



CristalVue Limited

Certificate of Incorporation/TIN

181-778-288

RX FREEFORM TECHNOLOGY

Proposal for Establishment of a Lab in Tanzania

RX Freeform Lab: Detailed Project Proposal

Executive Summary

CristalVue Limited aims to establish a cutting-edge surfacing lab facility in Tanzania. This proposal outlines our strategy for market entry, the technological investments required, a comprehensive budget breakdown, and projected financial outcomes.

This will be the first ever industry in the country and the second in the EAC

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Introduction

Overview: CristalVue will specialize in precision surfacing lab using freeform technology, which allows for the creation of complex geometries that are difficult or impossible to achieve with traditional methods. Freeform technology is the latest digital design for the optical lenses used for progressive, bifocal, astigmatism and other special lenses. These lenses are currently imported, being RX special requirement, each lens is individually manufactured and imported into the country. Even though the surfacing, polishing and coating takes 10-15 minutes the whole process of ordering, processing, shipment, and clearing takes 2 to 3 weeks currently.

Objective: To establish a state-of-the-art production facility in Tanzania, leveraging advanced machinery, technology and latest software to digitally designed and manufacture/surface the lens and deliver to the customer in a very short time frame of 24 to 48 hours as well as to cater for both local and international markets.

Vision & Mission:

- **Vision:** To become a leading provider of freeform processing solutions in Africa and the first of its kind in Tanzania.
- **Mission:** To deliver high-quality, precision-manufactured products through innovative technology and skilled workforce.

Rx Freeform Lens Industry in Tanzania

Market Analysis:

- **Current Landscape:** currently there is no such manufacturing facility in the country, leading to the fact that all such progressive, bifocal and related Rx lenses have to be imported individually according to the prescription of the patient. This this time consuming taking 10 to 20 days and costing dearly in terms of air courier/transporting them back into the county and associated costs.

Market Demand:¹

1. In Tanzania, the revenue of the Eyewear market was projected to reach US\$ 300.00m by 2025, of which US\$ 105 m is frames market
2. **The largest segment within the market is the Spectacle Lenses segment, which is expected to have a market volume of US\$121.20m in 2025.**
3. The market is anticipated to exhibit an annual growth rate of 6% (CAGR 2024-2029).
4. The largest segment within the market is the Spectacle Lenses segment, which was expected to have a market volume of US\$113.40m in 2024.
5. In comparison to other countries, the United States generates the most revenue in the Eyewear market, with an estimated revenue of US\$ 36,410m in 2025. (US\$36 Trillion), of which US\$10 Trillion is eyewear frames
6. In terms of per capita revenue, each person in Tanzania is projected to generate US\$ 4.2 in 2025.
7. The volume of the Eyewear market in Tanzania is expected to reach 60.7m pieces by 2029, with a volume growth rate of 2.0% in 2025.
8. By 2029, the volume of the Spectacle Lenses market is expected to reach 4.5m pieces.
9. The average volume per person in the Eyewear market is projected to be 0.1 pieces in 2025
10. Moreover, the segment is projected to exhibit a volume growth of 2.7% in 2025
11. In Tanzania, sales of non-luxury are expected to contribute to 94% of sales in the Eyewear market by 2024.
12. Tanzania's eyewear market is growing due to increased awareness of eye health and the availability of affordable prescription glasses.
13. Tanzania's spectacle lens market is experiencing a shift towards demand for higher quality lenses to address vision problems caused by prolonged use of electronic devices.
14. **The aging population due to increase in life expectancy, better health and eye care and increasing purchase power and insurance coverage is expected to multiply the need for such type of lenses beyond the envisaged growth**

¹ <https://www.statista.com/outlook/cmo/eyewear/tanzania>

SWOT Analysis for RX Freeform Industry

Strengths

1. **Advanced Technology:** Utilization of cutting-edge freeform technology for precision lens manufacturing.
2. **Customization:** Ability to produce highly customized lenses tailored to individual prescriptions, providing a competitive edge.
3. **Market Potential:** Growing demand for progressive lenses and high-quality optical products in Tanzania.
4. **Innovative Designs:** Capability to create innovative and complex lens designs that traditional methods cannot achieve.
5. **Cost Efficiency:** Potential for reduced material wastage and improved production efficiency compared to traditional manufacturing methods.

Weaknesses

1. **High Initial Investment:** Significant upfront costs for machinery, technology, and infrastructure setup.
2. **Skilled Labor Requirement:** Need for specialized skills and training for operating advanced machinery and ensuring high-quality production. Expat will be required.
3. **Dependency on Technology:** Heavy reliance on sophisticated technology, which may require frequent maintenance and updates.
4. **Market Awareness:** Potential lack of awareness of freeform technology among local opticians and consumers.

Opportunities

1. **The first ever such manufacturing facility for lenses in Tanzania.**
2. **Growing Eyewear Market:** Increasing demand for eyewear, particularly progressive lenses, driven by factors such as aging population and rising awareness of eye health.
3. **Technological Advancements:** Continuous advancements in freeform technology can enhance production capabilities and product quality.
4. **Partnerships and Collaborations:** Opportunities to collaborate with local opticians, hospitals, and clinics to expand market reach.
5. **Export Potential:** Potential to export freeform lenses to neighboring countries and international markets, tapping into a broader customer base.
6. **Government Support:** Possibility of receiving support from government initiatives aimed at promoting local manufacturing and technological innovation.

Threats

1. **Competition:** Intense competition from established international manufacturers and local importers in the optical lens market.
2. **Economic Factors:** Economic fluctuations and currency volatility in Tanzania can impact costs and pricing strategies.
3. **Regulatory Challenges:** Navigating complex regulatory requirements and obtaining necessary approvals for manufacturing and sales.
4. **Technological Obsolescence:** Rapid technological advancements can render existing machinery and processes obsolete, requiring continuous investment in upgrades.
5. **Market Penetration:** Challenges in penetrating the market and gaining consumer trust and loyalty in a relatively new technological domain and local manufacturer.

This SWOT analysis provides a comprehensive overview of the internal strengths and weaknesses, as well as external opportunities and threats, associated with establishing RX Freeform Industry in Tanzania

Strategic Location:

- **Site Selection:** the manufacturing plant will be situated in Dar es Salaam, to cater for the big market in the city as well as to take advantage of good transport network for upcountry supply as well as air delivery for neighboring countries

Legal and Regulatory Considerations:

- **Compliance:** the company will be resisted with all the relevant regulatory and statutory institutions: BRELA, TIC, TRA etc.

Technology & Equipment

Technology Overview:

Freeform Technology:

Freeform technology refers to advanced manufacturing techniques that allow for the creation of complex, non-rotationally symmetric shapes. This technology is used in various industries, including optics, aerospace, automotive, and medical devices. Freeform surfaces can be produced using computer-controlled machining processes (CNC), which offer greater flexibility and precision compared to traditional methods. The designs also are generated by computer using Computer-Aided Design (CAD) Software

Rx Freeform Technology for Optical Lenses

RX Freeform Technology is an advanced method used to manufacture prescription lenses with highly precise and customized shapes. Unlike traditional lenses, which are typically spherical or aspherical, freeform lenses are designed to provide superior optical performance and comfort. The end product is **exactly** as according to the specific need of an individual for each eye.

Key Features of RX Freeform Technology

1. **Customization:** Freeform lenses are tailored to individual prescriptions, allowing for precise correction of vision. This customization ensures that each lens is optimized for the wearer's specific needs².
2. **Improved Optical Performance:** By using complex surface geometries, freeform lenses can correct vision more effectively than traditional lenses. They reduce optical aberrations and provide clearer vision across different distances³.
3. **Lightweight and Thin:** Freeform lenses can be made thinner and lighter than conventional lenses, enhancing comfort and aesthetics.
4. **Enhanced Design Flexibility:** Freeform technology allows for more innovative lens designs, including progressive lenses that provide a seamless transition from distance to near vision.

Machinery Required for RX Freeform Lens Surfacing

1. **Computer-Aided Design (CAD) Software:** Used to create detailed 3D models of the lenses based on the wearer's prescription.
2. **Computer-Aided Manufacturing (CAM) Systems:** These systems control the machinery used to shape the lenses. They ensure high precision and consistency in the manufacturing process.
3. **Diamond-Tip Lathe:** A key piece of equipment in the freeform lens manufacturing process. The diamond tip is used to carve the prescription into the lens surface with extreme accuracy.

4. **Polishing Machines:** After the initial shaping, lenses are polished to achieve the desired surface quality and clarity.
5. **Coating:** Coating to protect the surface from scratches, as well as to add other properties like water/fog repellent, anti-reflection, night driving etc
6. **Measurement and Quality Control Equipment:** to ensure that the lenses meet the required specifications and quality standards.

Surfacing Process

1. **Prescription Input:** The wearer's prescription is input into the CAD software to create a 3D model of the lens.
2. **Lens Shaping:** The CAM system controls the diamond-tip lathe to carve the prescription into the lens surface.
3. **Polishing:** The lens is polished to remove any imperfections and achieve a smooth surface.
4. **Coating:** as and when required according to specification required.
5. **Quality Control:** The finished lens is measured and inspected to ensure it meets the required specifications.

Benefits of Rx Freeform Lenses

- **Enhanced Vision:** Provides clearer and more accurate vision correction.
- **Comfort:** Thinner and lighter lenses reduce eye strain and discomfort.
- **Aesthetics:** Customized lens designs can be more visually appealing and less noticeable.
- **Specific:** Customised exactly according to individual eye requirement

Supplier Partnerships: Identification of potential machinery suppliers.

Worldwide there are handful of manufactures of these systems and machines. The company is in discussion with them to establish the most suitable for Tanzania, after sales services and backup they can avail etc. The cost of machine, consumable, and aftersales are important factors. That Directors of the company are assessing by conduction factory visit, discussing with other users their experiences and consulting industries experts.

A final supplier will be identified and order for equipment place as per the timeline provided

Investment Requirements:

- **Capital Expenditure:** Detailed breakdown of the initial capital investment required for machinery, infrastructure, and other setup costs as under:

Cost of machine ex-work	\$540,000.00
Cost of consumables 6 mo	\$35,000.00
Additional Local cost	
Pre Startup	
Company reg, TIC, TRA etc	\$5,000.00
Installation, Transport	\$5,000.00
Backup generator	\$20,000.00
Industrial UPS	\$15,000.00
Compressor, Air Vacuum	\$5,000.00
A/C, Furniture & Fixture	\$10,000.00
Computer, Printer, Barcode	\$5,000.00
Other, incidentals	\$10,000.00
Working Capital (to pay salaries utilities ets)	\$50,000.00
	\$125,000.00
	\$700,000.00

Implementation Plan:

- **Timeline:** Step-by-step timeline for the procurement, installation, and commissioning of the machinery.

Timeline for Implementation	
Description	Dates
Company Registration Brela	Saturday, January 25, 2025
TIC, other	Saturday, February 15, 2025
Identify final supplier and pay	Monday, February 10, 2025
Rental,	Monday, February 10, 2025
Renovation	Tuesday, February 25, 2025
Pay final and Ship	Saturday, March 15, 2025
Purchase local and install	Monday, March 31, 2025
Clearing & Forwarding	Tuesday, April 15, 2025
Installation & Testing	Wednesday, April 30, 2025
Commissioning	Saturday, May 10, 2025

Detailed Budget of Income and Expenditure

Initial Setup Costs:

Machinery & Equipment:

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Description	Costs	
Cost of machine ex-works	\$	540,000.00
Cost of consumables 6 months	\$	35,000.00
Additional Total Cost	\$	125,000.00
Total Investment Cost	\$	700,000.00

Details given above

Operational Costs: Recurrent

Operational Cost	Per Month	
	100 pieces per day	200 pieces per day
Salaries		
Expat to Operate/Train	\$ 1,500.00	\$ 1,500.00
Manager	\$ 500.00	\$ 600.00
Trainee	\$ 300.00	\$ 350.00
Store Keeper		\$ 250.00
Cleaner	\$ 150.00	\$ 150.00
Assistant		\$ 400.00
	\$ 2,450.00	\$ 3,250.00
Rental	\$ 2,500.00	\$ 2,500.00
Utilities	\$ 500.00	\$ 1,000.00
Transport	\$ 200.00	\$ 400.00
other	\$ 400.00	\$ 600.00
	\$ 6,050.00	\$ 7,750.00
Cost per pc	\$ 3.03	\$ 1.94

Operation Cost: Cost of Production

	(First 1-3 Months)	(Anticipated from 4 to 6m)
Operational Costs	per lens (100 lens per day)	per lens (200 lens per day)
Lens Raw Materials	\$ 3.00	\$ 3.00
Consumables	\$ 1.50	\$ 1.40
Software rental per click	\$ 1.50	\$ 1.50
Overheads (inc salaries, utilities etc)	\$ 3.00	\$ 1.80
	\$ 9.00	\$ 7.70
Per pair	\$ 18.00	\$ 15.40

Market Penetration: Current lenses in the market are all imported on a time scale of 10 to 20 days. With proper advertising to all opticians and eye hospital of the benefit to buy locally with the advantage of getting delivery on time within 48 hours, it is anticipated to capture 80-90 percent of the market.

Export Market: There is also potential for export market in the neighbouring countries like DRC, Zambia, Malawi, Burundi, Rwanda Uganda, Comoros, and Mozambique where there is a need for the Rx Lenses but have no facilities to manufacture such lenses. Full potential of the market and ability to supply from Tanzania has not been fully researched but expected to be in the range of 100 to 200 million USD per year.

Job Creation:

It will also create, initially 6-7 direct jobs in the first 6 to 12 months and 10-14 by the second year. It will be adding value industry, saving time and foreign exchange for the country too.

Full Time	1st Year	2nd Year	3rd Year	4th Year	5th Year
Expat to Operate/Train	1	1	0	0	0
Operator (local)	1	1	2	2	3
Manager	1	1	1	1	1
Trainee	1	1			
Store Keeper	1	1	1	1	1
Secretary		1	1	2	2
Cleaner	1	1	1	1	1
Assistant	1	1	1	1	1
Accounts		1	1	1	1
Asst. Account			1	1	1
QC		1	1	1	1
	7	10	10	11	12
Part Timers					
Accounts	1				
Delivery	1	1	2	2	2
	2	1	2	2	2

Financial Summary:

- **Income Statement:** Projected income statement for the first five years of operation.

Income Statement						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Description	Amount	Amount	Amount	Amount	Amount	Amount
Sales of Freeform Lenses	\$ 160,000	\$ 440,000	\$ 572,000	\$ 660,000	\$ 748,000	\$ 836,000
Cost of Sale						
Raw material	\$ 48,000	\$ 132,000	\$ 171,600	\$ 198,000	\$ 224,400	\$ 250,800
Labour	\$ 48,000	\$ 79,200	\$ 102,960	\$ 112,200	\$ 127,160	\$ 142,120
Overheads	\$ 48,000	\$ 83,600	\$ 108,680	\$ 125,400	\$ 142,120	\$ 158,840
	\$ 144,000	\$ 294,800	\$ 383,240	\$ 435,600	\$ 493,680	\$ 551,760
Gross Profit	\$ 16,000	\$ 145,200	\$ 188,760	\$ 224,400	\$ 254,320	\$ 284,240
Marketing & Sales	\$ 2,000	\$ 3,000	\$ 4,000	\$ 5,000	\$ 6,000	\$ 7,500
Annual Service of Machines	\$ 20,000	\$ 25,000	\$ 35,000	\$ 25,000	\$ 35,000	\$ 25,000
Total Expenses	\$ 22,000	\$ 28,000	\$ 39,000	\$ 30,000	\$ 41,000	\$ 32,500
Operating Income	\$ (6,000)	\$ 117,200	\$ 149,760	\$ 194,400	\$ 213,320	\$ 251,740
Interest	\$ 18,000	\$ 18,000	\$ 15,600	\$ 9,000	\$ 9,000	
Net income before Tax	\$ (24,000)	\$ 99,200	\$ 134,160	\$ 185,400	\$ 204,320	\$ 251,740
Tax	\$ -	\$ 33,067	\$ 44,720	\$ 61,800	\$ 68,107	\$ 83,913
Net Income after Tax	\$ (24,000)	\$ 66,133	\$ 89,440	\$ 123,600	\$ 136,213	\$ 167,827

- **Cash Flow:** Cash flow analysis showing inflows and outflows.

Cash Flow Statement	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Cash Flow from Operations						
Net Income	\$ (24,000)	\$ 66,133	\$ 89,440	\$ 123,600	\$ 136,213	\$ 167,827
Depreciation (Non Cash)	\$ 75,000	\$ 75,000	\$ 75,000	\$ 75,000	\$ 75,000	\$ 75,000
Changes in Working Capital						
Account Receivable	\$ (5,000)	\$ (8,000)	\$ (12,000)	\$ (18,000)	\$ (20,000)	\$ (24,000)
Inventory	\$ (5,000)	\$ (10,000)	\$ (15,000)	\$ (20,000)	\$ (25,000)	\$ (25,000)
Account Payable	\$ 2,000	\$ 4,000	\$ 5,000	\$ 6,000	\$ 8,000	\$ 1,000
Net Cash provided by Operations	\$ 43,000	\$ 127,133	\$ 142,440	\$ 166,600	\$ 174,213	\$ 194,827
Cash Flow from Investment						
Purchase of Machinery	\$ (500,000)		\$ (100,000)	\$ (50,000)		\$ (150,000)
Setup	\$ (100,000)					
Net Cash Flow in Investing	\$ (600,000)	\$ -	\$ (100,000)	\$ (50,000)	\$ -	\$ (150,000)
Cash Flow from Financing						
Proceeds from Issuance of Equity	\$ 300,000					
Proceeds from Long Term Debt	\$ 300,000					
Repayment of Debt	\$ (40,000)	\$ (60,000)	\$ (60,000)	\$ (60,000)	\$ (80,000)	\$ -
Net Cash from Financi	\$ 560,000					
Net Increase in Cash	\$ 3,000	\$ 67,133	\$ (17,560)	\$ 56,600	\$ 94,213	\$ 44,827
Cash at the Beginning of Year	\$ 50,000	\$ 53,000	\$ 120,133	\$ 102,573	\$ 159,173	\$ 253,387
Cash at the End of the Year	\$ 53,000	\$ 120,133	\$ 102,573	\$ 159,173	\$ 253,387	\$ 298,213

Break-Even Analysis:

- **Breakeven Point:** The break-even point for the production of the lenses is around 40 pc per day. This is point can be reached within 60 days keeping in mind the current demand of the lenses

Profit Margins & Return on Investment:

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Net income before Tax	\$ (24,000)	\$ 99,200	\$ 134,160	\$ 185,400	\$204,320	\$ 251,740
Tax	\$ -	\$ 33,067	\$ 44,720	\$ 61,800	\$ 68,107	\$ 83,913
Net Income after Tax	\$ (24,000)	\$ 66,133	\$ 89,440	\$ 123,600	\$136,213	\$ 167,827
ROI	-3%	7%	10%	14%	15%	19%

Risk Analysis:

- **Potential Risks:** these are very sensitive CNG machines running of a software, minor power interruption or fluctuations may have major effect on either the final product of the machine itself that may lead to breakdown
- **Risk Mitigation:** Need to install Voltage stabiliser/ Uninterrupted Power Supply (Industrial 3-phase UPS)

Financing:

A mixture of equity (from shares) and Family/Directors/Bank loan is envisaged to initially raise \$ 700,000 with further reinvestment of \$300,000 in the next 3 years to bring total investment up to \$1,000,000 for the venture

Conclusion:

In summary, the RX Freeform Industry project aims to revolutionize the optical lens manufacturing sector in Tanzania by leveraging state-of-the-art freeform technology. With a thorough market analysis, strategic investment in cutting-edge machinery, and a robust financial plan, the project is positioned for success. The anticipated growth in demand for high-quality, customized lenses coupled with our innovative approach provides a compelling opportunity for investors.