

The FreshRain System FAQ

Proprietary Rainwater Harvesting and Treatment Solution by InspCorp

Visit Website: <https://freshrain.inspcorp.com/>

1. What is the FreshRain system?

The FreshRain system is a proprietary rainwater harvesting and treatment solution designed by [InspCorp](https://freshrain.inspcorp.com/). It integrates both water harvesting and water treatment processes in a smart, low-maintenance, turnkey system suitable for domestic and light commercial use. The system produces clean, safe, and fresh-tasting rainwater free from microbes and chemical additives.

2. How does the FreshRain system work?

FreshRain employs a 5-stage chemical-free filtration process combined with UV treatment to purify harvested rainwater. It is fully automatic, operates based on water demand, and provides real-time monitoring of water consumption, harvesting levels, and storage capacity through smart monitoring features.

Why This 5-Stage System is Ideal for Rainwater Purification

The FreshRain system's 5-stage filtration process is specifically designed to address the unique challenges of rainwater purification. Each stage plays a critical role in ensuring the water is clean, safe, and free from contaminants. Here's a breakdown of how each stage works and why it's essential for rainwater treatment:

1 First Stage: 90-Micron Pre-Filtration (Large Sediment Removal)

- **Purpose:** Captures large debris such as leaves, dust, pollen, and insect matter from rooftops and gutters before water enters the main filtration system.
- **Why It's Important for Rainwater:**
 - Rooftop water collection can contain bird droppings, dust, and organic debris that must be removed early to prevent clogging in subsequent filtration stages.
 - Protects and extends the lifespan of finer filters in subsequent stages.

2 Second Stage: 5-Micron PP Sediment Filter (Fine Particle Removal)

- **Purpose:** Removes smaller particles like fine dust, rust, and micro-sediment that pass through the 90-micron filter.
- **Why It's Important for Rainwater:**
 - Rainwater can contain airborne pollutants that settle in the storage tanks.
 - Prevents cloudiness and turbidity, ensuring the water is clear before chemical filtration.

3 Third Stage: Granular Activated Carbon (GAC) Filter (Chemical & Odor Removal)

- **Purpose:** Adsorbs chlorine, pesticides, VOCs (volatile organic compounds), and organic odours.
- **Why It's Important for Rainwater:**
 - Rainwater can pick up contaminants from roofing materials (e.g., asphalt, metal, or paint residues).
 - Removes any strange taste or odour caused by organic material breakdown.

4 Fourth Stage: Carbon Block Filter (Final Chemical & Microbial Filtration)

- **Purpose:** Further removes remaining chemicals, bacteria, and cysts, improving taste and quality.
- **Why It's Important for Rainwater:**
 - Some microorganisms and fine particulates may still be present after GAC filtration.
 - Helps ensure no residual organic contaminants enter the final stage.

5 Fifth Stage: UV Treatment (Biological Disinfection)

- **Purpose:** Uses ultraviolet light to destroy bacteria, viruses, and pathogens by disrupting their DNA.
- **Why It's Important for Rainwater:**
 - Rainwater can contain bacteria from animal droppings and airborne spores that survive filtration.
 - UV ensures the water is completely safe for drinking by eliminating harmful microorganisms.

Why This 5-Stage System is Perfect for Rainwater Purification

1. **Comprehensive Contaminant Removal:** Each stage targets specific types of contaminants—physical debris, chemicals, and biological pathogens—ensuring the water is safe and clean.
2. **Protects Filtration Components:** By removing larger particles early, the system prevents clogging and extends the lifespan of finer filters.
3. **Chemical-Free Process:** The system avoids chemical additives, making it eco-friendly and safe for drinking.
4. **UV Disinfection for Safety:** The final UV stage ensures 99.99% elimination of harmful microorganisms including dangerous chlorine-resistant pathogens, providing peace of mind for users.
5. **Optimized for Rainwater:** The system is specifically designed to handle the unique challenges of rainwater, such as rooftop debris and airborne pollutants.

By combining these five stages, the FreshRain system delivers a reliable, efficient, and sustainable solution for rainwater purification, making it ideal for households, schools, and commercial applications.

3. How does the FreshRain system make rain more dependable, eliminating the worries about running out of water when it is not raining?

The FreshRain system makes rainwater a dependable and sustainable water source by combining advanced rainwater harvesting, purification, and smart water management—ensuring a consistent supply of safe drinking water year-round.

How FreshRain Ensures Reliable Rainwater Supply:

1. **Precision Rainwater Harvesting & Storage Optimization**
 - The FreshRain team of scientists and engineers uses meteorological data to predict rainwater harvesting potential.
 - Each system is custom-designed based on the client's rooftop area and potable water needs.
 - An optimized storage capacity is calculated to ensure maximum water collection and minimal wastage.
2. **Smart Water Management for Year-Round Availability**
 - A tailored water management schedule guarantees a consistent daily production of safe drinking water.
 - Automated flow control prevents overflow during heavy rains and optimizes water use during dry periods.
 - Real-time monitoring ensures efficient water use and prevents shortages.

3. Advanced Filtration & Purification

- Multi-Stage Filtration removes sediments, debris, and chemical contaminants.
- UV Disinfection eliminates bacteria, viruses, and protozoa.
- On-Demand Treatment ensures water is purified only when needed, preserving filter life and energy.

By integrating scientific predictions, customized system design, and smart purification, FreshRain eliminates the risk of running out of rainwater—guaranteeing a reliable, safe, and sustainable drinking water supply all year round.

4. What are the key features of the FreshRain system?

- 5-stage chemical-free filtration with UV treatment
 - Computer-controlled rainwater harvesting with a self-cleaning routine
 - Smart Monitoring: Track harvested and consumed water metrics directly on your device
 - Live Capacity Updates: See how much water is stored in real-time
 - Meteorological Tracking: Provides weather forecasts and early warnings
 - Low Power Consumption: Consumes only 350W on demand
 - Outside Installation: Designed for outdoor use with minimal noise (<70 dB)
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5. How much power does the FreshRain system consume?

The FreshRain solar-powered model uses 100% solar power, ensuring eco-friendly operation with no electricity costs. When connected to mains electricity, the system employs on-demand power consumption, saving energy by treating only the amount of water consumed. Additionally, its treatment process consumes 5 times less power than Reverse Osmosis (RO) systems.

6. What is the FreshRain system's On-Demand Operation?

The FreshRain On-Demand Operation refers to how the FreshRain system activates and purifies water only when needed, rather than continuously running. This approach optimizes efficiency, water quality, and energy usage, making it ideal for rainwater harvesting systems.

How FreshRain On-Demand Operation Works:

1. **Water is Stored in a Reservoir** – Rainwater is collected and stored in tanks.
2. **Activation Only When Needed** – Instead of continuously filtering water, the system turns on when water is required for drinking, cooking, or other uses.
3. **Sequential Filtration & UV Treatment** – As water is drawn from the tank:
 - a. It passes through multiple filtration stages to remove sediment, chemicals, and microorganisms.
 - b. UV disinfection is activated only when water is flowing, ensuring real-time pathogen elimination.
4. **Prevention of Stagnation & Waste** – Since filtration happens on-demand, there's no risk of treated water sitting in the system for too long, reducing the chance of recontamination.
5. **Energy Efficiency** – The system only uses power when in operation, reducing unnecessary energy consumption.

Benefits of FreshRain's On-Demand Operation:

1. **Preserves Water Quality** – Ensures freshly purified water every time, minimizing storage contamination.
2. **Saves Energy** – UV and filtration components only activate when needed, reducing power use.
3. **Extends Filter Lifespan** – Since water isn't constantly running through the system, filters last longer.
4. **Ideal for Intermittent Use** – Perfect for schools, homes, and communities where water is used at specific times rather than continuously.

7. How is FreshRain different from Reverse Osmosis (RO) systems?

- Retains natural minerals in water, unlike RO systems that strip them.
- Does not use chemical additives such as antiscalants or remineralizers.
- Consumes 5 times less power compared to typical RO systems.

8. What is the treatment capacity of the FreshRain system?

The system has a treatment capacity of 250 litres per hour (LPH), making it suitable for households and light commercial applications.

9. Can the FreshRain system handle other water sources besides rainwater?

Yes, the system can also treat municipal water. However, it is optimized for rainwater.

10. What is the cost of the FreshRain system?

The standard FreshRain system is priced at KES 130,000 + VAT. Pricing for tailored solutions will vary depending on the specific requirements, including harvesting capacity and reservoir size.

11. What are the maintenance requirements?

Maintenance is minimal. The system features a self-cleaning routine, and only light maintenance is needed, such as replacing filters and the UV treatment bulb annually. These costs are approximately KES 5,000 per year.

12. Is the system scalable?

Yes, the FreshRain system is scalable. Our engineers can customize the setup to match your water demand and harvesting potential, whether for households, schools, hospitals, hotels, or commercial buildings.

13. How much water can I harvest with the FreshRain system?

The amount of water you can harvest depends on your roof's surface area and local rainfall patterns. Our team can assess your location to estimate your harvesting potential and design a system tailored to your needs.

14. Can I monitor the system remotely?

Yes, the FreshRain system features smart monitoring. You can track water harvesting levels, consumption, and storage capacity on your device. It also provides weather updates and early warnings.

15. Is the FreshRain system environmentally friendly?

Absolutely. The system operates on low power, avoids chemical additives, and promotes sustainable use of rainwater, reducing reliance on scarce water resources like municipal or borehole supplies.

16. What common biological contaminants does the FreshRain system eliminate, and what is its effectiveness?

The FreshRain system is designed to eliminate biological contaminants commonly found in rainwater collected from rooftops, ensuring the water is safe for drinking.

Bacteria Removed:

- **E. coli** – Found in bird droppings and decaying organic matter on rooftops; causes diarrhea and gastrointestinal infections.
- **Salmonella** – Can be present in contaminated rainwater and causes food poisoning symptoms.
- **Legionella** – Thrives in stagnant water and can cause Legionnaires' disease, a severe respiratory infection.

Viruses Removed:

- **Hepatitis A Virus (HAV)** – Can survive in water and causes liver infections.
- **Rotavirus** – A leading cause of severe diarrhea, especially in children.
- **Norovirus** – Highly contagious and causes vomiting and diarrhea.

Parasites & Protozoa Removed:

- **Giardia lamblia** – Causes giardiasis, leading to diarrhea and dehydration.
- **Cryptosporidium** – A chlorine-resistant parasite that can cause severe intestinal infections.
- **Cyclospora** – A parasite found in contaminated water causing prolonged gastrointestinal illness.

Effectiveness of FreshRain System in Eliminating Biological Contaminants:

Contaminant Type	Filtration Stage	Effectiveness (%)
Bacteria (E. coli, Salmonella, Legionella)	Carbon block + UV treatment	99.99%
Viruses (HAV, Rotavirus, Norovirus)	UV treatment	99.99%
Parasites & Protozoa (Giardia, Cryptosporidium)	Carbon block + UV treatment	99.99%

- UV disinfection is the final and most crucial stage, ensuring that 99.99% of bacteria, viruses, and parasites are destroyed.
- Carbon block filtration removes cysts and protozoa, while earlier sediment filtration prevents clogging and improves effectiveness.

17. What is the noise level of the system?

The FreshRain system operates at noise levels below 70 dB, making it suitable for residential and commercial environments.

18. What are the potential applications of the FreshRain system?

The system is ideal for various settings, including:

- Households
- Schools
- Hospitals
- Commercial buildings
- Hotels and restaurants

19. How do I get started with the FreshRain system?

Contact InspCorp for a consultation. Our engineers will assess your location, determine your water harvesting potential, and provide a tailored solution, including installation and commissioning.

For further inquiries or to schedule a consultation, please reach out to us via:

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VISUALISATION OF THE FRESHRAIN PROCESS

