

Design and Build Engineer

Background

NjordFrey is a Rwanda-based social enterprise committed to empowering smallholder farmers through the development of sustainable, scalable modular aquaponic (combining fish and soilless crops) farming systems. Our innovative approach integrates engineering, renewable energy, and digital technologies to create highly efficient solutions that improve food security, enhance economic resilience, and promote environmental sustainability across Sub-Saharan Africa.

Our proven track record established via our flagship farm launched in May 2022, has demonstrated our success in delivering innovative agricultural solutions tailored to the unique challenges of smallholder farmers. Our systems (including fish tanks, above ground growbeds, filtration, pumping and equipment) are designed to maximise resource efficiency, including significant water savings, while addressing pressing issues such as food production, land use, and climate resilience.

The **Design and Build Engineer** role is critical to furthering our mission by ensuring our current pilot aquaponic farm kit is developed and improved to reach a **Technology Readiness Level 9 / commercial grade standard** to ensure the modular farm kit can be packaged up and shipped internationally to users. Where relevant, we want to ensure the farm kit aligns with relevant standards and certifications (e.g., ISO 9001, ISO 14001, Global Agricultural Practices (GAP) and others) to ensure it can be exported globally without restrictions.

This position combines technical ingenuity with hands-on execution, contributing directly to NjordFrey's goal of scaling 2000 farms to impact 100,000 farmers across Rwanda and the wider Sub-Saharan Africa region. If you are interested in solving complex problems in a creative manner yet grounded and backed by data driven decision-making, then this role offers a great opportunity for you!

Design and Build Engineer Responsibilities and Duties

As we are developing our aquaponic starter kit (a series of fish tanks, growbeds, filters and pumps) to be a standardised modular kit that can be easily assembled and scaled across Rwanda and the wider Sub-Sahara African region, we require someone with a proactive and creative approach to complete the following tasks:

Design Development and Verification

We are constantly looking for ways to improve the design of our solution to increase reliability, increase ease of installation and operation and reduce costs. Therefore, the role requires someone who can:

- Assess existing designs for ways to improve the quality/output and reduce cost.
- Suggest new designs for existing or new requirements and present them to the team for review; this includes producing sketches or prototypes.
- Cost up designs at a reasonable level to allow costs to be compared and considered as part of the design evaluation and selection process.
- A good understanding of mechanical and product engineering is preferable for the development of the modular kit itself. Along with working knowledge of general civil works to ensure the foundations at the farm site are suitable to house the kit in different terrains.

Procurement & Testing

Once the design has been presented for review and approved, then the next stage in our process is to build and test the design. This includes:

- Testing materials/equipment to ensure they are suitable for the job required. A hands-on approach/background is desirable.
- Taking ownership and continue development of the 'supplier register' that we have internally developed. This documents all the key suppliers and provides scoring criteria to vet them. Building a good understanding of what is available on the market is key.
- Populate and keep up to date all procurement information. Documenting and demonstrating decisions based on evidence is important.
- Provide weekly and monthly reports on procurement items i.e., suppliers engagement, items bought, invoicing requirement. Overall, the person needs to track trends and look to reduce the cost of our farm kit by 50% within 2-3 years.
- Take meeting minutes/notes of procurement meetings and procurement items in meetings in general, recording actions and following up as required to manage relationships with third parties.

Build

Once the design and testing is in place, the role requires:

- Managing third parties, technicians, and farm caretaker staff to build items on the farm(s).
- Test and verification that the final build achieves the required quality standards agreed. This includes keeping records to demonstrate this e.g., pictures of test, table of results.
- Taking opportunity to build test beds and collect data to validate the design.
- Collect data on site to support the quality of the build e.g., water retention test, circulation checks, filtration checks etc.
- Manage and coordinate maintenance activities required on site e.g., servicing pumps, checking integrity of growbeds each month etc.

General

In addition to the above:

- The company operating language is English, though the role may require speaking and translating English into Kinyarwanda when engaging with stakeholders.
- The Design and Build Engineer will report to our Rwandan Team Lead though a proactive attitude to manage tasks independently is welcomed in the role.
- The role requires someone comfortable managing and directing third party resource i.e., labour, construction teams, suppliers, consultants etc.
- Mapping stakeholders, suppliers, technicians that all support the construction and operation of farms.
- This is a non-exhaustive list of duties. The role is dynamic and offers great variety and suits someone who is adaptive, flexible and a positive outlook.
- Critical thinking and problem solving is key to the position, as it is to any position in the company.

Experience/Skills:

We are looking for someone with:

- An Engineering and Construction background or similar.
- Degree background.
- Accredited status / qualifications e.g., Chartered Engineer are considered a strong positive.
- Some formal construction (mechanical / product or civil) experience.
- A hands on/practical background is desirable to test materials/equipment bought during procurement.
- Experience developing registers, drawings, and Bill of Quantities etc, to ensure everything is well documented for replication.
- Strong communication skills, in terms of written and verbal communication.
- Excellent written and verbal English skills. Kinyarwanda strongly desired.
- Positive and flexible outlook and interested in working in a team environment.
- Good time keeping and proactively managing tasks is key.

This is a **6-month position** designed to focus on transforming our innovative pilot farm into a fully commercialised, scalable solution ready for widespread deployment. The role offers an exciting opportunity to contribute to the development of an innovative form of agricultural technology that will empower smallholder farmers and promote sustainable farming practices.

Successful candidates will not only play a pivotal role in this critical phase of development but will also have the opportunity to be kept on and explore long-term roles with NjordFrey. This may include further product development roles and/or opportunities to lead the ambitious scale-up of 2,000 farms across Africa from a logistics and construction side, creating lasting impact in the region.

We believe in fostering a diverse and inclusive work environment at NjordFrey. We encourage individuals of all genders and backgrounds to apply for the Aquaponic Farm Officer role.

We appreciate this is a new sector that is developing in Rwanda, and you may not currently have all the experience/criteria mentioned above, however if you are confident that you at least have proven data management and communication skills with experience in a relevant field to the role, then please apply.

As part of the application process, NjordFrey will conduct a reference and local criminal record check as part of the process.

Use the following link for the application form:

<https://forms.gle/Vfuj3uQAisqRVVgo8>

Thank you for your consideration for the role and we look forward to receiving your application.