hotel structures exist close to the site to welcome customers, users or resellers when they need to be trained, ...

The majority of our suppliers and subcontractors are New Aquitaine companies. The first prototype assemblies will be carried out by our subcontractors, but job creation is expected after the first

orders; successive hirings will then complete our needs. Our subcontractors or master craftsmen will have the task of training our new recruits.

11 Human resources

The hiring of various employees is planned

An administrative employee will have the role of accounting secretary. Our wish is that he or she masters the CEGID accounting software because our accounting firm uses this software. We also use it for invoicing, purchasing and manufacturing.

A design office technician will reinforce our team from the first year. We have targeted several profiles: BTS or IUT level in HVAC engineering for beginners or experienced technicians willing to be promoted. Employees in the assembly department will be technically trained, electromechanical, plumber or metalworker, holding a level 3 diploma or currently graduating.

Depending on the circumstances, we may look for work-study contracts for our design office or in the production line.

Training on our products is one of our aims.

We will promote the internal promotion, the principle being that the first hired technicians will take charge of the after-sales service of the units already produced, the responsibility of the production...

A training plan is currently being studied; it will be finalized upon the first recruitments depending on the profiles selected (CACES, electrical certification, gas certification, training in company software).

I have personally benefited from the "social ladder". Now in my fifties, I would like to establish a human resources policy based on values and diversity.

We are also assisted by a law office in Bordeaux and by an accountant expert of the Entre-deux-Mers.

12 Legal setting

The generators will have certified performance. Our wish is to label our productions. We also want to create a certification symbolizing measured and referenced performances, in order to differentiate ourselves from the generators of the competitors likely to give utopic and wrong performances. I have shared this project with correspondents of international organizations and their technicians; some have recognized the interest of this eventuality. We have an atomic testing centre in the southern Gironde region, the CEA, which, in partnership with Cemafruid, has a climatic chamber capable of hosting our projects and operating them under realistic conditions.

13 Deliveries

Deliveries will be made at the factory.

A test report will be systematically issued.

14 Environment

Starting from a blank page and sensitive to the environment, my wish is to create a production site taking into consideration the most exigent environmental constraints. I have previously managed ISO 14001 industrial sites in my career; I will use this experience to set up an eco-responsible production site management approach.

A pre-selection of components, tools and consumables has already been carried out with this objective in mind.

I currently head a company which is a member of the SOLTENA association.

15 Business development

There are several markets: the two main ones are water needs for different industries and water supply for populations.

If the infrastructures planned to manufacture our generators are for the moment sized according to initial production estimations (up to 40 units a year), they could quickly take an industrial turn with the production of about a hundred units a year.

The initial project is a small-scale project. However, large-scale industrialisation has been taken into consideration in the design of our generators.

Forecast sales and their distribution are detailed in the business plan.

Several companies are interested and would like to market our solutions. Their locations and geographical areas include South America, the United States, West Africa, Maghreb, the Middle East and Nigeria. These companies are well known and have strong references in their sectors.

AQUATETHYS is attracting the interest of NGOs, water resource associations and other prospects around the world to provide fresh water through its technology. The company estimates these sales at 8 units of 5000 litres/day in 2020.

10 units of 5000 litres /day in 2021

15 units of 5000 litres/day in 2022 and the following years.

We were deliberately pessimistic about our forecasts.

The business plan is based on the hypothesis that AQUATETHYS will only sell 15 units per year.

In these estimations, we have not taken into account the sale of stand-alone units for emergency situations or the sale of units with larger production capacities. We are betting that we will attract people to our technology and to larger water production when small units will be operating in different strategic locations.

We have costed major projects for non-governmental organisations, but these have been excluded from the business plan.

For each unit sold, some revenues will automatically be generated from additional services (training, set-up, installation, maintenance and live monitoring).

16 Areas for future development

A second patent is currently being registered; it concerns a tri-generation process, which will use the above-mentioned patent. This technology produces electricity, hot water and drinking water.

This new process will enable us to distribute the water from our production thanks to hydraulic stations, allow us to purify wastewater and to supply peri-urban electricity supplies, etc.

In this case, the production capacities are multiplied and can reach production volumes comparable to those of small desalination plants, it is an alternative to these plants.

Our CAPEX and OPEX cost prices per m³ are equivalent to those of desalination when annual maintenance and financial depreciation are included.

This process has no competition when the sites are not on the seafront.

Paragraph 5 / point 2: the cold production of our generators has COP and ESSER higher than 8, the marketing of this technology for chillers and heat pumps will be one of our potential objectives.

We collaborate with startups and companies working on water purification, our processes are complementary, the mix of our technologies will eventually allow us to produce water during the rainy and dry seasons in an even more economical way.

Even if this market appears much less promising, we will increase the operating spectra of the generators in order to be able to produce water with ambient temperatures. Lower than at present, this will make it possible to produce water economically even in the northern hemisphere.

17 Our assembly site

The industrial site we have selected will be dedicated to the assembly of our generators. This workshop has an evolutive nature, as we have already mentioned, we are in negotiations to assemble the containers of the startups with which we have to sign partnership agreements. This activity could be a significant complement and would allow us to enhance and diversify our production facilities.

18 Annexes

Annex 1: 3D views of the container intended for emergency rescue services

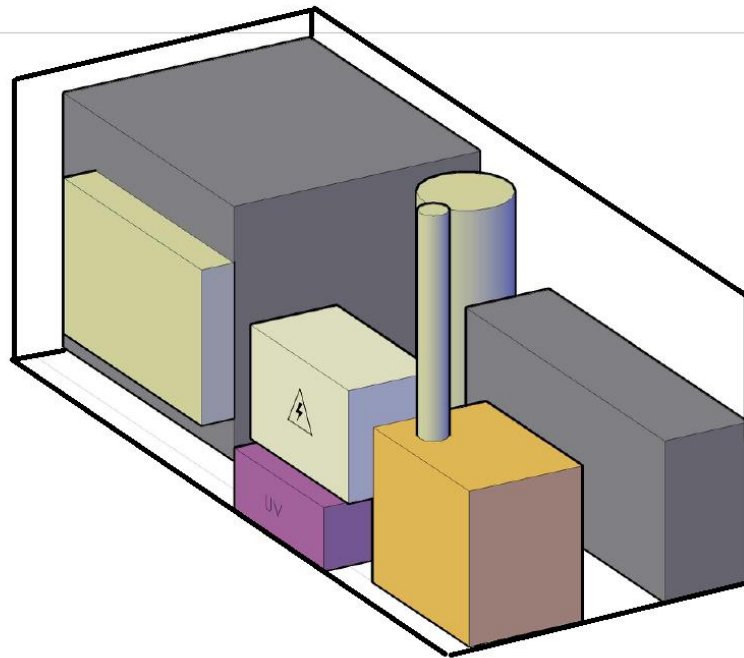
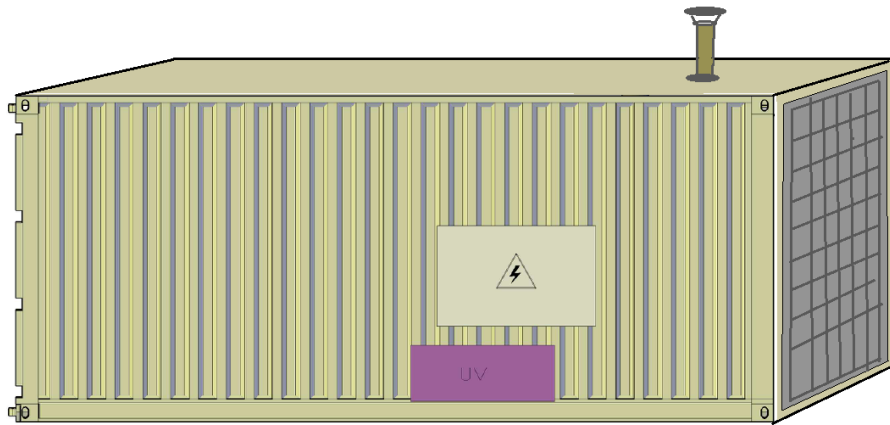
Annex 2: 3D views of the atmospheric generator running on electricity with a capacity varying according to the options from 3000 to 10000 litres/day

Annex 3: Diagram of an example of a container assembly providing higher daily water productions than our individual productions.

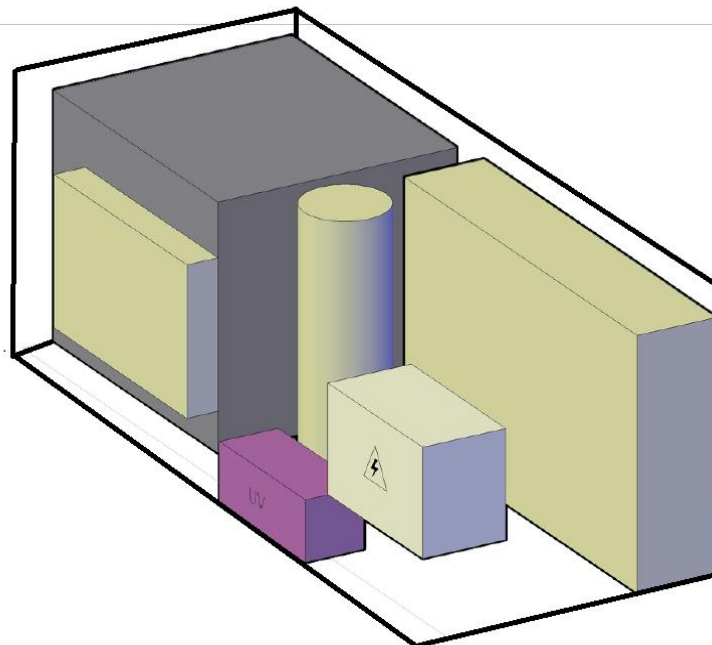
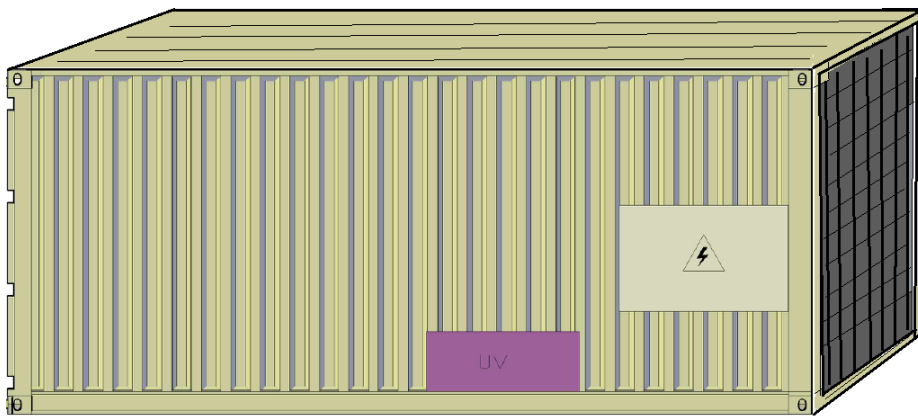
Annex 4: Factory plans

Annex 5: Business Plan

ANNEXE 1



ANNEXE 2



ANNEXE 3

