Uganda Association of Consulting Engineers

IDEAS THAT MAKE A DIFFERENCE

Newsletter | MAY 2025

Representing the professional concerns and general business interests of its members in the field of engineering consultancy.

The mission of
Uganda Association of Consulting Engineers is to

develop and promote the consulting engineering industry in Uganda to internationally accepted standards.

EDITOR'S NOTE

The Uganda Association of Consulting Engineers (UACE) brings you yet another issue of ideas that make a difference, all compiled into our periodical – the UACE Newsletter.

Dear Reader,

This issue marks the end of tenure of the UACE 2023 - 2025 Council and truly words innumerable can just not explain the pleasure it has been serving the consulting engineering industry and the entire construction/engineering industry at large while on the Council.

In this issue, you will clearly notice a record-breaking increment in our membership numbers – thanks to our passionate Secretariat and Council. It is to be noted that most entrants were as a result of Secretariat/Council invitation and recommendation. We hope the new members find a very safe haven with UACE for the practice of their profession.

Additionally, this issue has put together for you a number of interesting must-reads precisely authored for your good pleasure - we hope you enjoy.

> "In this issue, you will clearly notice a record-breaking increment in our membership numbers – thanks to our passionate Secretariat and Council.

Finally, we definitely cannot forget to announce and also invite our great readership to this year's Global FIDIC Infrastructure Conference strategically happening just next door in Cape Town, South Africa from 21st to 23rd September 2025 (more details inside). You will note that this year there shall be no FIDIC Africa Infrastructure Conference as has always been in the past – all efforts and resources should target the FIDIC Global conference in September.

This note ends with an appreciation and big kudos to the volunteer contributors of the articles that make these Newsletters. May your burnt man-hours impact the sector so positively and make your joy complete!

Enjoy!

Eng. Nsimbe Joseph
UACE Vice President
Chairman, PR Committee

CONTENTS

A WORD FROM THE OUTGOING PRESIDENT

Dear Members,

It is with great pleasure that I address you through our quarterly publication in this same period of our 28th Annual General Meeting (AGM) of the Uganda Association of Consulting Engineers (UACE).

This is my final official publication in this official medium for my first term as President of UACE, a role I have had the privilege of holding and enjoyed with a deep sense of fulfillment since April 2023. Serving this wonderful Association has been a profoundly rewarding and exceedingly humbling experience. It has made me realise how close we are as a family in the Consulting Engineering fraternity, especially in the light of challenges that threatened our survival. At some point it felt like a full-time job and in other respects it has been a job so fulfilling with the enjoyment of the challenges that have taken me to different growth levels in leadership, management, negotiations and even counselling at times when there seemed no more hope was left but to hang in there yet still expected things to happen and they indeed happened.

During these two Council years, there has been a lot of challenges and benefits. With the two years' Council term, there is relative stability in Council. But in all our membership growth has continued as a testament to the dynamism and relevance of UACE. As someone who joined UACE within the infancy of membership in 2017 (23 No.), I am happy to highlight that we are scaling to triple the number to above 60 No. this year (currently at 58 No.). We would indeed have beaten this already had it not been for the financial challenges for some of our members whom we have had to recommend for suspension on financial obligations grounds.

We have endeavoured to engage strategic partners in the profession and look forward to a future of fruitful collaboration and success. Our relevance has been headlined by GIZ for a 4th successive advertisement for consulting services where they have specifically demanded for UACE membership. KCCA has also given real credence to the local consulting engineers through their well-crafted framework contracts – an approach that has helped them have the best on board all the time when needed and saved them a lot in procurement time. We recognize such strategic partnerships and look forward to not only strengthening but growing and expanding them.

We have been faced with enormous challenges. Some have threatened our survival but others have also taken lives from amongst us. The loss of our two member firms' directors in Eng. Dr. Paul Niels Sagala and Eng. Frank Magoba of Sagala-Bwanika Eng. Consultants and Kaizen Africa Ltd took a huge toll on us. The two fallen comrades pumped life into our association. We pay great tribute to them for their invaluable contributions to the profession and look forward to meeting them again in the bigger life after this life of struggles.

> **"Serving this wonderful Association has been a profoundly rewarding and exceedingly humbling experience. It has made me realise how close we are as a family in the Consulting Engineering fraternity, especially in the light of challenges that threatened our survival."**

The Prime Minister's Directive has been a huge challenge that has not left us the same ever since we interfaced with it in full throttle around June 2024. Whereas we are wounded and are bleeding because of it, we are steadily emerging out stronger. Because of this directive, that the entire consulting engineering fraternity has termed as ill-conceived, ill-advised, irrational and fatally faulty in many aspects, we have grown from strength to strength, unified and even coalesced to a stronger force that fears no more un-chattered grounds. When this directive came into force, we boycotted all government procurements that operationalized it. It took great interventions from different authorities to draw us back into such procurements with packs of promises to understand our plight. We have since engaged different players and many have started understanding us. I am happy to note that whereas some of our member firms have signed contracts under some government programs like the Greater Kampala Metropolitan Area (GKMA) in protest, we have started seeing some positive results coming in from the Attorney General and Solicitor General's offices clearing the contracts with deletion of the

unreasonable payment terms that the PM's directive had put forward. We have also been formally engaged in the revision of those initially proposed payment terms through the ministry of works and transport and are still pursuing the ultimate quashing of the directive and other regulations through our legal team using the judicial review process. It is rather unfortunate that the rearrangements within the civil division of the high court affected our pursuit. I am now, happy to note that our matter is up for injunction hearing this morning of 16th April 2025 and the main judicial review hearing shall also be tabled.

Such great success could not come with ease. It has been out of your great efforts, commitments and sacrifices as individuals and firms at large. We particularly appreciate those of you who have been able to attend the five (5 No.) Extra ordinary General Meetings within this one year that have focused and made guiding resolutions that have steered us to this point. We appreciate those of you who have willingly made the donations, both financial and in kind, to push us through with the logistics. The mobilization effort that quickly made a collection of close to UGX 80,000,000/= (Eight Million Uganda Shillings) in a short time and pledges of over UGX 140,000,000/= that became commitments to every member is a real manifestation of the belief in the cause and I applaud you all. We have had a good fight. It is now clear that we shall never need bid bonds as consulting engineers. We are also on a clear push with the matter having reached the fountain of honour regarding the performance securities and guidance having been issued by the permanent secretary of ministry of finance planning and economic development (MoFPED) and secretary to the treasury regarding the no need of such securities from local service providers as the performance securing declarations would serve the purpose. We can, thus, start seeing the new trends that had started emerging with demands of on-demand performance securities as a thing of the past.

Incentivization of government and government departments to pay timely after we have provided them with services still remains a huge challenge for us. It is an even bigger challenge when the revenue authority demands for taxes on such government invoices and/ or refuses to provide requisite transactional tax clearances. As employers, it becomes hard for us to meet our obligations in so many respects besides taxes, staff payments and meeting of business overheads. Moreover, there is never interest paid on delayed payments of consulting engineers. Our next Council advocacy drives should thus put a little more focus on this besides promotion and raising of thresholds for local service providers' reservation schemes.

Whereas, I am indebted to the great Council and the quality of membership you sent through to steer the association business, our greatest strength has been in you all as our directors and specifically, those of you who joined the advocacy committee to deal with the PM's issues amongst other pressing issues. On this note, therefore and in no particular order, allow me to extend further appreciation to Director Ronald Kibuka and the management of Prome Consults Ltd., Eng. Charles Bakaki and the management of Professional Engineering Consultants, Eng. David Kaddu and the management of UB Consulting, Musa Ssegabwe and management of Segamu 14 Consults, Eng. Peter Magambo and the management of Kagga and Partners Ltd, Kato Kagga and KKat management, Eng. Patrick Batumbya and the management of MBW consulting as well as the managements of all our Council member firms including Air Water Earth (AWE) Ltd who have sacrificed a lot of time in volunteering their members to serve our general consulting industry's cause. I shall forever be indebted to you for the achievements made by our association during this time.

The challenges aside, we now enjoy a special place in our country being a strong pillar and key players in our national infrastructure development. The status-quo has been shaken in the recent past but we have taken this as a mirror to do self reflection and emerge out better in doing what we can do best. I encourage all of us to commit to a better profession as we contribute towards our national development. Let us keep fostering the strategic partnerships with the different government departments and individuals so that we are well understood. We should keep a key focus to local capacity development and local content enhancement. Multilateral development organisations and development partners ought to know that we are key custodians to this country's development cause and we are here to lead, not to follow. We need to forge our own strategic partnerships as local firms and form associations and joint ventures that are productive and competitive for our national development agenda. I am hopeful that with such a good understanding our contribution to national development and our better organisation as a profession, we shall scale better strategic horizons.

Once again, thank you very much for allowing me to serve you in this highly esteemed office of the president and look forward to doing more wonderful things together as we serve our Country.

For God and My Country.

Dr. Ronald S. MUSENZE, PhD
PRESIDENT, UACE
CEO, AIR WATER EARTH (AWE) Ltd

UACE APPLAUDS THE NATIONAL PRIVATE SECTOR STRATEGY

for Construction and Real Estate (NPSSCRE) and Calls for Deeper Integration of Consulting Engineers in Uganda's Construction Transformation

By Dr. Ronald S. MUSENZE, PhD
President of the Uganda Association of Consulting Engineers (UACE)

This month of April 2025 has seen the construction sector achieve a huge milestone in the launching of the 10 – year national construction and real estate strategy. The Uganda Association of Consulting Engineers (UACE) warmly welcomes the launch of this ***National Private Sector Strategy for the Construction and Real Estate Industry (2024–2034)*** by the Private Sector Foundation Uganda (PSFU), with support from the Mastercard Foundation.

This 10-year strategy, which has been developed consultatively with different key stakeholders, is both timely and necessary. It offers a much-needed sector-specific framework to unlock the competitiveness of Uganda's construction and real estate industry—an industry that accounts for nearly 60% of the national development budget but continues to struggle with underperformance, limited indigenous and local sector players' participation, and fragmented coordination.

As UACE, we particularly endorse the strategy's call for macro-level reforms such as the establishment of a Uganda Construction Industry Commission (UCICO) and efforts to improve public procurement, access to finance, skills development, and professionalization.

The Consulting Engineer: A Critical, Yet Underrepresented Pillar

The strategy is the first and definitely a first step in the positive direction. However, as we celebrate this milestone, we must also highlight a critical gap: there is a strategic under-recognition of consulting engineers in the proposed interventions put forward within this strategy.

Consulting engineers are not merely support actors in construction— we are the lead planners, designers, risk managers, and guardians of public safety. It is us who ensure that infrastructure is not only built—but built to last, built efficiently, and built responsibly.

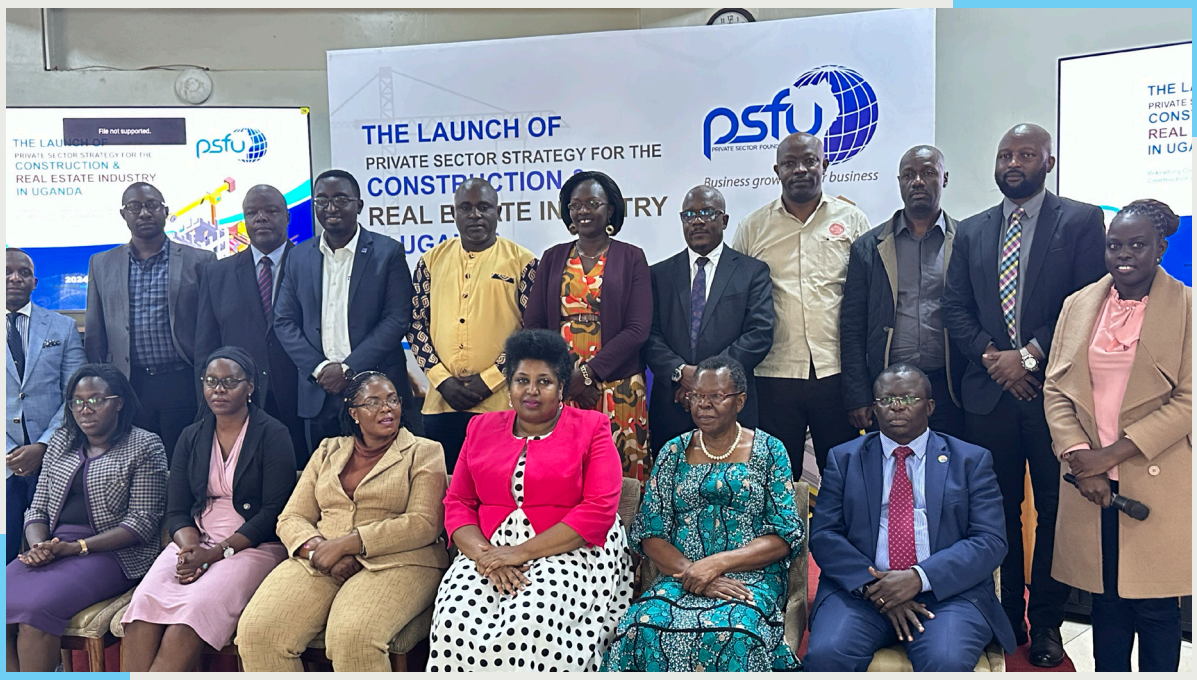
We urge the implementation leadership of this strategy, therefore, to deliberately integrate Ugandan consulting engineers in the following ways:

1. Formal recognition of UACE as a core implementation partner, especially in procurement reforms, professional standards, and sector coordination.
2. Development of a National Consulting Engineering Export Strategy, positioning Ugandan firms for regional work in South Sudan, DRC, Rwanda, and beyond.
3. Institutional support to enhance local firm capacity, digitalization say through Building Information Management Systems (BIMS) and digital twins, and ISO-level certifications that would instill consumer confidence.
4. Strengthening of independent, professional engineering oversight in both public and private sector infrastructure delivery.

UACE's Commitment to National Transformation

As UACE, we commit to actively contributing to the success of the strategy through:

- Policy advocacy for the implementation of UCICO with consulting engineers fully represented.



- Establishing a Consulting Engineering Development Platform, focusing on skills transfer, young professional mentorship, and technology adoption.
- Working with the Engineers Registration Board (ERB), academic institutions, and international partners to deepen professionalism and ethical practice in engineering services.
- Supporting PSFU and government agencies in building a credible pipeline of local consulting engineering firms capable of handling large-scale national projects.

Call to Action

As consulting engineers, we appeal to the Government to urgently investment in Ugandan technical capacity development—not just construction delivery but also in design, supervision, innovation, and regulation.

We challenge our country's development partners to treat Consulting engineering services as part of local content. Our firms must be supported to lead—not to follow—in the implementation of infrastructure interventions.

To fellow engineers and professional bodies: This is the time for unity and leadership. Together, we must safeguard the future of our profession and its rightful place in Uganda's development.

Conclusion

To wrap it all and Ultra to my conviction, it is important for everyone to appreciate that a construction industry without strong consulting engineers is a structure without a foundation. The NPSSCRE is a major achievement. But the true impact of this strategy will only be realized if we build with wisdom, design with foresight, and deliver with integrity.

UACE stands ready to work hand in hand with all stakeholders to make this vision a reality—for a smarter, safer, and more sustainable Uganda.

For further information, contact:

Ms. Lillian Bamukobeku
Executive Director, UACE
Tel: +256 758 342 536
Email: lillian@uace.or.ug, info@uace.or.ug
Website: www.uace.or.ug

GLOBAL INFRASTRUCTURE INDUSTRY TO GATHER IN CAPE TOWN

for Major Annual Event in September

By Andy Walker

All eyes will be on Cape Town, South Africa, in September as the city hosts the 2025 FIDIC Global Infrastructure Conference

South Africa will host this year's annual gathering of the global consultancy and engineering industry as Cape Town plays host to the 2025 FIDIC Global Infrastructure Conference.

Based around the topical theme of Smart Infrastructure: Equality, Resilience and Innovation for a Sustainable World, the conference takes place against a backdrop of the infrastructure sector continuing to be in the global spotlight as world governments look to invest in their national social and physical infrastructure to help deliver their economic plans over the years ahead.

It's significant and apposite that FIDIC is hosting its annual event this year in Cape Town, as the G20 presidency is handed over to South Africa in 2025. With a theme for the G20 year based around fostering solidarity, equality and sustainable development, it's highly relevant that the global infrastructure sector will be meeting in Cape Town to meet and demonstrate its excellence, integrity and significance in shaping a better tomorrow for all.

Previous annual FIDIC conferences have explored key aspects around how infrastructure delivers a sustainable world and the 2025 event is set to be attended by many industry stakeholders including clients, governments, politicians, contractors, lawyers, financiers and architects to name a few. Attendees will also be able to take advantage of unrivalled networking opportunities and benefit from capacity building and knowledge sharing forums.

The 2025 FIDIC Global Infrastructure Conference will be held in the Cape Town International Convention Centre from 22-23 September 2025. The venue, the leading international convention centre on the African continent, is the ideal space to welcome the engineering, construction and infrastructure sector to South Africa for high-level discussions and debate on what needs to be done to plan, develop and deliver the infrastructure to support the creation of a more sustainable world.

Registration for the 2025 FIDIC Global Members and Infrastructure Conference will open soon, but attendees can register their interest now to ensure that they receive information as soon as it is available on what is bound to be a well-attended event for the global consultancy industry.

Click here to register interest in the 2025 FIDIC Global Infrastructure Conference.

CLICK https://events.fidic.org/GIC25

Industrialisation while Keeping Green environment for the Future - Kira Motors Vehicle Plant

PART THREE

By Eng. Peter Mugumya and Mr. Parscale Barebente

Biological treatment

On the basis of the fact that hazardous materials are toxic to living beings, it is not uncommon for some to assume that biological treatment is not possible for hazardous wastes. This assumption is untenable and, in fact we must aggressively seek biological treatment in order to exploit the full potential of hazardous wastes in terms of removal efficiency and cost. Against this background, let us now list some of the techniques used for biological treatment of hazardous waste.

i) Land treatment

This is a waste treatment and disposal process, where a waste is mixed with or incorporated into the surface soil and is degraded, transformed or immobilised through proper management. The other terminologies used commonly include land cultivation, land farming, land application and sludge spreading. Compared to other land disposal options (landfill and surface impoundments), land treatment has lower long-term monitoring, maintenance and potential clean up liabilities and because of this, it has received considerable attention as an ultimate disposal method. It is a dynamic, management-intensive process involving waste, site, soil, climate and biological activity as a system to degrade and immobilise waste constituents. In land treatment, the organic fraction must be biodegradable at reasonable rates to minimise environmental problems associated with migration of hazardous waste constituents. The various factors involved in the operation of the system are as follows:

- **Waste characteristics:** Biodegradable wastes are suitable for land treatment. Radioactive wastes, highly volatile, reactive, flammable liquids and inorganic wastes such as heavy metals, acids and bases, cyanides and ammonia are not considered for land treatment. Land treatability of organic compound often follows a predictable pattern for similar type of compounds. Chemical structure, molecular weight, water solubility and vapour pressure are few of the characteristics that determine the ease of biodegradation.
- **Soil characteristics:** The rate of biodegradation and leaching of waste applied, the availability of nutrients and toxicants to microorganisms and the fate of hazardous waste constituents are determined largely by application rate as well as the soil's chemical and physical characteristics or reaction. Principal soil characteristics affecting land treatment processes are pH, salinity, aeration, moisture holding capacity, soil temperature, etc. Some of the characteristics can be improved through soil amendments (nutrients, lime) tillage or through adjustments of loading rate, frequency at the time of waste application.
- **Microorganisms:** Soil normally contains a large number of diverse microorganisms, consisting of several groups that are predominantly aerobic in well-drained soil. The types and population of microorganisms present in the waste-amended soil depend on the soil moisture content, available oxygen, nutrient composition and other characteristics. The key groups of the microorganisms present in the surface soil are bacteria, actinomycetes, fungi, algae and protozoa. In addition to these groups, other micro and macro fauna, such as nematodes and insects are often present.
- **Waste degradation:** Conditions favourable for plant growth are also favourable for the activity of soil microorganisms. The factors affecting waste degradation that (may be adjusted in the design and operation of a land treatment facility) are soil pH (near 7), soil moisture content (usually between 30 to 90 %), soil temperature (activity decreases below 100 C) and nutrients.

ii) Enzymatic systems

Enzymes are complex proteins ubiquitous in nature. These proteins, composed of amino acids, are linked together via peptide bonds. Enzymes capable of transforming hazardous waste chemicals to non-toxic products can be harvested from microorganisms grown in mass culture. Such crude enzyme extracts derived from microorganisms have been shown to convert pesticides into less toxic and persistent products. The reaction of detoxifying enzymes is not limited to intracellular conditions but have been demonstrated through the use of immobilised enzyme extracts on several liquid waste streams. The factors of moisture, temperature, aeration, soil structure, organic matter content, seasonal variation and the availability of soil nutrients influence the presence and abundance of enzymes.

iii) Composting

The principles involved in composting organic hazardous wastes are the same as those in the composting of all organic materials, though with moderate modifications. The microbiology of hazardous wastes differs from that of composting in the use of inoculums. The reaction is that certain types of hazardous waste molecules can be degraded by only one or a very few microbial species, which may not be widely distributed or abundant in nature. The factors important in composting of hazardous wastes are those that govern all biological reactions. The principal physical parameters are the shape and dimensions of the particles of the material to be composted and the environmental factors of interest in an operation are temperature, pH, available oxygen, moisture, and nutrient availability.

The compost technology can be divided into two broad classes – windrow (open pile) and in-vessel (enclosed) and the former may be further subdivided into turned and forced aeration (static pile). Composting, by no means, is a panacea for the hazardous waste problem. When considering the future of hazardous waste composting needs, attention must be paid to the advantages and disadvantages inherent in composting as compared to those inherent in physical, chemical and thermal method of waste treatment.

iv) Aerobic and anaerobic treatment

Hazardous materials are present in low to high concentration in wastewaters, leachate and soil. These wastes are characterised by high organic content (e.g., up to 40,000 mg/l total organic carbon), low and high pH (2 to 12), elevated salt levels (sometimes, over 5%), and presence of heavy metals and hazardous organics. Hazardous wastes can be treated using either aerobic or anaerobic treatment methods.

In aerobic treatment, under proper conditions, microorganisms grow. They need a carbon and energy source, which many hazardous wastes satisfy, nutrients such as nitrogen, phosphorus and trace metals and a source of oxygen. Some organisms can use oxidised inorganic compounds (nitrate) as a substitute for oxygen. Care is to be taken such that all the required nutrients and substances are supplied in sufficient quantities. Temperature and pH must be controlled as needed and the substances that are toxic to the organisms for example heavy metals must be removed.

Anaerobic treatment is a sequential biologically destructive process in which hydrocarbons are converted, in the absence of free oxygen, from complex to simpler molecules and ultimately to carbon dioxide and methane. The process is mediated through enzyme catalysis and depends on maintaining a balance of population within a specific set of environmental conditions. Hazardous waste streams often consist of hydrocarbons leading to higher concentrations of chemical oxygen demand (COD). Depending upon the nature of waste, the organic constituents may be derived from a single process stream or from a mixture of streams.

The treatability of the waste depends upon the susceptibility of the hydrocarbon content to anaerobic biological degradation and on the ability of the organisms to resist detrimental effect of biologically recalcitrant and toxic organic and inorganic chemicals. The metabolic interactions among the various groups of organisms are essential for the successful and complete mineralisation of the organic molecules. Various parameters such as the influent quality, the biological activity of the reactor and the quality of the reactor environment are monitored to maintain efficient operating conditions within the reactor.

Waste water treatment

Waste water is a mixture of water with all sorts of inorganic (sand and salts) and organic (proteins, sugars, oil, fats) compounds. Part of these compounds appears in dissolved and other in suspended form.

When biological water treatment is discussed, the main interest is the elimination as organic matter and nutrients by means of micro-organisms. Most of the organic components will not be removed or only in a limited in waste water treatment plant.

Objectives of waste water treatment

- To remove all the pathogenic germs contained in raw water.
- To remove unpleasant taste and odor.
- To make water free from objectionable color.
- To make water suitable for industrial use and reuse.
- To reduce the corrosive properties of water.

NOTE: All the above is done in order:

- To prevent death resulting from drinking contaminated water.
- To comply with the legal requirement of water quality regulations and standards, thus provide communities with safe and clean water for use.
- To increase awareness of the importance of clean water and the increasing concern about water related health problems.
- To reduce water scarcity in relation to quality.
- To improve sanitation and hygiene in the surrounding communities.

Treatment Steps

Step 1: Screening and Pumping

The incoming wastewater passes through screening equipment where objects such as rags, wood fragments, plastics, and grease are removed. The material removed is washed and pressed and disposed of in a landfill. The screened wastewater is then pumped to the next step which is grit removal.

Step 2: Grit Removal

In this step, heavy but fine material such as sand and gravel are removed from the wastewater. This material is also disposed of in a landfill.

Step 3: Primary Settling

The material which will settles but at a slower rate than step two, is taken out using large circular tanks called clarifiers. The settled material called primary sludge is pumped off the bottom and the wastewater exit the tank from the top. Floating debris such as grease is skimmed off the top and sent with the settled material to digesters. In this step, chemicals are also added to remove phosphorus.

Step 4: Aeration / Activated Sludge

In this step, the wastewater receives most of its treatment. Through biological degradation, the pollutants are consumed by microorganisms and transformed into cell tissue, water, and nitrogen. The biological activity occurring in this step is very similar to what occurs at the bottom of lakes and rivers, but in these areas the degradation takes years to accomplish.

Step 5: Secondary Settling

Large circular tanks called secondary clarifiers allow the treated wastewater to separate from the biology from the aeration tanks at this step, yielding an effluent which is now over 90% treated. The biology (activated sludge) is continuously pumped from the bottom of the clarifiers and returned to the aeration tanks in step four.

Step 6: Filtration

The clarified effluent is polished in this step by filtering through 10micron polyester media. The material captured on the surface of the disc filters is periodically backwashed and returned to the head of the plant for treatment.

Step 7: Disinfection

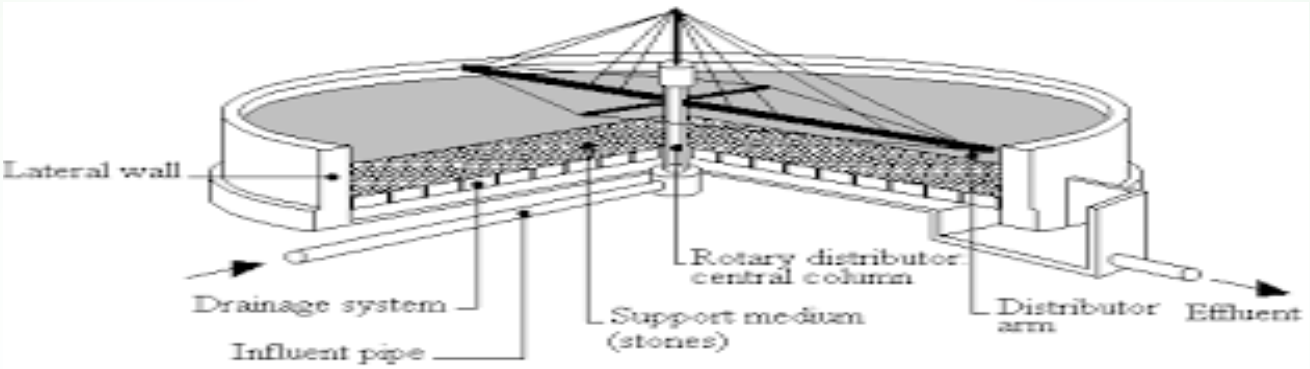
To assure the treated wastewater is virtually free of bacteria, ultraviolet disinfection is used after the filtration step. The ultraviolet treatment process kills remaining bacteria to levels within our discharge permit.

Step 8: Oxygen Uptake

The treated water now in a very stabilized high-quality state is aerated if necessary to bring the dissolved oxygen up to permit level. After this step, the treated water passes through the effluent outfall where it joins the water discharged to the river must meet stringent requirements set by the DNR. Pollutant removal is maintained at 98% or greater.

Sludge Treatment

The primary sludge pumped from the bottom of the primary clarifiers in step three, along with the continuous flow of waste activated sludge from the aeration / activated sludge process in step four, must be treated to reduce volume and produce a usable end product. The sludge treatment process involves four steps as described here.



An illustration of a trickling filter.

Trickling filters

This is a type of wastewater treatment system which consist of fixed beds of rocks, coke, gravel, slag, polyurethane foam, sphagnum, peat moss, ceramic, or plastic media over which sewage or other wastewater flow downward and causes a layer of microbial slime (bio film) to grow, covering the bed of media. Aerobic conditions are maintained by splashing, diffusion, and either by forced air flowing through the bed or natural convection of air if the filter media is porous. They are also known as biological filters, bacteria bed or percolating filters.

They consist of large tank or concrete tank approximately 1.8m deep which may be circular or rectangular shape containing the filter media which is usually an inert material. i.e., stones and plastics with a large surface area on which microorganisms can grow.

The settled waste water is distributed over the surface of the filter material often using sprinklers. As the water trickles through the filter media, a microbial slime develops which consists majorly of bacteria and other microorganisms that feed on the organic matter in the wastewater using oxygen from the atmosphere. Generally, they require cleaning to prevent blockage because worms and insects often feed on the slime.

Importance of trickling filters

- Ability to handle and recover from shock loads.
- Relatively low power requirements (only power to run the pump).
- They produce less sludge than suspended growth system.
- Levels of skills and technical expertise needed to manage and operate the system is moderate. The cost to operate a trickling filter is low
- They can remove Carbon dioxide, Hydrogen sulphide and other gases because of their large air water interface. A portion of a liquid in under system is recycled, it improves treatment efficiency to dilute strength of incoming wastewater and maintain enough wetting of slime layer.

How trickling filter is designed

A typical trickling filter is circular and between 10m and 20m across and between 2m to 3m deep. A circular wall often of bricks, contains a bed of filter media which in turn rests on a base of under drains. These under drains functions both to remove liquid passing through the filter media but also allow the free passage of air up through the filter media. Mounted in the center over the top of the filter media is a spindle supporting two or more horizontal perforated pipes which extend to the edge of the media. the perforation on the pipes is designed to allow an even flow of liquid over the whole area of the media and also angled so that when the liquid flows from the pipe the whole assembly rotates around the central spindle.

How trickling filter is operated

The settled wastewater is delivered to a reservoir at the center of the spindle via some form of dosing mechanism, often a tipping bucket device on small filters. Large filters may be rectangular and

the distribution arms may be driven by hydraulic or electrical system. The settled sewage from the primary sedimentation tank is sprinkled intermittently over the filter bed, when the wastewater trickles down, a microbial layer develops on the surface of the rock which is called a slim layer which mostly consists of bacteria. The wastewater is oxidized by bacteria producing effluent in the form of water, gases and new cells

Activated sludge systems

This treatment system uses aeration and a biological floc composed of bacteria and protozoa. In mainly sewage treatment plants, the biological process can be used for one or several of the following purposes, oxidizing carbonaceous biological matter, oxidizing nitrogenous matter mainly ammonium and nitrogen in removing biological matter and nutrients. The aerobic microorganism digests the organic matter in sewage and clump together flocculation thereby producing a liquid that is relatively free from suspended solids and organic material and flocculated particle that will readily settle out and can be removed.

The general arrangement of an activated sludge process for the removal of carbonaceous pollutants includes settling tanks usually referred to as "final clarifiers" or "secondary settling tanks" that allow the biological flocs (sludge blankets) to settle thus separating the biological sludge from the clear water and aeration tanks where air is used.

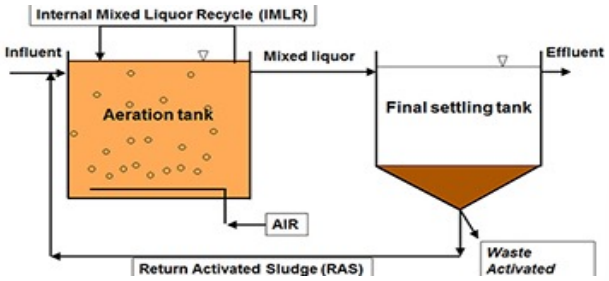
In Aeration method, pure aeration is sealed tank reactor vessels with sludge surface aerator types impellers mounted within the tanks at the oxygen carbon liquid surface, the amount of oxygen can be control by weir adjusted level control.

Surface aeration is achieved by vertically mounted tubes of up to 1mm extending from just above the base of a deep concrete tank to adjust below surface of the waste water.

For Diffused aeration, wastewater is run into deep tank with diffuser grid aeration that are attached to the floor these are like diffused air stones used in tropical fish tank but on larger scales, air is pumped through the blocks and curtain of bubbles formed which oxygenate the wastewater and also provide the necessary mixing action.

Bioreactor and final clarifier involve air or oxygen being introduced into mixture of screened and primary treated industrial waste water combined with organisms to develop biological floc which reduces organic content of the sewage.

This consist of brown floc largely composed of saprotrophic bacteria but also has an important protozoan flora component mainly composed of amoebae spirotichs peritichs including vorticellids and a range of other filter feeding species.



An illustration of activated sludge process.

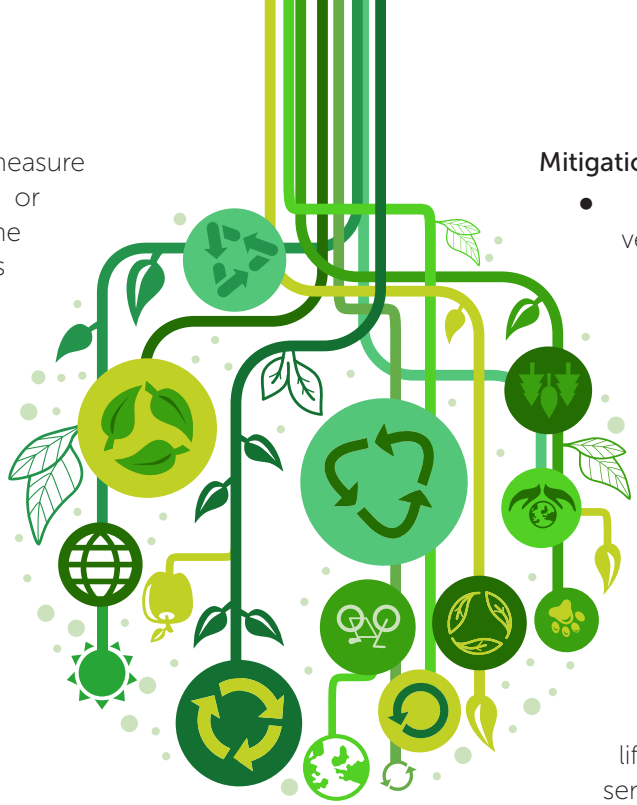
Impact Mitigation and Management Measures

Impact Mitigation Plan

The negative impacts of the project such as Loss of vegetation and destruction of habitats and biodiversity, air pollution and solid waste were identified. Mitigation measures and enhancement mechanisms are discussed below. The overall goal is to ensure adherence to laws and regulations governing environmental management to ensure sustainability. Public outreach and awareness as well as sensitization to enhance long term sustainability of environmental conditions as well as environmental goods and services will be important aspects of the mitigation plans. The overall objective of environmental and social monitoring is to ensure that mitigation measures are implemented and are effective. Environmental monitoring also enables response to new and developing issues of concern during the project implementation to ensure that project activities comply with and adhere to environmental provisions.

This section assesses and proposes adequate mitigation measures for implementation. The proposed mitigation measures have monitoring indicators to assess the level of implementation and

adequacy of the mitigation measure to address the identified or the anticipated impact. The objective of this section is to provide a time bound program covering implementation of proposed environmental mitigation measures and subsequent monitoring of the emerging environmental issues during the progress of the project.



Loss of vegetation and destruction of habitats and biodiversity:

There was anticipated increase in clearing of vegetation, destruction of natural habitats and loss of biodiversity during the development phase of the project for construction works

Mitigation: To mitigate against these:

i) where possible, the clearing of vegetation, particularly of indigenous trees needs to be avoided as much as possible during construction, and the clearing needs to be carried out only where necessary;

ii) where clearing was done, land should be landscaped and reclaimed by planting more trees and other forms of vegetation;

iii) Avoid clearing and construction within key sensitive habitats such as wetlands, culturally protected areas, unique and special habitats; and

iv) Where possible, buffer the special, sensitive and ecologically important habitats, particularly during the infrastructure designing.

Air pollution

Air pollution is a mixture of solid particles and gases in the air. It is expected that during construction of this project dust particles and gases due were generated due to vehicle emissions, chemicals from asphalt plant and dust may be suspended as particles. Emissions of air pollutants occur from a wide variety of activities like construction and operation. These activities are categorized based on the spatial characteristic of the source including point sources, fugitive sources and mobile sources

Mitigation measures

- Regular servicing of vehicles, trucks and machinery to minimize exhumation of fumes from un-fully combusted fuels.
- Sprinkling of all the work sites with water to minimize dust emissions.
- Regular monitoring of air quality (both gases and particular) levels through-out the project's implementation lifecycle especially at the sensitive receptors

Impacts of solid waste

A considerable amount and different type of solid waste is generated during the project works.

Mitigation measures

- Before construction, a solid waste control procedure (storage, provision of bins, site clean-up schedule, bin clean-out schedule, etc.) must be prepared by Contractors and it must be carefully followed during construction activities.
- Measures must be taken to reduce the potential for litter and negligent behaviour with regard to the disposal of all refuse.
- Recyclable materials such as wooden plates for trench works, steel, scaffolding material, site holding, packaging material, etc. must be collected and separated on-site from other waste sources for reuse, for use as fill, or for sale.

Hazardous wastes

Mitigation measures

- The removal of asbestos-containing materials or other toxic substances must be performed and disposed of by specially trained and certified workers.
- Used oil and grease must be removed from site and sold to an approved used oil recycling company.
- Used oil, lubricants, cleaning materials, etc. from the maintenance of vehicles and machinery must be collected in holding tanks and removed from site by a specialized oil recycling company.

Water
– at the Center of the Climate Crisis

By Eng. Ceaser Kisa Wakiibi and Patience Biira

Climate change is exacerbating both water scarcity and water-related hazards as rising temperatures disrupt precipitation patterns and the entire water cycle. In recent years, the increasing impacts of climate change have become impossible to ignore.

While the effects of climate change are multifaceted, one crucial element stands out as both a victim and a driver of this crisis: water.

Water, the very essence of life, plays a pivotal role in regulating the Earth's climate systems. However, the balance is shifting due to the changing climate patterns, resulting in a multitude of challenges that threaten ecosystems, communities, and our own well-being.

Water Scarcity:

One of the most significant consequences of the climate crisis is the growing issue of water scarcity. As temperatures rise and precipitation patterns change, many regions around the world are experiencing prolonged droughts, reduced river flows, and shrinking water supplies. This scarcity not only affects drinking water availability but also impacts agriculture, leading to crop failures, food insecurity, and displacement of communities.

Only 0.5 per cent of water on Earth is useable and available freshwater – and climate change is dangerously affecting that supply. Over the past twenty years, terrestrial water storage – including soil moisture, snow and ice – has dropped at a rate of 1 cm per year, with major ramifications for water security (WMO)

According to the United Nations, about 2.2 billion people live in areas facing a scarcity of freshwater resources, and this number is projected to rise rapidly if we fail to address climate change effectively.

Extreme Weather Events:

The climate crisis intensifies the occurrence and severity of extreme weather events, such as floods and droughts.

These events not only disrupt ecosystems but also pose a significant threat to public safety and infrastructure, including water supply systems. Flooding and water contamination become more common, leading to increased health risks, including the spread of waterborne diseases.

Feedback Loops:

As water plays a fundamental role in regulating our climate, the alterations caused by the climate crisis can trigger dangerous feedback loops. For instance, melting ice caps reduce the Earth's capacity to reflect sunlight, leading to more absorption of heat and further acceleration of global warming. Similarly, deforestation, driven by rising temperatures, reduces water retention capacity, exacerbating the impact of droughts and contributing to climate change.

Solutions to the Water-Climate Crisis:

Remember, conservation starts with you!

Addressing the water-climate crisis requires global cooperation, immediate action, and sustainable approaches:

1. **Education and Awareness:** Promoting awareness about the interconnections between water and the climate crisis is vital. Education initiatives can empower individuals and communities to adopt sustainable practices, advocate for policy changes, and make informed decisions that contribute to water conservation and climate change mitigation efforts.
2. **Water Conservation:** Implementing efficient water management practices, both at the individual and community levels, can help conserve water resources. This includes promoting water-saving technologies, responsible agricultural practices, and recycling wastewater for non-potable uses.
3. **Enhancing Water Infrastructure:** Investing in resilient water infrastructure can help communities adapt to the changing climate. Building stronger flood defences, improving water storage and distribution systems, and implementing advanced forecasting and monitoring technologies are crucial steps towards mitigating the impact of extreme weather events.
4. **Reducing Emissions:** We must prioritize decarbonisation efforts to reduce greenhouse gas emissions. Transitioning to renewable energy sources, promoting energy-efficient practices, and embracing sustainable transportation methods are vital steps toward mitigating climate change and its impact on water resources.
5. **Protecting Ecosystems:** Preserving and restoring natural ecosystems, such as wetlands and forests, is vital for maintaining water quality, regulating water cycles, and mitigating climate change. These ecosystems serve as natural barriers against flooding, store carbon, and provide habitats for biodiversity.

Water lies at the heart of the climate crisis, both as a victim and a driver of the changing climate patterns. By recognizing this relationship and implementing comprehensive measures, we can safeguard our water resources, protect vulnerable communities, and work towards a more sustainable future.

Together, we have the power to make a difference and ensure that water remains a source of life and not a casualty of climate change.

Stay informed, take action, and pave the way for a healthier planet!

CAN AFRICA LEAPFROG FROM MECHANICAL VEHICLE TO THE ELECTRIC VEHICLE?

By the Late Eng. Frank Magoba

Figure 1: Electrical Vehicle on display at the Renewable Energy Conference, Speke Resort, November 2022

Last year, the Ministry of Energy and Mineral Development held its annual Renewable Energy conference from 3rd to 5th November 2022 at Speke Resort Munyonyo.

At the conference, Total Energies showcased an electric vehicle. The vehicle is a Nissan and it is 100% an electric vehicle. It uses electricity to power the engine. Total Energies has partnered with Nissan to supply this vehicle to the Ugandan market. Total Energies plans to provide charging stations at 200 Fuel stations distributed across the country.

The vehicle can be charged at a fuel station for 45 minutes. It has a home charger that takes 4 hours to charge. When fully charged it travels for 240km.

This is the first aggressive plan to make electric vehicles mainstream. I personally applaud Total Energies for this bold move. Electric vehicles is the future of automobile industry. The question has always been how will this technology cross into Africa. Total Energies bold plan is a big breakthrough for the Ugandan market. Many enthusiasts now have hope that electric motor vehicles have a chance to be a viable alternative to fossil fueled vehicles in Africa.

The vehicle goes for UGX:300 million. This is equivalent to USD 78,000. It is a small 5-seater Sedan. I suggest that companies that use small sedans for moving staff across the country have a viable option in this electric vehicle.

As I reflected on the possibility of Uganda and Africa in general going electric vehicle. I thought of a similar situation about twenty-seven years ago. As an engineering student, I remember sitting in a telecommunications class and we discussed the gap of access of telephony between the west and Africa particularly Uganda. As engineering students, we could not fathom how Uganda would catch up with the developed countries in terms of getting telephones in Uganda.

It was an impossible feat to reach the connectivity ratios of the western world. How would we get a telephone into households in the developing world? In Uganda there were less than two hundred thousand telephone lines in the country.

To double the number of telephones alone was a gigantic task. Considering the amount of copper cable that would need to be laid. There was no infrastructure for it. In terms of tunnels to run the copper cable. Copper prices themselves were shooting up every day. It had taken several decades to attain the the two hundred thousand telephone lines. One would easily surrender. It was the sober thing to do.

In November 2022, I read an interview in the local daily where the outgoing CEO of MTN, one of telecommunication companies mentioned one of his achievements as having attained Fifteen million subscribers. This was quite an achievement given that twenty-seven years ago we had under two hundred thousand telephone lines in the entire country.

Then I contemplated the benefit of the electric vehicle and its impact in Africa. I looked at what the increase in fuel prices have caused many car drivers to abandon driving altogether or reduced driving. Major traffic choke points on the streets of Kampala are clear at windows they were characteristic of traffic. There are junctions that I took a minimum of half an hour to drive through due to traffic. Of late, I drive through them in a few minutes. Driving in the city is a joy because of this. The reason why cars are off the roads is because of the fuel escalations.

Diesel in January, 2022 was going for UGX: 4,000 a liter. It is now going for UGX 5050 a liter. Having reached a peak of UGX 6500 in 2022. That was an over 50% increase in the cost of diesel.

Sometime last year, I spoke to a boda boda (motorcycle) driver. I asked him why he is still using a petrol motorcycle when there is an electrical one. He said that the electric motorcycle covers a short distance. He said he cannot travel to his home district and back on an electric motorcycle a journey of approximately three hundred kilometers. The reason for this is that electric motorcycle charging stations are not distributed across the country.

When I reminisced where we were on telephone connectivity in the nineties. I could see that it is possible to have as many electric charging stations in the country as fuel stations. The fact that one of the leading oil companies with over two hundred fuel stations was promoting the electric vehicle. I saw that the lack of electric charging stations, the boda boda rider was complaining about can easily be changed.

It could be done by the fuel stations themselves and also by interesting people to buy electric vehicle charging stations across the country.

The electric vehicle can be just like the cell phone bailed out Africa's connectivity chances. The advantages of electric vehicles are quite enormous. They use electrical energy that is a cleaner fuel in terms of carbon foot print as compared to mechanical vehicles that use fossil fuels, they bring about a number of advantages include reduction in noise, and less dependency on imported fuel. In Uganda, we currently have an electrical energy surplus.

There are so many motor cycles in the country and I believe if we choose to get all motor cycles a significant portion on to electric power that will be a good starting point of converting Uganda onto electric vehicle. The challenge that needs to be overcome is the distribution of charging stations across the country. We need to get charging stations across the country. Right now, charging stations are only in a few places in the city.

Once the motor cycles are converted, the journey shall begin for converting cars to electric vehicles.

UACE MEMBERS' DIRECTORY

ADRIAX CONSULTS SMC LIMITED – CLASS A

Plot 49, Ntinda Road. ROVIS Apartments Suite D4 | P.O. Box 70182, Kampala
Tel: +256 393 256 386/ +256 774 760 943 | Email: consultadriax@gmail.com
Contact person: Eng. Tom Kisubi

Areas of practice

- Consultancy Engineering Services with Civil, Mechanical, Electrical and Water engineering
- Construction Supervision
- Project Planning and Management
- Feasibility studies
- Geotechnical Assessment of Ground Condition for Foundation designs
- Resettlement and Action Planning and Implementation
- Environmental and Social Impact Assessment
- Scientific Research and Development

AIR WATER EARTH LTD - CLASS A

Plot 27 Binayomba Road, Bugolobi, Kampala | P.O Box 22428, Kampala
Tel: +256 414 268 466 | Email: mail@awe-engineers.com | www.awe-engineers.com
Contact person: Dr. Ronald Musenze

AIR WATER EARTH (AWE) LTD
Civil, Environmental Engineering & Project Management Consultant

Areas of practice

- Road/Highway design
- Civil/Structural engineering design
- CDM/Carbon audits
- Oil & gas services
- Cleaner production
- Noise and air pollution
- Environmental monitoring, testing and analysis
- Occupation health and safety
- Pollution control equipment
- Solid waste, water & sanitation
- EIA & Environmental audits and site remediation

ALINEA (U) SMC LIMITED – CLASS B

Plot 49, suite C-7, Rovis Apartments Ntinda Road | P.O. Box 132466 Kampala, Uganda
Tel: 0772933814, 0701717509 | Email: alineaugandalimited@gmal.com
Contact person: Eng. Ronald Daniel Okello

Areas of practice

- Detailed and process designs
- Infrastructure Engineering Design
- Feasibility studies
- Preliminary and final design
- Site supervision and Treatment process design
- Construction project Management
- Construction supervision
- Detailed geometric design

ASENSE SERVICES LIMITED – CLASS A

Plot 128 Old Kira Road, Kamure Park building, Room 304 | P.O. Box 8761 Kampala
Tel: +256 393 151571/ +256 776 568 426 | Email: asense.services@gmail.com
Contact person: Dr. Eng. Jotham Ivan Sempewo

Areas of practice

- Water supply management
- Urban Infrastructure systems
- Irrigations and environmental systems planning & management
- Management research, training and capacity building engineering
- Decision support systems development
- Environmental management

UACE MEMBERS' DIRECTORY

ASHOK CONSULT LIMITED (ASHOK) – CLASS A

Plot 32 Kanjokya Street, Lower Kololo, 1st Floor MUG ONE House | P.O. Box 23931, Kampala
Tel: +256 777 913 831, +256 772 402 891, +256 772 859 396, +256 772 418 954
E-mail: ashokconsultltd@gmail.com/ info@ashokconsult.com
Contact person: Eng. Augustine Mugisa Obyero

Areas of practice

- Pre-Feasibility and Feasibility Studies
- Detailed Engineering Designs
- Construction Supervision
- Engineering Technical Audits
- Capacity Building and Training Programs

ASSOCIATED ENGINEERING SERVICES (AES) – CLASS B

Munyonyo | P.O. Box 23931, Kampala
Tel: +256 772 461 012 / 256 703 009 210 | Email: stephenkawuma25@gmail.com
Contact person: Eng. Kawuma Stephen

Areas of practice

- Structural Engineering \design
- Civil/ Structural engineering design- Roads and Bridges Supervision
- Project planning and management
- Feasibility studies
- Geotechnical Assessment of Ground Condition for Foundation designs

ARMSTRONG CONSULTING ENGINEERS LTD – CLASS B

Plot 13-14 Kataza Close - Bugolobi, Maria House, 3rd Floor | Tel: +256 772 120 836
Email: armstrong@armstrong.co.ug | www.armstrong.co.ug
Contact person: Eng. Kenneth Magembe

Areas of practice

- Structural Engineering – (design, documentation and supervision) of reinforced, pre-stressed concrete, steel, masonry, prefabricated, composite and timber structures
- Bridges and Dams Structural Engineering
- Geotechnical Engineering
- Foundation analysis and Design
- Grading and other soil improvement methods
- Slope stability analysis including that for earthquakes
- Deep foundations and designs
- Retaining and Flood walls, sub-surface investigations
- Underpinning Piling

ASTER INTEGRAL PRIVATE LIMITED (ASTER INTEGRAL) - CLASS B

2nd Floor, Bulindo Plaza, Plot 1951 Kira-Bulindo Road, Kira Municipality
P.O Box 35468, Kampala Uganda | Tel: +256 414 255 672 Mob: +256 784 009 487
Email: wycliff.jagwe@aster-integral.com / wjagwe@gmail.com | www.aster-integral.com
Contact person: Eng. Wycliff Jagwe

Areas of practice

- Power Generation (Solar, Hydro, Biomass, Diesel Generators)
- Power Transmission (HV-Transmission lines and substations)
- Power Distribution (MV/LV power lines and Rural Electrification)
- Mini-grid systems
- Piped water supply schemes
- Solar Water Pumping schemes
- Hydrogeological investigations, siting of wells and production wells
- Environment and social impacts assessments
- Environment audits
- Resettlement Action plans
- Feasibility studies
- Project planning and management
- Tender and contract documentation
- Construction supervision and management
- Engineering audits
- Geological studies
- Land surveying and topographic surveys

UACE MEMBERS' DIRECTORY

ATRO ENGINEERING AND MANAGEMENT – CLASS A

Plot 14, Mackenzie Vale road, Kololo | P.O. Box 132774 Kampala | Tel: 0417 117100
Email: info@atro-em.com | www.atro-em.com
Contact person: Eng. Ronald A. Athiyo

Areas of practice

- Advisory services
- Infrastructure Engineering design
- Feasibility studies
- Preliminary design
- Site supervision
- Construction Project management
- Construction supervision
- Detailed geometric design
- Storm water infrastructure
- Contract documentation

CENTRE FOR INFRASTRUCTURE CONSULTING LIMITED – CLASS A

1st Floor, Wildlife Tower, Plot 31 Kanjokya Street, Kololo | P.O. Box 240, Ntinda Kampala Uganda
Tel: +256 414 599 095 / +256 414 672 466 | Mob: +256 705 341 782
Email: info@cic.co.ug | www.cic.co.ug | Contact person: Eng. Jjingo Kizito

Areas of practice

- Energy and climate change services
- Planning and Design of water services
- Design and rehabilitation of civil engineering structure
- Traffic and transportation engineering
- Design and Rehabilitation of road works, parking facilities and runways
- District, town council / urban Centre services
- Drainage design
- Surveys, site investigations, materials and geotechnical investigations
- Management services

CREEK CONSULT LTD – CLASS B

Plot 1499 Lubowa Estate | P.O. Box 26600 Kampala | Tel: +256 414 572 021
Fax: +256 414 572 021 | Email: info@creekconsult.com
Contact person: Eng. Patrick Rusongoza

Areas of practice

- Technical Audits / Value for Money Assessments for on-going and completed infrastructure projects;
- Project / Program Reviews (both Mid-Term and End-Term Evaluations)
- People Advisory Services (Training in Engineering audit for non-engineering personnel such as financial accountants)
- Conducting Technical Evaluation of bids and tenders
- Undertaking Administrative Reviews on behalf of Procurement bodies
- Job evaluations, recruitment of personnel, development, review of HR Manuals etc.).
- Local Governance Capacity assessments, training / mentoring.

EMSULT ENGINEERS LTD – CLASS B

Plot 2129 Moyo Close, Bukoto | P.O. Box 11915, Kampala, Uganda | Tel: +256 392 599 200/74
Email: info@emsult.com | www.emsult.com | Contact person: Eng. Nelson Mukwaya

Areas of practice

- Energy consultancy
- Electrical engineering consultancy
- Power distribution and supply systems
- Access control, alarm and lightening protection systems
- Solar systems
- Audio-visual and Voice and data systems
- Mechanical engineering consultancy
- Air conditioning, gas supply and fire-fighting systems Lifts, hoists and escalators

ENG. BALIREMWA NOVATI MUKAJANGA - INDIVIDUAL

P.O. Box 1134,Masaka Uganda | Tel: +256 772 / 752 646 883 | Email: baliremwa@yahoo.com

Areas of practice

- Structures and buildings - design and construction supervision
- Projects supervision and management
- Technical and value for money auditing
- Mentorship and training of trainee engineering students
- Waste water management

UACE MEMBERS' DIRECTORY

ENG. CEASER KISA WAKIIBI - INDIVIDUAL

P.O. Box 159081 | Tel: +256 700 570 090
Email address: ceasarkisa@gmail.com

Areas of practice

- Design engineering
- Project management
- Water resources expert
- Data analysis

ENG. DENNIS ADROLE - INDIVIDUAL

P.O. Box 349, Entebbe Uganda | Tel: +256 772 490 773 | Email: denadson@yahoo.com

Areas of practice

- Geotechnical, materials and soil investigations
- Quality assurance
- Project management
- Road and bridge engineering

ENG. EDGAR JJEMBE TEFIRO – INDIVIDUAL

P.O. Box 22428 Kampala, Uganda | Tel: 0706050190
Email: edgarjjembe@gmail.com

Areas of practice

- Project formulation
- Design and implementation
- Public procurement
- Contract administration
- Construction supervision

ENG. FREDRICK LWANGA - INDIVIDUAL

Plot 2 Bandali close, Bugolobi, P.O. Box 6583, Kampala, Uganda | Tel: 0776 365 678
Email: fred.lwanga@kaggapartners.com

Areas of practice

- Project coordination and management
- Contract management
- Overall supervision of construction works
- Quality assurance

ENG. GLORIA KEMIGISHA MWEBAZA - INDIVIDUAL

Naalya | Tel: 0776 678 002
Email: gloriakemisha@gmail.com

Areas of practice

- Structural engineering design
- Project management
- Supervision of multi – storey buildings
- Geotechnical investigations for foundation designs

ENG. IVAN KATAMBA - INDIVIDUAL

P.O. Box 17042, Kampala Uganda | Tel: +256 785 202 250 / 0755 494 763
Email: ikatamba@botvinnik.co.ug

Areas of practice

- Project formulation, design and implementation of Civil Engineering projects
- Public procurement and use of computer aided tools to achieve specific goals

ENG. NSIMBE JOSEPH - INDIVIDUAL

P.O. Box 10666, Kampala Uganda | Tel: +256 787 727 240 | Email: jnsimbe@gmail.com

Areas of practice

- Project management and supervision
- Contract administration/management
- Transportation engineering and design
- Procurement/tender preparation
- Infrastructure inventories and condition assessments
- Mentorship and trainings for engineering students, graduate engineers and technicians.

UACE MEMBERS' DIRECTORY

ENG. PETER J. MAGAMBO – INDIVIDUAL

Plot 2 Bandali Rise, Bugolobi | P. O. Box 6583, Kampala Uganda | Tel: +256 414 220 279
Mob: +256 782 961 487 | Email: p.magambo@kaggapartners.com | www.kaggapartners.com

Areas of practice

- Urban and Rural Water Supply
- Water Resource Management
- Roads – trunk, urban and rural
- Hydro-power Generation and Water for Production Dams
- Power transmission and distribution lines
- Storm Water Drainage
- Waste Water Management
- Solid Waste Management
- Structural and Foundation engineering
- Institutional Building Structures
- Infrastructure for housing and industrial estates
- Institutional strengthening and restructuring
- Technical Auditing
- Policy and Guidelines formulation
- Claims review and determination
- Adjudication
- Arbitration

FBW UGANDA LIMITED – CLASS A

Plot 1834 White House Close, Muyenga | P.O Box 24843, Kampala Uganda
Tel: +256 393 260 138 / +256 772 508 462 | Email: j.debuni@fbwgroup.com
www.fbwgroup.com | Contact person: Eng. Joseph Debuni

Areas of practice

- Surveying
- Architectural services
- Engineering services
- Project management
- Telecommunication
- Consultancy services

FENCON CONSULTING ENGINEERS LTD – CLASS A

Bible House | P.O Box 24922, Kampala Uganda
Tel: +256 414 660 228/ 0392002374, Mob: +256 772 988 313 | Email: info@fenconconsulting.com
www.fenconconsulting.com | Contact person: Eng. G.B Fataki

Areas of practice

- Architecture and engineering design and construction supervision.
- Project management and advisory services
- Quantity and land surveying
- Physical planning and development - master planning
- Water supply system design, wastewater management sanitation engineering
- Tendering and procurement services
- Environmental studies and management
- Real estate development
- Roads and bridges
- High ways and transportation

GAUFF CONSULTANTS (U) LTD – CLASS A

Plot 53, Upper Kololo Terrace | P. O. Box 201, Kampala Uganda | Tel: +256 414 236 798 / +256 312 266 799 | Fax: +256 414 259 508 | Email: jbgkla@starcom.co.ug |
www.gauff.com/uganda / www.gauff.co.ug | Contact person: Eng. Emmanuel Mugamba

Areas of practice

- Transport, Roads and Railways
- Water Supply and Sanitation
- Town and Regional Planning
- Agriculture and Rural Development
- Environment and Industrial engineering
- Architectural design
- Signaling and Telecommunication

UACE MEMBERS' DIRECTORY

GUMAK ASSOCIATES COMPANY LTD – CLASS B

Wildlife Tower, Kanjokya street | P.O. Box 520105, Luzira | Tel: +256 393 225 465
Email: gumak@gumakassociates.com | Contact person: Eng. Gloria Kibera Guma

Areas of practice

- Co-ordination of geotechnical investigation and interpretation of results.
- Design modelling for seismic and wind analysis for all structures
- Design of pavement and storm water structures for roads & parking and roof building drainage systems
- Preparation of structural/ civil design reports
- Value engineering of structural/ civil designs
- Preparation of bar bending schedules
- Civil and structural engineering and preparation of drawings
- Site supervision of construction
- Quality control of civil and structural engineering components
- Preparation of As-built drawings

ICS INFRASTRUCTURE LIMITED – CLASS A

Plot 3 Portal Avenue, 2nd Floor Crusader House | P. O. Box 10591, Kampala Uganda
Tel: +256 414 343 045 / +256 312 263 319 Mob: +256 772 542 248
Email: andrew.kasekende@icsglobal.com, info@icsglobal.com | www.icsglobal.com
Contact person: Andrew Kasekende

Areas of practice

- Preliminary Investigations
- Institutional development
- Road sector policy development
- Procurement
- Socio-Economic evaluation
- Feasibility studies
- Development planning
- Quality assurance
- Preparation of Contract Documents
- Project management
- Construction supervision
- Contract administration
- Maintenance planning
- Maintenance management
- Technical assistance / advisory training

IMK ENGINEERING COMPANY LTD – CLASS B

Plot 66 Valley Drive, Minister's Village, Ntinda | P.O. Box 16587 Kampala, Uganda
Tel: 0392 178 089 Mob: +256 782 793 581 I +256 782 885 759 | Email: imkeng.ltd@gmail.com
www.imkeng.ug | Contact person: Eng. Samuel Isoke

Areas of practice

- Building Services Engineering
- Energy Systems
- Information & Communication Technology
- Project Management

INFRASTRUCTURE PROJECTS LIMITED (IPL) – CLASS A

2nd Floor, Eseza House, UMA Show Grounds, Lugogo | P.O Box 33224, Kampala Uganda
Tel: +256 312 515 262 / +256 312 262 728 Mob: +256 772 509 885 | Email: info@ipluganda.com
www.ipluganda.com | Contact person: Eng. Caleb Tugumisirize

Areas of practice

- Structural engineering
- Civil engineering
- Bridges
- Geotechnical investigations
- Materials testing
- Project planning and management
- Tender and contract documentation
- Construction supervision and management
- Engineering audits

UACE MEMBERS' DIRECTORY

INTERFACE CONSULTING LTD – CLASS A

Plot 64 Kanjokya Street, Kololo | P.O. Box 24701 Kampala, Uganda
Tel: +256 393 262 434 | Mobile: +256 772 748 308 | Email: victormale@interface.co.ug; interface@interface.co.ug | www.interface.co.ug | Contact person: Eng. Victor Male

Areas of practice

- Water supply and sanitation infrastructure development (urban and rural)
- Market infrastructure development
- Hydropower infrastructure maintenance
- Infrastructure programme review development and management
- Institutional development and capacity building (for relevant sector agencies)

KAGGA & PARTNERS LTD – CLASS A

Plot 2 Bandali Rise, Bugolobi | P. O. Box 6583, Kampala Uganda | Tel: +256 414 220 279 | Business Fax: +256 414 220 208 | Mobile: +256 782 961 487 | Email: mail@kaggapartners.com www.kaggapartners.com | Contact person: Eng. Peter Magambo

Areas of practice

- Urban and Rural Water Supply
- Water Resource Management
- Hydro-power Generation and Irrigation Dams
- Infrastructure for housing and industrial estates
- Waste Water Management
- Solid Waste Management
- Roads - trunk, urban and rural
- Structural and Foundation engineering
- Institutional strengthening and restructuring

KAIZEN AFRICA LIMITED – CLASS B

Uganda Bankers' Association Building, Nyangweso Road, Muyenga
P.O Box 35177 Kampala, Uganda | Tel: +256-414-692406 | Mob: +256-779-544388
Email: frank@kaizenafrica.com | Contact Person: Mrs. Jalia Magoba

Areas of practice

- Operational excellence
- Engineering
- Sustainability
- Project management
- Research

KEA GROUP LIMITED – CLASS A

6th Floor Rumee Towers, Lumumba Avenue | P.O. Box 10337 Kampala Uganda
Tel: +256 200 906 213/ +256 393 254 580 | Mob: +256 773 212 021
Email: info@keagroup.net | Contact person: Eng. Ernest Kusiima

Areas of practice

- Project management
- Masterplans
- Feasibility studies
- Engineering Design
- Procurement
- Construction Supervision and O & M
- Geotechnical studies and investigations
- Topographic and cadastral surveys
- Environmental and Sociological studies
- Economic studies etc.

KKATT CONSULT LIMITED – CLASS B

KKATT HOUSE Plot 3301, Ggaba Road, (Opposite KIU), Kansanga | P. O. Box 25999 Kampala, Uganda | Tel: +256 414 690 800 / 0392 901 247 | Email: mail@kkattconsult.com www.kkattconsult.com | Contact person: Eng. Mary Rwaboona

Areas of practice

- Transportation Engineering
- Water Engineering
- Sanitation Engineering
- Power Engineering
- Oil and Gas
- Architectural and Structural Engineering
- Safeguards Management
- Engineering Investigations and Surveys
- Procurement, Financial and Technical Auditing
- Asset Management
- Project Management

UACE MEMBERS' DIRECTORY

KOM CONSULT LTD – CLASS A

Plot 7 Kome Crescent, Luzira, Kampala | P.O Box 40108 Kampala Uganda
Tel: +256 414 323 666 | Mobile: +256 772 468 356 | Email: info@komconsult.co.ug
www.komconsult.co.ug | Contact person: Eng. Betty Nakamya

Areas of practice

- Roads, highway structures and buildings
- Water supply and public health
- Environmental and social sciences
- Geo-technical and Hydrological engineering

MBW CONSULTING LIMITED – CLASS A

Plot 107 Kira Road | P. O. Box 8493, Kampala | Tel: +256 393 740 800 Mob: +256 701 740 800
Email: mbw@mbw.co.ug / mutenga@mbw.co.ug | www.mbw.co.ug
Contact person: Eng. Patrick Batumbya

Areas of practice

- Engineering Infrastructure Development
- Strategic planning
- Institutional Development and Capacity Building
- Social-Economic and Governance Studies
- Structural and Civil Design and Construction Supervision
- Energy Development and Environmental Impact Studies
- Water Supply System Design and Sanitation Engineering
- Highways and Transportation
- Project Management
- Environmental Engineering
- Master plan preparation for Infrastructure Development including Community
- Mobilization
- Management of Expectations in Infrastructure Development
- Project Formulation

MEIR ENGINEERING & RESEARCH LTD – CLASS A

No. C24, Plot 936, Victoria Loop, Luboowa | P.O. Box 3701, Kampala | Tel: +256 393 193 231
Mobile: +256 752 258 089 | Email: smugume@meir.co.ug | www.meir.co.ug
Contact person: Eng. Dr. Seith Mugume

Areas of practice

- Water resources and hydraulic engineering
- Urban water management
- Drainage & flood risk management
- Dams & hydropower engineering
- Waste & wastewater treatment process design
- Structural / bridge and transportation engineering

M & E ASSOCIATES LTD – CLASS A

Rofra House, 2nd Floor | Ggaba Road, Kansanga | P.O. Box 4052, Kampala
Tel: +256 392 175 604 | Business Fax: +256 772 746 371 | Email: meassoc@meassocs.com
www.meassocs.com | Contact person: Eng. Ssentongo Samuel

Areas of practice

- Electrical Engineering (Building Services - Electrical Installations, Fire Alarms, Security Alarms, Communication Systems, Computer Networks, Audio and Visual Systems etc.)
- Water Resources and Environmental Engineering
- Mechanical Engineering (domestic, Industrial, Institutional and Commercial (Air conditioning, Ventilation, Refrigeration, Plumbing, Drainage systems, Water supply, Firefighting, Lifts, and Kitchen equipment and all related services).
- Civil and Structural engineering

UACE MEMBERS' DIRECTORY

MULTI-KONSULTS LIMITED – CLASS A

Plot 29 Clement Hill Road | P. O. Box 5390, Kampala Uganda
Tel: +256 414 341 321 / +256 414 232 836 Mob: +256 772 741 321
Email: mkvolts@imul.com, multikonsults@multikonsults.com | www.multikonsults.com
Contact person: Eng. Stephen Kangwamu

Areas of practice

- Electrical and Mechanical Engineering
- Building Services
- Energy Studies
- Agriculture Schemes
- Environment Studies
- Electric Power Systems
- Planning and Load Studies

MULTIPLAN CONSULTING ENGINEERS – CLASS B

Plot 668 Block 8, Kamanya road Mackay zone - Mengo | P. O. Box 12557, Kampala Uganda
Tel: +256 414 596 624 | Mobile: +256 772 406 291 | Email: multiplan@utlonline.co.ug
www.multiplanug.net | Contact person: Eng. Albert Muloiti

Areas of practice

- Water Supply
- Roads and Infrastructure
- Bridges and Structures
- Sewerage and Waste Water Treatment

NEK CONSULTS LTD – CLASS A

Suite B5, Block 2, HHCC Wandegeya | P.O. Box 23949 Kampala, Uganda
Tel: 0752 740 664 / 0759 222 229 | Email: nek@nekconsults.co.ug / ndawula@ieee.org
www.nekconsults.co.ug | Contact person: Eng. Edward Mike Ndawula

Areas of practice

- Feasibility studies
- Engineering designs
- Preparation of tender documents
- Contract management
- Geo- technical surveys
- Hydrological surveys
- Project monitoring and evaluation
- Environmental Impact Assessment

PRAUS CONSULTING ENGINEERS LTD – CLASS B

Plot 90 Kanjokya Street, Kamwokya. Ground Floor - Kanjokya House | P. O. Box 7471 Kampala
Tel: +256 414 672 549 | Email: mbegumisa@gmail.com
Contact person: Eng. Musinguzi Begumisa

Areas of practice

- Architectural and structural designs for buildings
- Training and Capacity Building for Engineers
- Project Planning and Management
- Public Infrastructure Management
- Surveying and GIS mapping
- Project Cost Control and Management
- Building Information Modeling (BIM)

PROESS LTD – CLASS B

Nosep House Plot 104 – Semawata Rd | P. O. Box 9363, Kampala, Uganda
Tel: +256 392 178 690 | Mobile: +256 782 819 688 | Email: info@proess.ug
Contact person: Eng. Daka Michael

Areas of practice

- Feasibility studies and detailed engineering design
- Tender administration
- Contract management
- Resettlement action planning
- Environment and social impact assessment
- Dispute avoidance and resolution
- Geotechnical and material investigations
- Internal bid evaluations
- Training in occupational health and safety
- Survey works (topographical surveys, cadastral survey, engineering surveying, hydrographic surveying, etc.)
- Independent parallel bid evaluations
- Technical staff recruitment
- Quality assurance
- Project and programme reviews
- Technical auditing

UACE MEMBERS' DIRECTORY

PROFESSIONAL ENGINEERING CONSULTANTS LTD – CLASS A

Plot 9 Makajja Close (off Ntinda II Road), Naguru | P. O. Box 9529, Kampala, Uganda
Tel: +256 393 513 038 or +256 393 513 019 | Email: pec@pec.co.ug or pecuganda@gmail.com
www.pec.co.ug | Contact person: Mr. Bonnie Kalanzi Nsambu

Areas of practice

- Transport Engineering
- Water and waste water engineering
- Geotechnical and materials engineering
- Surveying, mapping and GIS
- Environmental engineering
- Structural engineering

PROMAN CONSULT LTD – CLASS A

Plot 1B, Kalamu house, PKF building, 2nd floor | P. O. Box 7810, Kampala, Uganda
Tel: +256 392 778 211 Mob: +256 772 778 211 | Email: proman@proman.co.ug OR
jmuchiri@proman.co.ug | www.proman.co.ug | Contact person: Eng. John Muchiri

Areas of practice

- Project development and management
- Project design and management
- Construction supervision
- Feasibility and economic studies
- Provision of professional engineering advice
- Planning studies

PROME CONSULTANTS LIMITED – CLASS A

Innovations House, Plot 7B Acacia Avenue | P. O. Box 24934, Kampala Uganda
Tel: +256 414 345543/4 | Email: prome@promeconsult.com | www.promeconsult.com
Contact person: Eng. Ronald Kibuuka

Areas of practice

- Project Development and Management
- Project Management
- Water Supply and Sanitation Engineering
- Highways Engineering
- Civil and Structural Engineering
- Transportation Planning and Designing
- Electrical and Mechanical Industrial Engineering
- Quality Assurance
- Environmental Engineering
- Geotechnical Engineering
- Surveying and Mapping
- Institutional and Individual Industrial Capacity Development

QUEENSLAND & LEEDS CONSULTING ENGINEERS LTD – CLASS A

Plot 3628 Namugongo Model Road, Kira | P.O. Box 123083, Kampala, Uganda
Tel: +256 414 672 209 | Mobile: +256 782 580 480 | Email: mail@QL-engineers.com
www.QL-engineers.com | Contact person: Dr. Eng. Lammeck Kajubi

Areas of practice

- Water & Sanitation
- Environment & Sustainability
- Transport & Infrastructure
- Social Development
- Energy & Climate Health
- Architecture and Green Design

SABA ENGINEERING PLC – CLASS A

Muyenga, building 8249, Block 244 Kironde road | P. O. Box 21321 Kampala
Tel: 0745 907 771 | Email: info@sabaeng.com | Contact person: Eng. Tedros Teklehaymanot

Areas of practice

- Soils and materials testing
- Consultation services
- Design and supervision services
- Construction
- Feasibility studies and Geotechnical Investigations
- Tender document preparation of roads
- Design review and construction supervision of roads and airports
- Water supply and Irrigation projects

UACE MEMBERS' DIRECTORY

SAGALA BWANIKA ENGINEERING CO. LTD – CLASS B

Plot 247 Rubaga road | P.O. Box 1201616 Kampala
Tel: 0777 313 967, 0772 710 346 | Email: paul.sagala@sbe.co.ug
Contact person: Eng. Paul Sagala Sekikubo

Areas of practice

- Electrical engineering and energy services
- Mechanical and industrial engineering
- Feasibility studies
- Management science and operations research
- Consultation services
- Design and supervision services
- Rehabilitation and refurbishment

SANDHBOLT LIMITED – CLASS B

Kira Bulindo Road, Mulawa mall room G10 | P.O. Box 116662 Kampala
Tel: 0779073615 | Email: info@sandhbolt.com | Contact person: Eng. Ronald Atwine

Areas of practice

- Civil and structural engineering
- Construction of civil works
- Telecommunication, mechanical and electrical engineering
- Architecture, Design and planning
- Project planning and management
- Highway engineering
- Water and sanitation engineering

SEGAMU 14 CONSULTS LTD – ASSOCIATE

Plot 2758, Odur Lane, Ntinda-Kigowa | P.O Box 36306, Kampala Uganda
Tel: +256 782 129 014 / +256 785 777 996 | Email: info@segamu14consults.co.ug, smusa@segamu14consults.co.ug | www.segamu14consults.co.ug
Contact person: Mr. Musa Ssegaabwe

Areas of practice

- Feasibility Studies
- Engineering Designs
- Architectural Designs
- Construction supervision
- Tender Assistance
- Monitoring and Evaluation
- Baseline Surveys
- Feasibility studies
- Detailed Design
- Construction Supervision
- Water Transmission Mains
- Water Sources Investigation and Sitting
- Tender Assessment
- Hydrological Studies
- Monitoring and Evaluation
- Baseline Study
- Environmental & Social Impact Assessment
- Environmental Audits
- Environmental Management and Monitoring Plans
- Monitoring and Compliance
- Occupational Health and Safety
- Strategic Environmental Assessment
- Resettlement Action Planning
- HIV/AIDS Awareness & Sensitization
- Monitoring and Evaluation
- Baseline Surveys
- Social Impact Assessments
- Social Research

SEKA ASSOCIATES CONSULTING ENGINEERS LIMITED – CLASS A

SURE House, Bombo Road | P. O. Box 1354, Kampala Uganda
Tel: +256 414 256 455 | Business Fax: +256 414 342 729 | Email: sekag@sekaassociates.com, seka@sekaassociates.com, jsenfuma@gmail.com | Contact person: Eng. John Senfuma

Areas of practice

- Project Management and Planning
- Civil and Structural Engineering
- Site and Service Schemes
- Highways and Transportation Engineering
- Water Supply and Waste Disposal
- Geotechnical Services
- Materials Testing
- Architectural, Quantity Surveying and Electrical Engineering (in close association with other firms)

UACE MEMBERS' DIRECTORY

TB3 GLOBAL LTD – CLASS A

Plot 5584-5586, Najjera - Kira Rd, 2nd Floor Suite 212 Uphill Mall, Kira Municipality
P.O Box 6780, Kampala Uganda | Tel: +256 783 102 941 | Mobile: +256 782 952 470
Email: table3ms@gmail.com | www.tb3.co.uk | Contact person: Eng. Michael Ojok

Areas of practice

- Institutional Development and capacity Building
- Social-economic and Governance studies
- Architectural, Structural and civil Design and Construction Supervision
- Energy Development and Environment Impact Studies
- Water supply system design and sanitation engineering
- Highways and transportation
- Project management
- Health, safety and environment engineering
- Master plan preparation for general infrastructure development including
- Management of expectations in infrastructure development
- Project Formulation
- Land surveying mapping
- Geotechnical surveys

TECHNOLOGY CONSULTS LIMITED – CLASS A

1st Floor, room 200 CEDAT Old Building, Makerere University | P. O. Box 26690, Kampala Uganda
Tel: +256 414 540 618 | Mobile: +256 776 399 385 | Email: techcons@teco.co.ug
www.teco.co.ug | Contact person: Eng. Peter Mugumya

Areas of practice

- Building Consultancy Services
- Land Surveying
- Information Technology
- Civil Works
- Expert Technical Services
- Project Management

TECTONI AFRICA LTD – ASSOCIATE

Plot 241, Lower Kauga | P.O. Box 150736 Mukono
Tel: 0786 030 538, 0764 201 917 | Email: info@tectoniafrica.com | www.tectoniafrica.com
Contact person: Jude Kizza

Areas of practice

- Geotechnical investigations and material testing
- Infrastructure planning and design
- Project management and Construction supervision
- Capacity surveys and mapping
- Consultancy

TRIO CONSULTANTS LIMITED - CLASS A

Namuwongo | P. O. Box 10256, Kampala Uganda
Tel: +256 414 664 242 | Mobile: +256 772 420 502
Email: info@trioconsultants.com | www.trioconsultants.com
Contact person: Eng. Dr. Jackson Mwakali

TRIO CONSULTANTS LTD.
Consulting Engineers and Planners

Areas of practice

- Development and management of road Building and water projects
- Training/capacity building
- Infrastructure Planning
- Feasibility studies
- Preliminary and detailed engineering designs
- Supervision of engineering works
- Geotechnical investigations
- Structural health monitoring
- Engineering surveys
- Forensic engineering
- Traffic studies
- Tender and procurement assistance

UACE MEMBERS' DIRECTORY

UB CONSULTING ENGINEERS LTD – CLASS A

Plot 3, Nasuuna lane, Masanafu, Lugala – Rubaga division | P. O. Box 22509, Kampala, Uganda
Tel: +256 200 908 255 or +256 772 748 380 | Email: ub@ubconsulting.co.ug |
www.ubconsulting.co.ug | Contact person: Eng. David Kaddu

Areas of practice

- Materials and Geo technical Engineering
- Structural & Bridge Engineering
- Highways Engineering
- Hydrology and Hydraulics
- Sociology

ZUTARI UGANDA LIMITED – CLASS A

3rd Floor C/O KTA ADVOCATES, Plot 9 Hannington Road | P.O Box 37366, Kampala Uganda
Tel: +256 751 550 010 | Email: joel.muteesa@zutari.com | www.zutari.com
Contact person: Joel Muteesa

Areas of practice

- Asset management
- Asset transformation
- Bridges and civil structures
- Building structures and Building services
- Strategic infrastructure advisory
- Water resources management
- Program and Project management
- Dams and Hydropower
- Roads, transport planning and ITS
- Rail and mass transit
- Airports and aviation
- Ground and pavement engineering
- Geospatial information
- Environment and climate resilience
- Food and beverage infrastructure
- Midstream and Downstream infrastructures
- Asset Digitization
- Water, waste, and industrial treatment
- Bulk conveyance and distribution
- Urban planning
- Creative technology and interactive technology

International Federation of Consulting Engineers
The Global Voice of Consulting Engineers

The Secretariat, Uganda Association of Consulting Engineers

Plot 17 Martyrs' Way, Ministers' Village, Ntinda
P.O. Box, 11750 Kampala.

+256 758 342 536

uace2013@gmail.com | info@uace.or.ug

www.uace.or.ug