

Catalana OÜ



PYROLY

BUSINESS PLAN

Tallinn
2024

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1. EXECUTIVE SUMMARY

Introduction:

Introducing a business plan of an environmentally friendly and a completely energy-sufficient waste-to-fuel solution dedicated to the recycling of used tires (ELT) and various waste types, such as solid municipal waste (SMW) and other plastics, agricultural, and rubber waste into high-grade fuel products.

Mission:

Our mission is to shift from landfill accumulation to high-tech waste-to-fuel conversion sites. We're dedicated to fulfilling market demands while getting rid of unutilized waste and ensuring zero environmental footprint.

Innovative Technologies:

Our highly efficient and environmentally friendly **PYROLY** technology has been rigorously tested at both laboratory and industrial scales. This patented technology, unique on a global scale, supports the continuous processing of all types of waste from categories I to V. The process yields valuable products such as pyrolysis oil (additionally convertible to gasoline, diesel, and fuel oil), heat, electricity, and high-quality carbon black. This innovative approach significantly reduces waste accumulation and ensures processing without harmful emissions to the environment.

Strategic Alliances:

To ensure a continuous supply chain of raw materials, we have formed strong partnerships with leading tire collectors and recyclers, and conducted negotiations with landfill managers. Moreover, our compliance with regulatory norms, specifically obtaining all necessary licenses and permissions from governmental bodies and specialized authorized structures, underscores our commitment to responsible waste management and sets a positive trend in our relationships with partners.

Production Methodology:

Our four-stage approach transforms used tires into valuable resources:

1. **Shredding:** Converting tires into rubber crumbs, textile, and cord wire.
2. **Converting:** Using PYROLY solutions to produce pyrolysis oil, carbon black, and other products from shredded tires.
3. **Agriculture Integration:** After expansion, at 100 ton/day utilizing capacity, we start to use waste-derived heat and electricity for greenhouse farming.
4. **Factory Production:** Constructing a factory in Estonia for manufacturing "PYROLY-EKOPYR" environmentally friendly waste-to-fuel installations, with an annual capacity to produce two units.

Geographic Advantage:

Located near an Estonian seaport, our 7.73-hectare site is primed for current functions with potential for expansion to 18 hectares.

Vision:

We envision being the frontrunner in environmental sustainability within Europe. By converting waste into valuable products and energy, we believe we can redefine waste management, introducing a new, eco-friendly economic segment.

Ask: Investment Requirement: **€3,586,560**

Financial Projections (Next 5 Years):

- *Year 1:* Revenue: **€ 2,819,314**
Net Income: **€528,912**
- *Year 2:* Revenue: **€5,074,600**
Net Income: **€1,653,882**
- *Year 3:* Revenue: **€5,095,646**
Net Income: **€1,525,239**
- *Year 4:* Revenue: **€5,116,902**
Net Income: **€1,434,526**
- *Year 5:* Revenue: **€7,070,800**
Net Income: **€2,621,952**

Payback Period of Initial Investment: About 02 Years and 11 Months.

Our financial trajectory demonstrates revenue growth and profitability, reinforcing our capability to produce a consistent and growing income over the subsequent five years.

Conclusion: This summary encapsulates our innovative approach, alliances, and commitment to sustainable progression. For an in-depth view of our operations and strategies, delve into the detailed sections of our business plan.

2. Company Description

Catalana OÜ, registered under the code 10651017 (in Estonia) and founded on March 14, 2000, with a share capital of 145,488 euros and specializes in developing innovative solutions to address global waste utilization challenges. Catalana holds an operating license given by the Estonian Environmental Board (KL-509045) that lets them legally run businesses in this industry. As leading initiators, equipment manufacturers, and project developers within the international consortium of PYROLY group companies under the European Union, our primary mission is to design solutions that efficiently convert various types of waste—including municipal waste, rubber products, polymers, agricultural waste, wood, peat, oil sludge, and more—into valuable commodities like oil products, energy, and heat, with zero environmental impact and maximum efficiency.

Our journey began with logistics, focusing primarily on cargo transportation between North and East Asia. However, legislative changes after two successful years compelled us to suspend this activity. Concurrently, we ventured into the construction business, with ambitious plans to enter large-scale construction. Prolonged crises posed significant challenges in this endeavour, leading us to explore advanced waste processing technologies. During that period, we also began developing advanced waste processing technologies in collaboration with specialists and companies. These entities later became key participants and founders of the PYROLY International Consortium.

Our mission is rooted in our commitment to spearheading waste utilization technologies. We tirelessly aim to foster a cleaner and environmentally responsible world by using waste as a resource, contributing positively to the environment. Our journey continues with unwavering dedication to these ideals.

2.1. PYROLY

PYROLY stands as both a consortium and a brand within our company's portfolio. Although the official registration of this consortium and brand is still in processes, PYROLY represents and promotes our waste-to-fuel solutions that convert various types of waste into energy resources.

Under the PYROLY brand, we are poised to introduce a wide range of innovative pyrolysis solutions designed to efficiently handle various waste types, transforming them into valuable commodities using environmentally friendly and highly efficient processes. Our readiness to develop sustainable waste processing solutions has the potential to reshape waste management practices. Although we're in the process of officially registering the PYROLY consortium and brand, our unwavering mission to provide innovative and eco-responsible waste processing solutions remains unchanged. We envision PYROLY as a driving force in creating a cleaner and sustainable world where waste becomes a valuable resource, ultimately contributing to a healthier global environment and addressing energy issues.

In the developing of our waste-to-fuel solutions, PYROLY has become a testament to a decade-long collaboration with highly qualified engineers and scientists from world-renowned institutes.

In our approach, only select technical components are subject to patenting. Notably, our in-house production includes critical elements like the Thermolysis reactor, while the majority of components are sourced from established European companies, prioritizing reliability and maximum efficiency. However, a patent has been obtained for the reactor and the complex containing this reactor, which assures high quality and guaranteed use of the equipment included in the complex.

Having conducted comprehensive tests, including the SGN test in Estonia, our solutions are primed for the European market, adhering to the latest regulations. Our company has maintained a consistent European mindset throughout the evolution of our pyrolysis technologies.

As we progress toward the official registration of the PYROLY consortium and brand, our commitment remains rooted in providing sustainable waste processing solutions tailored to European standards.

2.2. Management Team

CEO: **Juri Šantšuk**

CFO: **Yuri Didukh**

Sales Director and Regulatory Affairs Specialist: **Kaido Koppel**

Production Director: **Ruslan Väli**

International Customer Relations Manager and Investor Relations Specialist: **Alan Sakson**

Currently, Catalana OÜ has 8 registered board members. After successful funding of our business plan by investors, we intend to make necessary legal changes to meet our investor partners' requirements. We've agreed with the board that only those team members directly involved in this project will remain on the board. In Estonia, all company registration changes are straightforward and swift, as all processes are fully digitized. Additionally, it's essential to note that our team has extensive connections with consultants and partners outside the board, actively contributing to our enterprise's growth.

2.2.1. Juri Šantšuk

Birthdate: 1968, Estonia.

Expertise: Broad entrepreneurial experience in construction, waste management, IT, and business management.

Key Achievements:

- Co-founder and director of RAVLOS OÜ and JTK OÜ, managing multiple business sectors, including wholesale trade, beverage production, and transportation, coordinating up to 235 employees.
- Founder of Catalana OÜ, a logistics company that later shifted to waste management, perfectly aligning with the waste-to-fuel plant initiative.
- Founder of WISHMACH OÜ, an active IT development company.
- Founded PINSECTOR OÜ in 2021, specializing in modular home construction.

Value Proposition:

With an enviable track record in business management, construction, IT, logistics, and waste management, he's a key expert for the waste-to-fuel plant project in Estonia.

2.2.2. Yuri Didukh

Birthdate: 1960, Ukraine.

Expertise: Over three decades of experience across sectors, including mining, energy, waste processing, and IT innovations.

Key Achievements:

- Leadership roles in various major Ukrainian and international corporations, including AMDON (USA), Aton (UKR), Dalex (USA), UkrDonInternational (UKR), and Kolsers Invest (EST).
- Esteemed reputation in waste processing as chairman of the international consortium PYROLY, aligning with the waste-to-fuel plant project's vision.
- Significant experience in the energy sector at companies like PromGazProcessing, specializing in associated petroleum gas processing.
- Graduated from Donetsk State University with a degree in Law, highlighting his managerial prowess.

Value Proposition:

Boasts a unique blend of managerial expertise, waste processing knowledge, and experience in the energy sector, making him a valuable member in our project for preparing and establishing waste-to-fuel plants.

2.2.3. Kaido Koppel

Birthdate: 1970, Estonia.

Key Achievements:

- CEO of Horsefood Estonia OÜ (2017 - present): Successfully managing the distribution of Van Corp Diervoeders BV products in Estonia, showcasing expertise in sales, logistics, and marketing.
- CEO of Aikon Kaubanduse OÜ (2014 - 2017): Demonstrated professionalism in the grain product import sector, overseeing sales and logistics.
- Board Member of Catalana OÜ (2019 - present): Plays a pivotal role in the waste management company, directly tied to the waste-to-fuel initiative.
- Obtained a BBA (Bachelor of Business Administration) in Business Management from Tallinn University of Technology in 2000, demonstrating proficiency in business management.

Value Proposition:

With a history of leading various businesses and direct experience in waste management through Catalana OÜ, Kaido Koppel brings a wealth of experience crucial to the success of the waste-to-fuel plant in Estonia.

2.2.4. Ruslan Väli

Birthdate: 1968.

Expertise: An experienced professional with extensive backgrounds in mechanical engineering, legal consulting, and metalworking. His career reflects a unique combination of technical skills and industrial management.

Key Achievements:

- Demonstrated mechanical skills and leadership qualities while working as a mechanic on a fishing vessel in association with the "EstRybProm" fishing industry (1990-1992).
- Developed communication, regulatory compliance, and enforcement skills while serving in the Estonian Customs Service from 1992 to 2007, reaching the rank of Chief Inspector.
- Held key positions in the metalworking and mechanical engineering sector (2007-2021), successfully managing projects, planning, and procurement at Levadia Metall OÜ and Vergine OÜ.

- Demonstrated entrepreneurial spirit by co-founding and serving on the boards of several Estonian companies, including VERGINE KV OÜ, CATALANA OÜ, PURPROFF OÜ, and VI KOOL OÜ, where his organizational and negotiation skills played a pivotal role.

Value Proposition:

Ruslan Väli's extensive skill set, including leadership, teamwork, and exceptional project management abilities, makes him an invaluable asset to the waste-to-fuel plant project. His capacity to tackle complex logistical and regulatory challenges, combined with entrepreneurial skills, positions him as a key figure ensuring the success of the enterprise.

2.2.5. Alan Sakson

Birthdate: 2000, Estonia.

Expertise: A unique blend of youth and professional experience, offering a fresh perspective on modern trends and innovations.

Key Achievements:

- Advisor positions at Hansax OÜ, actively contributing to service quality improvement, operational efficiency and management.
- Board member of Catalana OÜ since 2023, applying expertise in coordinating key communication strategies.
- Business Development Advisor, Investor Relations Specialist, and Administrative Translator at Catalana.

Value Proposition:

- **Innovative Thinking:** Youthfulness brings a fresh perspective, allowing the company to remain relevant and competitive in a rapidly changing world.
- **Research Skills:** The ability to quickly find information from various sources, ensuring the company stays current with modern business news, trends, and technologies.
- **Multilingual Abilities and Cultural Understanding:** Possesses unique language skills and a deep understanding of various cultures. This allows effective interaction with investors and business partners and professional translation of documents and administrative materials into different languages, expanding our opportunities in global markets.
- **Experience in the sales and marketing of goods,** thanks to roles in various companies.

3. Problem

The Energy Crisis of 2022-2023, triggered by the political-economic situation in the European Union (EU), led to a significant increase in electricity prices. The crisis was caused by factors such as:

- The EU's energy market conjuncture.
- Changes in supply chains and a reduction in the EU's fossil fuel reserves.
- Unthought-out environmental initiatives by the European Parliament and individual EU governments regarding electricity production from fossil fuels and renewable energy sources.
- The unpredictability of producing electricity from renewable energy sources.

High electricity prices in Europe can have varying impacts depending on their duration and the intensity of their effect on consumers and energy producers.

Here are some potential consequences of the rise in electricity prices in Europe:

- **Increased Production Costs:** Energy producers, especially those using shale, fuel oil, and gas, might face increased production costs, possibly leading to reduced profits and potential production cuts.
- **Increased Household Costs:** High electricity prices can also increase the costs of electricity for domestic use, negatively impacting household budgets.
- **Increased Pressure on Governments:** High electricity prices might lead to public dissatisfaction and pressure on governments to take measures to reduce electricity prices, including through price regulation or promoting alternative energy sources.
- **Increased Interest in Renewable Energy:** High electricity prices stimulate demand for renewable energy sources, leading to further development in these sectors and reducing dependence on traditional energy sources.

It's also worth noting that rising electricity prices stimulate the development of new technologies and innovations aimed at reducing electricity production costs or increasing the efficiency of energy sources. This can lead to reduced dependence on traditional energy sources and the creation of a cleaner energy system. Overall, high electricity prices in Europe can have positive outcomes, such as accelerating the adoption of new technologies and ensuring adequate evaluations when obtaining necessary approvals.

3.1 Waste Problem

The waste issue in Europe has been present for many years and remains one of the primary environmental challenges in the region. Europe generates a vast amount of waste, and its treatment and disposal are significant problems that need to be addressed at both local and national levels.

One of the main challenges is the increasing volumes of waste produced. According to Eurostat, about 2.5 billion tons of waste are generated annually in the EU. This is due to population growth, increased consumption, the use of packaging materials, and other factors.

Another issue is the lack of infrastructure for waste processing. In some European countries, there's a lack of resources and technologies for waste disposal, leading to its accumulation in landfills and environmental pollution.

Moreover, there's a discrepancy between the amount of waste produced and its treatment. For instance, in some countries, too much plastic waste is generated, but the systems for its treatment are either absent or underdeveloped.

In conclusion, the waste issue in Europe is complex and multifaceted, and its solution requires collaborative efforts from states, companies, and the public. Measures are needed to improve waste treatment and disposal technologies and organize an efficient waste collection and recycling system.

According to the World Health Organization (WHO) statistics, each individual globally produces an average of 0.74 to 1.23 kg of waste per day.

The EU has set a target to recycle at least 55% of household waste by 2025, 60% by 2030, and 65% by 2035. However, in Estonia, data from 2021 indicates only 30.4% of household waste was recycled, with actual figures between 7-13%. The remaining waste was sent to landfills. If Estonia fails to meet its waste recycling commitments, the European Commission could initiate an infringement procedure, which means Estonia could face an annual fine of 1.4 million euros.

3.2. Used Tire Problem

The challenge of disposing of End-of-Life Tires (ELTs) continues to escalate in Europe due to the increasing number of vehicles and tire production. Each year, global ELT waste amounts to one billion units, with the EU alone discarding over 300 million tires from cars and trucks.

The European Union (EU) generates around 3.5 million tons of waste tires annually. Of this, only around 70% is recycled or recovered, while the remaining 30% is landfilled or incinerated.

In 2020, the EU produced 4.2 million tons of tires. Despite having 93 tire manufacturing centers in the region, the EU imports more tires than it exports in all categories, further exacerbating the tire waste issue.

The vast volume of used tires produced annually remains a significant issue. The gap between producing new tires and recycling old ones continues to be a challenge. This issue demands collaborative efforts from governments, industries, and the public.

4. Used Tire Recycling

Tire utilization post-service involves various methods, from incineration to mechanical recycling, each carrying its negative issues and environmental impacts

4.1. Tire Retreading

While tire retreading, the process of refurbishing a tire's tread, extends its service life and is eco-friendly, its global application varies due to concerns about the quality and safety of retreaded tires. It's noteworthy that the degree of retreading and its influence on extending tire usage significantly differs across countries.

4.2. Tire Landfills

Storing used tires in landfills, both legal and illegal, poses numerous challenges, including resource wastage and environmental degradation exacerbated by the absence of efficient disposal alternatives. The scale of tire disposal challenges is underscored by alarming statistics of approximately one billion tires stored in dumps worldwide, causing immense environmental harm.

4.3. Rubber Crumb Recycling

Grinding rubber waste to crumb is recognized as a straightforward, though not fully resolved, disposal method given the economic and practical applications barriers to effectively using the resulting product. Shredding End-of-Life Tires into rubber crumbs presents various challenges such as potential contaminant leaching and high energy consumption. Notably, one of the challenges is that the shredders used to produce crumb material often face limitations in input volume.

4.4. Tire Incineration in Furnaces

Historically, tire incineration, notably in cement furnaces, has been favored for its ability to produce energy. However, this practice is now receiving criticism due to its harmful environmental effects. The process leads to the release of dangerous pollutants and carbon dioxide, potentially impacting the quality of cement. Among the available methods for managing End-of-Life Tires (ELTs), this is seen as one of the worst for the environment.

5. Our Solution

Our solution is the construction of a waste-to-fuel pyrolysis plant in Estonia with an initial processing capacity of 27,000 tons of used tires per year. This waste utilization facility will operate with zero CO₂ emissions and without generating hazardous residues, making our business completely environmentally friendly. Due to its high utilization efficiency, the plant will be entirely self-sustaining, producing its own electricity and heat while generating revenue from the sale of high-quality end-products such as pyrolysis oil, carbon black, liquid CO₂, and more.

Considering the variety of technological solutions proposed by national and international experts and current economic conditions in Estonia and Europe, the prioritized approach to rubber waste disposal should consider technologies offering:

- Reliable and safe waste disposal equipment.
- Energy consumption derived from the recycling process itself.
- A waste-free process.
- Full environmental safety.
- Production of valuable commercial products that meet the European market standards.

Our solutions meet all the aforementioned requirements for processing rubber tire waste and other municipal wastes, using the Pyroly pyrolysis technologies we intend to implement.

5.1. Pyrolysis Technology Description

Pyrolysis is a technological process where raw material is heated in the absence of air, leading to its deep decomposition and the transition of organic components into a gaseous state. This process takes place in a unit made of heat-resistant stainless steel. During pyrolysis, the raw material is transformed into pyrolytic gas, which is then separated into liquid and gaseous phases. These products can be further used as fuel or other materials.

The specifics and volume of the products obtained depend on the type of raw material. For instance, more carbon black and pyrolytic liquid are produced from rubber. The technology also includes the fractionation of pyrolytic liquid, allowing for the isolation of different types of fuel based on its composition.

One of the main advantages of pyrolysis is its eco-friendliness. Firstly, it allows for the recycling of waste, such as plastic and rubber, thereby reducing environmental impact and landfill volumes. Secondly, thanks to the closed process, there are no harmful emissions. Additionally, to ensure extra ecological production, filtration systems are used in the complex, preventing pollutants from entering the atmosphere.

5.2. PYROLY Solutions

CATALANA OÜ, in collaboration with branches, engineers, and developers from the consortium, has successfully created over 10 sets of equipment for recycling various types of waste, including municipal solid waste, rubber waste, plastic, agricultural waste, and oil industry waste. This long-standing 14-year collaboration has led to the creation of prototype industrial installations, including:

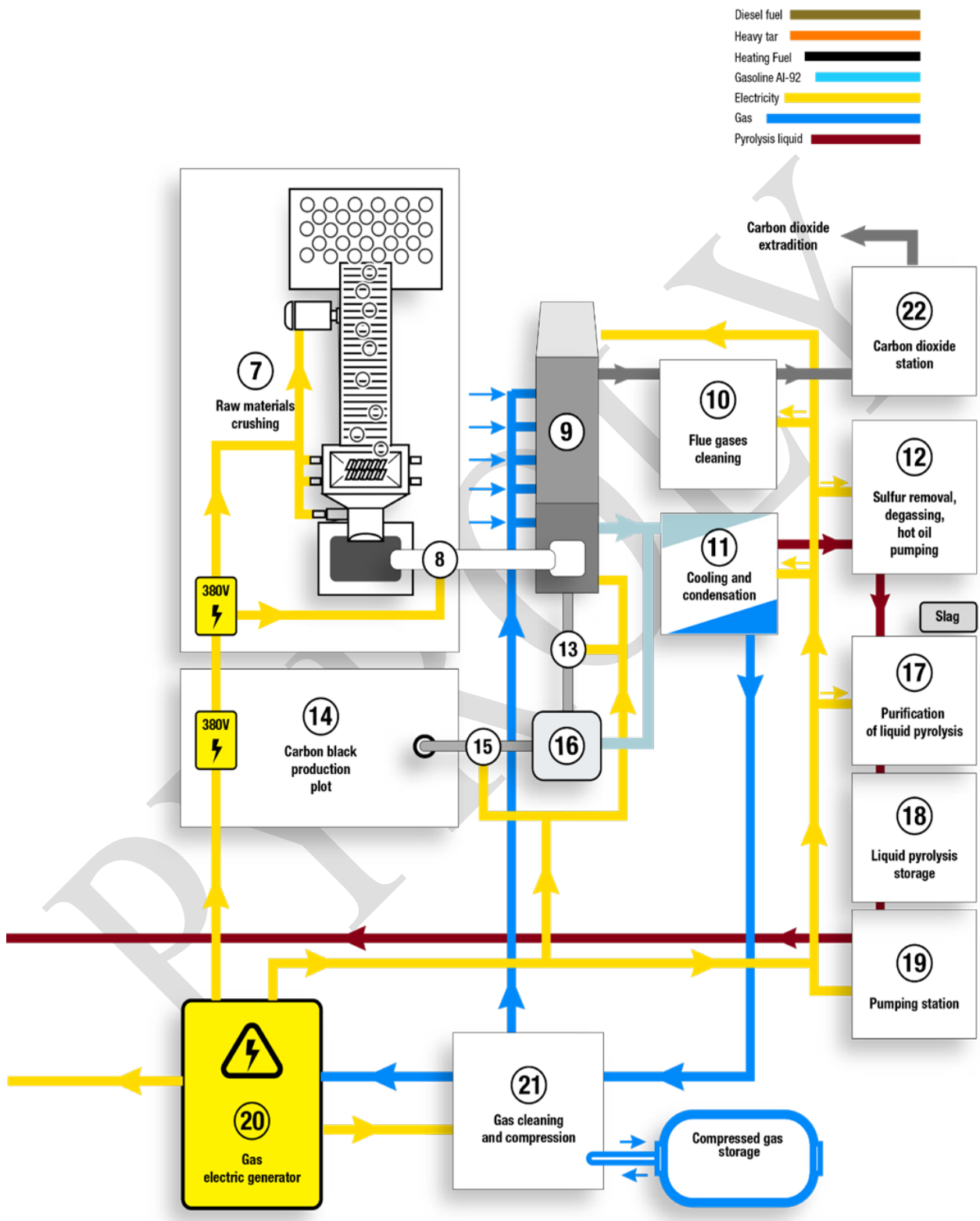
1. PYROLY-EKOPYR "OS": designed for processing oil sludges and acidic resins.
2. PYROLY-EKOPYR "RP": adapted for processing rubber, plastic, and polyethylene.
3. PYROLY-EKOPYR "EG": geared towards processing mixed waste of various kinds.

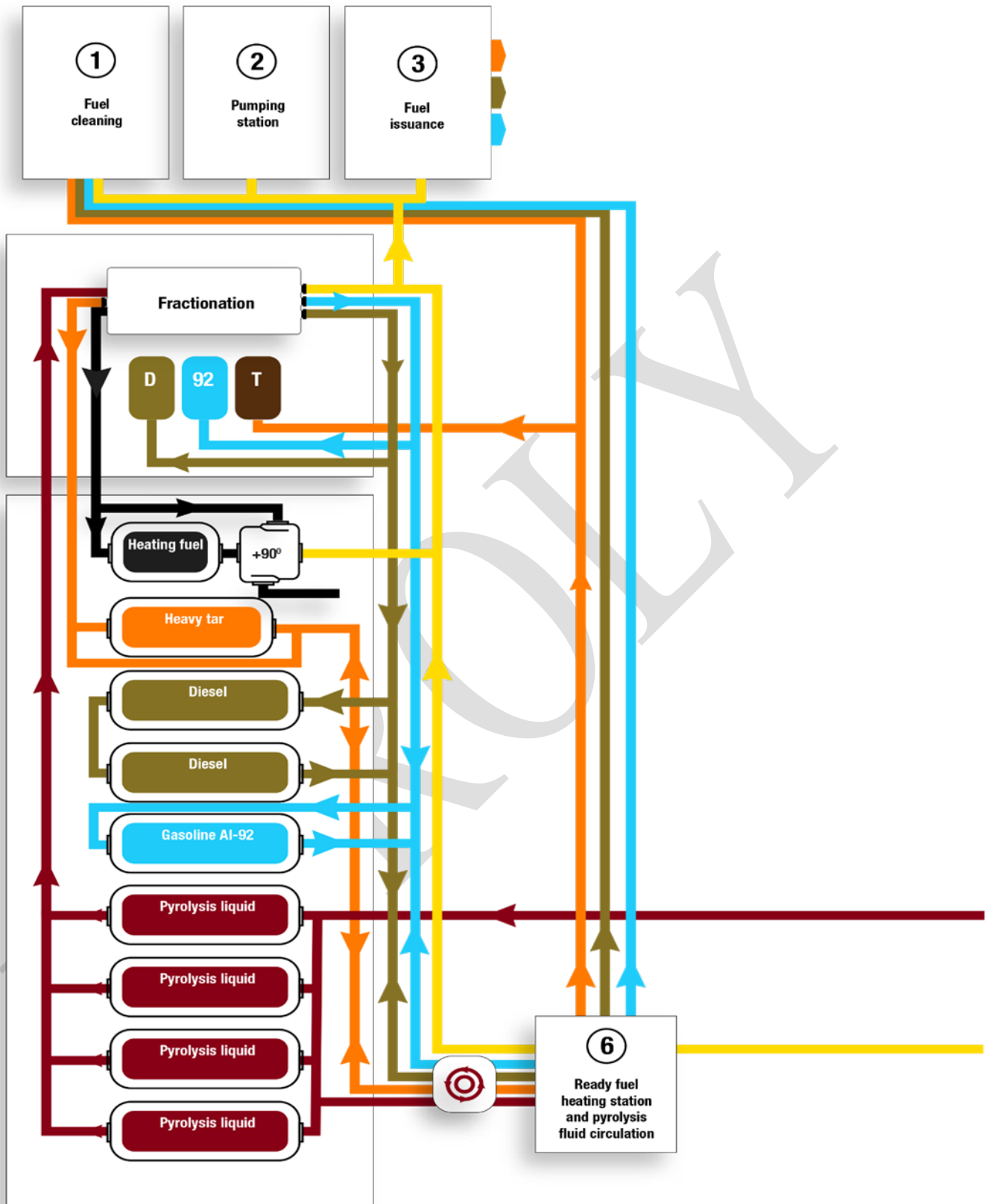
The PYROLY-EKOPYR system, manufactured by us within the European Union using modern technologies, offers unique advantages in terms of productivity, product output, and price compared to approximately similar equipment produced in other countries.

Key Features:

1. The pyrolysis reactor in the complex allows the recycling of various types of waste, including municipal solid waste (MSW), oil sludge, tires, plastics, organic waste, medical waste, agricultural waste, etc., both separately and in mixtures, excluding glass and metal.
2. The reactor's temperature conditions can be adjusted within a range of 350° to 1150°, enabling low-temperature operation from 350° to 850° (for pyrolysis oil production) and high-temperature pyrolysis from 850° to 1150° (for heat and electricity generation).
3. The ability to vary temperature settings allows for a quick transition between reactor operations for heat and electricity production (additional equipment such as gas turbine and gas piston units may be added to the price), or the production of pyrolysis oil in reverse.
4. The equipment boasts unique ecological compatibility as it eliminates the need for exhaust gas pipes, and it accommodates a wide range of input raw materials. Additionally, it features an unparalleled system for obtaining light oil fractions (such as gasoline and diesel) from mixed waste to meet ecological and other requirements.
5. The produced equipment can handle a daily recycling volume ranging from 10 to over 100,000 cubic meters (ca 5 tons – 42,500 tons), with the specific volume determined by the customer's needs.
6. The pyrolysis oil produced has an exceptionally low sulfur level, contributing to reduced emissions of sulfur dioxide (SO₂), nitrogen oxides (NO_x), and particulate matter, extending engine lifespan, improving fuel efficiency, reducing air pollution, ensuring regulatory compliance, and promoting sustainable shipping.

5.3. Pyrolysis Operating Scheme





6. Market Analysis

The European waste tire pyrolysis technology market size is expected to reach USD 500 million by 2030, growing at a CAGR of 15% from 2023 to 2030. The market growth is attributed to the increasing demand for sustainable and environment-friendly waste management solutions, the growing awareness about the harmful effects of waste tire disposal, and the stringent government regulations on waste tire management.

Pyrolysis is a thermal decomposition process that converts waste tires into valuable products such as pyrolysis oil, carbon black, and steel wire. Pyrolysis oil can be used as a fuel in power plants and other industrial applications. Carbon black can be used in the manufacturing of tires, rubber products, and plastics. Steel wire can be recycled and reused in the manufacturing of steel products.

Pyrolysis technology also has the potential to generate economic benefits by creating jobs and stimulating the circular economy.

The European waste tire pyrolysis technology market is expected to be driven by the following factors in the coming years:

- Increasing demand for sustainable and environment-friendly waste management solutions
- Growing awareness about the harmful effects of waste tire disposal
- Stringent government regulations on waste tire management
- Rising demand for pyrolysis oil, carbon black, and steel wire

The major players in the European waste tire pyrolysis technology market include:

- Klean Industries
- Green Fuel Nordic
- Woima
- Pyrum Innovations
- Scandinavian Enviro Systems

6.1. Market Trends

The market for used tire pyrolysis technology in Europe is expected to grow significantly in the coming years, driven by the following trends:

- **Increased demand for sustainable and eco-friendly waste management solutions:** The pyrolysis technology for used tires provides a sustainable and eco-friendly method of disposal. It transforms used tires into valuable products such as pyrolysis oil, carbon black, and steel wire, which can be applied in various sectors.

- **Growing awareness of the harm from used tire disposal:** Used tires pose a significant environmental challenge. They are hard to decompose and can emit toxic gases and pollutants. Pyrolysis technology aids in mitigating the environmental impact of used tire disposal.
- **New government regulations on used tire disposal:** European Union governments are implementing new regulations to minimize the environmental impact of used tire disposal. This is stimulating the demand for pyrolysis technology.
- **Rising demand for pyrolysis oil, carbon black, and metal in Europe:** This is promoting the growth of the used tire pyrolysis technology market.

In addition to the above trends, the following factors are also expected to contribute to the growth of the used tire pyrolysis technology market in Europe in the coming years:

- **Technological innovations:** Technological advancements in the field of used tire pyrolysis make it more efficient and economically viable, making pyrolysis technology more attractive to investors and operators.
- **Supportive government policies and initiatives:** EU governments are providing financial and other support to promote the use of used tire pyrolysis technology, aiding in market growth.

The pyrolysis technology market is rapidly evolving. While established entities are making their mark, other companies are also looking to start their new venture in pyrolysis industry, showcasing the immense potential of the sector.

Case in Point: Pyrum Innovations AG:

Take Pyrum Innovations AG, for example. They're not just another player in the tire pyrolysis domain. They've strategically partnered with Unitank, a reputable German tank terminal operator, to amplify their tire recycling capabilities. Their ambitious blueprint envisions the establishment of ten state-of-the-art pyrolysis plants across the European Union by 2030. Each of these facilities will host a minimum of three pyrolysis reactors, translating to an impressive processing capacity of around 20,000 tons of used tires annually.

The first plant is to be built in Germany, with the exact location to be announced by the end of the year. A final investment decision on the first plant is slated for 2023, with commercial operation commencing 24 months later, potentially by the end of 2025.

Pyrum has been operating a used tire recycling plant since May 2020, processing up to 10,000 tons of used tires annually to produce pyrolytic oil and recovered carbon black. The company is currently expanding the site, adding two more production lines.

In July, Pyrum formed a joint venture with MCapital GmbH, Textor GmbH, and Auer Holding GmbH to construct and operate an additional pyrolysis plant with a capacity of 20,000 tons per year in Straubing, Bavaria.

Case in Point: Scandinavian Enviro Systems AB:

The Swedish company ENVIRO is spearheading sustainable tire recycling, navigating financial challenges while securing crucial partnerships. With net revenues reaching MSEK 8.0 in Jan-Dec 2022, the company continued to expand its footprint with key initiatives, such as the construction permit granted for the Uddevalla facility and successful production tests conducted by a leading US oil company using ENVIRO's oil.

Collaborating with Antin Infrastructure Partners and Michelin, ENVIRO's forward-looking vision includes establishing large-scale tire recycling platforms across Europe, contributing significantly to solving waste handling challenges and increasing Europe's strategic autonomy in valuable raw materials. The joint venture targets an annual capacity of 1 million tons of end-of-life tires by 2030, aligning with global commitments to sustainability and circularity in the tire industry.

Market Dynamics:

The primary catalysts for this trend are the escalating demand for sustainable waste management solutions coupled with the pursuit of ecologically responsible energy production methodologies. In summation, the pyrolysis sector is gaining substantial growth and offers a lucrative avenue for discerning investors. This domain not only promises financial returns but also aligns seamlessly with global sustainability aspirations.

6.2. Analysis of European Pyrolysis Technology Clients

In this report, we will analyse the potential clients of pyrolysis technology in Europe based on their characteristics, needs, and preferences.

Primary Clients:

- 1. Collectors, processors, and handlers of used tires:** These entities can benefit from the valuable products and reduced disposal costs provided by pyrolysis technology. They are mainly located in countries with a high volume of used tire generation, such as Germany, France, Italy, Spain, and the UK. According to the European Tire and Rubber Manufacturers' Association (ETRMA), these five countries accounted for 62% of the total volume of used tires produced in Europe in 2019. The pyrolysis technology can help these clients enhance their profitability and competitiveness while also complying with environmental regulations and standards.
- 2. End-users of pyrolysis products:** This group includes entities that use products derived from tire pyrolysis, such as pyrolysis oil, carbon black, and steel wire. They mainly belong to industries that use these products as raw materials or energy sources, like the chemical, rubber, energy and steel industries. These clients are spread across Europe, and their preferences and requirements for product quality, quantity, and price may vary.

Demand and Supply of Used Tires in Europe:

- According to the ETRMA report, Europe generated about 3.4 million tons of used tires in 2019. Out of this, 96% were recycled through material recycling, energy recovery, or civil engineering applications. Only 4% were landfilled or stockpiled. Pyrolysis accounted for less than 1% of recovery methods.

Potential Clients and Markets for Pyrolysis Products:

- The ETRA report identified major sectors that can use recovered carbon black as a substitute for primary carbon black, such as rubber products, plastics, coatings, inks, and adhesives. The report also evaluated technical characteristics, quality standards, and certification schemes for recovered carbon black in different applications.

Specific Examples of Growing Demand for European Pyrolysis Technology:

- In 2022, the European Commission launched an initiative to promote the use of used tire pyrolysis technology, providing financial support to companies developing and implementing new pyrolysis technologies.
- In 2023, the French government announced a regulation mandating the recycling or recovery of all used tires by 2030. This is expected to stimulate demand for used tire pyrolysis technology in France.
- In 2023, the German government announced a subsidy program for the installation of used tire pyrolysis plants, expected to accelerate the adoption of the technology in Germany.

The increasing production of used tires in Europe poses both environmental and economic challenges for their disposal and recycling. Pyrolysis offers a potential solution to recover valuable products from used tires, such as pyrolysis oil, carbon black, and gas. As more countries adopt sustainable waste management practices, the demand for this technology is anticipated to continue growing.

6.3. Application and Usage of End-Products

This section explores the varied applications of our produced products, outlining their strategic roles in diverse industries worldwide.

6.3.1. Pyrolysis oil

- **Transportation:** Pyrolysis oil is currently used as a fuel for ships. While its application in road vehicles like trucks and buses is under development, the maritime industry is actively utilizing pyrolysis oil, leveraging the adaptability of marine engines to different fuel types. Pyrolysis oil also serves as a valuable feedstock for the production of diesel and other renewable fuels.

- **Manufacturing:** Pyrolysis oil can be used as a fuel for industrial furnaces and boilers.
- **Fuel Refining Applications:** Pyrolysis oil serves as a versatile feedstock in the production of refined fuels. Through advanced refining processes, it can be transformed into high-quality diesel, gasoline, and other fuel types.

6.3.2. Carbon Black

- **Transportation:** Recycled carbon black can be used in the production of tires, rubber hoses, and other automotive parts.
- **Construction:** Recycled carbon black can be used in the production of roofing materials, sealants, and other construction products.
- **Manufacturing:** Recycled carbon black can be used in the production of conveyor belts, gaskets, and other industrial products.
- **Agriculture:** Recycled carbon black can be used in the production of irrigation hoses, fertilizer bags, and other agricultural products.

6.3.3. Liquid CO₂

- **Food and beverage industry:** Liquid CO₂ is used to carbonate soft drinks, beer, and other beverages. It is also used as a preservative in food packaging and to decaffeinate coffee.
- **Chemical and petrochemical industry:** Liquid CO₂ is used as a solvent and feedstock for various chemical reactions. It is also used to produce dry ice, which is used for cryogenic applications.
- **Metals industry:** Liquid CO₂ is used to cool and clean metals during manufacturing processes.
- **Pharmaceutical industry:** Liquid CO₂ is used as a solvent and propellant for various drugs and pharmaceuticals.
- **Environmental uses:** Liquid CO₂ is used to capture and store carbon dioxide emissions from power plants and other industrial facilities. It is also used to clean up contaminated soil and groundwater.

6.4. Competitor Analysis

Pyrum Innovations AG: This German company has patented a pyrolysis technology capable of converting used tires into pyrolytic oil, recovered carbon black, and pyrolysis gas. Operating since May 2020, they process 10 000 / year of used tires. They are expanding their facility with two additional production lines and have established joint ventures for further expansion. The company claims that their pyrolysis technology is unique, efficient, and environmentally friendly.

Scandinavian Enviro Systems AB: Scandinavian Enviro Systems AB: This Swedish company has emerged as a potential competitor in the tire recycling sector, leveraging its patented CFC pyrolysis process developed in 2000 to establish a strong technological foundation. The successful completion of the Åsensbruk facility in 2013, coupled with collaborations with AnVa Polytech and Michelin, demonstrates Enviro's effective commercialization and industrialization efforts. Notably, the strategic partnership with Michelin and the attainment of sustainability certifications such as ISCC and EU REACH

underscore Enviro's commitment to environmental responsibility. The company's financial stability is evidenced by institutional investor participation in a directed rights issue in May 2023. The recent joint venture with Antin Infrastructure Partners signals ambitious plans to establish a large-scale tire recycling company, with a focus on Europe by 2030. Long-term supply contracts with Michelin further enhance Enviro's market position, emphasizing reliability and confidence in their products. In summary, Enviro's active approach to business development, environmental certifications, financial resilience, and expansion strategies position it as a significant influencer in the evolution of sustainable tire recycling in Europe.

6.4.1 Competitor Analysis in Estonia

As of December 12th, 2023, we have no knowledge of any businesses that are actively engaged in utilizing used tires or other waste materials to produce pyrolysis oil, carbon black, and other by-products for commercial sale. However, Eesti Energia, an Estonian government-run energy provider, has formed a partnership with the Swedish firm Ragn-Sells. Together, they are constructing a pyrolysis waste-to-fuel plant capable of processing up to 55,000 tons of waste annually. The main goal of the pyrolysis oil produced is to power their plants, and Ragn-Sells supplies them with used tires from Sweden. The facility is anticipated to start operations in 2024. We don't perceive them as a threat because Eesti Energia is restricted to utilizing used tires as raw materials, whereas our pyrolysis plant can be adapted to process various waste types, including bio and Municipal Solid Waste.

6.4.2 Competitor Analysis in Nearby Countries

As of December 12th, 2023, we have not identified companies using pyrolysis technologies exclusively for converting used tires into oil, also offering these solutions for sale. While we did find a small company in Latvia, they appeared to be less active and not up-to-date with the latest pyrolysis technologies, so we do not consider them as competitors. In Finland, there are some active mid-sized companies employing pyrolysis technologies for internal use and for external sales. However, their primary focus is on bio waste, generating biochar or biooil. For instance, Green Fuel Nordic Oy produces biooil, and Carbofex Oy produces biochar. Since their main emphasis is on bio waste, we do not view them as direct competitors. We are also aware of a Finnish company called Woima Oy, which utilizes municipal waste to generate electricity. However, their cost-effectiveness does not appear to be competitive compared to our technologies. Additionally, they are limited to electricity production, restricting their revenue potential in our view. We do not consider them competitors as they mainly use Municipal Solid Waste as resources, while our primary focus will be on used tires. In Sweden, there is a company called Enviro planning to build a large tire-utilizing plant by 2030. Despite having the capacity to utilize 1/3 of the used tires in Europe, there will still be millions of used tires to be utilized. Therefore, we do not perceive them as a threat until 2030.

6.5. Our Advantages - PYROLY

Introducing our innovative pyrolysis technology, which offers a range of compelling advantages. These advantages are not only environmentally responsible but also economically advantageous, making our solution a standout choice for sustainable waste management and energy production.

Our advantages:

- The system utilizes excess heat generated during waste utilization, promoting energy efficiency.
- The technology is versatile and can be deployed as mobile units, even on large ships.
- Waste-to-fuel processing plants can operate as power stations.
- The system's reactor can handle various materials, from household waste, oil extraction residues, tires, and more.
- The system boasts unique environmental compatibility with zero harmful emissions.
- The technology showcases high energy efficiency.
- There's no need for fine raw material grinding.
- Have solutions for utilizing more than 50,000 tons of waste per year.

6.6. SWOT Analysis

Strengths:

- High energy efficiency.
 - Versatility.
 - Mobile solutions.
- Eco-friendly compatibility.
 - Self-sufficient.

Weaknesses:

- Initial investment costs (still 10x cheaper comparing to competitors)
- Raw material preparation (moisture conten should not exceed 20%)

Opportunities:

- Growing demand for sustainable solutions.
 - Partnerships and collaborations.
 - Expansion into new markets.

Threats:

- Competitive pressures.
- Changes in the legislative framework.
- Economic factors related to fall in prices for traditional energy sources.

7. Marketing Plan

Our initial plan is aimed at building a strong foundation for our business in Estonia. We are well-prepared for this stage thanks to previously established preliminary agreements for the supply of raw materials and product distribution with key partners and clients. This preparatory work includes establishing crucial partnerships and creating a reliable structure for our marketing efforts. Currently, we have pre-agreements with state-owned companies in Estonia that will purchase rubber crumb from us.

7.1. Marketing Strategies

Our marketing strategies at this stage are designed to create a strong market presence and ensure the smooth operation of the business.

- Product Diversification:

After the construction of the planned pyrolysis plant, we will start producing pyrolysis oil, metallic shreds, and technical carbon from used tires. These high-value products will help us establish our presence and reputation, enabling us to expand our business and secure credits for faster growth.

- Electricity and Heat:

Our technologies have the capability to harness excess heat generated during waste utilization. This not only contributes to additional revenue but also makes our greenhouse-grown products in our 5th generation greenhouse complexes more attractive. This commitment to efficient waste utilization not only leaves a positive impression but also inspires others to choose our products, recognizing our dedication to maximizing waste efficiency.

- Emphasis on Environmental and Economic Benefits:

Our energy-efficient and environmentally friendly waste utilization processes set us apart from competitors. We will highlight the economic and environmental advantages of our solutions to attract environmentally conscious customers.

- Marketing Activities:

Initially, we will rely on pre-agreements with Estonian companies to purchase our products. As we expand, we will allocate resources for actively attracting potential customers and securing future contracts. In the long term, after commencing production, we plan to apply for membership in the association of used tire processors, which will allow us to generate more profit from raw materials and have guaranteed direct supplies. In our situation, attracting other companies as customers should not be difficult, given global issues related to unprocessed waste and rising energy prices.

7.2. Future Company Expansion

Our efforts for future expansion will focus on growing our operations and customer base. We currently have a license to process 27,000 metric tons of used tires annually from the Estonian market.

In the future for the Estonian PYROLY project, we plan to increase the rubber processing capacity to 200 m³/day and enhance the licensing potential for rubber intake for our production to 35-45 thousand tons/year or more.

The launch of the project's second stage will enable us to negotiate with the European Rubber Manufacturers' Association and elevate our business to a new level. This will provide the opportunity to gain more guaranteed profit from rubber intake from a centralized supplier and increase orders and production of "PYROLY-EKOPYR" complexes, which we manufacture, for placement in territories where necessary.

Considering that 3.45 million metric tons of used tires are generated annually in Europe, we realize our significant growth potential. Our expansion plans may include additional waste-to-fuel processing plants and extended market outreach.

By implementing these strategies and consistently delivering high-quality products, we aim to become a major provider of sustainable and affordable energy solutions in the European market. We will closely monitor our marketing initiatives and customer feedback.

8. Production Plan

At Catalana OÜ, our unwavering commitment to environmental sustainability is the foundation of our business philosophy. We are dedicated to responsibly processing various waste materials into valuable energy products, effectively addressing waste pollution issues and contributing to a green and environmentally conscious future. In the following sections, we offer a comprehensive examination of our production processes, providing detailed information on the development of each planned stage and the unique products they produce. Our production path is structured into two distinct stages, each with a unique purpose.

8.1. First Stage: Used Tire Shredding

Investment size - €3,586,560

At this initial stage, the primary focus is on using used tires. These tires are transformed into rubber crumb, and during the shredding process, steel wires and textile fibers are extracted from them, not only providing additional sources of income but also promoting our ecological goals.

Work Hours:

10 hours/day, 28 days/month, totalling 3,360 hours/year.

Tire Supply and Finances:

We have pre-agreements with Estonian tire collection organizations, ensuring stable supplies of used tires and generating income.

€110/MT - for reception, storage, and subsequent processing

Total annual revenue: **€2,970,000 (27,000 tons/year x €110/MT).**

Materials Used: Used tires.

Products Produced:

1. Rubber crumb
2. Recycled textile
3. Recycled metal cord

Production Volumes and Pricing:

- Crumb FR 25mm x 25mm: 14,000 tons/year - **€45/ton**
- Crumb FR 0-5mm: 10,000 tons/year - **€124/ton**
- Recycled textile: 90 tons/year - **€20/ton**
- Recycled metal cord: 2,910 tons/year - **€80/ton**

This stage promises a financially stable start, marked by robust economic indicators that facilitate self-financing of subsequent stages and the steady advancement of the project as a whole.

8.2. Second Stage: Construction, Installation, and Commissioning of the PYROLY-EKOPYR "EG"50 Complex

Investment size - €4,877,840

In the second stage of operations, Catalana OÜ combines the current production of rubber crumb and the pyrolysis process through the PYROLY-EKOPYR "EG"50 complex purchased from our partner company specializing in Pyroly's waste-to-fuel solutions. Simultaneously, our partnership with Estonian tire collection organizations continues, supplying us with 27,000 tons of used tires annually, ensuring financial stability.

8.2.1. PYROLY-EKOPYR "EG"50 and List of Obtained Products.

The PYROLY-EKOPYR-50 system is specially designed to process raw materials that have been finely shredded to dimensions up to 25×25 mm. By integrating existing technologies with certified equipment, this system avoids the need for further innovation. Its primary goal is to efficiently convert recycled rubber and plastic into electricity, heat, pyrolysis oil, and other combustibles. As a result, not only does it produce valuable materials from used tires, but it also fully powers its operations using the energy produced, all while operating in a closed-loop to ensure zero harmful emissions. This approach underscores the environmental and economic advantages of the system.

Material Used: Used tires.

Products Produced by the EKOPYR Plant and Pricing:

- Pyrolysis Oil: 5,460 tons/year - **€300/ton.**
- Carbon Black (with ash content not exceeding 5%): 2,548 tons/year - **€400/ton.**
- Liquid CO₂: 1,336 tons/year - **€100/ton.**
- Propane-Butane-Ethane Gases: 510 ton/year - *Will be used to operate the plant.*

Additional Revenue Sources from the First Stage:

- Crumb FR 0-5mm: 10,000 tons/year - **€124/ton**
- Taking in Tires: 27,000 tons/year - **€110/ton**

The second stage will play a crucial role in our expansion plans, paving the way for investments in future developmental stages. Once our initial waste-to-fuel plant is operational, we aim to demonstrate its efficiency and environmental friendliness, aspiring to set an example for other companies. We hope to encourage widespread adoption of our solutions, contributing to global efforts in transforming waste into valuable energy products.

8.2.2. Energy Generation for Self-Use

Propane-Butane-Ethane Gases - Used for internal energy needs, ensuring the operation of the entire plant. Gas and electricity produced in the pyrolysis process is directed to power our production complex, **creating a fully self-sufficient system**. This makes the plant energy self-sustainable and significantly reduces our operational expenses and carbon footprint.

8.3. Location and Facilities

We will establish our business on a land plot with an area of 7.73 hectares, cadastral number 77601:001:0565, located at METSALAO, KADARPIKU KÜLA, LÄÄNE-NIGULA VALD.

8.4. Raw Material Procurement

We have established pre-agreements with an organization responsible for tire disposal in Estonia, which represents essential cooperation at the beginning of our operations. Additionally, we are considering future expansion strategies aimed at scaling our processing capacity parallel to production growth.

8.4.1. Partnership with a Tire Processing Organization in Estonia

As we begin our mission to convert waste into diverse energy forms, our partnership with a tire supplier is crucial, particularly during our early operational phases. This supplier, being our main provider of used tires, plays a vital role in our sustainability initiatives and offers significant financial backing. Our agreement ensures an annual delivery of 27,000 tons of used tires. For each ton processed, we'll receive 110 euros, following the laws of the Republic of Estonia. This financial assistance will help offset our costs, facilitating consistent business growth.

8.4.2. Licensing and Responsible Waste Management

It is important to note that our primary supplier operates in compliance with licenses and government decisions that allow them to responsibly manage and supply us with used tires. We collaborate exclusively with licensed tire collection organizations that have all the necessary government-issued permits for their activities.

9. Production Expansion Plans

Looking ahead, our growth plans are built on a combination of eco-friendly practices and advanced technologies. In the next stage, we deepen this commitment by merging sustainability with viable business approaches. We aim not just to adopt these methods, but to lead in forging a future where waste conversion and agriculture flourish side by side. This approach embodies our vision for a greener and more sustainable tomorrow.

9.1. Third Stage: Utilizing Excess Heat for Sustainable Agriculture

In this stage we begin acquiring the advanced "GREEN 5" greenhouse complex. This greenhouse not only demonstrates our commitment to sustainable practices but also exemplifies innovative use of energy through surplus heat and electricity generated by the PYROLY-EKOPYR "EG" complex during environmentally friendly waste conversion.

This initiative allows us to yield 100 kg of tomatoes and 130 kg of cucumbers per square meter annually, dedicating 1 hectare for tomatoes and cucumbers. The "GREEN 5" greenhouses are developed in collaboration with "ECOPYR" facilities, optimizing operational efficiency and minimizing the cost of the final product to impressively low levels.

By using excess heat produced by our pyrolysis plant, we can reduce energy consumption in our commercial greenhouse business by up to 90%. This strategy not only highlights the high efficiency and sustainability of Pyroly technologies we intend to use but also elegantly demonstrates our ability to convert waste into clean sources of energy, which can be used for agricultural production and food. The scalable greenhouse model could potentially be adapted for growing various plants or even seedlings, opening new revenue avenues.

The potential income and net profit from this ancillary business, selling cucumbers and tomatoes at €0.90 per kg, are calculated as follows:

- $10,000 \text{ m}^2 \times 100 \text{ kg} \times €0.90 = \mathbf{€900,000}$ for tomatoes.
- $10,000 \text{ m}^2 \times 130 \text{ kg} \times €0.90 = \mathbf{€1,170,000}$ for cucumbers.

Total projected Revenue: €2,070,000

9.2. Fourth Stage: Building a Production Plant

The second stage of the second phase involves constructing a production complex for manufacturing PYROLY-EKOPYR waste-to-fuel conversion units using an existing site that we plan to acquire for our business. Here, our team of highly qualified specialists will work on the production block designed to manufacture PYROLY-EKOPYR units for waste-to-fuel, heat, and electricity conversion with an annual capacity of 2 units. The plant will produce two PYROLY-EKOPYR 200 units per year, each capable of processing 200 cubic meters of waste per day (42,500 tons per year) for sale.

With a license to use and sell Pyroly waste-to-fuel solutions, this stage will allow us to produce Pyroly products on a larger scale. Our transition to production is motivated by our strong belief in the growing need to convert waste into fuel and electricity. Given the high efficiency of these technologies, we expect significant interest from various companies and government agencies seeking to address their waste issues and produce environmentally friendly energy products. This represents significant market opportunities for our products.

The cost of the equipment produced is **€19,800,000 per unit**, based on metal and related material prices as of January 1, 2022. With a potential selling price of **€31,200,000 per unit**, the financial forecasts are as follows:

- Annual Commercial Sales: **€62,400,000**
- Annual Production Expenses: **€39,600,000**
- 20% Reserve for Production Expenses: **€7,920,000**

Annual Net Profit Before Taxes: €14,880,000

10. Organizational Plan

Our initial business stage focuses on tire shredding operations. We have a dedicated team responsible for key operational tasks at this phase. To ensure seamless operations, there will be 2 shifts of each staff member, allowing us to meet production demands. With 2 shifts, there will be 12 workers in total during first stage of our project. We offer competitive gross salaries to attract the necessary specialists.

10.1. Staffing and Roles in Tire Shredding Operations

❖ **1x Finished Product Operator:**

- Position: Ensures the quality and readiness of shredded rubber from tires.
- Responsibilities: Quality control and preparing the shredded product for distribution.

❖ **1x Forklift Driver:**

- Position: Operates forklift machinery for safe handling and transportation of materials.
- Responsibilities: Transporting raw materials and shredded products within the facility.

❖ **1x Shredder Operator:**

- Position: Operates the tire shredding process to produce rubber crumbs.
- Responsibilities: Operating shredding equipment, ensuring proper material processing.

❖ **1x Shift Supervisor:**

- Position: Supervises the operations of each shift, ensuring efficiency and safety.
- Responsibilities: Supervising team members, managing shift activities, and resolving operational issues.

❖ **1x Warehouse Worker:**

- Position: Responsible for organizing and managing materials in the warehouse.
- Responsibilities: Inventory management, material organization, and logistic support.

❖ **1x Site Guard:**

- Position: Ensures the security and safety of the facility, staff, and materials.
- Responsibilities: Monitoring site access, conducting regular patrols, and responding to security incidents.

10.2. Staffing and Roles in Administration

- ❖ 1x Accountant:
 - Position: Manages the financial records and ensures fiscal compliance.
 - Responsibilities: Overseeing financial transactions, preparing reports, and ensuring accurate financial documentation.
- ❖ 1x Secretary:
 - Position: Provides administrative support and manages day-to-day office tasks.
 - Responsibilities: Scheduling meetings, handling correspondence, and maintaining records.
- ❖ 1x Warehouse Manager:
 - Position: Oversees warehouse operations and inventory management.
 - Responsibilities: Streamlining warehouse processes, managing stock levels, and ensuring efficient space utilization.
- ❖ 1x Electro-Mechanical Technician:
 - Position: Maintains and repairs the plant's electromechanical systems.
 - Responsibilities: Conducting routine checks, troubleshooting issues, and ensuring optimal functioning of machinery.
- ❖ 1x Cleaner:
 - Position: Ensures the facility remains clean and meets hygiene standards.
 - Responsibilities: Cleaning production areas, disposing of waste, and maintaining a tidy environment.
- ❖ 1x Production Manager:
 - Position: Directs the day-to-day operations of the production facility.
 - Responsibilities: Overseeing the production process, coordinating with different departments, and implementing production plans.
- ❖ 1x Sales Manager:
 - Position: Drives the sales strategy and manages customer relationships.
 - Responsibilities: Identifying sales opportunities, negotiating contracts, and achieving sales targets.

10.3. Team Growth

While our current focus is on tire shredding operations, we anticipate significant growth in our workforce when expanding our activities to the waste-to-fuel plant (PYROLY-EKOPYR "EG"200). This future expansion includes hiring approximately 40+ employees.

11. Social and Environmental

Our principles of social and environmental responsibility are deeply ingrained in our business philosophy. We have obtained all necessary licenses to start our operations. The foundation of our business will be meticulously organized to meet stringent safety requirements set by our government and the European Union. This includes a complete reconstruction of our future facility to ensure compliance with industry standards. We will acquire additional equipment necessary for effectively meeting these standards.

Our initial plans do not involve the receipt or use of hazardous or toxic substances. We recognize the complexities associated with using tires classified as problematic waste. We have acquired a permission from the Estonian government and the Ministry of Ecology, confirming our commitment to responsible waste utilization.

As our business develops and expands, it's important to mention that we will have to obtain more additional licenses and permissions that may be required for new aspects of our operations. However, acquiring new licenses should not pose a significant challenge. Our primary goal is to prioritize compliance with safety and environmental regulations before commencing our business activities.



KESKKONNAAMET

Keskkonnaluba

Keskkonnavalaja registrinumbr		KL-509045
Loa omaja andmed	Ärinimi / Nimi	OSAÜHING Catalana
	Registrikood / Isikukood	10651017
Tegevuskoha andmed	Tegevuskoha nimetus	Kadarpiku küla vanarehvide käitluskoht
	Tegevuskoha aadress	Metsalao, Kadarpiku küla, Lääne-Nigula vald, Lääne maakond
	Katastritunnus	77601:001:0565
	Territoriaalkood EHAK	2479
Tegevusvaldkond	Keskkonnavalajaga reguleeritavad tegevused	Jäätmete käitlemine;
Loa andja andmed	Asutuse nimi	Keskkonnaamet
	Registrikood	70008658
	Aadress	Narva mnt 7a, 15172 Tallinn
Loa kehtivuse periood	Loa versiooni kehtima hakkamise kuupäev	06.08.2020
	Lõppemise kuupäev	

Our operating license given out by Estonian Environmental Board.

12. Risk Analysis

1. Regulatory and Environmental Compliance Risks:

We confidently believe that our pyrolysis technology, which effectively eliminates CO₂ emissions, places us in a very favourable position regarding environmental regulations in Estonia and the EU. Our approach inherently reduces the risks associated with CO₂ quotas and related expenses. We stay vigilant and adaptive to potential regulatory changes, but we are optimistic that our environmental contribution in waste reduction aligns us with government objectives, minimizing this risk. We do not foresee significant changes till 2030 in regulations that would significantly reduce our operational activity.

2. Supply Chain and Raw Material Cost Fluctuations:

Our unique business model of utilizing waste tires could potentially rise the risk of raw material deficit. We are confident in ensuring a consistent and efficient supply chain, particularly as we specialize in regulated waste utilization. In the initial years, high net profit from tire utilization is expected, and even without compensation, our versatile pyrolysis solutions allow us to profit from processing diverse waste types. Estonia's plentiful waste resources should guarantee consistent availability till 2030. Looking ahead, should waste availability diminish, we plan to expand to other countries with substantial waste issue. This approach is more cost-effective than importing waste. Additionally, we have the option to obtain contracts with other countries to have them bring their waste to us for further utilization.

3. Geopolitical Stability and Regional Conflicts:

While Estonia's proximity to Russia might raise concerns, we believe the risk of regional instability impacting our operations is minimal. Current political indicators suggest a stable environment. Our long-term expansion strategy involves establishing operations in multiple regions, which not only showcases our growth potential but also strategically diversifies our operational risk across different geopolitical landscapes. We do not plan to operate in one country only.

4. Energy Cost Considerations:

In preparing our financial plan, we've accounted for the possibility of high energy costs by incorporating a significant buffer in our operational expenses. This foresight demonstrates our preparedness for fluctuations in energy prices, ensuring our business model's resilience. We are confident in the robustness of our financial planning, especially given the stable revenue from tire suppliers and the strong demand for our sustainable products.

13. Financial Plan

In Estonia, VAT, or Käibemaks (KM) as it's locally known, is a fundamental component of the country's fiscal system. The standard Estonia VAT rate is 22%, with a reduced rate of 9% and a zero VAT rate for certain goods and services. VAT is charged on the supply of goods and services in the course of business activities and the self-supply of goods and services.

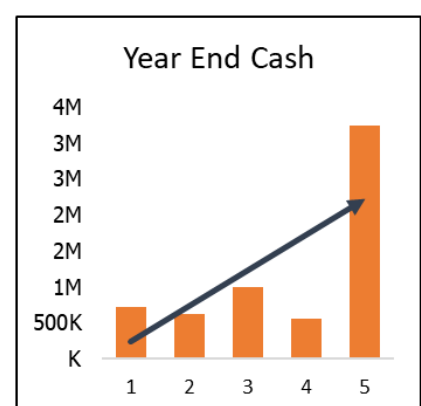
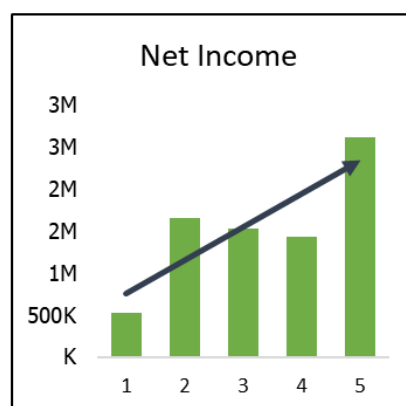
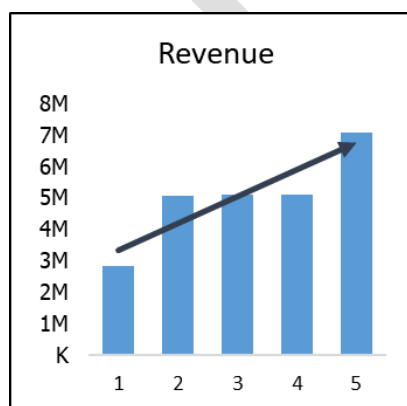
There is no corporate income tax on retained and reinvested profits.

This means that Estonian resident companies and the permanent establishments of foreign entities (including branches) are subject to 0% income tax for all reinvested and retained profits and a 20% income tax only for all distributed profits (both actual and deemed).

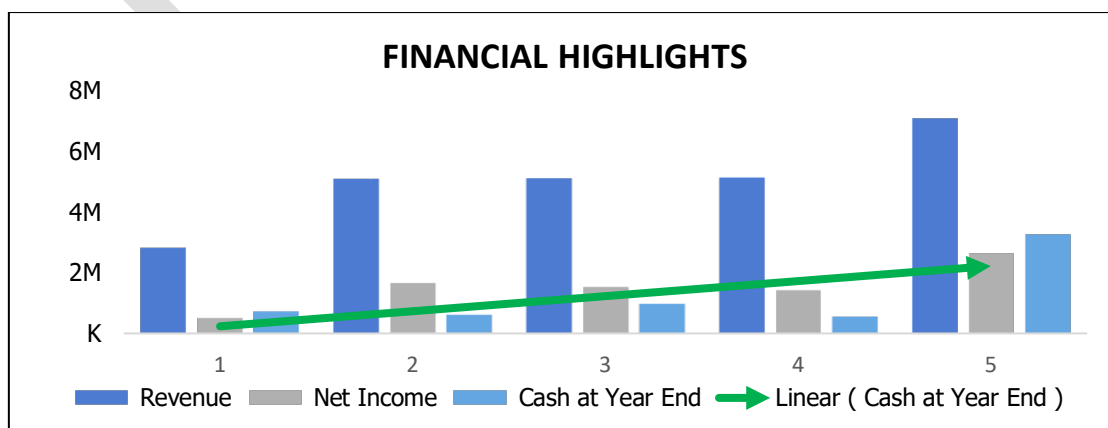
Companies are subject to income tax on various aspects, such as fringe benefits, gifts, donations, entertaining costs, distributed profit (dividends), and payments from equity capital. All these payments incur a uniform tax rate of 20/80. Notably, tax liabilities for companies arise specifically during profit distribution (dividend payment). Dividends are taxed at a standard rate of 20/80, with regularly paid dividends subject to a reduced rate of 14/86.

The Business Plan provides an analysis of a pessimistic (conservative) scenario, taking into account a 30% risk buffer for our first stage. This buffer helps to lower potential financial risks and assess opportunities in the event of a more negative development during the business project. However, we are confident that the outcomes and the speed of company development would be faster.

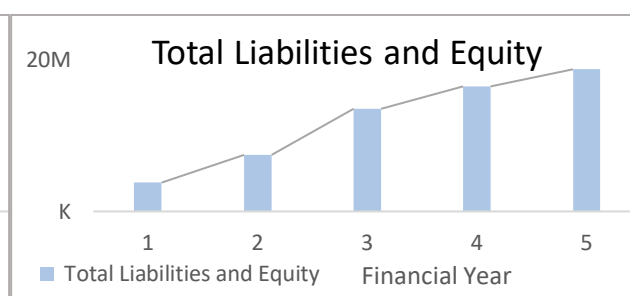
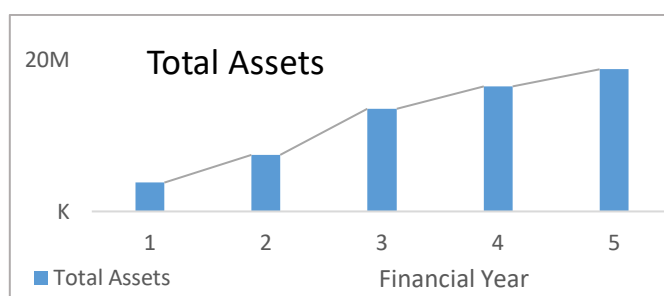
CATALANA					
FINANCIAL HIGHLIGHTS					
DESCRIPTIONS	YEAR-1	YEAR-2	YEAR-3	YEAR-4	YEAR-5
Revenue	2,819,314	5,074,600	5,095,646	5,116,902	7,060,800
Net Income	528,912	1,653,882	1,525,239	1,434,526	2,621,952
Year End Cash	728,602	622,112	992,905	552,655	3,246,686
Net Income	19%	33%	30%	28%	37%



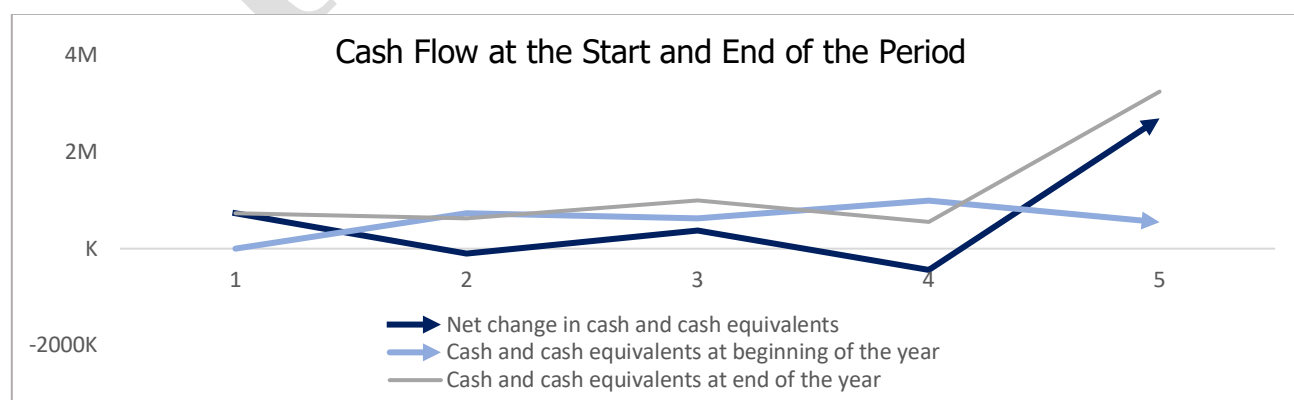
CATALANA						
PROFORMA INCOME STATEMENT						
REVENUE	Trend	YEAR-1	YEAR-2	YEAR-3	YEAR-4	YEAR-5
Revenue from FR 25x25mm €		350,010	630,000	636,300	642,663	-
Revenue from FR 0-5mm €		688,944	1,240,000	1,252,400	1,264,924	1,300,000
Revenue from Steel Cord €		129,360	232,800	235,128	237,479	-
Revenue from Textile €		1,000	1,800	1,818	1,836	-
Revenue From Taking In Used Tires €		1,650,000	2,970,000	2,970,000	2,970,000	2,970,000
Pyrolysis oil sales		-	-	-	-	1,638,000
Carbon Black sales		-	-	-	-	1,019,200
Liquid Carbon dioxide (CO2) sales		-	-	-	-	133,600
Total Revenue		2,819,314	5,074,600	5,095,646	5,116,902	7,060,800
OPERATING EXPENSES	Trend	YEAR-1	YEAR-2	YEAR-3	YEAR-4	YEAR-5
Wages And Salaries		1,026,000	1,440,000	1,440,000	1,440,000	2,700,000
1st Shredder Group Electricity Expenses		145,200	261,360	271,814	282,687	-
2nd Shredder Group Electricity Expenses		227,040	408,672	425,019	442,020	-
Energy Expenses for the Premises and Facilities		18,000	18,720	19,469	20,248	-
Logistics		156,000	280,800	292,032	303,713	315,862
Bookkeeping		24,000	24,960	25,958	26,997	28,077
Communications and Other		12,000	12,480	12,979	13,498	14,038
Interest Expense		-	-	38,000	38,000	38,000
Depreciation Expense		199,690	239,628	287,554	345,065	414,078
TOTAL OPERATING EXPENSES		1,807,930	2,686,620	2,812,826	2,912,228	3,510,055
Risk Buffer (30%)		482,472	734,098	757,582	770,149	928,793
TOTAL NET OPERATING EXPENSES		2,290,402	3,420,718	3,570,407	3,682,376	4,438,848
Net Income		528,912	1,653,882	1,525,239	1,434,526	2,621,952
HIGHLIGHTS	Trend	YEAR-1	YEAR-2	YEAR-3	YEAR-4	YEAR-5
Revenue		2,819,314	5,074,600	5,095,646	5,116,902	7,060,800
Net Income		528,912	1,653,882	1,525,239	1,434,526	2,621,952
Cash at Year End		728,602	622,112	992,905	552,655	3,246,686



CATALANA					
PROJECTED BALANCE SHEET					
	YEAR-1	YEAR-2	YEAR-3	YEAR-4	YEAR-5
Assets					
Current Assets					
Bank	728,602	2,622,112	4,472,905	6,290,496	9,364,527
Cash	-	-	1,520,000	1,140,000	760,000
Total Current Assets	728,602	2,622,112	5,992,905	7,430,496	10,124,527
Non-Current Assets					
Property Plant & Equipments	3,086,870	2,847,241	2,559,687	2,214,622	1,800,544
EKOPYR-50 Equipment			3,000,000	4,877,841	4,877,841
New Facilites for EKOPYR		2,000,000	2,000,000	2,000,000	2,000,000
Total Non-Current Assets	3,086,870	4,847,241	7,559,687	9,092,463	8,678,385
Total Assets	3,815,472	7,469,353	13,552,592	16,522,959	18,802,912
Liabilities					
Current Liabilities					
Accured Interest	-	-	38,000	76,000	114,000
Total Current Liabilities	-	-	38,000	76,000	114,000
Non-Current Liabilities					
Long-Term Loan	-	-	1,520,000	1,140,000	760,000
Total Non-Current Liabilities	-	-	1,520,000	1,140,000	760,000
Total Liabilities	-	-	1,558,000	1,216,000	874,000
Shareholder Equity					
EKOPYR-50 Equipment	-	-	3,000,000	4,877,841	4,877,841
New Facilites for EKOPYR	-	2,000,000	2,000,000	2,000,000	2,000,000
Paid-in Capital	3,286,560	3,286,560	3,286,560	3,286,560	3,286,560
Retained Earnings	528,912	2,182,793	3,708,032	5,142,558	7,764,511
Owner Contributions	-	-	-	-	-
Total Equity	3,815,472	7,469,353	11,994,592	15,306,959	17,928,912
Total Liabilities and Equity	3,815,472	7,469,353	13,552,592	16,522,959	18,802,912



CATALANA					
PROJECTED CASH FLOWS STATEMENT					
	YEAR-1	YEAR-2	YEAR-3	YEAR-4	YEAR-5
CASH FLOW FROM OPERATING ACTIVITIES:					
Profit before tax	528,912	1,653,882	1,525,239	1,434,526	2,621,952
Adjustments for:					
Depreciation	199,690	239,628	287,554	345,065	414,078
Cash generated before working captial changes	728,602	1,893,510	1,812,793	1,779,591	3,036,030
Working capital changes:					
Accured Interest	-	-	38,000	38,000	38,000
Cash generated from operations	728,602	1,893,510	1,850,793	1,817,591	3,074,030
Gratuity Paid	-	-	-	-	-
Cash generated from operating activities	728,602	1,893,510	1,850,793	1,817,591	3,074,030
CASH FLOW FROM INVESTING ACTIVITIES:					
Purchases of Non-Current Assets	(3,286,560)	-	-	-	-
EKOPYR-50 Equipment	-	-	(3,000,000)	(1,877,841)	-
New Facilites for EKOPYR Equipments	-	(2,000,000)	-	-	-
Cash used in investing activities	(3,286,560)	(2,000,000)	(3,000,000)	(1,877,841)	-
CASH FLOW FROM FINANCING ACTIVITIES:					
Movement in Loan	-	-	1,520,000	(380,000)	(380,000)
Owner Contributions	-	-	-	-	-
EKOPYR-50 Equipment	-	-	-	-	-
New Facilites for EKOPYR Equipments	-	-	-	-	-
Paid-up Capital	3,286,560	-	-	-	-
Cash flow from financing activities	3,286,560	-	1,520,000	(380,000)	(380,000)
Net change in cash and cash equivalents	728,602	(106,490)	370,793	(440,250)	2,694,030
Cash and cash equivalents at beginning of the year	-	728,602	622,112	992,905	552,655
Cash and cash equivalents at end of the year	728,602	622,112	992,905	552,655	3,246,686

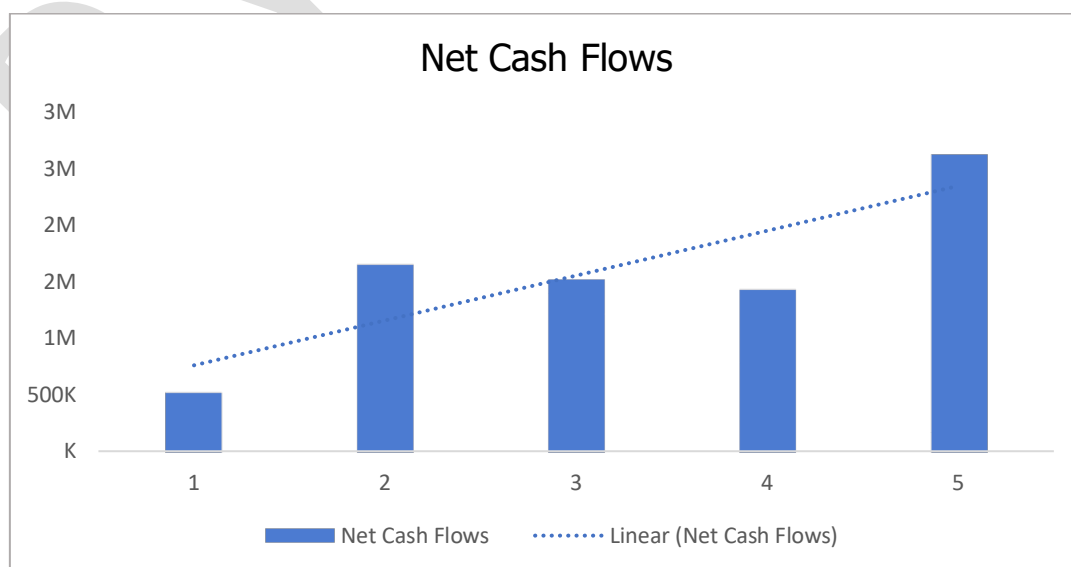


CATALANA Profit and Loss Monthly Forecasting

Description	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
Revenue	234,943	234,943	234,943	234,943	234,943	234,943
Total Revenue	234,943	234,943	234,943	234,943	234,943	234,943
OPERATING EXPENSES						
Wages And Salaries	85,500	85,500	85,500	85,500	85,500	85,500
1st Shredder Group Electricity Expenses	12,100	12,100	12,100	12,100	12,100	12,100
2nd Shredder Group Electricity Expenses	18,920	18,920	18,920	18,920	18,920	18,920
Energy Expenses for the Premises and Facilitie:	1,500	1,500	1,500	1,500	1,500	1,500
Logistics	13,000	13,000	13,000	13,000	13,000	13,000
Bookkeeping	2,000	2,000	2,000	2,000	2,000	2,000
Communications and Other	1,000	1,000	1,000	1,000	1,000	1,000
Total Operating Expenses	134,020	134,020	134,020	134,020	134,020	134,020
Risk Buffer (30%)	40,206	40,206	40,206	40,206	40,206	40,206
Total Net Operating Expenses	174,226	174,226	174,226	174,226	174,226	174,226
Net Income	60,717	60,717	60,717	60,717	60,717	60,717

Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Total
234,943	234,943	234,943	234,943	234,943	234,943	2,819,314
234,943	234,943	234,943	234,943	234,943	234,943	2,819,314
85,500	85,500	85,500	85,500	85,500	85,500	1,026,000
12,100	12,100	12,100	12,100	12,100	12,100	145,200
18,920	18,920	18,920	18,920	18,920	18,920	227,040
1,500	1,500	1,500	1,500	1,500	1,500	18,000
13,000	13,000	13,000	13,000	13,000	13,000	156,000
2,000	2,000	2,000	2,000	2,000	2,000	24,000
1,000	1,000	1,000	1,000	1,000	1,000	12,000
134,020	134,020	134,020	134,020	134,020	134,020	1,608,240
40,206	40,206	40,206	40,206	40,206	40,206	482,472
174,226	174,226	174,226	174,226	174,226	174,226	2,090,712
60,717	60,717	60,717	60,717	60,717	60,717	728,602

CATALANA							
COMPANY VALUATION AND PAYBACK PERIOD							
Discount Rate	6%						
Cash Inflows	Years	0	1	2	3	4	5
Total Revenue		-	2,819,314	5,074,600	5,095,646	5,116,902	7,060,800
Cash Inflow		-	2,819,314	5,074,600	5,095,646	5,116,902	7,060,800
PV Cash Inflow		-	2,659,730	4,516,376	4,278,403	4,053,066	5,276,241
Cumulative Cash Inflow		-	2,659,730	7,176,106	11,454,509	15,507,575	20,783,815
Costs							
Initial Investment		3,586,560					
Total Net Operating Expenses		-	2,290,402	3,420,718	3,570,407	3,682,376	4,438,848
Cash Outflow		-	2,290,402	3,420,718	3,570,407	3,682,376	4,438,848
PV Cash Outflow		3,586,560	2,160,757	3,044,427	2,997,783	2,916,787	3,129,213
Cumulative Cash Outflow		3,586,560	5,747,317	8,791,744	11,789,527	14,706,314	17,835,526
Net Present Value		2,948,289					
Average Profits		1,552,902					
Average Investment		7,336,929					
Return on Investment		21.17%					
IRR		26.36%					
Net Cash Flows		(3,586,560)	528,912	1,653,882	1,525,239	1,434,526	2,621,952
Cumulative Cash Flows			528,912	2,182,793	3,708,032	5,142,558	7,764,511
Balance		(3,057,648)	(1,403,767)	121,472	1,555,998	4,177,951	
Payback Period	2 Years	11	Months				



CATALANA
REVENUE FORECAST

REVENUE	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
Year 01						
Revenue from FR 25x25mm €	29,168	29,168	29,168	29,168	29,168	29,168
Revenue from FR 0-5mm €	57,412	57,412	57,412	57,412	57,412	57,412
Revenue from Steel Cord €	10,780	10,780	10,780	10,780	10,780	10,780
Revenue from Textile €	83	83	83	83	83	83
Revenue from Taking in Tires €	137,500	137,500	137,500	137,500	137,500	137,500
	234,943	234,943	234,943	234,943	234,943	234,943

Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Total
29,168	29,168	29,168	29,168	29,168	29,168	350,010
57,412	57,412	57,412	57,412	57,412	57,412	688,944
10,780	10,780	10,780	10,780	10,780	10,780	129,360
83	83	83	83	83	83	1,000
137,500	137,500	137,500	137,500	137,500	137,500	1,650,000
234,943	234,943	234,943	234,943	234,943	234,943	2,819,314

Description	Year-1	Year-2	Year-3	Year-4	Year-5
Revenue from FR 25x25mm €	350,010	630,000	636,300	642,663	-
Revenue from FR 0-5mm €	688,944	1,240,000	1,252,400	1,264,924	1,300,000
Revenue from Steel Cord €	129,360	232,800	235,128	237,479	-
Revenue from Textile €	1,000	1,800	1,818	1,836	-
Revenue from Taking in Tires €	1,650,000	2,970,000	2,970,000	2,970,000	2,970,000
Pyrolysis oil sales	-	-	-	-	1,638,000
Carbon Black sales	-	-	-	-	1,019,200
Liquid Carbon dioxide (CO2) sales	-	-	-	-	133,600
Total Revenue Forecast	2,819,314	5,074,600	5,095,646	5,116,902	7,060,800

CATALANA CAPITAL PLAN	
CAPITAL INVESTMENT PLAN	AMOUNT
Land Development	1,646,000
1st shredder group equipmnet	737,160
2nd shredder group equipmnet	558,400
Loaders	75,000
Manipulators	160,000
Tractor	110,000
Customs costs, logistics	300,000
TOTAL FUNDS REQUIRED	3,586,560

CATALANA	
LAND DEVELOPMENT COST	
LAND DEVELOPMENT EXPENSES	AMOUNTS
Purchase of Land	230,000
Construction of Perimeter Fencing	75,000
Main Entrance Gate	4,500
Fire Exit Gates	3,500
Well with Pump Station	12,000
Fire Tanks with Pumping and Monitoring System	25,000
Fire Safety Project	15,000
Security System with Cameras and Sensors	25,000
Security House with Access Control System	25,000
Weighing Scale with Equipment	35,000
Area Lighting with Equipment	40,000
Platform Repair with Asphalt Work and Necessary Materials	60,000
Preparation of Three Zones for Rubber Storage	30,000
Two Light Tent Hangars with Installation	25,000
Work and Materials for Bridge Rehabilitation	20,000
Renovation of the Main Building	620,000
Project Documentation for Phase One	18,000
Storage Tanks for Raw Material	30,000
Toolkits and Work Benches	6,000
Furniture for Work Changing Room	3,000
Office Furniture with Equipment	3,000
Equipment for Site and Production Facility Cleaning	25,000
Hoist (Telfer) and Installation	35,000
Hangar for Equipment and Storage	60,000
Office Buildings	38,000
Utilities (Water, Electricity, Sewerage)	35,000
Auxiliary Equipment (Carts, Forklifts, etc.)	3,000
Additional Electrical Capacity	20,000
Vehicles (Passenger Car) for Emergency Work	25,000
Contingency Fund	100,000
TOTAL	1,646,000

The high costs of land development are primarily due to the need to meet strict regulatory requirements set by the Estonian Environmental Board. To start our operations, we must invest significantly to ensure that the land and site meet these regulations precisely. Failing to do this would not only delay the start of our business but also put us at risk of not meeting the rigorous safety and European Union compliance standards.

CATALANA EKOPYR-50 INVESTMENT PLAN	
EKOPYR-50 INVESTMENT PLAN	AMOUNTS
Raw material preparation area	389,500
Fuel area	186,989
Reactor area	270,659
Pyrolysis reactor 50m3	1,079,545
Cogeneration unit	321,364
3 Mitsubishi Gas-Piston Generator 1MWh/h	1,193,182
Gas compressor area	701,909
Pumping Station	173,898
Automation control system	123,295
Expenses related to safety regulations and other	437,500
TOTAL FUNDS REQUIRED	4,877,841

13.1 Financial Plan Highlights and Assumptions

Revenue Projection:

In the initial year, our operational capacity targets 15,000 tons/year, leading to a substantial increase in revenue between the first and second years. Later, we anticipate maintaining a consistent revenue level from year 2 to 4, aligning with our main operational capacity of 27,000 tons/year. The stabilized revenue during these years reflects the limitation imposed by our waste utilization capacity, which stands at 27,000 tons/year.

Risk Buffer Allocation:

To safeguard against unforeseen operational and minor tax-related expenses, we have incorporated a 30% risk buffer into our financial plan. While we are optimistic about managing operational risks without incurring significant unforeseen expenses, this buffer serves as a prudent measure to ensure the financial resilience of our venture.

Cashflow Management:

During the initial four years, our financial plan involves heavy investments into our pyrolysis plant model, EKOPYR-50. Consequently, the cash levels are projected to be relatively low during this period. Our funding strategy relies on a combination of internal earnings and loans. Although the plan anticipates the plant's operation commencing at the beginning of year 5, we remain open to negotiations with potential investors and officials interested in providing essential funds, potentially accelerating the establishment of EKOPYR-50. While grant opportunities may arise during our operations, we have not factored them into this financial plan, even though Estonia actively supports small companies in the sustainability sector.

Dividends Consideration:

The financial plan does not showcase dividends, as this aspect is subject to negotiation with our investors. We maintain an open stance towards distributing dividends to investors who prefer not to reinvest all earnings back into the company. In this financial plan, we want to underscore that our primary objective is to demonstrate the feasibility of establishing the pyrolysis plant within a 5-year timeframe, leveraging the benefit of no income taxes when funds are reinvested into the company.