# TABLE OF CONTENTS

## Contents

I. Executive Summary .......................................................... 1
II. Vision and Mission Statement .............................................. 3
III. Industry Profile and Overview ........................................... 4
IV. Business Strategy .......................................................... 8
V. Company Products and Service .......................................... 12
VI. Marketing Strategy ........................................................ 13
VII. Competitive Analysis ..................................................... 18
VIII. Management Team ....................................................... 20
IX. Operations ................................................................. 23
X. Financial Forecast .......................................................... 25
XI. Loan Proposal ............................................................. 26
EXECUTIVE SUMMARY

I. Executive Summary

A. COMPANY NAME
Our company name is BioDor, LLC, the name representing the services we provide. Our systems utilize naturally occurring biological metabolism to reduce and remove odorous chemical compounds from contaminated waste air.

B. BUSINESS PLAN OVERVIEW
BioDor is a privately owned service provider that designs biofilters for odor reduction in industrial use. Biofiltration is a process by which naturally occurring biological metabolism is used to reduce odorous chemical compounds in waste air before it is released into the atmosphere. The most common contaminant is hydrogen sulfide, a malodorous compound that is a product of the decomposition of organic material and waste. This is a constant and growing need in the wastewater treatment industry in particular, which is the primary market BioDor will be servicing.

The most common odor-reducing technologies are wet chemical scrubbers and carbon adsorbers. These technologies are expensive, inefficient, difficult to maintain, and often produce hazardous byproducts. We intend to supply our clients with a low maintenance, low cost, and low energy-use alternative. Additionally, we intend to customize each biofilter to the specific needs of the facility, optimizing efficiency and ensuring sustainability of the design.

Our staff of four engineers provide the system designs for the product. As part of the design process, we have the capabilities to construct a complete analysis of each site we service and we provide construction administrative services.

C. MARKET OVERVIEW
Our initial business strategy focuses on the wastewater treatment industry over the first few years of startup. The Wyoming Clean Water Plant, the wastewater treatment facility for the City of Wyoming and the surrounding area, is our first client and will serve as our “test market”. This initial project will serve to establish operational details such as cost estimates, project timelines, and supplier relationships.

Our business strategy will be adapted to include other odor-producing industries after we have established our practice and our name in the market. Secondary markets include the pulp and paper industry, composting facilities, paint industry, and livestock processing and production.

D. BUSINESS STRATEGY OVERVIEW
The business plan incorporates market research and projected trends. Based on this information, our company has developed specific strategies to make our company a success in our target market. Our
company values environmental and economic sustainability, considering the efficiency of the processes we design and the carbon footprint of the manufacturers we recommend. We wish to serve our client by providing a superior product in respect to project lifetime and overall cost. We plan to promote ourselves as designers of the most efficient and sustainable biofiltration systems, which will differentiate our product in the market.

To do this, we will market to wastewater treatment facilities in particular by submitting advertisements in relevant magazines and distributing informational brochures. As a startup business, a challenge we must overcome as a company is establishing our name in the market of wastewater treatment. However, our greatest strength is our confidence that through customer relations and sustainable biofilter design, we will provide a higher quality, longer lasting, and more cost efficient product than our competitors. Understanding our strengths and weaknesses will help us maximize opportunities and avoid threats in the existing market.

E. MANAGERIAL STAFF OVERVIEW
Our staff includes four design engineers, each with an impressive resume in chemical or environmental engineering. These individuals are responsible for the founding of this company and will be making executive decisions during startup. Their primary role is to serve as the designers of our product and they will interact with clients on a regular basis ensuring we meet their needs. In addition, business personal will facilitate operations. We plan to staff a CFO, a business executive, and a marketing executive to handle business operations.

F. FINANCIAL OVERVIEW
To ensure the success of our company, we will need additional funds to jumpstart a sustainable operation. Based on financial analysis, we are requesting the bank finance a loan valued at $311,000. The purpose of this loan will be to provide salaries for our seven employees during the first year of operation. The four co-founders of this company are confident in the success of this firm, and as confirmation they are willing to receive an annual salary of $30,000 for year one of operation. After one year, we are confident our company will have a substantial net income at which point salaries will be raised. With an average revenue on each project we complete of $250,000, we expect to repay this loan in full after 2 years of operation.
VISION AND MISSION STATEMENT

II. Vision and Mission Statement

A. ENTREPRENEUR’S VISION

The vision of Bi0dor is to design a biofiltration system that is personalized to the specific needs of each facility. Our service performs a thorough investigation of air quality for each biofilter design. Our engineers will optimize each system with respect to sustainability, long-term use, cost, and operation and maintenance.

B. COMPANY VALUES

Bi0dor operates under three primary principles: caring, transparency, and stewardship. These principles establish the basis upon which our company makes decision and steers the direction we wish to move within the market.

Transparency

The basis of the design norm “transparency” comes down to communication. We are committed to being transparent with our clients throughout the design and installation process, meaning we will always be ready to answer questions or explain concerns in a clear and effective manner. Furthermore, our staff will be transparent with each other, recognizing that each individual contributes unique insight to the diverse range of expertise of our company.

Stewardship

The most marketable aspects of the biofilter is that it is a low-maintenance, low-cost, and energy efficient alternative for odor reduction. Our company values stewardship by aiming to accomplish odor reduction through sustainable means. Bi0dor has the means and resources to introduce an effective and sustainable technology into the market, and we feel that it is our responsibility to do so. Our product is a natural, simple, and inexpensive alternative to conventional odor treatment. The superior quality of our product benefits our customers and the environment.

Caring

Our company operates with a caring mentality, a principle that applies not only to our client but to the surrounding community as well. Odor reduction is desired by our client largely due to concern for the public. We are motivated to offer our services in order to facilitate odor reduction thus creating a better environment for our client and for the public.
III. Industry Profile and Overview

A. INDUSTRY BACKGROUND

Biofiltration technology has been around for nearly 50 years, but its popularity in the United States lags that in Europe. Biologically-based odor control systems have an established history in Europe and currently 80% of wastewater treatment facilities using biofiltration for odor control. There are currently 7,500 biological control systems installed in Europe, half of which are installed at sewage treatment plants and pumping stations [1]. In the United States, however, popularity for biofiltration is relatively recent and competing odor-control technology, primarily wet chemical scrubbers and carbon adsorbers, are still much more dominant in the market. This may be attributed to a lack of regulatory standards and government-funded research and development, which has begun to increase only within the last decade [1]. The market for biofiltration is growing in the United States and it was estimated that this is an $800 million market for the year 2015 [2].

Biofilters can be configured in a variety of ways to accomplish contaminant removal depending on the composition of the odorous air. The most important component of a biofilter is the media used for contaminant removal. The media can consist of natural or synthetic material and is optimized to have a high surface area, appropriate structure to resist compaction sturdy, and high porosity in order to adsorb large quantities of contaminants and extend time to saturation. Natural media includes wood chips, peat, or lava rock and is generally inexpensive. Synthetic media is engineered to function optimally and therefore last longer, but is often far more expensive. Biofilter media is inoculated with specific bacteria used to metabolize the targeted contaminant.

Biofiltration is a cost effective, sustainable, and low-maintenance alternative to conventional odor control technologies. Media replacements requirements is lower for biofilters than it is for other technology allowing for a reduction in the overall cost of the system. The process requires no chemical additions, making it an attractive alternative from an environmental and safety viewpoint. The media in the biofilter must be monitored for temperature, pH, and moisture due to bacteria sensitivity. The design is developed around these parameters in order to produce an effective system that is essentially self-sustaining.

B. CUSTOMER GROUPS

Our primary customer group is wastewater treatment plants in the United States. According to Biotechnology for Odor and Air Pollution Control, “Residential development will come ever closer to plants, increasing the likelihood of odor complaints” [3], therefore odor control is a growing need. Wastewater treatment plants produce the gaseous compound hydrogen sulfide, a malodorous chemical, that biofiltration has proven to efficiently remove. Operators of wastewater treatment facilities are familiar with biological processes because other biological-based treatment is used for
INDUSTRY PROFILE AND OVERVIEW

various components of the overall treatment process. Subsequently, operators are accepting of biofiltration because they have experience with operations involving intricate metabolic processes.

Secondary markets to consider in the future are pulp and paper factories, composting facilities, the paint industry, and livestock processing. These plants produce waste gas in large quantities that affect factory workers as well as those working and living in the surrounding community. Our goal is to enter this market by first establishing a good company name in the wastewater treatment industry. After our operation is well underway and we have built a successful resume of projects, we hope to extend our services to these industries.

C. REGULATORY RESTRICTIONS

On the federal level, the United States’ government has directed the Environmental Protection Agency (EPA) to complete studies involving composting biosolid waste from agriculture, septic solids, and sewage sludge, however the enforcement of nuisance odor control is left to the State, local courts, and their executive agencies [3]. Regulation of odor proves to be challenging due to the subjectivity of its measurements. No systematic “odor scale” exists due to the variability of the compound and individual reactions [3]. Odor is not regulated according to set quantitative standards for wastewater facilities [4]. However, the production of hydrogen sulfide at these facilities typically requires action be taken for odor prevention due to nuisance odors.

A permit to install will typically need to be acquired by the facility prior to construction of the biofiltration system. Specific regulations in this regard depend on state and local laws. We intend to apply for and obtain any regulatory permits necessary for installing odor control technology.

D. SIGNIFICANT TRENDS

Biofiltration is gaining popularity in the market due to its advantages in terms of cost, effective removal rate, and sustainability options. Familiarity with the process is growing and biofiltration technology is becoming more readily accepted and implemented by the wastewater industry. The need for odor control technology is also increasing because of additional residential and commercial developments located closer to the plants. In a market research report from BCC Research, “the global market for sludge treatment and odor control equipment was valued at nearly $5.3 billion in 2011 and was expected to reach $5.5 billion in 2012. By 2017, the market should total nearly $7 billion, which is a compound annual growth rate of 4.7% from 2012 to 2017” [5].

Looking to European trends, biofiltration will soon become the most popular and widespread form of odor control. In addition, within the next few decades it is estimated that $298 billion will be spent on wastewater and storm water system upgrades or replacements due to aging infrastructure across the United States [6]. This provides an opportunity for our company to more easily enter the market because of the increasing demand. Advanced odor control will likely be incorporated into facility upgrades. Plants currently lacking odor control or those operating with unsatisfactory systems will
be more inclined to expand their operation to include biofiltration as a result of additional federal funding.

E. GROWTH RATE
According to a report by BCC Research published in June 2014, the compound annual growth rate for sludge and odor treatment is estimated to be 5.9% during the time period ranging from 2014 to 2019 [7]. This is an increase of 1.2% from a previous 2012 study and results in an expected $9.2 billion industry by 2019. This shows significant promise for the future of odor treatment at wastewater treatment plants.

F. BARRIERS TO ENTRY AND EXIT
Our company will find it challenging to enter the market because existing companies are trusted and have provided proven technology in the past. Companies similar to ours that design alternative odor control technologies already have clients and receive referrals. We will need to promote our product based on differentiation, but to do so we must first publicize successful projects and our team’s qualifications by networking in the market. This will be particularly challenging because the success of our service speaks to our ability to gain contracts with wastewater treatment plants. In order to gain these contracts, we have to first prove ourselves as competent engineers with an innovative solution to the problems. Given our engineers experience in the wastewater industry, we expect that their connections will provide a basis for the startup. This barrier can be overcome with the aid and referrals of our first client, the Wyoming Clean Water Plant, for whom we are optimizing and retrofitting an existing odor control system.

We make a commitment to our clients that our designs are long lasting, and we have warranties on our products to ensure this promise. However, this presents a barrier for exiting the market because we will have an obligation to continue providing our service for the life of the warranty.

G. KEY INDUSTRY FACTORS FOR SUCCESS
To be successful in this industry, it will also be important to understand various media types and their use so as to produce the most efficient design for each particular facility. The wastewater treatment industry favors sustainability and long-term cost effectiveness over quick-fixes and low quality products, even if this means compromising cost. We intend to profit from this notion by guaranteeing a long-lasting design which will have a high appeal than low costs.

Furthermore, for the success of our company we must gain an understanding of governmental regulations currently in place. This will help us to accurately inform our clients of details concerning implementation of the system.
H. OUTLOOK FOR FUTURE

Odor control is a persistent problem. Although the nature of this product serves one-time customers, the number of industries is constantly growing. Odor control machinery is projected to reach $3 billion worldwide by 2017, indicating this is a good time to enter the market [8]. It is expected that biofiltration will become the dominant form of odor control due to its economic and environmental superiority.
IV. Business Strategy

A. DESIRED IMAGE IN MARKET
Our company image will be customer-focused, personable, reliable, and efficient. We aim to establish ourselves as innovative with respect to sustainability and attention to detail with our designs by investigating the unique characteristics of each project. With this approach, we will be able to design and optimize each system so that it operates efficiently with a guarantee of long-lasting operation. Our biofiltration systems will operate sustainably in terms of their functional longevity as well as reduced environmental impact. We are dedicated to environmental sustainability by designing to reduce energy consumption of the system as well as incorporating recycled or natural media materials into the design whenever possible.

B. COMPANY GOALS

1. Operational
To optimize a solution based on needs specific to each client, we will perform a full characterization of the contaminated air stream. This ensures byproducts are not formed as a result of unforeseen biochemical reactions during the treatment process. In addition, the design will accommodate the plant’s geographical location. For example, in West Michigan, annual temperature changes and seasonal changes will be a more significant design criteria compared to an operation located in a region with a more temperate climate.

2. Financial
Within the first three years of startup, our company will reach a level of profitability that will allow us to repay our startup loan. Three years into our company history, we expect to achieve a cash flow that significantly reduces liability risks for the members of our company’s shared ownership. With the success of our advertising and promotional plan, the goal of our organization is to operate as a million dollar company by this time.

C. SWOT ANALYSIS

1. Internal Strengths
We have a skilled set of employees for our startup company that allows us to enter the competitive market successfully. Our employees have an extensive background in chemical, civil, and environmental engineering and are knowledgeable in the most recent leading technology in this field as well as the trends of the market. Furthermore, we have taken on skilled executive leadership in our business, accounting, and marketing departments who will greatly contribute to the success of our company.
BUSINESS STRATEGY

In comparison to other odor control technologies, our firm’s advantage is the fact that our technology results in less maintenance. We can use this to advertise that our biofilters will result in far less operation and maintenance costs than their outdated and ineffective technology.

Our particular biofiltration design plan is advantageous over our competitors because it is customized to the specific needs of each client. Each facility has their own unique set of factors that will be taken into consideration in order to design an optimized and highly sustainable system. Optimization includes energy use, utility of space, and cost effectiveness while retaining product quality. When at all possible, we are dedicated to using recycled or natural construction and media materials, as well as looking at the possibility of retrofitting any existing infrastructure.

2. Internal Weaknesses

Our company is at a disadvantage in a market consisting of well-established and experienced companies. Additionally, our staff is young and limited in their resume of publications and patents, which may decrease our credibility.

The design of our systems is not yet proven, but based on previous experience of our engineers we expect our designs to be successful. Our first few projects will serve to stabilize the foundation of our company and solidify our capability to produce a quality produce.

We currently have no research team or facilities for experimental testing. Our design capabilities will be limited in this regard until we reach a level of profitability where we can staff a research lab and development team, which is a priority as we expand our company. We are also not staffed in mechanical or electrical engineers, which may be beneficial for designing certain components of the system.

In comparison to alternative odor-reducing technologies, biofiltration system have a greater weight, require a large area for setup, and involve a certain level of fragility due to the sensitivity of biological activity. In comparison to other biofiltration designers, our company mandates a slightly high labor cost for design due to the extensive investigation we perform in order to optimize a system for a specific plant. The capital cost of our system may turn potential clients away. However, we are confident our design is far more sustainable and therefore less expensive in the long-term.

3. External Opportunities

The trend of the market for odor control technology provides an external opportunity for our company. Biofiltration technology has become more technically precise and widely used. Additionally, based on European trends biofiltration can be applied to a variety of industries including food processing, chemical processing, and livestock. Our long-term goal is to expand our business to include these various industries in addition to wastewater treatment plants. This provides us with an external opportunity to significantly grow our client base in future years.
BUSINESS STRATEGY

In comparison to alternative odor reducing technologies, biofiltration has many advantageous qualities that are attractive to our market. The cost of maintaining a biofiltration system is substantially lower than chemical scrubbing; biofiltration costs approximately 1.2% of chemical operating costs [9]. Whereas other technology requires constant input of chemicals or frequent maintenance, biofiltration is essentially self-sustaining.

Our product puts us at an advantage in the market because we are dedicated to designing a high quality, sustainable, and environmentally-efficient system. This approach will allow for the opportunity of promoting ourselves based on environmental conscientiousness, an image that is greatly valued by most of the industrial professionals we will be interacting with. Although this approach may cause our upfront costs to be higher, we will act according to these standards based on the values of our company.

Although we are marketing to wastewater treatment facilities, our product has the support of surrounding communities who would greatly benefit from reduced nuisance odors. Cities continue to expand as urban areas experience population growth, which push communities closer and closer to waste treatment facilities. Many of the facilities we will be providing services to are public entities, therefore they have the best interest of the public in mind and will spend funds to meet the community’s needs. This provides an external opportunity for our company.

In addition, wastewater facilities in the United States are currently rated very poorly and many are in desperate need of upgrades. We expect this will include the latest and most efficient odor control technology, which our company can provide.

4. External Threats

Our largest initial external threat is developing a client base and gaining recognition within the odor-control market. Our primary competitors produce alternative odor-control technologies, such as chemical scrubbers and carbon adsorbers. These companies are well-established in the market because these technologies have a longer history, but in many cases these technologies have proven to fail. Until recently, there was little government supported research and development for biofiltration which delayed its popularity in the United States. Unfamiliarity with biofiltration itself may turn some clients away from the start and it may be a challenge to persuade their decision.

Additionally, clients who are familiar with biofiltration will not be familiar with our company name, putting us at a disadvantage. We will need to rely on things other than a resume of successful case studies or testimonials to prove ourselves to our clients. We hope to remedy this by competing on product differentiation. Engineers who have worked with a particular facility in the past commonly recommend other companies when a niche engineering specialty is needed. As a startup company, we will need to rely on personal references of individuals in our company.
D. COMPETITIVE STRATEGY: DIFFERENTIATION

We aim to compete in the market primarily through product differentiation by establishing ourselves as a unique service. Our competitors typically design a “one-size-fits-all” biofilter, meaning each system is over-designed to accomplish odor-reduction for a variety of circumstances. A biofilter designed in this manner is not specific to the needs of each given facility and includes unnecessary system components. These additional components inevitably increase the complexity, but not the effectiveness, of the system. This design approach may be operational, but it lacks the efficiency, sustainability, quality, and economic viability that our services provide.
V. Company Products and Service

A. SERVICE FEATURES
The service we provide is the design drawings, specifications, and construction administration for on-site biofilters used to treat nuisance odors at wastewater treatment facilities. To deliver a satisfactory product to each of our clients, we plan to perform the following services.

- Investigate onsite odor sources and evaluate potential installation areas
- Characterize odor-producing compounds in waste gas streams
- Understand priorities for each client (i.e. low energy system, low cost system, all natural material, etc)
- Seek quality suppliers of construction materials and media
- Optimize the use of natural or recycled material in our design
- Design in compliance with regulatory EPA requirements
- Apply for and obtain permits
- Provide design drawings and specifications
- Perform cost estimations for construction
- Identify potential construction contractors and request bids
- Provide construction plans to contractor
- Provide construction inspection oversight during installation

B. WARRANTY POLICY
We guarantee our design will be sustainable in operation. We ensure a warranty of the selected packing media of 15 years. In addition, we will guarantee a warranty of the operational system (exterior and interior structure, fans, ductile work, electronic components, etc.) of 30 years covering any necessary repairs and replacements.

C. FUTURE SERVICES
We expect to expand our company in the future to provide additional services to a larger market. First, our biofiltration design can be applied to industries other than wastewater treatment. After seven years of operation, we expect to have the expertise needed to expand our client base to include other industries (i.e. food and beverage processing, composting facilities, fermentation plants, livestock industry, etc.). We intend to offer the same personalized service to our future customer base, which will require us to become familiar with these industries.

We intend to expand our company to include a skilled research and development team, providing us with a leading edge on biofiltration technology. This is a relatively recent but growing field of research which we expect to contribute to once our resources allow for us to do so.
VI. Marketing Strategy

A. TARGET MARKET

The Wyoming Clean Water Plant, the wastewater treatment facility for the City of Wyoming and the surrounding area, has shown interest in the services we intend to provide and will serve as our initial client. It is anticipated that during the initial start-up years of our operation our services will attract municipal wastewater treatment facilities, therefore this client base will serve as our short-term target market. Currently, there are approximately 16,255 wastewater facilities in the U.S [10].

However, biofiltration can be applied to a wide range of industries, many of which emit the same problematic odor-producing compounds as does wastewater facilities, therefore our skill range will be versatile giving us the opportunity to expand our target market. Our long-term target market consists of processes that emit odorous gas in large quantities and at nuisance levels. Data concerning the projected trends in the U.S. are based on historical trends in Europe. Biofiltration has been applied to the following industries and will be included in our target market as a long-term goal.

- wastewater treatment plants
- sulfide chemical plants
- food and beverage processing
- flavor manufacturing
- composting facilities
- paint industry
- biogas fermentation plants
- waste handling plants
- livestock industry

1. Benefit Offered

Public Concern

The primary odor-producing compound at wastewater treatment facilities is hydrogen sulfide (H₂S), which the Michigan Department of Environmental Control (DEQ) describes as a colorless, transparent gas with a characteristic of a “rotten-egg” odor [4]. While rarely released in such quantities, H₂S has the potential to be detrimental to one’s health. Our goal as a company is to reduce H₂S odor emissions by installing biofiltration systems. Our product is desirable by government-operated facilities looking to satisfy public concern. Addressing odorous emissions improves the living conditions in the area and could increase the surrounding real estate and tax income of the municipalities.
MARKETING STRATEGY

Advantages of Biofiltration

Alternative odor reducing technologies include wet chemical scrubbers and carbon adsorbers, however, these technologies require expensive and frequent maintenance. Some plants have reported these systems perform far less satisfactory than what the manufacturer expected.

Operational advantages of biofiltration in comparison to alternative technologies include the following:

- The design is diverse with respect to the types of contaminants it can treat
- The system functions optimally for high volumes of contaminated air with nuisance contaminant levels, which is characteristic of odors produced at wastewater facilities
- The process is natural and typically does not involve chemical additions
- There is no secondary waste streams in the design
- The packing material is often inexpensive (i.e. wood chips, peat, perlite, etc) and in some cases, the media may be found on-site for no cost
- Media replacements are infrequent or are not required at all (depending on the selected media type)
- The system can be designed to be stackable, helping to conserve space and footprint
- The system provides a contaminant removal efficiency equal to or greater than that of competing technologies

Biofiltration provides incredible economic advantages. The design of the system requires minimal materials and less frequent media replacements, which greatly contributes to a low overall project-life cost. Table 1 shows a cost comparison of various odor-reducing technologies.

<table>
<thead>
<tr>
<th>ODOR CONTROL TECHNOLOGY</th>
<th>TOTAL COST (U.S. $) / 1000 FT^3 AIR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorine-based Chemical Scrubber</td>
<td>130</td>
</tr>
<tr>
<td>Activated Carbon Adsorption</td>
<td>20</td>
</tr>
<tr>
<td>Biofiltration</td>
<td>8</td>
</tr>
<tr>
<td>Chlorine-based Chemical Scrubber</td>
<td>130</td>
</tr>
</tbody>
</table>

2. Demographic Profile

The demographic profile of our client base are industry professionals, specifically engineers, plant owners, and plant operators of industrial odor-producing facilities located across the United States. In the context of municipal wastewater treatment facilities, our business will involve interactions with government personnel, requiring familiarity with regulatory standards.
In many cases, our client will have previous experience with competing technologies. Depending on the effectiveness of their existing odor-control system, this may impact their inclination to change to biofiltration. For this reason, our company must be well-versed in the trends of the market and have a detailed understanding of the competing alternatives.

B. CUSTOMER MOTIVATION TO BUY

Our target market is motivated to install odor-reducing systems for the benefit of the surrounding community. This is particularly true for urban areas where the public is in close proximity to the odor source. City boundaries are being pushed closer and closer to wastewater plants, increasing the need for governments to encourage odor-control out of concern for the public.

C. MARKET TRENDS

1. Size

Our current market can be estimated by the number of existing waste treatment plants in the U.S. About 75% of the U.S. population is served by publicly owned treatment plants. There are approximately 16,255 wastewater facilities in the U.S., which has grown by approximately 200 facilities since 1998 [10]. At each of these facilities, there are multiple locations where odors are emitted, providing our company with a large potential for biofiltration installations.

2. Dynamic Trend

Market trends indicate a rise in demand for odor-control, proving this is a good time to enter the market. Biofiltration has an established history in Europe where it has been found to be economically advantageous for large volumes of low pollutant off-gas streams [11]. As of 1991 in the U.S. and Canada, however, it was estimated that less than 50 odor-control biofiltration units were installed [11].

In today’s market, time has been allowed for adequate R&D on biofiltration. Our potential clients are already informed of the technology and are aware of the benefits. Furthermore, the American Society of Civil Engineers (ASCE) reported that within the next two decades, an estimated $298 billion will be spent on wastewater and stormwater system upgrades or replacements [6]. ASCE reported wastewater facilities in the U.S. were graded a D+ in 2013 due to aging infrastructure across the country, meaning wastewater treatment plants across the U.S. will be expanding and replacing existing plant facilities in the coming years.

D. ADVERTISING AND PROMOTION

1. Message

We will promote our service based on its superiority performance and low cost in comparison to alternative odor reducing technologies. Differentiation of our design includes the decrease in
environmental, operation, and economic impact. Furthermore, we will promote our dedication to delivering a sustainable biofiltration system based on specialty needs of each client.

2. Media
We intend to advertise our services by promoting our name through magazines and literature directed at the wastewater industry. We will advertise in publications issued by national organizations such as the American Society of Civil Engineers (ASCE), the American Water Works Association (AWWA), and the National Association of Clean Water Agencies (NACWA). As our client base grows, industry recommendations will contribute substantially to broadcasting our image. Using existing civil industrial connections, we plan to connect with engineering firms who work closely with municipalities. Feedback from these engineers will be valuable.

3. Budget
As a startup company, our budget for advertising is limited. In order to establish a successful company, we must allocate a significant amount of funds towards promoting our services in order to gain clients. We intend to spend $11,000 in advertising in the first few years of startup. The amount spent in subsequent years will be adjusted according to our initial profitability.

4. Publicity
Our strategies to promote our services include publishing magazine advertisements, distributing informational brochures, and building trusting relationships with our clients and suppliers such that our company name becomes well-known and reputable.

E. PRICING

1. Desired image
With respect to pricing, we aim to be comparable with our competitors in the market. Due to the nature of this industry, as a start-up company we recognize that our prices will not feasibly undercut that of our highly established competitors. We aim to work closely with each client to provide a system that remains within their budget and our designs will be differentiated based on sustainability. Our customers will receive a superior biofiltration system which maximizes removal efficiency and minimizes overall project life costs.

2. Competitors’ Prices
We intend to work closely with each client ensuring they receive the most efficient system customized to their specific operation. The time we will need to spend on each specialized design will likely be longer than that of our competitors, whose design basis for biofiltration is a general one-size-fits-all approach, therefore our cost for labor may be slightly higher as well. Our product differentiation will balance this disadvantage.
3. **Budget Management**

As our company gains project experience, we aim to ensure the satisfaction of our clients by providing a quality product that is reliable and sustainable. As a result, most of our clients will be single-item buyers. We are committed to working closely with each client to ensure they receive a system that will provide long-term satisfaction and that is within their budget.

In some specialty situations, our clients may desire multiple biofiltration systems throughout their facility. If we foresee an opportunity to install multiple systems at one facility within separate time frames, we will consider the possibility of limiting the cost for the initial installment and perform a multiple-phase design process. After our design has proven itself to be reliable, the customer will likely employ our services for future needs. We will continue to work within their budget.

4. **Gross Profit Margin**

Based on our financial forecast calculations, we anticipate a gross project margin of 74%, 69%, and 72% for years 1, 2, and 3 respectively. These numbers are relatively high because the variable costs for our service company are relatively low.

---

F. **DISTRIBUTION STRATEGY**

For most situations, our biofiltration systems will be constructed on site. Distribution of our product is ultimately coordinated through the contractors and manufacturers of the materials. Our company provides services drafting contract documents with specifications proper for the operation and equipment for each design. After creating a bid sheet with estimated unit prices we will request quotes from multiple construction companies and evaluate the advantages and disadvantages of each offer. Our client makes the ultimate choice for contracting, but we provide our best recommendation. The client charges the construction company directly for material and installation costs. Because the engineers are most familiar with the design, we will oversee construction to inspect for proper installation of the biofilter.

---

G. **TEST MARKET**

Our first specialized biofilter is being designed for the Wyoming Clean Water Plant. This facility has employed our services to provide a feasibility study and design plans for a biofiltration system. Our client will function as a test market for similar projects in the future. From this study, we will acquire knowledge of the necessary management, budget, and timeline requirements for our company to provide biofilter design services. Costs associated with the design will be determined and will provide a more accurate basis for providing a quote to future clients.
VII. Competitive Analysis

A. EXISTING COMPETITORS

Existing competitors of our company are designers and manufacturers of biofiltration systems as well as alternative odor control technologies and wastewater treatment plant accessories. The following is a list of existing companies that we will be competing with in the market.

• BioRem
• Bohn Biofiltre
• L.S. Enterprises
• Daniel Company
• PPC Air Pollution Control Systems
• Vapex

1. Strengths

The following describe the main strengths of our competitors.

Experience: The companies identified as our competitors are strong in terms of experience, some of them being in business for more than 25 years. This means they have a well-established name in the market and are known for their capabilities and product quality. Additionally, their experience has likely led to trusted relationships with their clients and material suppliers, placing an obstacle for us as we enter into the market.

Quick Response: The experience these companies help them design a system more quickly. They have developed relationships with their suppliers which allows them to know prices and quantities more efficiently. Experience also implies they have a better understanding of what works and what doesn’t, which helps shorten the design process and complete the project quicker.

Less Restricted Budget: Our competitors have built up their profitability and it will be difficult to match their prices upon entry into the market. This makes it virtually impossible for our company to try to undercut prices.

2. Weaknesses

The following describe the assumed weaknesses of our competitors.

One-Time Customers: The nature of this business usually implies clients are one-time buyers. For this reason, a customer of these companies may likely not be a returning customer once their needs have been met. In this sense, they are essentially only marketing to new clients, which brings the competition to the same level as our company.
COMPETITIVE ANALYSIS

Non Exclusive: None of our identified competitors specialize in biofiltration specifically, but rather offer an array of water or air-related technologies. In this regard, our company has an advantage in the market because we can spend more time and energy optimizing each biofilter to fit the needs of each client. We can adjust our budget to support researching and optimizing the best possible biofiltration system.

Regional: Many of our competitors operate within a specific region, therefore limiting their potential customer base. We intend to operate nationally and will therefore be knowledgeable about regulations specific to certain states as well as the effects a specific climate may have on our design.

B. POTENTIAL COMPETITORS

As biofiltration technology becomes more and more popular, additional competing companies similar to ours may arise. Additionally, companies currently designing conventional odor-control technologies may expand their services to include biofiltration.

If these competitors were to enter the market, they may not have the ability to undercut our costs or offer a system that is significantly more effective, but their presence will direct business away from us. Because the customer base for this product is limited, any additional biofilter providers will affect our potential market. At this time, however, our company is one of a small few that offers specialty biofiltration design. No additional future competitors have been identified. We intend to place a strong emphasis on promotional advertising so that our company develops a trusted client base.
VIII. Management Team

A. KEY EMPLOYEES

1. Co-Managers

The following individuals have invested in the founding of this company and will serve as co-managers during startup. All founding members have background in engineering and are to perform all design work for the startup of this company. These four individuals will also act as co-leaders for all executive decisions for the company.

Jonathan Gingrich: Chemical Engineer P.E. Specialty: Biochemical Engineering

Jonathan Gingrich is a licensed P.E. in biochemical engineering. He graduated Calvin College with a double major in Chemical Engineering and Biochemistry and he continued on to graduate school at the University of Minnesota in biochemistry, with a specialty in biological remediation. He has worked for the past 7 years at a company specializing in industrial bioremediation of waste for large-scale contaminated waste sites. As a result of his education and experience, he is an expert in the area of biochemical reactions and metabolism, the basis for biofiltration design. Jonathan’s experience brings an essential technical component to our company and allows for a greater level of sophistication with our designs. Optimization of biofiltration ultimately depends on the success of the biochemical processes involved, which is an entire area of study. In this regard, Jonathan brings an unmatched technical expertise to our company.

Lauren Grimley: Civil and Environmental Engineer P.E. Specialty: Wastewater Treatment Engineering

Lauren Grimley is a licensed practicing civil/environmental engineer who specializes in wastewater treatment processes. She has worked in the industry of wastewater engineering for the past 9 years and has a history of highly successful and innovative projects in this field. Her resume of past projects shows a particular emphasis on energy use optimization of conventional wastewater treatment processes. Energy conservation is an area Lauren is passionate about, which helps to provide a basis for differentiation of our company in the market. We aim to design systems with optimal efficiency with respect to energy use and project life, and Lauren’s input is highly beneficial in this regard. She has established a name for herself in the wastewater treatment industry due to the success of her low-energy designs and her good name and clientele connections will greatly contribute to the success of our startup company.

Cassandra Miceli: Chemical Engineer P.E. Specialty: Chemical Design Process Engineering

Cassandra Miceli graduated with a Chemical Engineering and Biochemistry double major from Calvin College. She works as a P.E. as a chemical engineer. Her area of specialty is in chemical processes and she has worked for the past 8 years at Odno Tech, a company specializing in various forms of odor control technology. She an extensive background designing chemical scrubbers, one of our main
sources of competition in the market, and understands the advantages of biofiltration over competing technology. She is well-versed in the market of odor control and has many connections with wastewater facilities. Her contribution to the company in this respect is incredibly valuable and provides credibility to our company. Her experience equips our company with a basis for contacting potential clients and her positive connections with individuals in the market greatly enhances our image.

**Kerala Smith:** Civil and Environmental Engineer; Specialty: Air Quality Control

Kerala Smith graduated Calvin College with a Civil/Environmental Engineering degree. After graduating, she spent two years at a civil engineering firm in their water resources department, and for the past 6 years she has worked at the Michigan Department of Environmental Quality (MDEQ) specializing in air quality. This combination of experience has provided her with an understanding of air contaminants and their sources in municipality facilities. She is experienced with the “how-to” for air quality testing. Her experience at the MDEQ provides our company with an inside knowledge of regulations and permitting involved with odor-control. This process has the potential to be confusing and slow, but with Kerala’s experience we can approach this situation with confidence, putting us at an advantage over competitors.

**B. EMPLOYEES TO BRING TO THE TEAM**

The following employee positions are to be added to our team to ensure a successful company startup. They will assist with business operations of the company because of their experience and expertise.

**CFO:** We plan to bring on an experienced CFO to manage the finances of our company. This will be essential as none of the co-managers are trained in finances and our large cash flow must be well-managed for the success of our company. Our potential hire will be someone with experience in financial management for wastewater, municipality, or general engineering with at least 8-10 years of experience.

**Business Executive:** We will be adding an experienced business executive to our team to handle the organization of our company. This individual will be in charge of executing marketing strategies during the growth of our company. This position will ensure that our company maintains its vision and acts according to our mission statement. They will oversee operations and ensure all departments act uniformly. The ideal candidate is one who has at least 5-7 years of business management experience, preferably with some history in the field of engineering.

**Marketing Executive:** A marketing executive will serve as the go-between for our engineers and potential customers. This individual will attend marketing events, create and distribute promotional information to our target market, and manage advertisements. In addition, we will delegate webpage management to this individual and expect them to be experienced in this area. Our potential hire will be someone with at least 5 years marketing experience.
C. FUTURE EMPLOYEE POSITIONS

Our current staff has the capabilities to fully manage all aspects of our business. However, we do not have specialty training in specific aspects of business and operation. During the initial startup of our company, we will be required to spend time and energy in areas outside of our expertise, therefore as our company grows we will acquire additional staff for proper employee utilization. Descriptions of future additions to our company are as follows.

Research and Development Department: BiOdor plans to expand our resources to include a diverse research and development department. This highly skilled team will advance our company in the field of biotechnology by developing innovative means to accomplish odor-control.

Electrical and Mechanical Engineers: Certain aspects of the biofiltration design involve electronic and mechanical components. Furthermore, many components of our system could be designed to be automated. As research and development continues, it would be beneficial to bring on a team of electrical and mechanical engineers to provide our company with a more diverse set of skills.

Marketing Department: Our marketing department will aid in public relations and promotion of our company name. This department will report to the Marketing Executive. They will be employed to manage advertisements, company events, and client interactions.

Financial Management: Expansion of our company will necessitate additional staff to aid our CFO. As we expand our company and grow in the market, we intend to employ a well-trained business management staff. The initial expansion will include a chief accountant and a sales team.

Human Resources: As our company grows and we see the need to expand our staff, we will greatly benefit from a department trained in finding talented individuals for each of our departments.
IX. Operations

A. LEGAL FORM OF OWNERSHIP

The legal form of our company will be a limited liability. A limited liability company (LLC) is one of the most common type of private companies because it lowers the liabilities associated with ownership. This form of ownership is advantageous for a startup company because it allows capital to be raised more quickly. A LLC provides financial risk protection for the owner and has advantages associated with tax requirements. Because a LLC is recognized on a legal level, it equips the company with credibility in the eyes of clients and suppliers. At startup, our company will have a shared ownership between employees, so establishing our company as an LLC will allow for each member to have liability protection and will ensure distribution of profit. Our company will not have a board of directors at startup.

B. COMPANY STRUCTURE

The managerial flow chart of our company is shown in Figure 1. This is a diagram of the company supervisory positions and their designated departments including our plan for future additions to the team.

![Flowchart](image)

Figure 1. Long-Term Managerial Flowchart

C. DECISION MAKING AUTHORITY

The four co-managers will have executive authority. After one year of operation, we plan to promote one of the four founding managers to CEO of the company. This selection will be based on support of the remaining employees and desire for this position by the individual. The role of CEO is to process all executive decisions.

The director of each department will have authority over decisions made among their designated staff members. Departments will be in close communication with one another to ensure a seamless operation among the company.
D. COMPENSATION AND BENEFIT PACKAGES

Our firm will have limited funds in the initial years of start-up. Because we are confident in the success of our company, the founding co-managers (our four design engineers) are willing to receive a significant salary cut during the first year of startup. The founding members will be receiving a salary of $30,000 for the first year of operation. After this time, these individuals will be compensated with an annual salary of $70,000. The employee positions we intend to bring to our team will receive full salaries at startup. We have budgeted for a salary of $67,000 for our CFO and $62,000 for our business and marketing executives. Additionally, we will ensure employees are equipped with a 401K plan and healthcare insurance.

E. CAPACITY CONSTRAINTS

The capacity of our company’s services is restricted by the number of employees and their talents and workload. The expect number of projects our company can feasibly take on is approximately 8 odor-control designs in the first year of operation, 9 in the following year, and 10 in year three. As we grow and expand our employee numbers, we will adjust our operating capacity accordingly.
Financial Forecast

A. KEY ASSUMPTIONS

Forecasting our company’s finances required several key assumptions to be made concerning expectations for our operation.

Growth Rate of Startup

The primary assumption is that our company will experience a constant and upward growth. Startup companies are designed to grow quickly and we intend to monitor our growth rate frequently to ensure our company is on track.

Demand

The initial market has been defined as 16,255 wastewater treatment facilities [10]. Although some facilities will install more than one system, some will not install any, therefore we will assume this number to be the startup demand. This figure excludes other odor-producing facilities, which we intend to expand our target market to include in years following the first few years of startup.

Production Costs

Production costs are highly variable from case to case because each system is a unique and specialized design. The initial investment cost of our systems can range anywhere from $400,000 to $800,000, depending on the complexity of the design and labor required [3]. As a design firm, our engineers are producing a set of plans and documents necessary for the installation of a biofiltration system. Our client pays for the engineering services we provide, which includes design plans and contract assembly.

B. BASIS OF COST ANALYSIS

The expected labor cost charged to our client associated with the design of each biofilter averages to $100,000. Additionally, we charge 25% of the total project costs for construction administration services. Our construction administration costs cover the service of identifying and requesting bids from construction companies, recommending a bidder to our client based on the capabilities of the construction company and our experience with them, and obtaining installation permits. The client has the ultimate say in which construction company to employ, however we have the expertise of knowing which bid offers the most feasible project cost based on our own estimated unit prices (refer to the Appendix for a list of unit prices). An average for the initial investment cost of a biofiltration system is $600,000 to the client, thus a typical project revenue for our services (without construction costs) $275,000. Refer to the Appendix for all financial forecasting calculations.
XI. Loan Proposal

A. AMOUNT REQUESTED
As a startup company, we are requesting a loan of $311,000 from the bank to jump-start operation. The loan will have an annual interest rate of 17%, which is relatively high due to the risk associated with investing in a new company [12].

B. PURPOSES OF FUNDS
The purpose of this loan will be to finance one year of salaries for all seven of our startup employees. To show our confidence in the success of our company, this loan implies the founding co-managers are willing to receive a cut in salary during the first year of operation.

C. REPAYMENT SCHEDULE (EXIT STRATEGY)
We intend to repay in a timely manner, and based on our financial forecast we believe this will easily be accomplished. We intend to pay off half of the loan each year so that it will be paid in full after 2 years of operation. If it were that our company financial forecast is inaccurate and we do not accomplish this goal, our assets (including current cash value of warranties, technical equipment, and accounts receivable) can serve as adequate collateral for the requested loan.

D. TIMETABLE FOR LAUNCHING BUSINESS
Given the experience of our staff, we have connections in the industry and expect to launch our first project immediately after startup. We are in contact with interested parties providing us with confidence that startup will be smooth and fully functioning. Startup of our company can begin if and when the requested loan is granted.
## Appendix

### Breakdown of Operating Costs

<table>
<thead>
<tr>
<th>Operating Components</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Components of Fixed Costs</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Testing Equipment</td>
<td>$10,000</td>
<td>$10,000</td>
<td>$10,000</td>
</tr>
<tr>
<td>Office accessories</td>
<td>$10,000</td>
<td>$5,000</td>
<td>$5,000</td>
</tr>
<tr>
<td>Internet/Phone</td>
<td>$3,600</td>
<td>$3,600</td>
<td>$3,600</td>
</tr>
<tr>
<td>Letterhead/Printing</td>
<td>$2,000</td>
<td>$2,000</td>
<td>$2,000</td>
</tr>
<tr>
<td>Rent</td>
<td>$25,000</td>
<td>$25,000</td>
<td>$25,000</td>
</tr>
<tr>
<td>Marketing</td>
<td>$11,000</td>
<td>$11,000</td>
<td>$11,000</td>
</tr>
<tr>
<td>Software License</td>
<td>$15,000</td>
<td>$10,000</td>
<td>$10,000</td>
</tr>
<tr>
<td>Employee Insurance</td>
<td>$35,000</td>
<td>$35,000</td>
<td>$35,000</td>
</tr>
<tr>
<td>Liability Insurance</td>
<td>$15,000</td>
<td>$15,000</td>
<td>$15,000</td>
</tr>
<tr>
<td><strong>Salaries (Fixed Costs)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business Executive</td>
<td>$62,000</td>
<td>$62,000</td>
<td>$62,000</td>
</tr>
<tr>
<td>Marketing Executive</td>
<td>$62,000</td>
<td>$62,000</td>
<td>$62,000</td>
</tr>
<tr>
<td>CFO</td>
<td>$67,000</td>
<td>$67,000</td>
<td>$67,000</td>
</tr>
<tr>
<td>Co-Manager (4)</td>
<td>$120,000</td>
<td>$280,000</td>
<td>$280,000</td>
</tr>
<tr>
<td><strong>Assets</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office accessories</td>
<td>$10,000</td>
<td>$10,000</td>
<td>$10,000</td>
</tr>
<tr>
<td>Accounts Receivable</td>
<td>$70,000</td>
<td>$70,000</td>
<td>$70,000</td>
</tr>
<tr>
<td>Testing Equipment</td>
<td>$10,000</td>
<td>$10,000</td>
<td>$10,000</td>
</tr>
<tr>
<td>Warranty Coverage</td>
<td>$250,000</td>
<td>$250,000</td>
<td>$250,000</td>
</tr>
<tr>
<td><strong>Liabilities</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Needed for Salaries</td>
<td>$311,000</td>
<td>$311,000</td>
<td>$155,500</td>
</tr>
<tr>
<td>Paid per Year</td>
<td>$-</td>
<td>$155,500</td>
<td>$155,500</td>
</tr>
<tr>
<td>Accounts Payable</td>
<td>$7,000</td>
<td>$7,000</td>
<td>$7,000</td>
</tr>
<tr>
<td>Notes Payable</td>
<td>$6,000</td>
<td>$6,000</td>
<td>$6,000</td>
</tr>
<tr>
<td>Other Current Liabilities</td>
<td>$10,000</td>
<td>$10,000</td>
<td>$10,000</td>
</tr>
<tr>
<td><strong>Variable Costs</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20% of Annual Fixed Costs</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: Assets and Liabilities listed here are one-time payments and the values shown do not accumulate over the three-year span*
UNIT PRICES (ESTIMATION OF CONSTRUCTION COSTS)
The following unit price estimates will be used during the bidding process for construction to determine a reasonable bid approximation.

<table>
<thead>
<tr>
<th>Estimated Unit Prices</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel structural elements</td>
<td>$9.00</td>
<td>per sq. ft.</td>
<td></td>
</tr>
<tr>
<td>Fiber glass ductile work</td>
<td>$9.00</td>
<td>per ft.</td>
<td></td>
</tr>
<tr>
<td>Fan</td>
<td>$80.00</td>
<td>each</td>
<td></td>
</tr>
<tr>
<td>Electronics</td>
<td>$150.00</td>
<td>each</td>
<td></td>
</tr>
<tr>
<td>Geotextile</td>
<td>$0.30</td>
<td>per sq. ft.</td>
<td></td>
</tr>
<tr>
<td>Insulation</td>
<td>$0.35</td>
<td>per sq. ft.</td>
<td></td>
</tr>
<tr>
<td>Sprinkler system</td>
<td>$50.00</td>
<td>each</td>
<td></td>
</tr>
<tr>
<td>Pressure sensors</td>
<td>$20.00</td>
<td>each</td>
<td></td>
</tr>
<tr>
<td>Media (average)</td>
<td>$46.00</td>
<td>per cubic ft.</td>
<td></td>
</tr>
<tr>
<td>Concrete base</td>
<td>$4.00</td>
<td>per sq. ft.</td>
<td></td>
</tr>
</tbody>
</table>

BiOdor

**Statement of Income**

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales revenue</td>
<td>2,000,000</td>
<td>2,250,000</td>
<td>2,500,000</td>
</tr>
<tr>
<td>Depreciation</td>
<td>3,573</td>
<td>6,123</td>
<td>4,373</td>
</tr>
<tr>
<td>Gross Margin</td>
<td>1,996,428</td>
<td>2,243,878</td>
<td>2,495,628</td>
</tr>
<tr>
<td>Variable Operating Costs</td>
<td>87,520</td>
<td>117,520</td>
<td>117,520</td>
</tr>
<tr>
<td>Fixed Operating Costs</td>
<td>437,600</td>
<td>587,600</td>
<td>587,600</td>
</tr>
<tr>
<td>Operating Income</td>
<td>1,471,308</td>
<td>1,538,758</td>
<td>1,790,508</td>
</tr>
<tr>
<td>Interest Expense</td>
<td>26,435</td>
<td>39,653</td>
<td>13,218</td>
</tr>
<tr>
<td>Income Before Tax</td>
<td>1,444,873</td>
<td>1,499,105</td>
<td>1,777,290</td>
</tr>
<tr>
<td>Income tax (40%)</td>
<td>577,949</td>
<td>599,642</td>
<td>710,916</td>
</tr>
<tr>
<td>Net Income After Tax</td>
<td>866,924</td>
<td>899,463</td>
<td>1,066,374</td>
</tr>
</tbody>
</table>
BiOdor

Statement of Cash Flows

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Beginning Cash Balance</strong></td>
<td>-</td>
<td>1,162,496</td>
<td>1,918,582</td>
</tr>
<tr>
<td><strong>Net Income After Tax</strong></td>
<td>866,924</td>
<td>899,463</td>
<td>1,066,374</td>
</tr>
<tr>
<td><strong>Depreciation expense</strong></td>
<td>3,573</td>
<td>6,123</td>
<td>4,373</td>
</tr>
<tr>
<td><strong>Invested Capital (Equity)</strong></td>
<td>6,000</td>
<td>6,000</td>
<td>29,000</td>
</tr>
<tr>
<td><strong>Increase (decrease) in borrowed funds</strong></td>
<td>311,000</td>
<td>(155,500)</td>
<td>(155,500)</td>
</tr>
<tr>
<td><strong>Equipment Purchases</strong></td>
<td>(25,000)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Ending Cash Balance</strong></td>
<td>1,162,496</td>
<td>1,918,582</td>
<td>2,862,828</td>
</tr>
</tbody>
</table>
### BiQdor

**Break - Even Analysis**

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sales revenue</strong></td>
<td>2,000,000</td>
<td>2,250,000</td>
<td>2,500,000</td>
</tr>
<tr>
<td><strong>Less: Variable Costs:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variable Cost of Goods Sold</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Variable Operating Costs</td>
<td>87,520</td>
<td>117,520</td>
<td>117,520</td>
</tr>
<tr>
<td><strong>Total Variable Costs</strong></td>
<td><strong>87,520</strong></td>
<td><strong>117,520</strong></td>
<td><strong>117,520</strong></td>
</tr>
<tr>
<td>Contribution Margin</td>
<td>1,912,480</td>
<td>2,132,480</td>
<td>2,382,480</td>
</tr>
<tr>
<td><strong>Less: Fixed Costs</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed Cost of Goods Sold</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fixed Operating Costs</td>
<td>437,600</td>
<td>587,600</td>
<td>587,600</td>
</tr>
<tr>
<td>Depreciation</td>
<td>3,573</td>
<td>6,123</td>
<td>4,373</td>
</tr>
<tr>
<td>Interest Expense</td>
<td>26,435</td>
<td>39,653</td>
<td>13,218</td>
</tr>
<tr>
<td><strong>Total Fixed Costs</strong></td>
<td><strong>467,608</strong></td>
<td><strong>633,375</strong></td>
<td><strong>605,190</strong></td>
</tr>
<tr>
<td>Income Before Tax</td>
<td>1,444,873</td>
<td>1,499,105</td>
<td>1,777,290</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Fixed Costs</strong></td>
<td><strong>467,608</strong></td>
<td><strong>633,375</strong></td>
<td><strong>605,190</strong></td>
</tr>
<tr>
<td>Contribution Margin %</td>
<td>96%</td>
<td>95%</td>
<td>95%</td>
</tr>
<tr>
<td><strong>Break Even Sales Volume</strong></td>
<td><strong>489,006</strong></td>
<td><strong>668,280</strong></td>
<td><strong>635,042</strong></td>
</tr>
</tbody>
</table>
### Equipment Purchases

<table>
<thead>
<tr>
<th>Equipment Purchases Year 1</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>25,000</td>
<td>3,573</td>
<td>6,123</td>
<td>4,373</td>
</tr>
</tbody>
</table>

### MACRS Rates (7-year recovery period)

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1429</td>
<td>0.2449</td>
<td>0.1749</td>
<td></td>
</tr>
</tbody>
</table>

### Interest Expense

<table>
<thead>
<tr>
<th>Annual interest rate on debt</th>
<th>17%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 1</td>
<td></td>
</tr>
<tr>
<td>Average debt balance</td>
<td>155,500</td>
</tr>
<tr>
<td>Interest expense</td>
<td>26,435</td>
</tr>
</tbody>
</table>

### BiOdor Ratio Analysis

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Margin of Revenue</td>
<td>0.74</td>
<td>0.69</td>
<td>0.72</td>
</tr>
<tr>
<td>Profit Margin</td>
<td>0.43</td>
<td>0.40</td>
<td>0.43</td>
</tr>
<tr>
<td>Net Asset Turnover</td>
<td>6.31</td>
<td>7.10</td>
<td>7.35</td>
</tr>
<tr>
<td>Debt to Equity Ratio</td>
<td>51.83</td>
<td>25.92</td>
<td>0.00</td>
</tr>
</tbody>
</table>


