THE ASIDI BRIEF

Helping to restore dignity in education

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basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

ASIDI
Accelerated Schools Infrastructure Delivery Initiative

Going green in the Free State

Two kitchens powered by a combination of gas and bio gas are feeding 1700 children daily at Vredefort Primary school in Vredefort about 10km from Parys and at Dorrington Matsepe Primary school in Kroonstadt. In addition, Vredefort boasts solar panels that power their geysers saving much needed electricity. How did this come about?

Royal HaskoningDHV (RHDHV) were appointed as professional services provider (PSP) on one cluster for Dorrington Matsepe Intermediate School, Phephetso Senior Secondary School and Vredefort Primary School.

Royal HaskoningDHV
Enhancing Society Together

The company displayed innovation by implementing greenhouse systems such as biogas and underground rainwater harvesting systems on all three schools.

PROGRESS UPDATE

The ASIDI programme stands at 116 schools completed, 499 provided with water, 425 given decent sanitation and 298 connected to electricity.

Green Building Systems Implemented on ASIDI Free State Schools Projects

Rainwater Harvesting

Biogas System

Biogas System Feasibility Study

Feasibility studies were conducted for the 3 schools to deduce if the schools will be able to generate the required amount of gas for use by taking into consideration the enrolment figures. The gas is generated from the ablutions waste hence the name biogas. These systems form part of the green building principle. The schools will be utilising the available resource to generate energy, which will be a cheaper way of obtaining gas from waste matter. The generated gas will be used for cooking at the school nutrition centres.

Some of the advantage of using the bio-gas system are as follows;

1. Provides a non-polluting and renewable source of energy.
2. Efficient way of energy conversion (saves fuel wood).
3. Saves time consumed for cooking.
4. Produces enriched organic manure, which can supplement or even replace chemical fertilizers.
5. Leads to improvement in the environment, sanitation and hygiene.
6. Household wastes and bio-wastes can be disposed of usefully and in a healthy manner.
7. The technology is cheaper and much simpler than bio-fuels, and it is ideal for small scale application.
8. Dilute waste materials (2-10% solids) can be used as in feed materials.
9. Any biodegradable matter can be used as substrate.
10. Anaerobic digestion inactivates pathogens and parasites, and is quite effective in reducing the incidence of water borne diseases.
11. Environmental benefits on a global scale: Biogas plants significantly lower the greenhouse effects on the earth's atmosphere. The plants lower methane emissions by entrapping the harmful gas and using it as fuel.

Overview

Biogas systems use bacteria to break down wet organic matter in this instance, human sewage and animal waste. This produces biogas, which is a mixture of methane and carbon dioxide, and also a semi-solid residue. The biogas is used as a fuel for generating heat or electricity. Using biogas can assist keeping bacteria out of the environment and precious water resources and cut greenhouse gas emissions. Biogas plants can also improve sanitation, and the residue is useful as a fertiliser.

Individual biogas systems are already benefitting several million households in Nepal, India, China and elsewhere. Larger systems are also used, for instance to process farm waste in Germany, and at sewage treatment works in the UK.

A feasibility study was done for the 3 schools to verify if enough gas will be generated to meet the demands needed for consumption. It answers three needs at the school:

- Methodology for dealing with human sewage
- Methodology for dealing with food and garden waste
- Free energy to be used in preparing school meals.

Systems offered

Biogas Pro 6

Biogas Installation on SC2 for 3 no. schools






RAINWATER HARVESTING SYSTEM

The rain water harvesting system was implemented on this project in order to use the rainwater in flushing of the toilets and urinals thereby saving the clean domestic water. Basically the rainwater is harvested from the roof and goes through down pipes to 6500L storage tanks which are underground. Inside the tanks is a pump which will pump water to a gravity tank 100L in the service duct. The water will gravitate from this tank into the urinals and toilets. In the event that the water in that tank reaches a minimum level, the pump in the underground tank will kick in to fill the tank. Should the water in the underground tanks deplete, the switch over system will allow the municipal water to be used for the flushing.

The harvesting system with self cleaning filter, automatic pump system and municipal back-up supply, will supply the toilets and urinals. The water harvested from the roof is channelled into the underground tanks using the gutters and down pipes. The tanks have a pump which will pump the water into a temporary storage tank in the ceiling. The water will gravitate from the tank to the toilets and urinals. There is a municipal change over switch which will allow the toilets to use the municipal water in the event that the rainwater in the tank is finished.

There is a centralised filter where all the downpipes from the roof are connected to pre-filter the water from dirt before entering the storage tanks. The filter will be rinsed automatically. A floating suction strainer and back washable fine filter will prevent any dirt particles to enter the building. An automatic submersible pump will deliver water on demand with dry protection. A pressure tank will is fitted on the supply line of the pump to reduce the start/ stop times and ensure constant pressure in the building. The system is equipped with a municipal switch over device in the case of power failure and/or no rain water, the system will automatically switch to mains supply.

Carat- S 6500L underground tanks

The Carat-S 6500L underground tanks are used in this system and are

unlike any other underground tank in the world. It is the largest tank of its kind to be manufactured by injection compression moulding. The technique provided unbeatable stability and the highest of accuracy. Unlike other underground tanks, the wall thickness is equal in all areas of the tank which result in strength, reliability and high quality.

The Carat- S has a rotating tank dome to ensure easy alignment with connections. The telescopic shaft can be adjusted to final surface level with 5 degree. The Carat system has the following mechanisms;

1. Ribbed tank base – The tank base of the Carat- S underground tank is extremely stable due to the numerous ribs. These enable the Carat- S to be installed in ground water up to the middle.
2. Encircling stabilisation ring in unique H profile - The Carat-S tank's H profile ensure stability and security. The tanks suffer no significant wrapping even under extreme loads due to the rib design.
3. Flush with ground level – The Carat- S tank has numerous seals to effectively stop dirt getting into the tank. This means that seepage water cannot get into the tank, thus preventing contamination.

Pump system

A submersible pump inside the tank will detect via flow and pressure drop that a tap/sprinkler is open/ close and the pump will automatically start or stop. The pump is dry run protected and will switch off if the water level drops below a certain point. A mains backup control unit will switch over to municipal supply in the case of no rainwater. Floating suction intake with strainer will prevent any dirt or pieces to go through the pump.

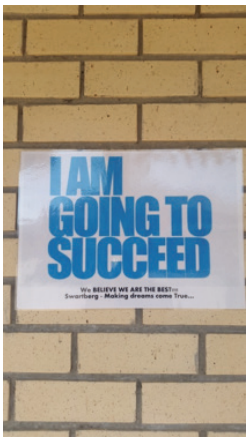
Rainwater Harvesting Installation on one cluster – SC2 for 3 no. schools






Forging ahead in the Western Cape

For more years than one cares to remember, Atlantis was known as the “forgotten town”. It is a residential area about 50km outside the Cape Town CBD characterised by unemployment, lack of housing and crime. The last 12 months have, however, brought a smile to the residents of this town as they will soon be boasting, not one, but two brand new state of the art schools courtesy of the Department of Basic Education.



Left: Swartberg School in Caledon has dozens of motivational posters. Right: The cookery class is well equipped.

Firstly, ASIDI sites provide jobs and much needed skills for locals and the two sites combined have created 261 local jobs for the duration of the project.

Secondly, the state of the art nature of the facilities will make for a sense of pride in school children. It is a fact that wherever an ASIDI school is built, there is a surge of demand for enrolment. Communities, spurred by the new facilities take a greater interest in their children’s education and there is renewed hope in the air. The facilities at the schools will provide the catalyst that, if seized upon, will provide current and future learners an escape route out of the despair and helplessness that sometimes characterises economically depressed areas.

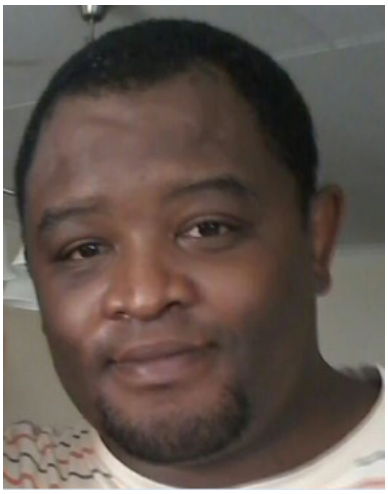
Work in progress in Atlantis

The Myciti bus service has brought the area closer to the Mother City CBD, the computer, science labs and media centres will bring the learners closer to the global environment allowing them to dream beyond the horizon of the Atlantic Ocean. This is what ASIDI schools do. Much more than beautiful buildings to be really proud of, they are an avenue for a brighter future for learners, a more dignified place to work for teachers and a firm foundation for children in Grade R.

Examination time at Swartberg

The ASIDI programme has built 13 schools to date in the Western Cape out of a targeted 25. We are forging ahead!

DEATH NOTICE



Yolo, one of the engineers working on our programme tragically lost his life in a car accident while on way to site in July. We offer our deepest sympathies and condolences to his family on behalf of the entire ASIDI team and DBE.

Hand written and emailed tributes flowed in and here we reproduce two of them.

Good Day Sir

Deepest sympathies from the management and staff of Thap Nor Dik Consultants. Words are never adequate in moments like these. We will say though, that our hearts go out to you, and we will always remember the joyous memories that we are privileged to have in knowing your employee Yolo. We are so sorry we could not be there in person to convey our condolences. Though we may be far away, know that our spirit and prayers are with you and Yolo's family.

Kind Regards

Mr. T. J. Dikgale

Project Manager

Dear George

As the Regional Director for The Mvula Trust in Mpumalanga, I was very saddened to learn of the tragic passing of Yolo.

Yolo was a cheerful and friendly person and we will miss him greatly on our ASIDI programme, on which he was our colleague for the past two years. Please relay our most heartfelt condolences to his family and friends.

Kind regards

Shivon Wiggins