

Eco-Libre Life-Line Documentation

Versión 1.0.0

© 2023, Michael Altfield and the Eco-Libre Team

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Figure 1: CAD Design of the Eco-Libre Life-Line 1

Welcome! This is the official documentation for the Eco-Libre Life-Line.

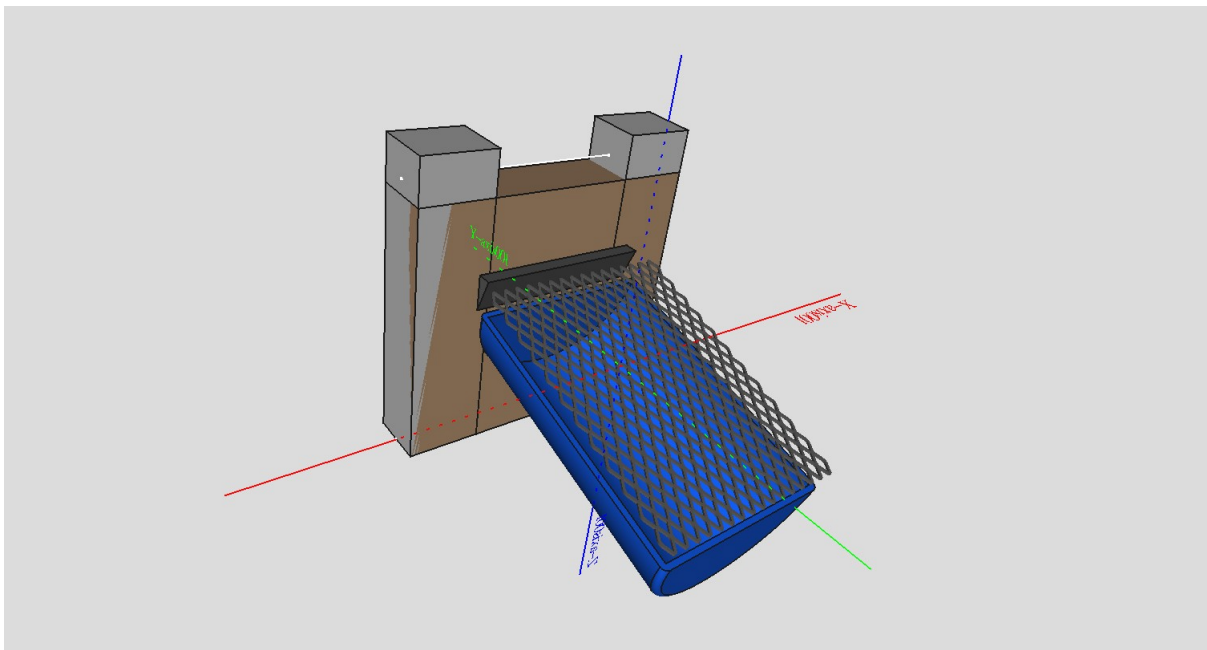


Figure 1. CAD Design of the Eco-Libre Life-Line

Introduction

The Eco-Libre Life-Line is a raw water intake, filtration, and storage system.

- [Chapter 2](#)

Frequently Asked Questions

2.1 Q: How can I get updates about Eco-Libre?

You can [signup](#) for our [BusKill](#) email newsletter or follow us on any of the following social media profiles:

- Twitter [@EcoLibreNews](#)
- Facebook [@EcoLibreNews](#)
- Mastodon [@ecolibre@chos.social](#)
- GitHub [Eco-Libre](#)
- YouTube [@Eco-Libre](#)

2.2 Q: My questions isn't listed. Where can I get support?

Please see [Chapter 18](#)

Theory

This section will describe the research behind this project and how it would benefit the lives of your community.

3.1 Concept

The Eco-Libre Life-Line project is a system designed to collect, filter, and store surface water for an off-grid community.

3.2 Design Goals

The water system should be:

1. Low-Maintenance
1. Hygienic

Low-Maintenance

Low-Maintenance means that low-tech automation and well-engineered, self-cleaning systems should be employed so that the system only needs routine maintenance once or twice per year.

Hygienic

Hygienic means that the water stored in the clean water tanks and delivered to sinks should be free of contamination (bacteria, parasites) and be safe to drink.

Size

Pico (3-person) (the smallest Eco-Libre Life-Line water system) should provide sufficient water for 3-people.

Nano (15-person) The small-size system should be horizontally scalable by multiplying the number of filters and tanks to provide sufficient water for a 15-person community

Micro (30-person) To handle a community of up to 30-people, a larger system design is provided.

Milli (150-person) To handle a community of up to 150-people, the micro system is horizontally scaled.

6.1 Components

Intake

The water intake will consist of a weir on a stream with two openings with turbulence bars that channel turbulent water down onto a screen-covered 200-liter barrel angled at a downward slope.

This is a common low-budget, self-cleaning intake design that will shed organic debris during high-flow (eg a heavy rain).

The distance from the bottom of the weir to the top of the screen should be at least 20 cm.

The size of the holes in the screen should be 1-5 mm (it should be supported by an expanded metal screen below it).

The screen on the barrel should be mounted on a hinge to allow for routine maintenance.

Settling Tank

A radial-flow settling tank should be located very near to the intake and will remove sediment that passed the intake screen.

Large Sediment Filter

A self-cleaning spin down filter (largest size micron available) will remove debris that passed through the settling tank.

The flush valve should be automatically opened electronically by a timer.

Pre-Filter

This pre-filter will remove turbidity from the water before it enters the slow sand filter.

This

is

[built](https://web.archive.org/web/20070728135100/http://www.refugeecamp.org/learnmore/water/slow_sand_f)
from a 200-litre HDPE drum that's filled with rocks and (mostly coarse) sand.

Slow Sand Filter

The [Slow Sand Filter](https://en.wikipedia.org/wiki/Slow_sand_filter) will remove harmful bacteria and parasites from the water.

This is [built](https://web.archive.org/web/20070728135100/http://www.refugeecamp.org/learnmore/water/slow_sand_f) from a 200-litre HDPE drum that's filled with rocks and (mostly fine) sand.

Media Sediment Filter

A self-cleaning spin down filter (smallest size micron available) will remove filtering media debris (sand) that may have come-out of the filters

The flush valve should be automatically opened electronically by a timer.

Clean Water Tank

The clean water tank stores potable water.

Lifeline

Pipes supply clean water from the clean water tanks to the community.

Praxis

This section will show example builds of the Eco-Libre Life-Line around the world.

14.1 Get Listed!

Did you build this? Please [let us know](#) and we'll add your build to this page.

Getting Started

This section will document how to build the Eco-Libre Life-Line.

Note You can view the documentation to build a previous version by selecting a different version in the bottom-left menu

Intake

This section will document how to build the Intake for the Life-Line.

Contributing

Thank you for considering to help us!

As an open-source project, we depend on the work of volunteers to stay alive, and your time helping to improve our project is very much appreciated :)

17.1 Wish List

Below is a list of items on our TODO list. If you'd like to help us tackle these tasks, please [contact us](#) as there may be someone already working on a given task that you may be able to collaborate with.

Please be aware that any contributions you make will be made open-source. See license for more info.

TODO

17.2 Donate

Running the Eco-Libre project has many fees, including

1. Server & domain infrastructure fees
2. Purchasing hardware items for testing & iterating

If you have more money than free time, you can also help Eco-Libre by making a donation. We accept Bitcoin and Monero.

BTC 1DXyJpmu2KQMw2v4QJVzzjZo6f87BBndu6

XMR

4B5ra5N1SN4d7BqDtkxAE5G5kGNz5mA5oCob41RzzoduM1uPAcr7QmNLzXtci5HvtkNXC7SowkxMjUUCXF2hm57MMS4jwkk

:: TODO: Open-collective

Donations of any amount are **greatly** appreciated. Thank you!

Support

As an open-source project, we try to keep all of our support requests on GitHub. If you

1. have a question that is not answered by this documentation,
2. discover a bug in the software, or
3. would like to request a feature in the software

then please [create an issue](#) on our GitHub.

If you don't want to register for an account on GitHub or you'd like to remain anonymous, then you can [email us](#). We'll put the issue on GitHub for you.

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. _license:

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Version 3, 29 June 2007

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```

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(at your option) any later version.
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```
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```

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Attribution

Thank you to the following folks who have contributed to the Life-Line project!

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- [Jack Nugent](#)

This project would not have been possible without the following tools and services:

- [Python](#)
- [FreeCAD](#)
- [Vim](#)
- [Gimp](#)
- [Kdenlive](#)
- [Sphinx](#)
- [Read The Docs](#)
- [Roboto Font](#)
- [Material Design Icons](#)
- [Wordpress](#)
- [phpList](#)
- [QubesOS](#)
- [Debian GNU/Linux](#)

21.1 Similar Projects

The reader may be interested to investigate the following similar projects:

- [Open Building Institute](#)
- [WikiHouse](#)
- [One Community Global](#)
- [Auroville Earth Institute](#)

