Company Profile

Capt. (Engineer) P. Stavrakakis, MSc, MBA, PhD
Managing Director

KPAD
Food Process Analysis & Design
Ltd
Consultancy Services

1 Kings Avenue
N21 3NA, London, UK
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Established: 2014 in London, UK

Company size: SME (Micro)

Private sector / European and National projects

KPAD as a research oriented organization leads in:

- biotechnology,
- microalgae-based technology,
- food process analysis,
- life cycle analysis, and
- project management

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Expertise & Services

- Design, re-design and optimization of industrial processes
- Development of innovative products and processes in food & biotechnology industry
- Economic feasibility assessment
- Water, energy and resources saving
- Identification of “hotspots” of materials and processes
- CO_2 footprint of products estimation
- Environmental engineering management
- Sustainable product design and development
- R&D project support and management
- Determination of sensory analysis, shelf life tests and user’s acceptance
- Mathematical modeling of the physical processes and thermophysical properties of materials

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Current funded R&D projects

Program	Starting Date	Duration (months)	Total Funding (€)	KPAD Funding (€)	No of partners
KATANA	01/07/2016	30	5.445.695	304.500	14
VOLATILE	01/12/2016	48	6.565.926	206.250	21
SmartVRA	02/10/17	24		223,541 (£)	2
SMART-AGRIFOOD	01/11/2017	36	5,999,653	238,000	
YPACK	01/11/2017	36	7.277.671	240.000	21
Ochravine Control	01/01/2018	48	1.183.500	198.000	8

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KPAD People

Currently 7 internal persons

- Managers, Researchers (MScs, MBAs, PhDs, Postdocs)

10+ external partners

- Researchers & Subcontractors

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LifeSub: Symbiotic Life Support Systems for Submarines

Regenerative atmosphere revitalization in conventional submarines

KPAD **proposal** for European Defence Industrial Development Program call of Hellenic Ministry of Defense / General Directorate for Defense Investments and Armaments

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Market Need for LifeSub:

A Submarine is a closed eco system that contains the crew and a limited supply of air. In order to keep air in submarine breathable and the crew alive:

- O2 has to be replenished as it is consumed; if O2 level in the air is limited, a person suffocates
- CO2 must be removed from the air; as the concentration of carbon dioxide rises, it becomes toxic,
- the exhalation moisture must be removed
- All other onboard generated air pollutants needs to be removed

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LifeSub Approach:

LifeSub achieves to give a most effective solution to the most immediate concern for submarine crews: to support human metabolism and life

- and achieve to convert; the onboard produced, CO2 to pure breathable O2,
- to remove all other onboard generated air contaminants
- and, to produce onboard food for crew of high dietetic value

Through the advanced LifeSub microalgae-based biotechnology.

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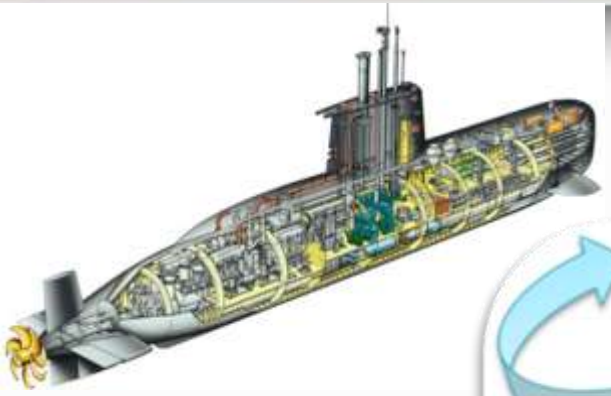

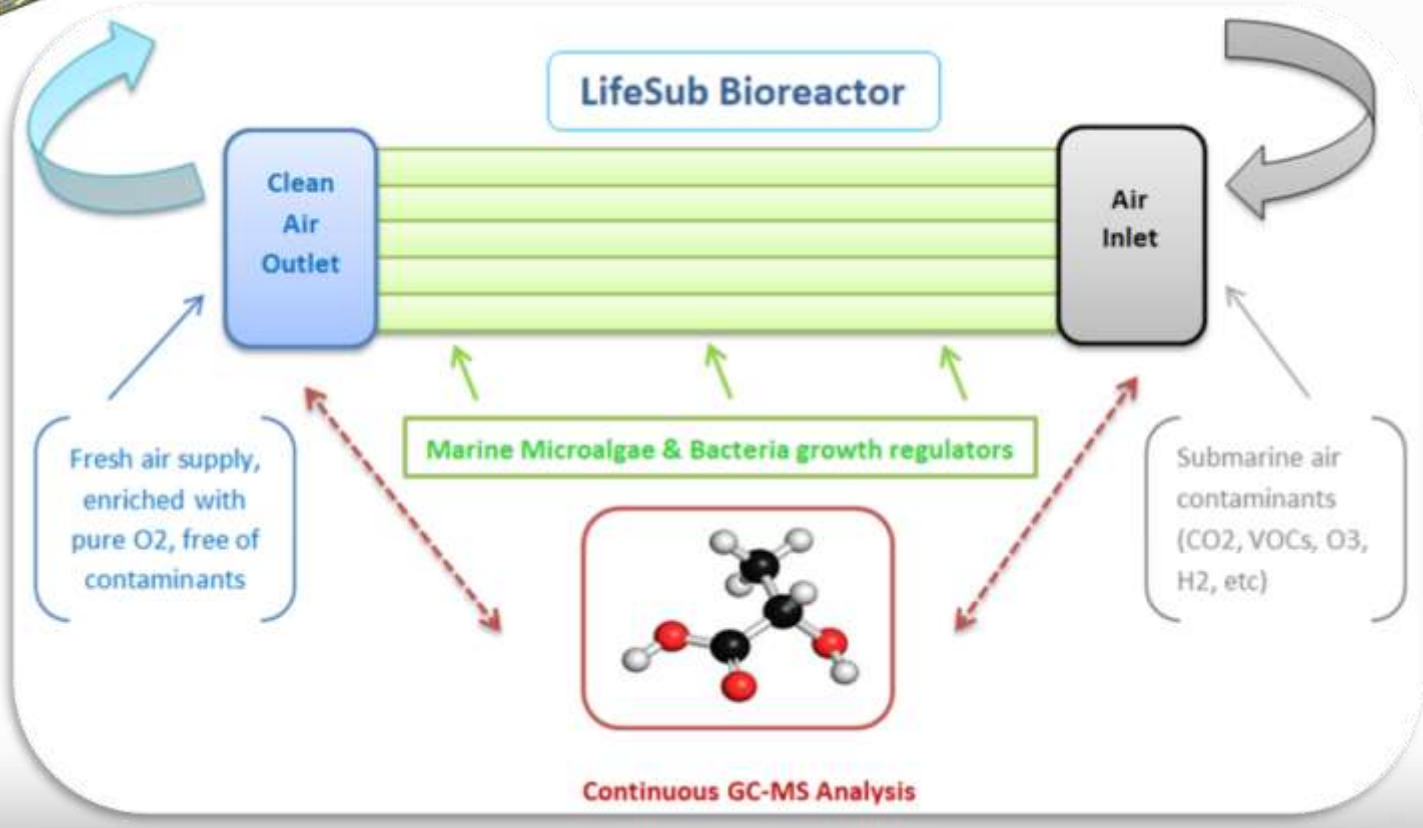

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KPAD microalgae-based baked products:

- Onboard production and consumption
- Healthier products
- Gluten free
- Free of allergens, sugar and animal fat
- Vegan
- Cholesterol free
- Enriched with microalgae proteins, Ω3 & Ω6

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LifeSub Competition:

Currently, there is not a similar technology,

Existing technologies cannot provide satisfactory and safe submarine atmosphere revitalization, for conventional submarines.

The existing methods address partially the issue of life support on board, and present serious drawbacks:

- occupying valuable space,
- high energy consuming,
- are not safe for crew and vessels, since fatal accidents have been recorded, and create detection sources for the vessel
- do not provide complete atmosphere purification and revitalization

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LifeSub disruptive technology offers to submariners a safe and habitable atmosphere to live and work, free of toxicants and air contaminants

While Navy users of LifeSub gain:

- a safe, cost efficient, complete, and sustainable regenerative submarine atmosphere revitalization,
- a strategic advantage over other navies that operate similar submarines, and
- an opportunity for improved and longer submarine submerged operations