

EFFICIENCY ASSESSMENT REPORT

GOOD AIR FOR EVERYONE

EASY - HEALTHY - INDEPENDENT Improve your indoor air quality in the best and easiest way possible.

Solution ID: 474

Company: AIRY

Country: Germany

Export Date: 22.10.2019

ASSESSMENT RESULTS



APPROVED

FEASIBILITY

- Credibility of concept | YES
- Scalability | YES

ENVIRONMENT

- Environmental benefits | YES

PROFITABILITY

- Client's economic incentive | YES
- Seller's profitability | YES

GENERAL COMMENTS FROM THE SOLAR IMPULSE FOUNDATION

The solution ID474 is declared by the World Alliance Selection Group as labelled Solar Impulse Efficient Solution after going through the following selection steps:

- It is falling into the eligibility scope in terms of (1) Minimum Maturity and (2) Type of solution. Moreover, the solution is owned and developed by an entity Member of the World Alliance that is operating in accordance with the Solar Impulse Foundation's ethical position.
- The Solution Submission Form was assessed by 2 independent Experts with at least 5 years of Experience in one of the sectors of application of the Solution and valid and coherent answers with justifications were collected enabling the deliberation of a majority opinion on each of the 5 criteria.
- Based on Experts deliverables, both the Solutions and Experts Team concluded that the solution's assessments had been satisfactory and that the solution obtained a majority of YES on all criteria. For the Client's Economic Incentive criterion, Expert 2 chose option 4 as argument for his/her answers and comments. Following the label guidelines, the solution was sent to the Internal Deliberation Committee for a session to discuss if the solution has an indirect positive impact for society.
- Further comments made by the Internal Deliberation Committee can be found in the last section of this report.
- During the session, the Internal Deliberation Committee unanimously stated that (ADD ARGUMENT) which resulted in the awarding of the Solar Impulse Efficient Solution Label.

FEASIBILITY

This section captures the ability of the solution to be credible (based on a resilient technology or concept) and captures if the solution is already or has the potential to be scaled up and deployed concretely in the real world (vs. in lab). The Experts were required to answer two questions on (1) credibility of design and (2) scalability of the solution.

EXPERTS REVIEWS

CREDIBILITY OF DESIGN

Can the technology behind the solution be constructed and operated as designed?

YES

Expert justification - The concept of enhanced air purification through exposure of plant roots was new to me, but I have checked the literature including the original NASA study and have confirmed that plant root exposure does measurably improve air quality with respect to VOC.

YES

Expert justification - The solution being proposed is interesting and is working, that's a fact. The company communicates a lot on the idea coming from studies made by NASA since decade, that's true, but there is currently more recent activities who use plant root aeration to grow plant faster. however this is being used by the farming industry to produce food more efficiently : we call that aeroponic culture. The company use the same kind of system for a different (smart) purpose, filtering air pollutant, using most adapted plants working with their pot. I am not 100% sure that all air pollutants are capture through plant roots, but since most of the plants optimize photo synthesis effect when roots are not in compact soil, and therefore grow faster, it makes sense. But the solution is definitely not only a plant pot with better oxygenation of plant root. this is about : - choice of the plant - substrate for the plant selected : if you put a compact soil in this pot this will not fly. - location of the pot in the room and access to sunlight or artificial lighting for the plant to grow and execute photosynthesis. - measuring pollutants with their upcoming sensor - services to assist user in plant localization in the room based on above limitation (choice of plant, and sunlight need). This service seem to be partially automated though a dedicated app running on smartphone.

SCALABILITY

Is the manufacturing (if a product) or distribution (if a service) of the solution at scale technically feasible?

YES

Expert justification - The company has already sold in excess of 30,000 pots and I have confirmed they are available on amazon.de, including reasonable reviews. For consistency the solution should be made of low carbon plastic with low-VOC emissions. The secondary produce "Airy sense" is extremely interesting but may be more difficult to scale at low cost due to electronics costs.

YES

Expert justification - Yes. they already scale the easiest part which is basically only mechanical parts and are on the way to do the same with the sensor components. As the company already add success with only the pot and started to work with different partners / supplier, they should be fine with potential issues finding the right partner for the electronics part of the solution. The risk is limited for manufacturing and distribution. However there will be a R&D risk in finding a cost effective reliable solution to measure air pollutants. The risk will be to use not reliable sensors who would provide bad guidance, but this can be mitigated by face to face / forum based services and assistance.

Additional feedback / advice for the member

It is difficult to quantify the effect of your solution so I am very encouraged to see you plan to provide a monitoring product. This could provide a much greater benefit potentially than the original product is continuously monitored.

Additional feedback / advice for the member

As explained the balance between quality of the sensor and cost maybe the most risky part. The company should probably partner with existing air quality sensor / device company in order to package a end to end solution instead of reinventing the wheel and taking risks. There are numerous of company trying to measure air quality in a cost effective way , but most of them produce unreliable data.

ENVIRONMENT

This section captures the ability of the solution to have a direct positive impact on the environment over its entire lifecycle compared to a reference without any significant negative impact transferred. The Experts were required to answer one question on the environmental benefit of the solution.

EXPERTS REVIEWS

ENVIRONMENTAL BENEFITS

Can the solution deliver an incremental environmental benefit versus a reference case, considering the lifecycle (production, use and disposal stages) of its value chain?

✓ YES

Expert justification - I have looked at the literature including the original NASA study. The performance of air purification does depend on plant selection but I note that this information is provided. Without monitoring, the effect on health is difficult to measure, I am glad to see you are planning to produce a monitoring product.

✓ YES

Expert justification - The solution is targeting indoor air pollutants. Worldwide, the best solution to avoid such pollutants is just to open your windows for 10 minutes every day, as outdoor air is less polluted than indoor air. However, this solution used since decades as some limitation : - outdoor air quality may be worst, especially in some large cities in China. - it is sometime impossible or not recommended to open a simple windows : * double flux CMV try to leverage Air calories to heat up or cool down a room. balance between heating/cooling and air quality is hard to find. * subway, tunnel, skyscraper don't allow you to just open a window. But subway/tunnel use case will be hard to cover with this solution. Therefore the proposed solution seems more and more relevant, and competition will be based on electronics and mechanical parts consuming more energies and requiring more ressources to be produced. It is not company main target to produce eco friendly pots, but this could be a next step in the development of the product.

PROFITABILITY

This section captures the capacity of a solution to deliver an economic incentive for the client and to generate profits for the seller in a 5-year timeframe, regardless of its marketing strategy, its positioning towards competitors, the novelty of the idea and the resources and experience of the team. The Experts were required to answer 2 questions on (1) Client's economic incentives and (2) Seller's profitability of the solution.

EXPERTS REVIEWS

CLIENT'S ECONOMIC INCENTIVE

Can the solution: 1) have the same or lower purchasing price than a reference case? OR 2) create return on investment over the lifetime of the solution despite a higher purchasing price? OR 3) create an economic incentive (value for money) for the client which is not directly related to savings? OR 4) become cheaper than the reference after a change in regulation that is reasonably foreseeable in the next five years in the targeted region(s) and sector(s) of implementation?

YES

Selected option - None

Expert justification - The product itself is expensive and the benefits are difficult to measure. However the literature suggests it will have a beneficial effect on health (criteria 4). Since a monitoring product is in development that will allow better quantification of the benefits and may add additional functionality such as detecting VOC releasing events/substances.

YES

Selected option - None

Expert justification - YES : 1/ definitely cheaper than a mechanical system and comparable price to a well designed plant pot. 2/ if you purchase airy pot versus a standard pot (not taking into account the design part) you get better air pollutant decrease from day 1 (assuming you put a plant in it ...)

SELLER'S PROFITABILITY

Could the solution itself be profitable for the seller within 5 years, with a sale's price at which clients would buy it? Please evaluate this regardless of the marketing strategy, the people behind it, the competitors and the novelty of the product.

YES

Expert justification - Although the product is expensive for a plastic pot it is selling in significant quantities and anecdotal evidence for a positive effect is being gathered. Customer feedback on amazon.de is generally very positive. The company expects to break even in 2019 and seems on track to achieve this. "Airy sense" the monitoring product may be more difficult to sell, however there would be strong interest in indoor air pollution monitoring of VOCs.

YES

Expert justification - There is definitely a market for this. The company is pretty young, but they already sold several thousand of pots. The main challenge is the marketing positioning of the solution : this is a design plant pot which by the way helps you filter air pollutants you will find in dedicated "green " shops, or this is an air filter solution you will find in "technical / hardware" shops where plants are not common (versus a power plug). For now the company only sell online so that this marketing issue is not totally settled. I guess that better visibility of the solution will drive attention of the most appropriate retailer and therefore enable the company with an other sales channel to simplify scale up and therefore profitability.

REPORT FROM THE INTERNAL DELIBERATION COMMITTEE MEETING

The Committee had to answer the following questions: (1) do we consider that the regulatory changes expected by the expert that would make the solution cheaper in the coming 5 years are realistic and do we feel confident enough that they could happen to put the solution in the portfolio?

REASON FOR PRESENTING THE SOLUTION BEFORE THE INTERNAL DELIBERATION COMMITTEE

Expert 1 chose option 4: The solution has a higher purchase price than the references / or costs more money to the client in the end but the experts thinks a change in regulation foreseeable within the next 5 years could make the solution cheaper or even suppress the reference etc.

OUTCOME OF THE DISCUSSION

- Bertrand : La solution fonctionne-t-elle ? Les gens achètent s'ils ont envie, la compagnie fait du profit et il y a un impact sur la santé humaine. - Sabrina : Not truly confident about the efficiency. Even with the Placebo effect. - Alexandra : Comparaison avec système de filtration de l'air. Techniquement ça fonctionne. Impact sur la santé. D'après les experts, pas d'intérêt direct mais ça va dans le sens des changements des indoor air quality. Besoin d'un système de monitoring. - Eleonore : Listen to understand the discussion. - Brice : Ok pour la labélisation : 1000 solutions.

The information set out above, is solely for the purposes of information and the Solar Impulse Foundation does not provide any guarantee as to its authenticity, completeness or accuracy. This information is the direct outcome of the assessment performed by external non-remunerated experts that volunteered to review your solution submission form following the application of the Efficiency Assessment Process of the Solar Impulse Efficient Solution Label Standards. This information is shared to you as it might be of value for you to get the feedback provided on your application – regardless of the outcome of the general selection process.

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