



RC: 1526070

EL-FAD CONCEPT

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BIOGAS SEWAGE TREATMENT PLANT PROPOSAL INTEGRATED WASTE TREATMENT SYSTEM IWTS

Anaerobic Aerobic Sewage Treatment Plant

AASTP

BIOGAS SEWAGE TREATMENT PLANT (BSTP)

PERMANENT SOLUTION TO SEWAGE EVACUATION.

**BIOGAS PLANT FOR HYGIENIC SUSTAINABLE
SEWAGE & WASTEWATER TREATMENT USING
ANAEROBIC DIGESTION SOLUTION(ADS)**

PERMANENT SOLUTION TO YOUR EVACUATION FOR ENERGY

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Dear Sir,

PROPOSAL FOR THE USE OF ANAEROBIC AEROBIC SEWAGE TREATMENT PLANT

ABOUT US

ELFAD Concept Ltd is an indigenous Civil and Environmental Engineering company with operations in Nigeria. The principal activity of the company is to process and recycle organic waste, both solid and liquid **on-site**, into reusable by-products. ELFAD believes strongly in sustainable living and is a champion in the advocacy of REDUCE RECYCLE AND REUSE (RRR) to reduce climate change action on the environment.

The treatment of sewage and biodegradable fractions of Municipal solid waste, Animal and Crop Farms is a response to the implementation of the Tokyo protocol (i.e., reduction in emission of greenhouse gases.)

OUR VISION / MISSION

ELFAD Concept Ltd corporate mission is to provide a clean/safe environment using AASTP which eliminates sewage dumping into our wetlands that poses threat to our ecosystem.

EXECUTIVE SUMMARY

As long-standing stakeholders in the Waste Management Industry, we are aware of the challenges that come with sewage management within and outside Lagos, especially for the domestic and commercial buildings, facilities / estates situated in highwater areas or facilities that have high population density, which will necessitate a sewage treatment plant as against the soakaway system bearing in mind that the state/ regulators (LSWMO) do not approve soakaway for any facility with more than fifty people.

It is in the light of the above that we proudly present for your consideration our HYBRID Biodigester which have passed through engineering and scientific scrutiny by Lagos State Wastewater Management Office and have therefore given us a provisional approval. ELFAD AASTP ELNAT 100SERIES, will treat, digest, and convert all organic waste into clean effluent and biogas.

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We therefore proudly present for your consideration a proposal to radically re-orient the sewage management system in all your projects and put in place a technology that is 100% in tune with the prevailing global shift toward proper management of the environment and green buildings.

The Technology sets out to demonstrate a strong technical capability and a documentation of a track record of relevant experience in the design, construction and commissioning of the biogas sewage plants.

If ELFAD AASTP (Anaerobic Biodigester) is implemented:

- 1. This system/ technology will completely solve all sewage system problems.*
- 2. There will be no more EVACUATION of Septic Tank or from other STP.*
- 3. 100% space reclamation guaranteed.*
- 4. Little or no more running cost as in the case of other sewage treatment plants or septic tank system.*
- 5. Create clean and healthy alternative water source to service the building and green areas.*
- 6. Provide Biogas for cooking, run some mechanical and electrical devices.*
- 7. Provide rich liquid fertilizer for your green areas.*

WHAT WE DO

ELFAD's AASTP is an Anaerobic Aerobic Digestion System (ADS) which is a safer and cost-effective sewage and wastewater solution that will permanently stop evacuation of sludge as against the conventional septic tank system and other Sewage Treatment Plant (STP)

It is a combination of aerobic and anaerobic treatment system to achieve the desired results and meet the effluent discharge specification of the state yet reduce operational cost and increase fecal sludge treatment efficiency.

Anaerobic digestion is a biological process whereby microbes break down organic matter (materials that originate from plants and animals) in confined oxygen –free environment. The biogas sewage treatment plant digests, treats and converts biomass or any other biodegradable materials into useful end products such as (a) Inflammable gas as fuel and (b) Enriched liquid organic effluent.

The Biogas provides a smokeless, high efficiency fuel for domestic purpose (cooking and lighting), as well as heating and power generation. It acts as the pump in the reactor.

The AASTP is most suitable for highly Populated facilities and in conditions where there is a high ground water table which can cause Water ingress into the septic tanks especially in Coastal and Niger delta environment. No land is lost due to the installation of the AASTP since the structure is underground hence the used space is recovered.

AASTP consists of an Inspection chamber, Dome Digester, Expansion chamber and a Filtration bed. The system operates via Gravity, Capillary action, and Filtration. However, the effluent generated from the

system has good nitrogen content, which can be used as liquid fertilizer (it is called the soil repairer) and can also be discharged into the environment.

AASTP is a Reduce Recycle Reuse sewage solution, a tool in fighting climate change and a sustainable ZERO WATSE treatment / accelerator.

SOME DISTINCT FACTS / RESULT FROM AASTP INSTALLATIONS

- ❖ *AASTP is completely an Anaerobic Digestion system.*
- ❖ *There will be **NO EVACUATION** of sludge.*
- ❖ *Reduce carbon emission.*
- ❖ *ELFAD Biodigesters require little or no supervision and has less physical contact with the sewage treatment plant hence it is most suited considering the Covid 19 pandemic.*
- ❖ *Create clean and healthy alternative water source to service green areas.*
- ❖ *Produce Biogas (Methane Gas) which could be utilized to power low mechanical systems and or used as direct source of energy for cooking.*
- ❖ *Biodegradable medical waste can be introduced into the digester for methane production.*
- ❖ *Biogas is very safe as it cannot explode easily due to (35-40) % CO₂ (Carbon dioxide) in the biogas mixture.*
- ❖ *Super structure is not required to house AASTP as in the case of STP.*
- ❖ *No energy is required to power the biodigester.*
- ❖ *No Running cost incurred e.g. Energy cost associated with operating a STP.*
- ❖ *No land is lost as cars can park on the AASTP on completion.*
- ❖ *AASTP has a Life span of 40 years.*
- ❖ *It is cost effective.*
- ❖ *It comes in varying capacity i.e. 10cu.m to 1000cu.m*
- ❖ **AASTP** *is a Hygienic sustainable sewage and wastewater treatment system.*

WHY DO YOU NEED AASTP

1. AASTP is an ecofriendly sewage solution.
2. **AASTP is a permanent solution to evacuation of sludge.** Therefore, you won't have to spend a dime on sewage evacuation as the sludge and biomass is converted to biogas and water.
3. AASTP solves sustainable development goal: SDG Goal 3 (good health and wellbeing) Goal 6 (clean water and sanitation)) Goal 15 (life on land) hence forms a major pivot for your sustainable infrastructure across Africa.
4. It is a statutory requirement from Lagos state wastewater management office, The Ministry of Environment for every facility with 50 people and above to install a sewage treatment plant.
5. Every facility with two suspended floors or more must install a sewage treatment plant.
6. For high density facilities such as Estates, schools, worship centers, hotels, guest houses, and commercial buildings, soakaway system will be over stretched and not sustainable.
7. High maintenance cost on running alternative sewage treatment plants which requires superstructures, heavy duty pumps and blowers.
8. Odour control.

PROJECTS EXECUTED / PARTNERS /WHO CAN USE AASTP

IWTS has been tried and tested, proven effective and efficient in treating Solid / Organic waste. We have installations in private Homes, Banks, Religious Houses, Estates, shopping malls, Hospitals, and Tertiary Institutions in Nigeria

We highly recommend the AASTP to you for consideration and installation. The biogas technology has been selected by clients such as such as.

- ✓ Ecofriendly Center, The University of Ibadan, Oyo State, Nigeria
- ✓ THE OVERLOOK (15 Floor Serviced Apartment) by Brookstone Property Limited, Okotie Eboh, Ikoyi, Lagos State
- ✓ Deluxe Residence, (10 floors serviced Apartment) Solomon Road, Silverbird, Lekki, Lagos
- ✓ Sahara Energy – Mercells Apartment. 12units Luxury Apartment, Ilabere Ikoyi.
- ✓ 10 units Luxury Terraces Glover Road, Ikoyi Lagos
- ✓ 5 Units Luxury Apartments, Oroke Drive, Ikoyi
- ✓ MATRIX Energy Head Office, Ikoyi, Lagos State

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- ✓ Admiralty Height by Tindel Development Company, Admiralty Way, Lekki phase one, Lagos
- ✓ 10 units Terrace by Tindel Development Company, Emeka Nwuze, off Admiralty Way, Lekki phase one, Lagos
- ✓ Modern Shelter Abuja
(Aso Villa – Detached Luxury Mansion)
- ✓ 6TH AND 9TH AVENUE ESTATE. Mabushi Abuja.
(95 Units Terrace, Detached, Semi-detached Luxury Apartments and blocks of flats)
- ✓ Brains and Hammers Beach Resort, Lekki Phase one, Lagos
(97 Units Terrace, Detached and Semi-detached Luxury Apartments)
- ✓ Brains and Hammers Jubilee Estate, Lagos
(220 Units Terrace, Detached and Semi-detached Luxury Apartments)
- ✓ Brains and Hammers Bungalow City Phase One Kubwa Abuja
(352 Units Terrace, Detached and Semi-detached Luxury Apartments)
- ✓ SOW REALTY, Life Camp Abuja
(78 Units Luxury Apartments)
- ✓ LANDWEY- Urban Prime
- ✓ MIXTA AFRICA
- ✓ Landmark Event Center, Oniru, VI. Lagos Nigeria
- ✓ Landmark Beach, Oniru, VI. Lagos Nigeria
- ✓ Landmark Hotels and Towers, Oniru, VI. Lagos Nigeria
- ✓ Skyview Beach and Resort, Oniru, VI. Lagos Nigeria
- ✓ Countrywide Housing Company Limited, Wuse 2, Abuja, Nigeria
- ✓ The Height Estate, Junior Staff Quarters, Asaba, Delta State.
(72units of 2bedroom flats on six blocks)
- ✓ Zenith Bank Plc. Nigeria
- ✓ Unity Bank Plc. Nigeria
- ✓ La Meridian Boulevard Estate, by Landmark Realty, Abraham Adesanya, Ogombo, Lagos
(60 Units Terrace, Detached and Semi-detached Luxury Apartments)
- ✓ Queens Court Estate, by Landmark Realty, Opic, Channels Tv Road, Lagos Ibadan Express, Ogun State. (70 Units Terrace, Detached and Semi-detached Luxury Apartments)
- ✓ Darmanawa Royal Estate, Zaria Road, Kano State
(131 units Three Bedroom and 58 blocks of 6 units of 2bedroom flats)
- ✓ 20Units Luxury Apartment by Joe Faraday Ltd, Banana Island, Lagos.
- ✓ Revolutionplus Property Development Limited, Sangotedo, Lekki Ajah, Lagos

- ✓ Stable Shelter Development Limited, Chisco Bus Stop, Lekki Lagos
- ✓ DPKAY Homes Ltd. ELF Busstop, Lekki Lagos
- ✓ AMUSA FOUR - 48units apartments by Carillion Construction Company, Admiralty way Lekki phase one.
- ✓ Corona School. Lagos Nigeria.
- ✓ Holden Park School, Sapata, VGC, Lekki, Lagos Nigeria
- ✓ Brookwater School, Chevron Drive, lekki, Lagos.
- ✓ Faculty of Agric, Dennis Osadebe University Asaba, Detla State
- ✓ Faculty of Agric, Delta State University Owa Alero, Agbor, Detla State
- ✓ Administrative Building, Delta State University Owa Alero, Agbor, Detla State
- ✓ Information Technology Building, Lagos State University LASU, Ojo, Iba Road, Lagos
- ✓ Delta State Government
- ✓ Onikan Stadium, Marina, Lagos, Nigeria
- ✓ Nigerian Police Area Command, Elemoro, Ibeju Lekki, & Idimu Lagos Nigeria
- ✓ General Hospital Igando, Lagos Nigeria
- ✓ BARON Architect Limited
- ✓ Housmith Tihamiyu Sawage Street, Victoria Island Lagos State
- ✓ Delano Architects
- ✓ Contemporary Design Associates, VI, Lagos
- ✓ CA Consultants limited, Marina Lagos
- ✓ Integrated Engineering and Project Managers - IEPM
- ✓ Building Services Design Consultants Limited – BSDCL
- ✓ CPMS LIMITED
- ✓ MEE Consultants Limited
- ✓ Kaiser Construction Ltd.
- ✓ Kenol Nigeria Limited
- ✓ Megawatts Nigeria Limited
- ✓ The Elevation Church Lekki, Lagos
- ✓ Good News Baptist Church, Surulere, Lagos.
- ✓ All Souls Anglican Church, Lekki, Lagos
- ✓ Redeem Christian Church of God - Master Court, Lekki Phase One
- ✓ Greenwich Nigeria limited, Oyin jolayin, VI, Lagos Nigeria.
- ✓ Prince Ebeano Super Market, Road 14-Lekki, Agungi, Chevron Drive, & Ikeja, Lagos
- ✓ Blenco Super Market,Sangotedo, Ajah, Lagos

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- ✓ Bagco. Ericmoore, Surulere, Lagos.
- ✓ V Care pharmaceutical by Poaddit Nigeria Limited. Ademola Adetokunbo, VI, Lagos, Nigeria
- ✓ Lasema Response Unit, Epe, Lagos state.
- ✓ Residence of Nikon Estate, Iekki, Lagos State.
- ✓ Residence of Carlton Gate Estate, Chevron drive, Lekki, Lagos State.
- ✓ Weiboro Properties Limited (six-unit duplexes) Oba Elegushi, Ikoyi, Lagos, Nigeria
- ✓ Several domestic Homes.

In conclusion, the system thus offers a cost effective, climate-friendly solution that will meet the WHO 3Ps sustainable philosophy (Prosperity-People and Planet) and SDG Goals:

SDG Goal 3 (good health and wellbeing)

SDG Goal 6 (clean water and sanitation))

SDG Goal 15 (life on land)

Also attached are references from our clients who have used our services:

Landmark Africa, Oniru, VI, Lagos. The Elevation Church Lekki, Lagos, and Nairabet Head Office Lagos.

Yours Faithfully

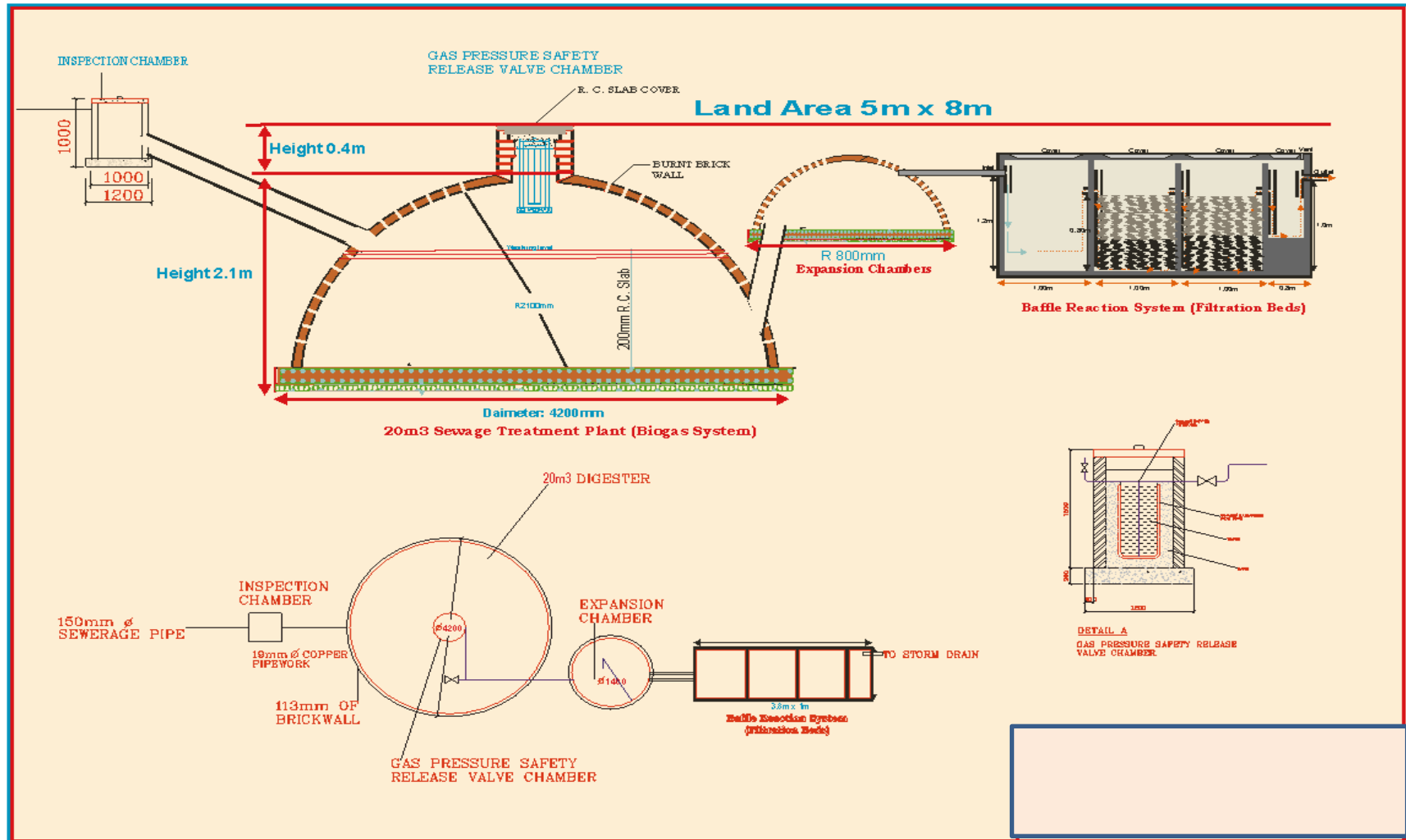
For: **ELFAD CONCEPT**



FADIPE Oladele Elnathan MNSE
MD/ CEO

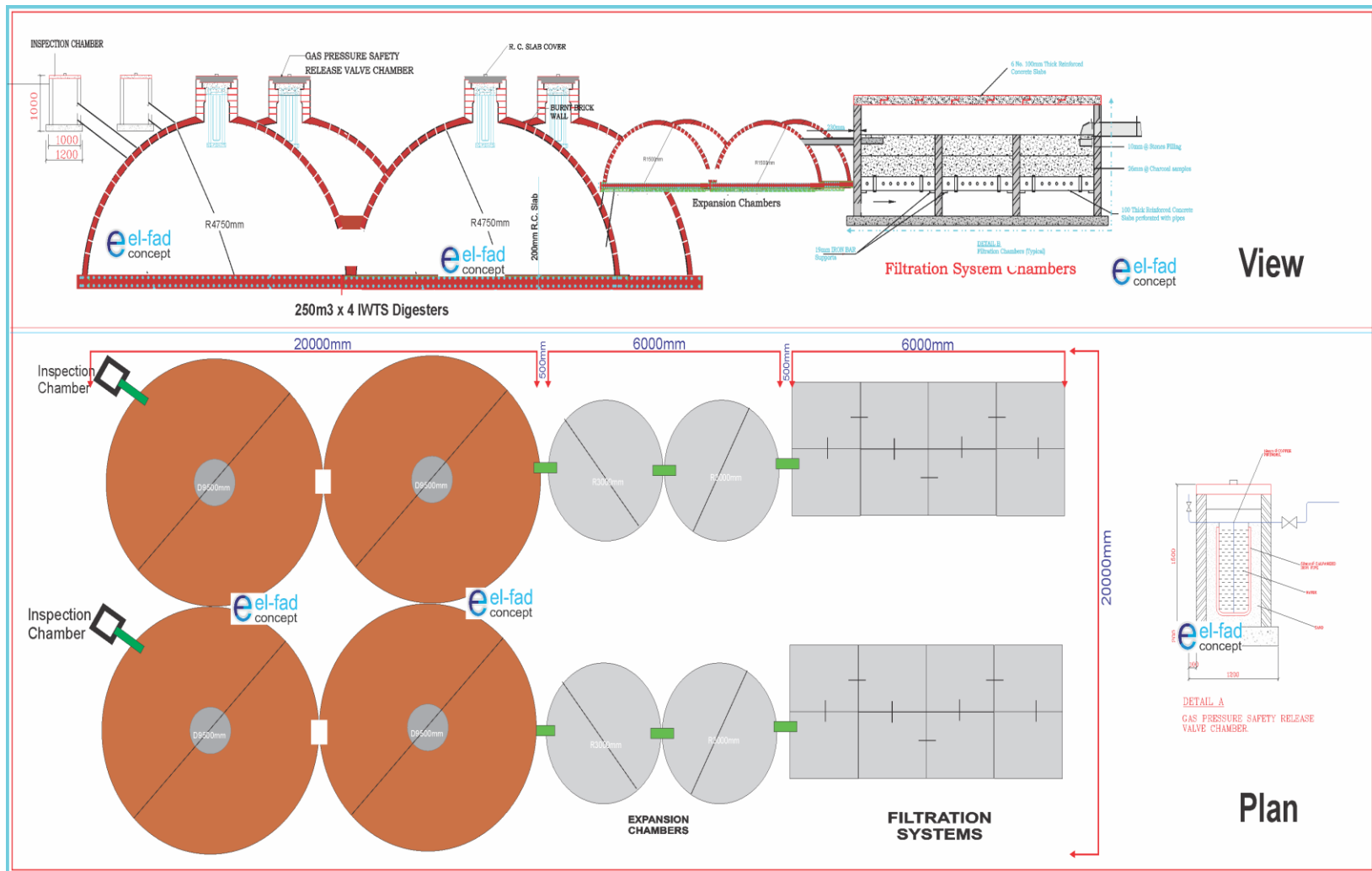
 **elfad**
concept
...Sewage Solution

SCHEMATIC DRAWING FOR 20m3 AASTP



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10 CUBIC METER DOMESTIC BIODIGESTER AT NICON ESTATE

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3 Badaru Str., Off Adegoke Str, Masha, Surulere, Lagos. Info@elfadconcept.com



DOMESTIC 10CU.M BIODIGESTER AT ZENITH BANK ELF BUS STOP- LEKKI-
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3 Badaru Str., Off Adegoke Str, Masha, Surulere, Lagos. Info@elfadconcept.com



BIOGAS SYSTEM AT ELEVATION CHURCH. LEKKI

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EIGHT UNIT DUPLEXES AT IKATE, OPOSITE NIKE ART GALLERY

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CENTRAL 260 CU.M BIODIGESTER AT LANDMARK EVENT CENTER- LANDMARK VI

GREEN TECH / PERMANENT SOLUTION TO YOUR EVACUATION

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GREEN TECH / PERMANENT SOLUTION TO YOUR EVACUATION

E-mail: info@elfadconcept.com



CENTRAL 200 CU.M BIODIGESTER FOR 1450 PIG FARM OWOODE OGUN STATE

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CENTRAL 200 CU.M BIODIGESTER FOR 1450 PIG FARM OWODE OGUN STATE

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CONCLUSION

- 1) The implementation of this project will indeed exploit the residual energy and nutrient value of sewage and bio-municipal waste for use, while providing good sanitation and environmental performance for the facility's operations.
- 2) The project will provide nutrient water for landscaping and less critical applications.
- 3) Provide Biogas for cooking from a sustained source of daily raw material – Feces and 'controlled' kitchen waste.
- 4) The project will ensure that the facility meets the regulatory standards of the Environmental Protection Agency for wastewater discharge quality required under the environmental permit for the institution.
- 5) Super structure is not required to house AASTP as in the case of STP /Extended Aeration system.
- 6) No replacement of mechanic parts as AASTP is a completely Anaerobic Digester System.
- 7) Biodigesters requires little or no supervision and has less physical contact with the sewage treatment plant hence it is most suited considering the Covid 19 pandemic.
- 8) ENERGY IS SAVED AS AASTP DOES NOT REQUIRE POWER TO OPERATE. ENERGY COST ASSOCIATED WITH OPERATING SEWAGE TREATMENT PLANT/AERATION SYSTEM IS REMOVED, THEREFORE TOTAL ENERGY CONSUMPTION COST IS REDUCED.
- 9) NO LAND IS LOST. CARS CAN PARK ON THE DIGESTERS.
- 10) NO MORE EVACUATION.

REFERENCE

BENEFIT OF INTERGRATED WASTEWATER TREATMENT (AASTP) - BIOGAS OPTION.

1. LANDMARK EVENT CENTER-ONIRU, VI, LAGOS:

We have been battling with activated sludge systems for a decade now with several maintenance issues until we gave ELFAD's biogas sewage treatment system a big trial at Landmark village. We previously spend and maintain the activated sludge system with about #850,000 on a quarterly basis until we got this solution of anaerobic digester by Elfad, which is in full operations in two of our facilities basically Landmark Village and the Landmark beach with digester volume of 260cubic meter and 60cubic meter respectively.

Sequel to enjoying the benefits of the 260cubic at LMV, my organization decided to give Elfad a 60cubic meter digester at our beach resort. We have been using this system for more than a year now (April 2019) with zero maintenance and no down time has been recorded so far.

With all these positive achievements and testimonies, we are planning to engage Elfad again to convert the activated sludge systems at Landmark Towers to Elfad biogas sewage treatment plant.

I will continue to spread this great achievement to other facility managers who have not experienced or heard about this system to quickly fast track their sewage maintenance processes using Elfad's biogas sewage solution.

Engr Ayotunde Oke

Facility Manager

Landmark Group

Water Corporation road, Oniru,

Victoria Island Lagos.

08032072375 / ayotunde.o@landmarkafrica.com

2. ELEVATION CHURCH, LEKKI-AJAH EXPRESS ROAD:

This type of sewage treatment system was introduced to my organization last year after the organization had spent several millions on sewage evacuation. We carry out 5-7 trips of evacuation weekly depending on the number of programs within the week. The biogas system was commissioned February 2018 at The Elevation Church.

The Elevation Church has really benefited from the system in several ways, from providing permanent end to sewage evacuation **(Saving almost 4.8M within 12months)** to utilization of the final effluent (water) for landscaping purpose. Also, the benefit of no maintenance cost has also been an added advantage.

Although we have not generated any gas due to the minimal amount of solid waste we produce because our major waste is mainly bodily fluid (wastewater) however we have plans to use biogas lamp for the gas that will be generated very soon.

I am recommending this new technology to everyone, because this is the best way to manage your sewage and wastewater yet achieve cost saving with economic and environmental benefit.

Adesola Adegbite

Head of Facilities Management

The Elevation Church.

Adesola.adegbite@elevationng.org

08104231874



3. NAIRABET HEAD OFFICE, IGBO EFON, LEKKI – AJAH , LAGOS

TESTIMONIAL OF EFFECTIVENESS ON INTEGRATED WASTEWATER TREATMENT SYSTEM (AASTP) – BIOGAS OPTION.

The Biogas System has been so beneficial to us in a number of ways.

- 1) It has eliminated evacuation since its operation over two years ago.
- 2) It has started given us return on investment as **we piped the gas to our kitchen.**
- 3) The technology has helped by making the sport bet arena Headquarters eco-friendly.
- 4 It has helped on the issue of water seepage which affected the former conventional septic tank we had constructed hereby increased frequency of evacuation.

I recommend this technology to all, for economic benefits, and to saving our environment as it has been proven on our site.

Engr. Oyedeji Muyiwa

Project Supervisor, Babs Anthoms Global

On Naira-Bet Projects.

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...Sewage Solution