

2014 - Denmark



Cool, Calm & Collected

Investment Proposal

Developed by

Nicolai Schjerning Lundsgaard

Dennis Krogsgaard Andersen

Mark Hollænder Viese

Christian Fonnesbæk Jensen

Daniel Buhl Nielsen

Advisor: Thomas Holm Knagaard

Patent Applied: Letters Patent to the United States in May 2014

Table of contents

Table of contents	1
Executive Summary	2
Introduction	3
General information about the company	3
Business Concept & Mission	3
Vision	3
Team & Organisation	3
RASIC Chart	4
The Product	4
Value Contribution	5
OPEX – Operating Expenses	5
Operation and Maintenance	6
Environment and Taxes	6
Customers	6
Markets and Competitors	7
The Ship Building Industry – year 2014	7
Market Entry	7
Market Entry Barriers	8
Entry Customers	8
Competitors	9
Business Model	9
Competencies and Resources	10
Critical Success Criteria – trade offs	10
Performance Objectives and Risk	11
Advisory Board & Strategic Partners	11
Financial Perspectives	12
Final remarks	12
Appendices 1 – Development Budget	13
Appendices 2 – Cash Flow	14

Executive Summary

USD 7.250.000.000 in potential savings! Worldwide 50,000 ships throw away 145,000 dollars per ship each year, directly off the bulk way in terms of unused waste heat. This is a huge waste of resources and a high operational cost for the ship owner. Also it holds unnecessarily environment impact in terms of inappropriate CO2 emissions.

COOL4SEA will utilize wasted heat and use it for cooling the vessels. Our idea is to use energy from waste heat to power the ship's refrigeration system. Developing a sea going absorption chiller solves the problem.

As the product is to be designed for use in the maritime and offshore industry special and unique parts in the unit is essential for both use and effect in this environment. COOL4SEA has applied for Letters Patent to the United States in May 2014 entitled "Absorption Refrigeration and Air Conditioning Device for Maritime Operation"

Market

Currently there is no absorption chillers installed in a ship. There are approx. 50,000 ships operating on the oceans. Annually build around 1500 ships and the trends in the beginning of 2014 are increasing. All these ships are potential customers for our unit. Research will be focused both on the installation in new construction and retrofit of existing tonnage. Currently there are no other companies producing absorption chiller units to be installed in the maritime world.

Customer Value

Our unit will provide the customer with operational and cost savings of approx. \$ 135.000 per ship/year in terms of fuel savings and reduced maintenance. In addition, the customer will obtain savings on environmental taxes and run a company with a more green profile, which would be a potential competitive advantage.

The company

COOL4SEA has team of highly qualified engineers with both technical and managerial skills and experience. The company has a strong advisory board and an extensive network within the maritime industry.

The need for additional competences and skills has been identified using a value chain analysis for the product and through customer interviews.

Business Model & Strategy

Implementation plan and critical success factors for a timeframe of 3 years has been identified and outlined in order to meet and challenge any trade-offs. The market entry is based on a "freemium" model with the "no cure – no pay" philosophy which provides the customer with a cooling unit without any costs.

Financial Perspectives

COOL4SEA has a Business Angel providing an initial investment of \$ 185.000. Development budgets show that additional capital for the first 18 months is approx. \$ 525.000.

A potential investor will get a ROI of 23 % of his investment within 3 years – as well as an interest of 20 %. The investor would be able to exit within 1 year still earning a 20 % interest to his investment.

Introduction

This Investment Proposal has been prepared by COOL4SEA and describes the process and challenges of establishing our company. The investment proposal is to be used as a guide for the company, and as a tool to empower stakeholders through strategic partners and investors an insight into the company's development and potential.

General information about the company

COOL4SEA was founded in 2014 in Svendborg, Denmark, for the purpose of development and impact of climate solutions for the maritime industry.

Name	COOL4SEA Limited Company
Registration no	35850120
Shareholders	M. Viese, D.K. Andersen, N. Schjerning, C.F. Jensen, D.B. Nielsen
Location	Sundbrovej 87, 5700 Svendborg, Denmark
Equity	DKK 56.250 – USD 10.250
Bank	Sparekassen Faaborg: www.sparekassenfaaborg.dk
Homepage	www. COOL4SEA.com

Business Concept & Mission

COOL4SEA will provide reliable cooling and heating solutions for the maritime industry. Focus on environmental, economic and technical development together with our customers.

Vision

COOL4SEA will develop innovative and sustainable solutions for maritime climate technology

Team & Organisation

The company COOL4SEA consists of 5 engineer students from Svendborg International Maritime Academy, Denmark.

The company has high professional experience and training skills in refrigeration engineering, thermodynamics, environmental engineering, automation, management and administrations.

All 5 shareholders hold an equal share of 20% of the company.

Potential Business Angels will receive shareholder rights – but without executive voting.

RASIC Chart – The organizational matrix created for COOL4SEA

	N. Schjerning	D.K. Andersen	C.F. Jensen	M.H. Viese	D.B. Nielsen
Management Patents	R / A	S / I / C	S / I / C	S / I / C	S / I / C
Financials	S / I / C	R / A	S / I / C	S / I / C	S / I / C
Marketing – Sales - Clients	S / I / C	S / I / C	R / A	S / I / C	S / I / C
Establishing Enterprise	S / I / C	S / I / C	S / I / C	R / A	S / I / C
Product Development	S / I / C	S / I / C	S / I / C	S / I / C	R / A

R: Responsible, A: Accountable, S: Support, I: Information, C: Consulted

The Product

In the modern shipping industry, there is an increasing focus on optimizing operations and savings of the same. Therefore, COOL4SEA are in the process of developing a cooling system that utilizes waste heat from the main and auxiliary machinery for cooling and heating of the accommodation on a ship.

The cooling solution works by the principals of the absorption chillers.

A gas refrigerator works by the principals of the absorption chillers, where you have a flame that heats up water, and ammonia at the bit to react with water. The ammonia is in that way the energy of the heated water, and produces cooling. The product works by using the main engines cooling water, and by applying the absorptions principle, generates cooling for the ships accommodation without the use of large electric compressors.

Our unit is based on a special type of salt instead of ammonia, as it is more environmentally friendly and therefore has fewer restrictions with respect to location and building construction, and it has a lower purchase cost. The units are mainly built on components and assembly of components. There are few wearing parts and dynamic moving components. The system is extremely low regarding maintenance costs.

Extensive theoretical calculations show the potential of the product. The cooling unit is able to cool the accommodation and substitute the existing cooling system onboard which will generate an electricity saving equivalent to 500 USD per day (185000 USD per year).

As the product is to be designed for use in the maritime and offshore industry special and unique parts in the unit is essential for both use and effect in this environment. COOL4SEA has applied for Letters Patent to the United States in May 2014 entitled “Absorption Refrigeration and Air Conditioning Device for Maritime Operation”

The patent is applied in the United States as it provides COOL4SEA with a timeframe of 18 months to raise capital for applying and purchasing patent in the European and Asian region.

Value Contribution

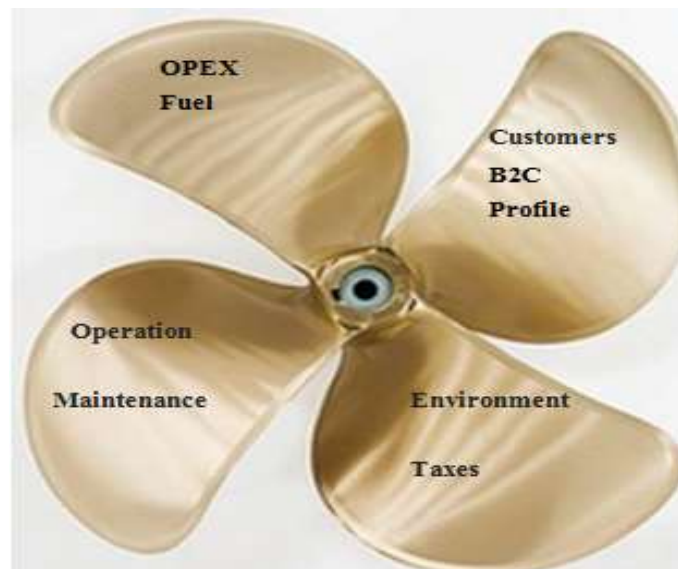
Value contribution to the customer is captured in 4 main elements

1. OPEX – Operating Expenses
2. Operation and maintenance
3. Environment and taxes
4. Customers value of bargaining.

Total saving:

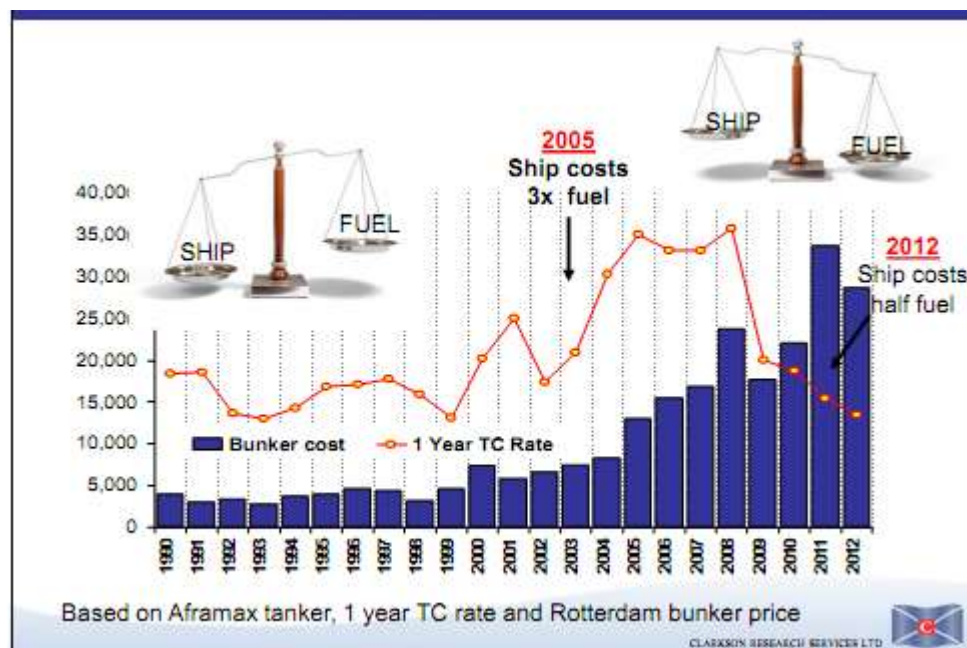
185.000

USD/Ship/year



OPEX – Operating Expenses

In the past capital costs of purchasing and investing in ships was the main cost. Today it is OPEX – especially fuel costs. OPEX has increased approx. 100 % over the last 10 years



We are facing the fact that capital investment cost of the ship is only approx. 50 % of fuel costs measured in USD/day. Compared to an “Average Earning USD/day” shows the relationship between fuel and profit/freight rate



Therefore the future calls for “ECO-Ships” – energy-saving ships that use less fuel – keeping the tonnage hauling possibilities. Our unit provides a higher efficiency of the fuel used in ship-s engines.

Operation and Maintenance

Maintenance cost on a ship involves approx. 10-15 % (400-500 USD per day) of the daily operation costs. These costs can be reduced by the introduction of a cooling with minimum maintenance. Our product is almost maintenance free with only a few moving parts it is extremely hard-wearing and durable. This will also relieve engineers on board for other more essential duties – saving wages.

Environment and Taxes

Ships will reduce their fuel consumption and emit significantly less CO₂, NO_x and SO_x - and thus be able to operate more environmentally friendly. In addition, the ships escape the levy, as there will no longer be stored traditional refrigerants on board. Refrigerants are strong greenhouse gases 10-50 times worse than CO₂.





The expenses saved is approx. 4.600 USD/year/ship

Customers

Customers (Ship owners) will be able to offer a more environmentally friendly B2C transport service to their customers - and could strengthen their green profile. Moreover, they could produce a better environmental report. The customer will have a unit that is "custom-made" for their needs and will be able to participate in the development and implementation phase. The customer will have a unique opportunity to be the "first mover" in the area and give themselves a competitive advantage.

Markets and Competitors

The four shipping markets that control the shipping industry are defined as:

-  Freight market – supply and demand of tonnage
-  Sale & Purchase – purchase and sales of secondhand tonnage
-  New Building – investment in new tonnage
-  Demolition – Recycling of ships

The four markets act internally – and thus creating cash flow in the industry. COOL4SEA identifies their primary market as the “New Building” market - as a supplier (B2B) of cooling solutions. Retrofitting existing tonnage will also be a targeted market segment when the product has a proven track record.

In this market we identify two potential customers/stakeholders: the ship owner and the ship yards. The ship owner has specific requirements for the ship design, quality and size of tonnage. The ship yard will often have standard solutions of ships – which mean less cost for the yard. COOL4SEA will supply both ship owner with customized cooling solutions specific for their needs – and ship yards with standard solutions – suitable for multiple ships and offshore installations.

There are worldwide more than 300 major ship yards – and numerous smaller

Geographically the ship owners are based primarily in Europe / East Asia, while the major ship yards are based in China / South East Asia. COOL4SEA will initially focus on the customers “close-to-home” in Denmark and Europe. As the product gains market share – the focus will be worldwide.

The Ship Building Industry – year 2014

As of 13-06-2014 **5.724** ships and offshore installations in the order book of the ship yards (source: *Clarkson Research*) for delivery within the next 4 years. These ships are all potential customers.

In 2013 was ordered 158 million dwt at the yards - a 300 % increase compared to 2012. The market trends and customer behaviors can also be described in relation to the different stages in short-term 7 -year-old shipping cycles, where we can identify market conditions and assess how costs and freight rates react to supply and demand.

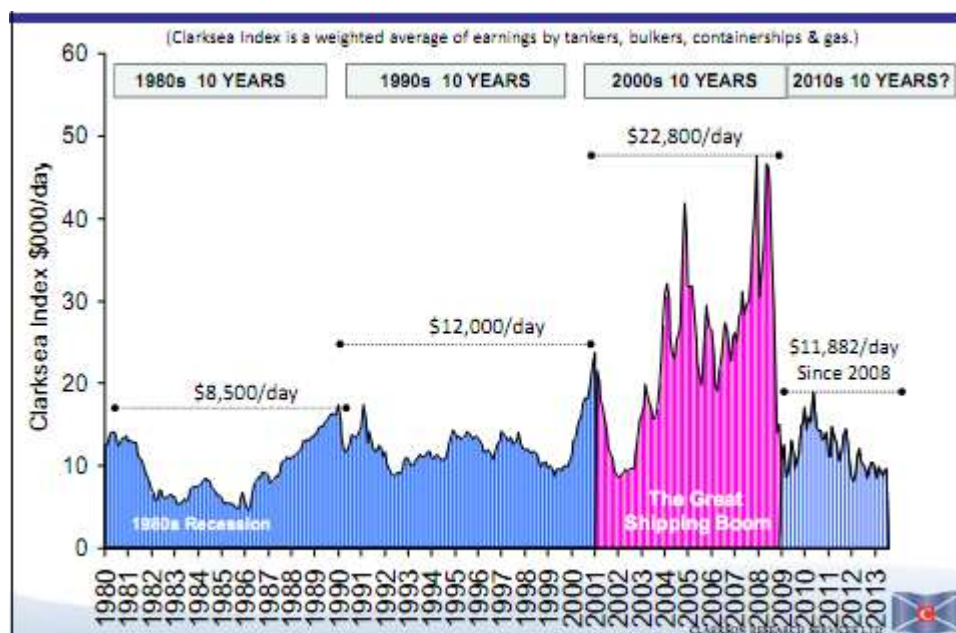
The market is in a "trough" now - heading towards a "recovery phase" - this is also reflected in the increasing freight rates in certain shipping segments. It is typically in the trough / recovery phase, we face market investments - and thus more new buildings - customers with a focus on new projects.

Market Entry

COOL4SEA will enter a market in growth – and with an extensive focus on fuel optimization, energy preserving solutions and cost effectiveness. The timing is right – the market and the customers are ready – and the product is for real.

The market segmentation will primarily be in new buildings as the potential customer savings are more evident here – but also the retro-fitting business is a possibility as ship owner optimizes their existing fleet.

The main focus will be on production of the cooling solutions – not on actual fitting and installation on board the ship. Installation on board is identified as an initial risk as is time and resource consuming without any significant earnings.



Generally the demand for transport is increasing year after year. We therefore expect an ever increasing demand for tonnage, thus increasing demand for product. Furthermore, we can look at the type of tonnage – there are built increasingly more cruise ships and "Offshore vessels / installations" - where the potential savings / benefits will be even more evident and extensive with the purchase of our product.

Market Entry Barriers

However, the shipping market holds reservations about new initiatives and is "reluctant to change" - and also it is difficult to identify the "Market buyer" - the real decision maker at a purchase of equipment. This relationship is identified through interviews with owners and other B2B dealers in the industry. Shipping market reacts very conservative - and relationships are paramount. **"Market is people - not only products"** is the basic market philosophy.

Therefore, the marketing strategy of COOL4SEA is based on "Customer Relationship Management".

We work with a product in which it is essential that the customer is involved in the development and implementation at a very early stage. Therefore, we need to work closely with the client - this regardless of whether the client is a ship owner or a ship yard. Close relationships with customers has to be established in order to gain trust and co-operation.

Entry Customers

COOL4SEA are currently in contact with 2 possible customers (Ship owners).

UNI-TANKERS A/S – DENMARK - Thomas Lynge - Maintenance Systems & Energy Efficiency Superintendent)

UNI-Tankers A/S operates a fleet of 17 product tankers in a worldwide trade. www.unitankers.com

A. P. Moller Maersk - Maersk Line - (Frants Sommer Reuss, Technical Department)

Maersk Line operates a fleet of containerships in a worldwide trade pattern. www.maerskline.com

The ship owner has to make “guestimates” for the investment especially with a focus of retrofitting his fleet. Estimated assumptions based on history, experience and the vision of the ship owner has to be examined.

- ✚ New Building or Retrofitting : ECO ships – Focus on energy awareness – or optimizing on existing tonnage
- ✚ Fuel Price and variation : fuel price June 12 – 875 \$/mt (Rotterdam) and has been increasing for 10 years
- ✚ Life Cycle period : a normal life cycle period of a ship today is approx. 12-15 years
- ✚ Markets & Freight Rates: depending on business segment and tonnage

Jeppe Juhl from **BIMCO** explains: *“ECO ships will become an important commercial parameter as investments in ECO ships are more viable – already now. ECO ships will become a brand. And ECO ships will put demands on ship designers and shipyards to think “out-of-the-box” to develop more fuel efficient ships – and focus on other environmental issues as well. First movers may be rewarded”*

BIMCO: Baltic and International Maritime Council

Competitors

We have identified numerous suppliers of “traditional” cooling solutions on the market. And there are also several manufactures of absorption chillers on the market – but none is manufacturing any products for ships and the maritime industry. The patented cooling solution from **COOL4SEA** will have first mover opportunities and gain substantial market shares – as the product is completely new to the market.

COOL4SEA sees opportunities in collaborating with the established suppliers in order to exploit their know-how on development and implementation. It will also facilitate quicker and more effective way to the client / customer network and give us an advantageous distribution channel for our product.

In Denmark Alfa Laval A/S, YORK A/S – is providing cooling solutions for the maritime industry

Thermax, India, YAZAKI, Japan is identified as providers of absorption cooling solutions.

Business Model

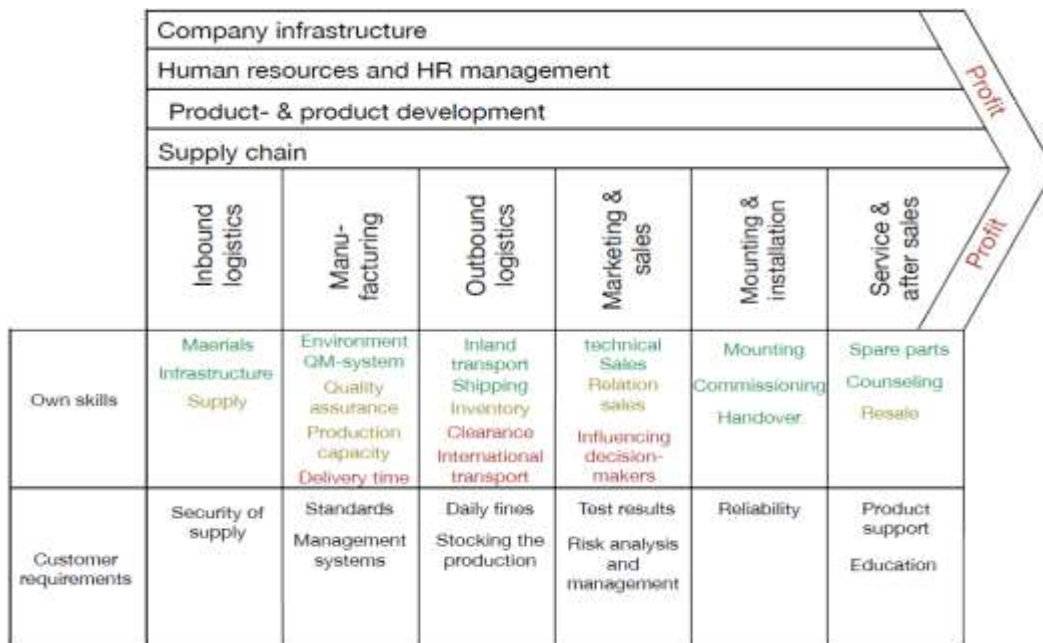
COOL4SEA will offer our "entry customer" a combination of an “open business model” - company skills and know-how in collaboration with the clients "in-house" expertise and knowledge. The solution is a "freemium" principle - the customer will be offered our unit at a no cost basis. He then agrees on being included in test-/ implementing and evaluating process of our product. Alternatively an agreement on a price or reimbursement in terms of percentage savings through the implementation of our product can be agreed on. We are motivated to use this form of business model as the maritime markets is driven by the philosophy of “no cure – no pay”.

As **COOL4SEA** is located in Denmark and with potential local customers the initial marketing strategy is to address this market and gain a market position – a 3 year plan of delivering 21 cooling units.

COOL4SEA has a strong focus on product positioning as we offer a unique and effective cooling solution. The product can be produced and assembled by quality parts and by competent people securing an overall high quality solution.

Competencies and Resources

Based on the Value Chain below COOL4SEA has clarified the skills and resources necessary for business success.



"Green tasks" we can fulfil with our own competences knowledge and skills

"Yellow tasks" we can possibly fulfil with internal competences skills and resources

"Red tasks" requires external resources - consultants or to hire new employees

Furthermore, we sought to clarify the customer requirements we will be facing throughout each stage of the development process. This is sought through interviews with partly customers and also suppliers to the industry









Critical Success Criteria – trade offs

CSC's is identified in order to get an overview of the company's potential success rate. The criteria are listed with a short and a long-term perspective.


Year 1:

- ✚ Establish contact with customers and reveal value contributions
- ✚ By establish cooperation with a company that has experience in developing and selling products to the maritime world
- ✚ Working with the product specifications towards a prototype
- ✚ To prepare the patent application for Europe and Asia
- ✚ To work with potential strategic partners and providing additional funding to cover the establishment costs
- ✚ Develop prototype – prove the effectiveness of the product in order to convince the customer

Years 1-3:

-  Prototype developed in partnership with partners associated with the company.
-  Implementation on board a ship
-  Testing the prototype - operating requirements and maintenance
-  Evaluation of the testing and further development of product specifications
-  Additional Venture Capital needs before startup of series-production
-  Production platform established
-  Office setup - Sales, Service, Finance, Marketing
-  Customer relations must be created and developed

Year 3 +






-  Certification of the unit - DNV – it is giving marked shares in the offshore industry

Performance Objectives and Risk

A performance objectives analysis of the shipping business shows

2 main objectives for COOL4SEA to succeed.

1. **Dependability.** It is evident that we have to deliver the product on time and to the required specs of the customer. If we fail – the customer will choose another supplier or product.
2. **Quality.** The product has to perform as promised and give the customer the service and cost benefits his investment requires.

-  Speed
-  Cost
-  Dependability
-  Flexibility
-  Quality

The customer will have a ROI < 1 year for this product, so cost is not an important issue. Alternatively the customer would have to purchase another cooling unit.

Advisory Board & Strategic Partners

COOL4SEA has established an “Advisory Board” to mentor the implementation strategy and goals - as well as legal and financial guidance

Erik Viese – CEO, Wimark PTY, Ltd – Supplier of equipment for the mining industry

Dr. J. S. Lundsgaard – Founder of IRD Fuel Cells – Energy Solutions for the future

Carl Aage Jensen – C. C. Jensen, Svendborg – Filter solutions World Wide

Also there is ongoing sparring between COOL4SEA and **Troels Johan Ankerstjerne** from “Funen Maritime Cluster” – “Innovation in the maritime industry”. The cluster has provided contact to potential venture capitalists as well as sub-suppliers of product parts. **Carl Aage Jensen – C. C. Jensen, Svendborg** has provided the company with free office and workshop facilities in enabling the team to start building the prototype of the product.

Financial Perspectives

Appendices 1 show the development costs and the need for additional capital

Appendices 2 show the calculated cash flow and potential earnings for the company

COOL4SEA has a Business Angel prepared to invest DKK 1.000.000 – € 135.000 in the company.

Furthermore an establishment budget to identify additional capital needs is set up. This budget reveals additional capital requirements of approx. DKK 3.027.000 - USD 550.000

The price of the product is determined from comparison with similar products. An exact price is difficult to establish at this point, as the product is custom made and sized according to customer specifications and installation.

Budgeted sales price is estimated to DKK 2.000.000 – USD 365.000 and could be considerable higher.

The “freemium” cash flow budget shows a “break-even” inclusive full re-payment of development and start-up costs with the sale of 7 units. The calculations are based on a 1 year timeframe. The payback is calculated from the delivery of unit 3. The payback time of these costs could be depreciated over a longer time frame or more units – but is included to show the short time frame of which the company will be able to obtain positive cash flow and gain earnings. There is an investor interest of 20 % pro anno calculated in the “freemium” cash flow. Giving the company a ROI of 0,7 % in year one.

This gives potential investors an almost immediate exit possibility with a profit.

A long term investment strategy of 3 years with a production of 21 units would provide COOL4SEA a ROI of 50,0 % with ROI of 20 % for the investor. A higher production rate of 28/35 units could provide COOL4SEA a ROI of 120,5/130,5 % included a dividend to the investor of 375.000 USD – a ROI of approx. 23 % for his investment + interest.

Depending on the production rate an increasing demand for manpower, equipment and location facilities is needed. This is included in the calculations for 28/35 units.

A service level agreement with the customers on maintenance/warranty of the product would could be optional and increase the sales price – thus also giving more expenses as to hiring of maintenance staff.

Final remarks

Shipping and the maritime industry being one of the world’s true global businesses COOL4SEA developed a unique product for a resourceful and asset strong market. The product fulfills a demand for energy effectiveness and awareness and gives the customer extensive savings and as of this – competitive advantages.

COOL4SEA has a strong and competent team that can meet and address the challenges of establishing setting up this business both on the technical as well as the managerial perspectives.

Investors will receive extensive return on investments and provide COOL4SEA with the opportunity to create a sustainable business with an evident growth potential.



Appendices 1 – Development Budget

Time Frame (0-18 months)	Development Costs	All figures are in US Dollar	
0	Equity		185.000
0	Owners investment		10.250
0	Investor		909
	Hyundai Funding		20.000
0	Patent application, US	-1.455	
0 - 6	Local travel costs	-4.545	
0 - 6	Design and consulting	-18.182	
0 - 6	Travelling	-18.182	
0 - 6	Marketing	-1.818	
0 - 6	Other costs	-9.091	
	Cash in hand		162.886
	Cash needed 6 to 18		354.205
6 to 18	Manpower and Consultancy	-227.273	
6 to 18	Office setup	-18.182	
6 to 18	Communication	-2.182	
6 to 18	Data capturing	-27.273	
6 to 18	Legal advise	-18.182	
6 to 18	Transportation	-36.364	
6 to 18	Book keeping and auditing	-3.636	
6 to 18	Office expenses	-2.182	
6 to 18	Prototype all included	-181.818	
	Cash needed 18 months		172.727
18	Final cost of American patent	-54.545	
18	Final cost of Asian patent	-54.545	
18	Final cost of European patent	-54.545	
18	Rental. Workshop and tools	-9.091	
	Summarizing	-743.091	743.091
	Additional capital 0 - 18 months		526.932

Appendices 2 – Cash Flow

Costs		1 Unit	2 Units	7 Units	21 Units 3 years	28 Units 3 years	35 Units 3 years
All figures in US Dollar							
Development costs	526.932						
Establishment costs	181.818						
Fixed Costs							
Salary		600.000	600.000	600.000	1.800.000	2.500.000	3.500.000
Administration		1.818	3.636	12.727	38.182	50.909	63.636
Insurance		4.545	4.545	4.545	13.636	17.500	25.000
Fixed costs from establishment budget		44.364	44.364	44.364	133.091	262.215	327.769
Depreciation of establishment cost				181.818	181.818		
Depreciation of development cost				526.932	526.932		
Interest of development cost (20 %)				106.073	318.219		
Freemium				727.273	727.273		
Potential Dividend						375.000	375.000
Fixed costs in total		650.727	652.545	2.203.732	3.739.151	3.205.624	4.291.405
Variable Costs							
Materials and goods		27.273	54.545	190.909	572.727	138.843	173.554
Extra Salary		9.091	13.636	36.364	109.091	145.455	181.818
Sales costs		3.636	5.455	13.636	225.000	381.818	477.273
Tools and small consumptions		3.636	5.455	14.545	240.000	270.000	300.000
Maintenance		1.818	2.273	6.364	19.091	25.455	31.818
Packing		1.818	3.636	12.727	38.182	50.909	63.636
Transportation		4.545	9.091	31.818	95.455	127.273	159.091
Taxes		2.727	4.545	11.818	35.455	47.273	59.091
Other costs		1.818	2.273	5.455	16.364	25.000	35.000

Variable costs in total		56.364	100.909	323.636	1.351.364	1.212.025	1.481.281
Fixed cost in total		650.727	652.545	2.203.732	3.739.151	3.205.624	4.291.405
Fixed cost per unit			1.294.500	314.819	178.055	114.487	122.612
Variable costs in total		56.364	100.909	323.636	1.351.364	1.212.025	1.481.281
Variable costs per unit		56.364	50.455	46.234	64.351	43.287	42.322
Total costs		707.091	753.455	2.527.369	5.090.515	4.417.649	5.772.686
Sales price - turnover		0	0	2.545.455	7.636.364	10.181.818	12.727.273
Revenue		-707.091	-753.455	18.086	2.545.849	5.764.169	6.954.587
Return on Investment				<u>0,7 %</u>	<u>50,0 %</u>	<u>130,5 %</u>	<u>120,5 %</u>