BACH KHOA
INNOVATION

from WASTES *to* BLUE ENERGY

BKTENG

THE PROBLEMS

- 8,58 million aquaculture businesses in Vietnam
- Aquaculture sector growth rate of 6,3% in 2022
- Vietnam's 5 largest shrimp exporting markets: US, EU, Japan, Korea, and China
- Product quality problems are hindering export value

Source: Viet Nam Briefing

BK TP.HCM

MATERIALS TECHNOLOGY

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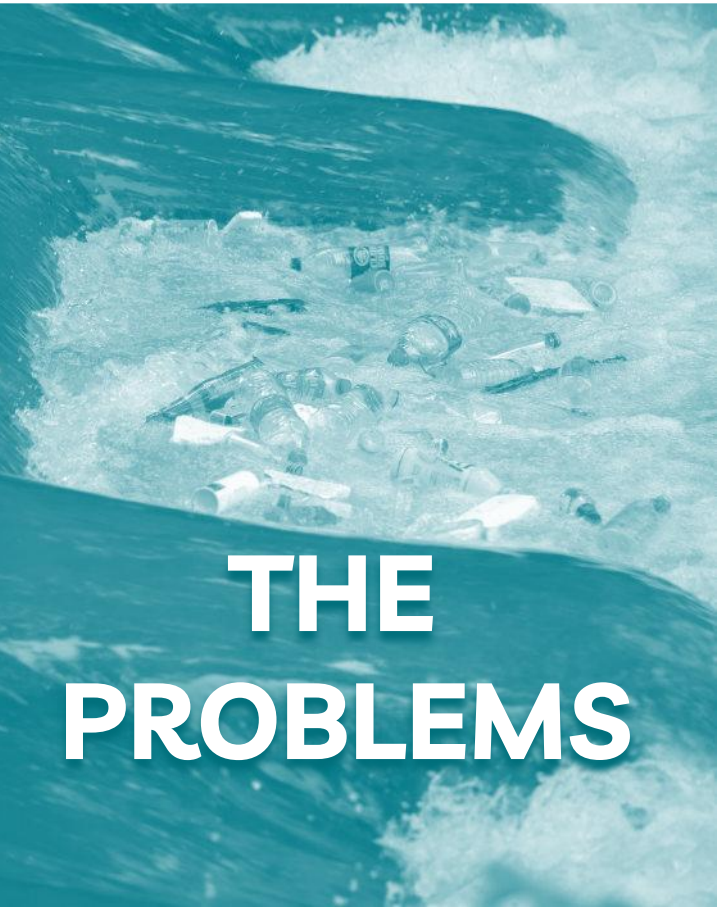
BK energy BLUE ENERGY HARVESTOR

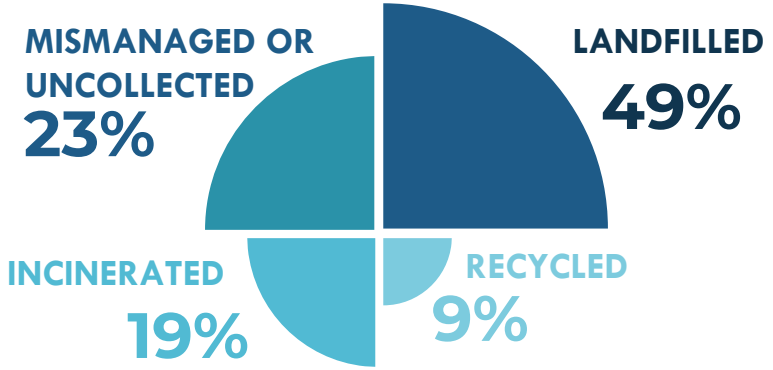
THE PROBLEMS

- Latency of data obtained from traditional sensors
- Demand for sustainable offshore electricity
- IoT adoption rate steadily increases by 5% each year
- Need for quick adaptation to environmental changes

Source: Viet Nam Energy Outlook Report 2021



THE PROBLEMS



400 million tonnes of plastic waste are discarded every year

Source: OECD

Solution

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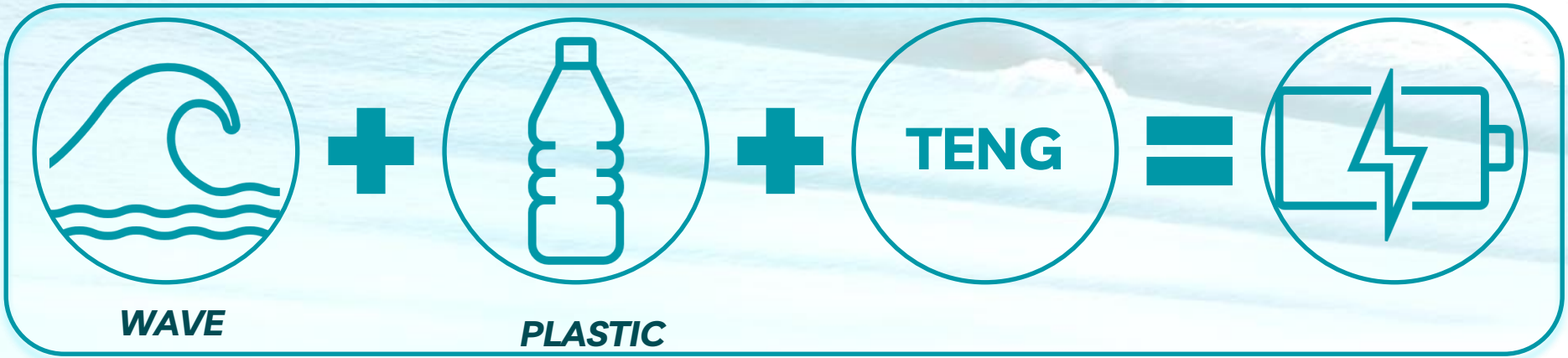

WAVE

PLASTIC

- Inexhaustible
- Environmental Friendly
- High potential

- Versatility
- Recyclability
- Environmental Protection

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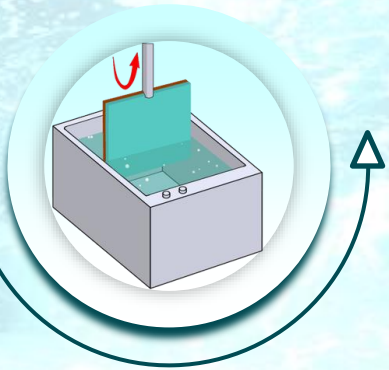
1 Plastic Wastes' Grinding and Sanitary

2 Dissolving Plastic Wastes' in Solvent

3 Making Recycled Plastic Mold



4 Making Plastic Waste-based Electret

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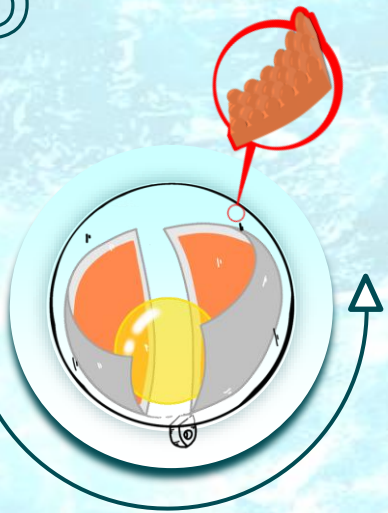
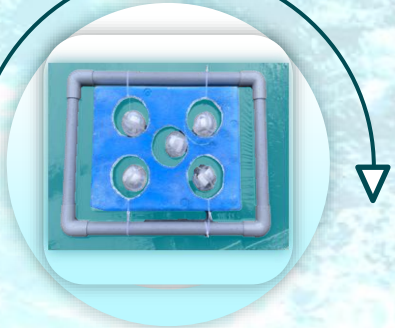
5 Scheme of FL-TENG



FL-TENG

6 Scheme of FL-TENG module

Network of FL-TENG



BK TP.HCM

MATERIALS TECHNOLOGY

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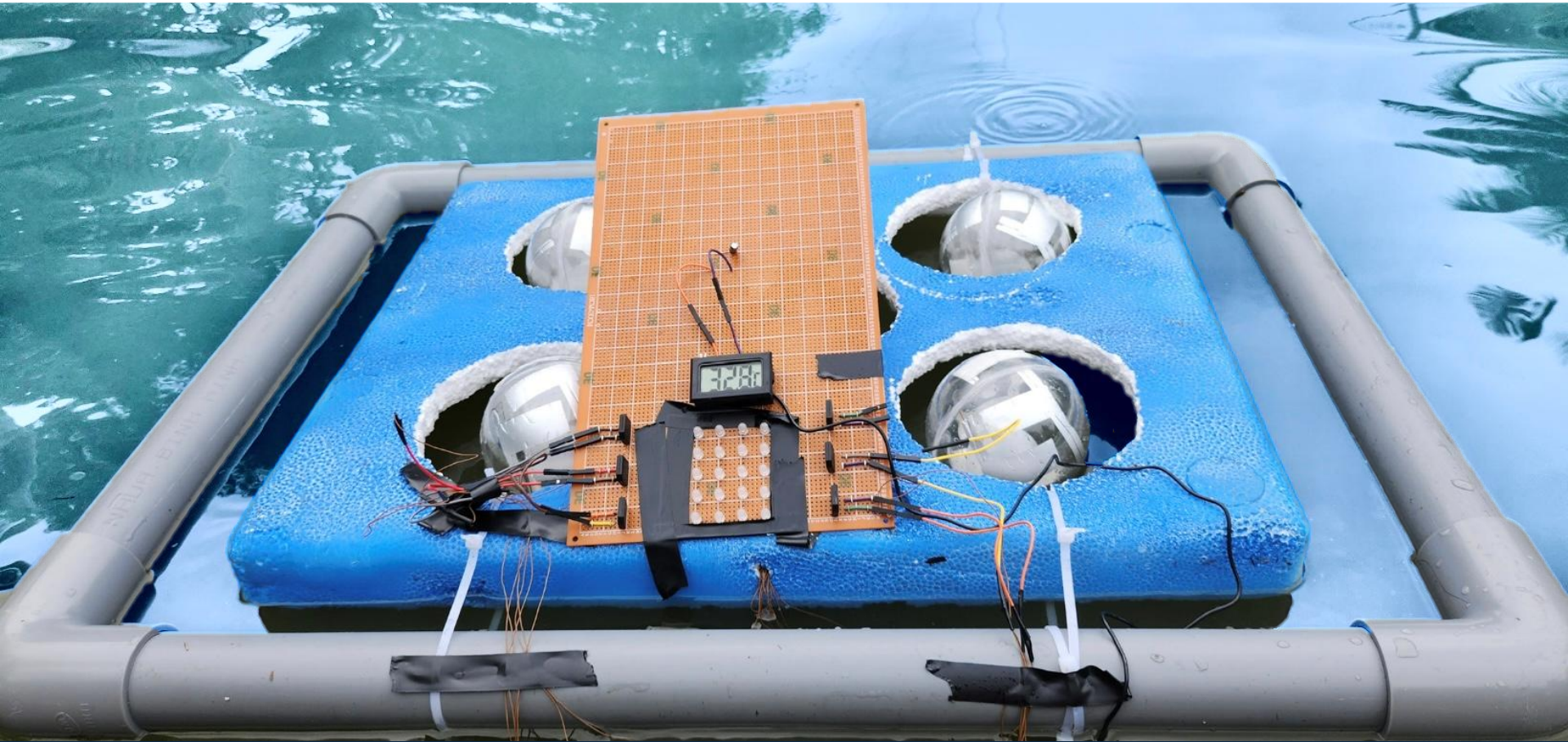
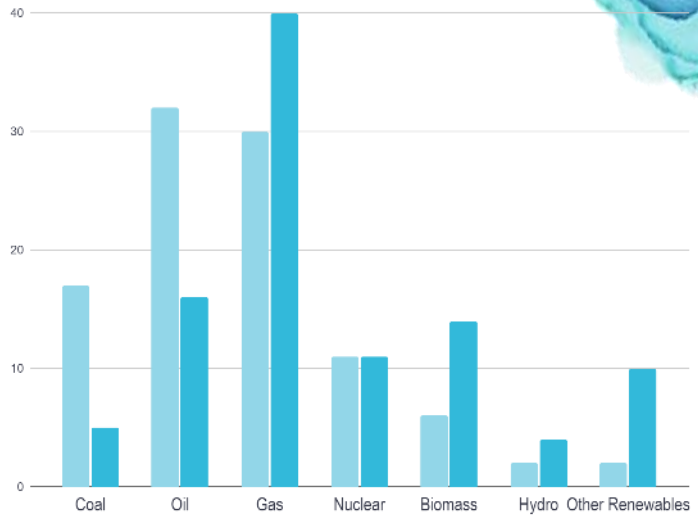
BK energy BLUE ENERGY HARVESTOR



MARKET VALIDATION

BACH KHOA INNOVATION



Source: Statista, World Bank

70% of total emissions come from a power system

Vietnam commits to be a net zero GHG emitter by 2050

Annual power demand steadily grow at 8%

MARKET VALIDATION

By 2030, export revenue from aquatic products is expected to reach $12 billion

By 2030, the growth rate of aquaculture value is expected to reach more than 4.5% a year.

Viet Nam is the third largest seafood exporter in the world

Source: VASEP

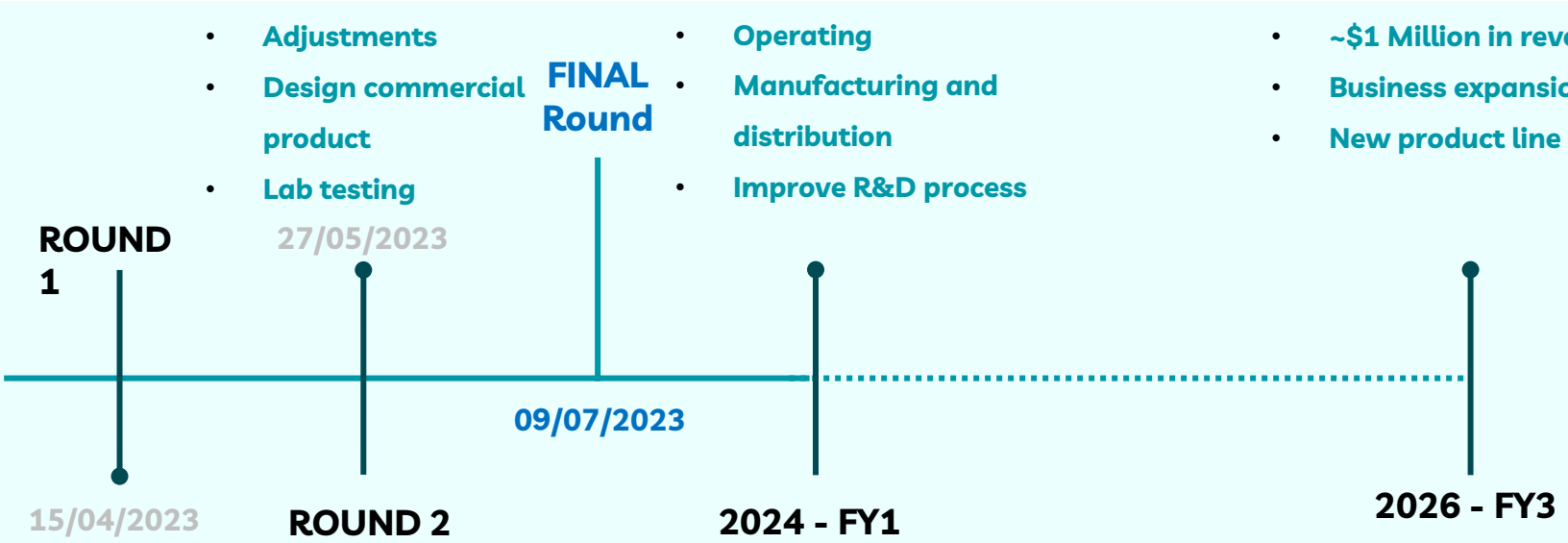
OUR CUSTOMER

Aquaculture businesses:

- Accurate real-time information
- Sustainable source of energy for monitoring services
- Immediate respond
- Total of 8,58 million businesses
- IoT adoption rate of 5%/year

BACH KHOA INNOVATION

Components	GENERAL MODULE Quantity	Unit Price	Price	SELF-POWER SENSORS MODULE Quantity	Unit Price	Price
Device (TENG system)	50	$1.13	$57	50	$1.31	$57
Charge Controller	1	$21	$21	1	$21	$21
Monitor				1	$42	$42
Inverter	1	$339	$339			
Battery	1	$339	$339	1	$339	$339
Monitoring sensors package				1	$424	$424
Total Cost			$756			$883
Selling Price (120% COGS)			**$907**			**$1060**


ROUND 1
15/04/2023
First prototype
Idea designed
R&D process
27/05/2023
ROUND 2
Adjustments
Design commercial product
Lab testing
09/07/2023
FINAL Round
Business idea
Field-test integrated applications
Prototype network designed
2024 - FY1
Operating
Manufacturing and distribution
Improve R&D process
2026 - FY3
~$1 Million in revenue
Business expansion
New product line

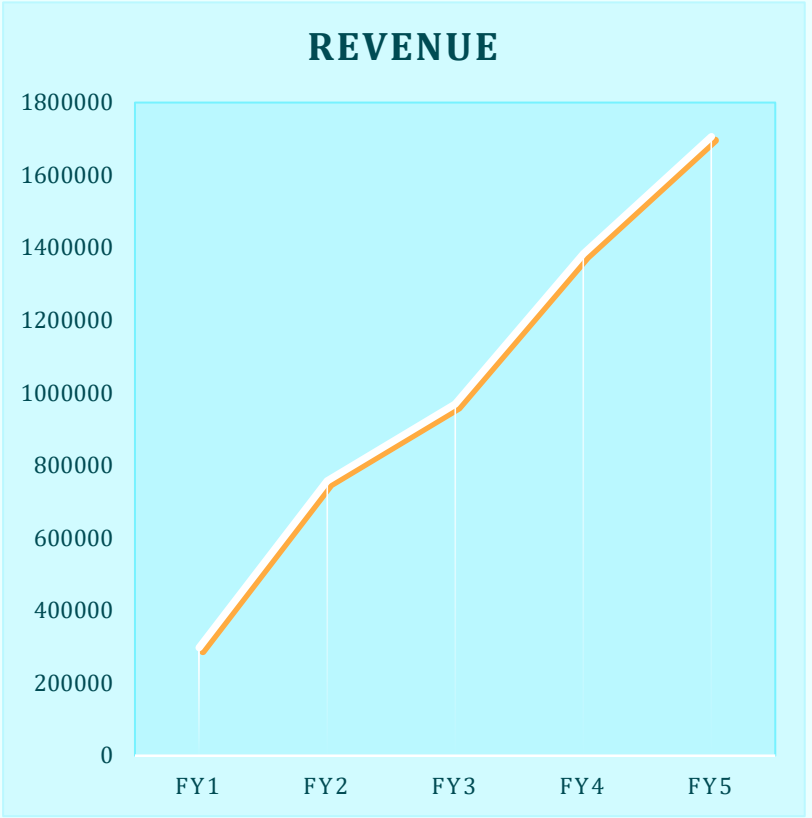
BACH KHOA INNOVATION

REMARKS

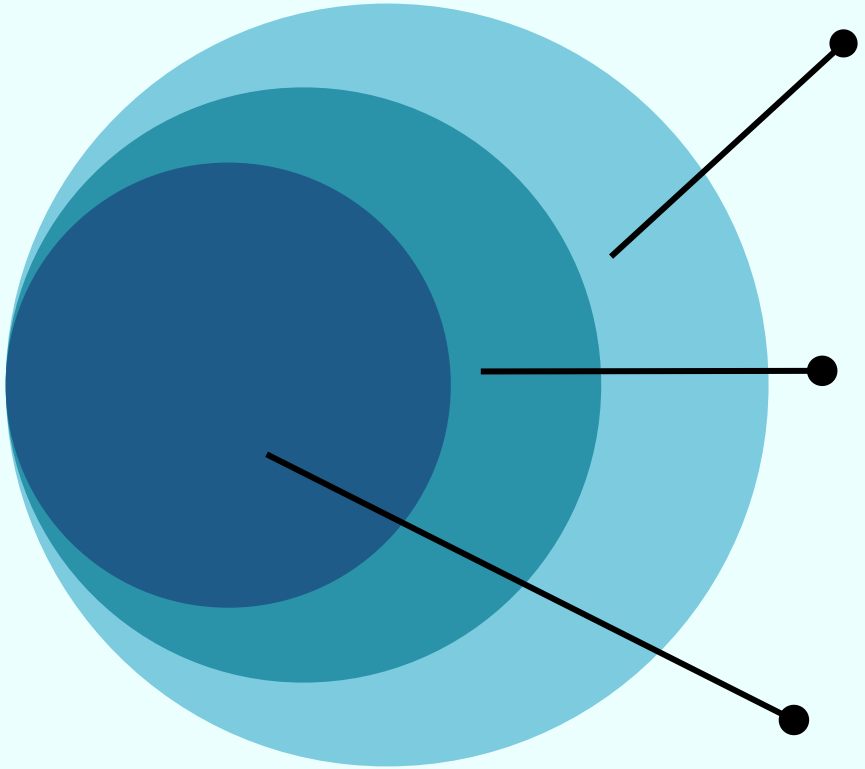
8 m^2 of FL-TENG can generate power to supply 2 standard households

Guaranteed for 5 years maximum efficiency up to 98.6%

Profit in 4 years is expected to reach ~50% ROI



MARKET SIZE



TAM ~ $10 Billion

8,58 million aquaculture businesses

SAM ~ $1,85 Billion

Aquaculture farmer adoption rate of IoT into business of 5% in the next 5 years

SOM ~ $360 Million

10% of the monitoring sensor market

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COMPETITORS & POTENTIAL PARTNERS

BACH KHOA INNOVATION

BK TENG'S MENTOR

Dr. Van Tien Bui

- Developed exclusive innovative technique
- Leading in TENG technology in Vietnam

Ms. NGOC-MAI CHAU

- MSI in Environment Engineering
- Ph.D. Candidate in Materials Science and Engineering

BACH KHOA
INNOVATION

LEADER

Tuan Dinh

Mai Tran

TECHNICIANS

Huy Nguyen

Quoc Pham

Binh Nguyen


US $43,000

APPENDIX

The Business Model Canvas of BKTENG

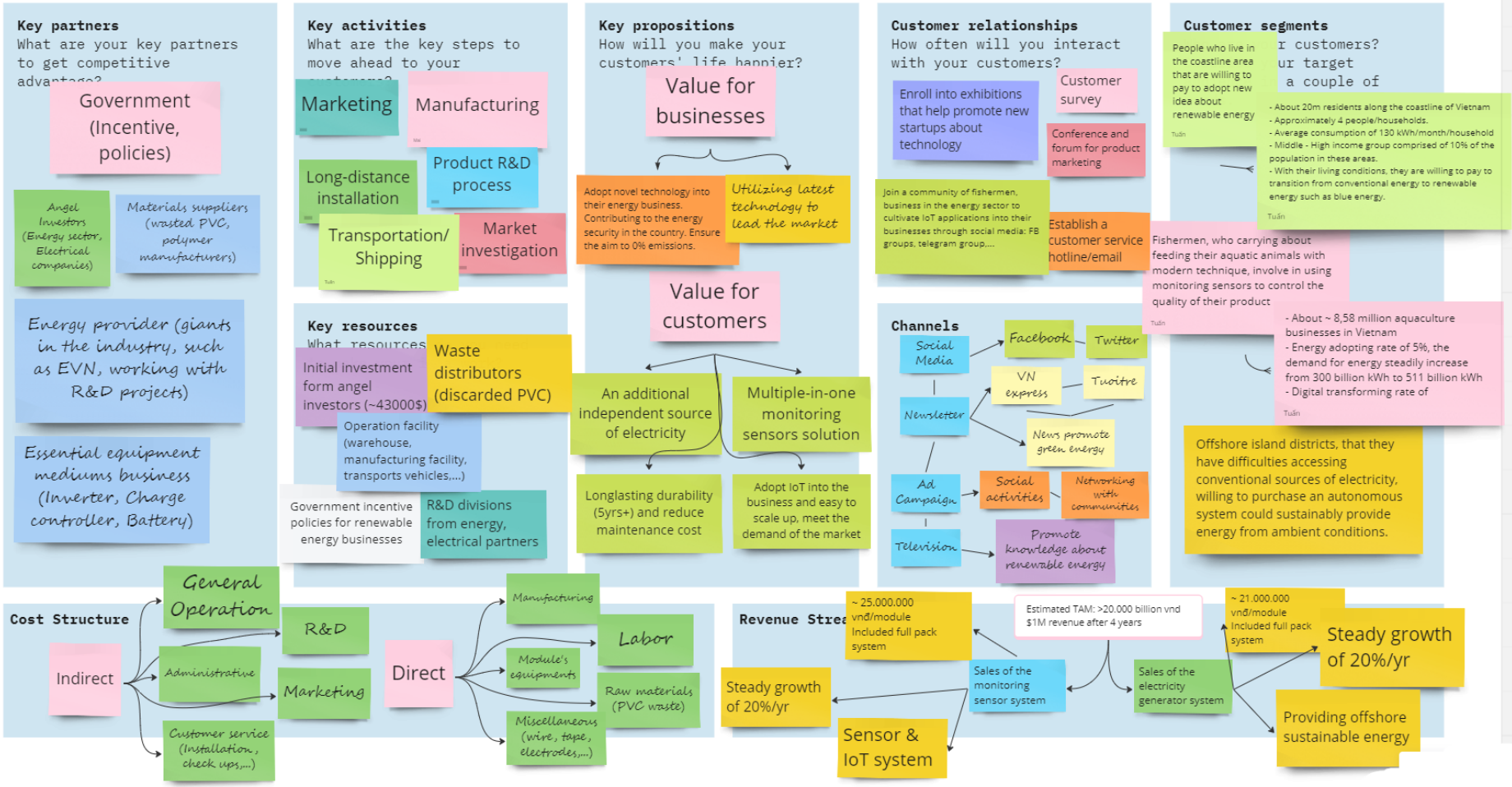

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Table 1. BKTENG Financial Projection

	FY1	FY2	FY3	FY4	FY5
Product 1 sales	135	250	300	500	600
Product 2 sales	165	500	600	800	1,000
Revenue	$297,315	$756,635	$968,979	$1,382,687	$1,705,680
Rev Growth %		*154%*	*28%*	*43%*	*23%*
Cost of Goods Sold 1	$102,055	$188,990	$226,788	$377,980	$453,576
Cost of Goods Sold 2	$159,691	$483,912	$580,694	$774,259	$967,824
Gross Profit*	$35,569	$567,645	$742,191	$1,004,707	$1,252,104
Gross Margin %	*86%*	*1496%*	*31%*	*35%*	*25%*
Operating Expenses	$135,038	$143,485	$154,964	$167,361	$180,750
Investment	$42,372				
Net Profit	-$38,135	-$59,752	$6,533	$63,087	$103,530
Net Present Value (NPV)	$21,906	$62,921	$143,394	$238,417	$313,027
Internal Rate of Return (IRR)	19.71%	32.59%	37.09%	39.76%	42.78%
Return On Investment (ROI)	-190%	-241.02%	-84.58%	48.88%	144.33%
Cashflow (End of Period)	$73,772	$14,020	$20,552	$83,639	$187,169

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Table 3. Detail of manufacturing cost for generator module

Components	Quantity	Unit price	Price
Device (TENG system)	50	$1,13	$57
Charge controller	1	$21	$21
Inverter	1	$339	$339
Battery	1	$339	$339
Total cost			**$756**
Selling Price (120% COGS)			**$907**

Table 4. Detail of manufacturing cost for self-powered sensors module

Components	Quantity	Unit Price	Price
Device (TENG system)	50	$1,13	$57
Charge controller	1	$21	$21
Monitoring sensors package	1	$424	$424
Monitor	1	$42	$42
Battery	1	$339	$339
Total cost			**$883**
Selling Price (120% COGS)			**$1.060**

Table 2. FL-TENG cost structure

Components	Unit	Price/Unit	Quantity	Cost
Acrylic sphere	Sphere	$0,5	1	$0,5
Aluminum foil	Roll	$2,12	0,15 m	$0,01
Coil	Roll	$0,85	2 m	$0,08
PDMS	Can	$16,95	0,015 kg	$0,25
Process				$0,29
Total				**$1,13**

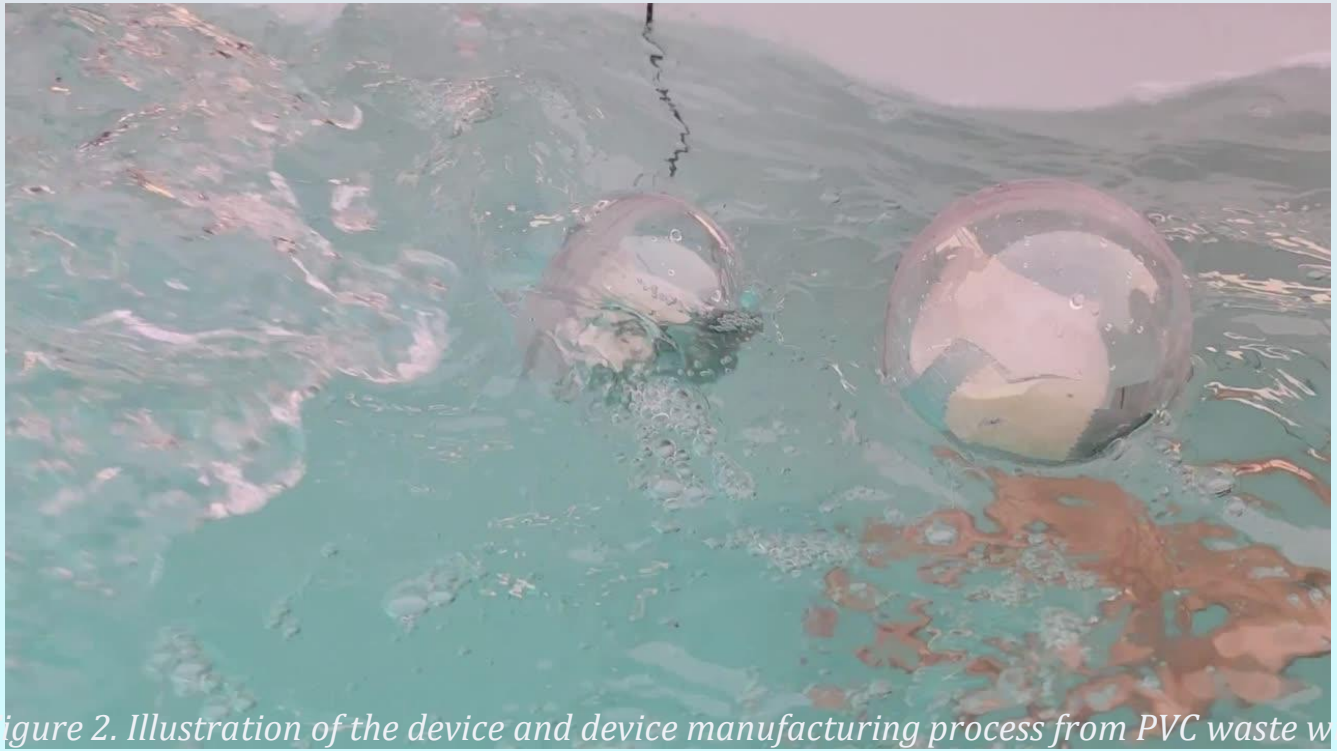
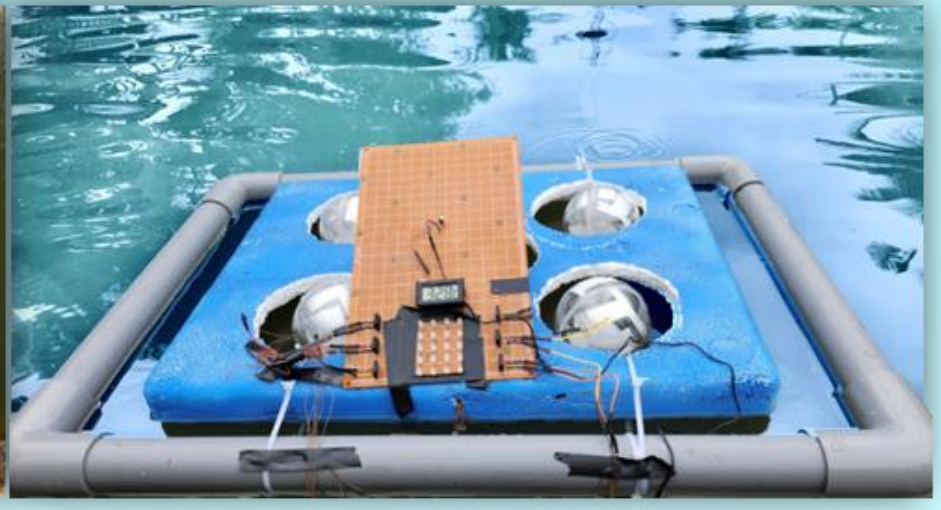


Figure 2. Illustration of the device and device manufacturing process from PVC waste with working mechanism



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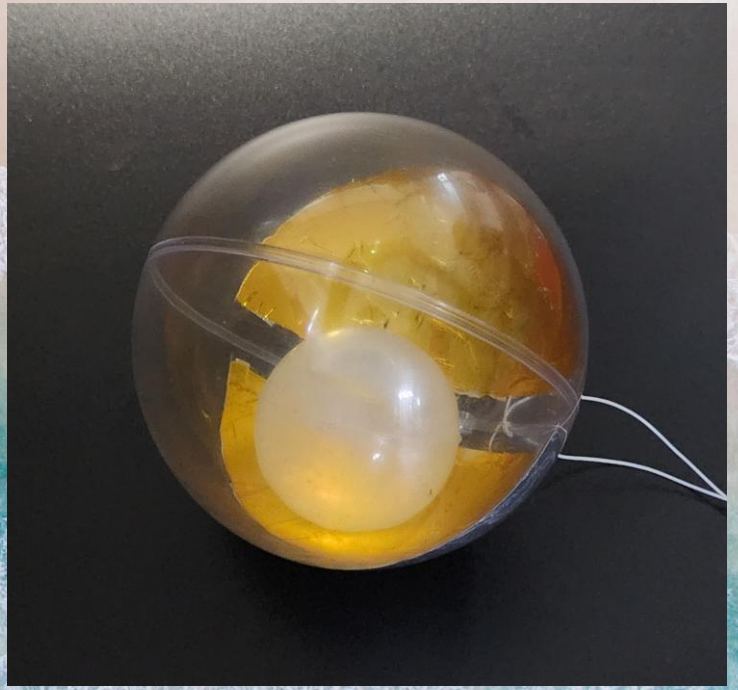


THE END,
THANK YOU FOR
YOUR ATTENTION