



## DESCRIPTION FOR TECHNICAL DRAWINGS

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### 1. Crater View Secondary School, Nakuru (Kenya)

Project location	Crater View Secondary School, Nakuru, Kenya
Planning institution	Egerton University, Kenya; Rosa Project
Supporting agency	European Union, 6 <sup>th</sup> Framework Programme
Project period	2008 / 2009
Number of users	200 students (120 girls and 80 boys), 16 teachers and 7 workers
Technologies applied	<p><u>UDDTs</u>: Eight cubicles of single vault UDD toilets; the girls section was provided with 5 cubicles (25 students per toilet), 4 waterless urinals and a space for changing clothes; the boys were provided with 3 cubicles and 9 waterless urinals; each side has two hand washing facilities; water for hand washing is harvested from the roof and piped to the water basins.</p> <p style="text-align: center;">Picture 1: Urine diverting dry toilet.                      Picture 2: UDDT cubicle.</p> <div style="display: flex; justify-content: space-around;">   </div> <p><u>Urinals (boys and girls)</u>: Urine from the 4 girls' urinals, 9 boys' urinals and from the UDD toilets is collected and stored into a 2000 litre masonry underground tank. The tank is enough to hold urine for approximately 2 months assuming a generation rate of 0.20 l/student (only during the day since the school is a day school). The total amount generated by 200 students will be 40 litres per day amounting to 2000 litres in 50 working days (2 months).</p>

Picture 3: Urinals for girls.



Picture 4: Urine storage tank.



Drying shed: The area of the drying shed for storage of faeces is 22m<sup>2</sup> and the dimensions are 6m x 3.6 m.

Picture 5: Drying shed for faeces.



Picture 6: Dried faeces.



Costs

Table 1: Cost for construction of UDDT at crater view secondary school (1€ =104Kshs)

Item	Description	Amount (KES)
1	Excavation and earthworks	20293
2	Concreting	84754
3	Walling	130252
4	Roofing	66821
5	Doors	86076
6	Sanitary installations	66149
7	Finishes	79724
<b>Total (KES)</b>		<b>534070</b>
<b>Total (EUR)</b>		<b>5135</b>

Table 2: Cost for construction of drying shed at the school





	<b>Item</b>	<b>Description</b>	<b>Amount (KES)</b>
	1	Cider posts and poles	2380
	2	Timber	21150
	3	Iron sheets and nails	14700
	4	Gutters and holders	2000
	5	Cement	8000
	6	Sand	5000
	7	Aggregate	14000
	8	Building stones	5280
	9	Wire mesh	6600
	10	Labour	10000
		<b>Total (KES)</b>	<b>89110</b>
		<b>Total (EUR)</b>	<b>857</b>

Operation & Maintenance	The entire project is managed by the school. The day to day cleaning of the toilet is done by an employee of the school. Collection, transportation and emptying of the faeces is done once every three months during the holidays. The urine tank is emptied when required.
Further details	Muchiri, E.W., Raude, J., Mutua, B. (2010). UDDTs and greywater treatment at Crater View Secondary School, Nakuru, Kenya - Draft. SuSanA. <a href="http://www.susana.org/docs_ccbk/susana_download/2-125-d8-6ke3craterviewsecondaryschoolsusana.pdf">http://www.susana.org/docs_ccbk/susana_download/2-125-d8-6ke3craterviewsecondaryschoolsusana.pdf</a>

## 2. St. Joseph Hospital, Kitgum (Uganda)

Project location	St. Joseph Hospital, Kitgum, Uganda
Planning institution	EcoSan Club Consulting KG, Austria
Supporting agency	BBM, Austria
Project period	2007 / 2008
Number of users	
Technology applied	<u>UDDTs</u> : One dry toilet for each family of staff members; the total number of dry toilets are 37; urine is collected in jerry cans and used as a natural fertiliser; the faecal matter is stored and dried on site first by using a container based system and additionally co-composted with other biodegradable wastes at a separate composting area.



	<p style="text-align: center;">Picture 7: Indoor UDDT.      Picture 8: Emptying doors for UDDTs.</p> <div style="display: flex; justify-content: space-around;">   </div> <p><u>Composting toilets:</u> The design for these toilets will accept a maximum number of 20 users per toilet.</p> <p style="text-align: center;">Picture 9: Composting toilet.      Picture 10: Composting chamber.</p> <div style="display: flex; justify-content: space-around;">   </div>
Costs	--
Operation & Maintenance	Care takers employed by the hospital.
Further details	--

### 3. Migyera Hospital, Migyera (Uganda)

Project location	Migyera Health Center, Migyera, Uganda
Planning institution	EcoSan Club KG
Supporting agency	DKA, Austria
Project period	2009/ 2010
Number of users	
Technology applied	2 UDDTs for the staff of the health center, 8 dry toilets for patients and patients' attendants. The faecal matter is collected and dried in containers on site and than transported to a separate composting area for additional co- composting with other biodegradable waste.

Costs	-
Operation & Maintenance	The O&M is done by a care taker employed by the health center.
Further details	-

#### 4. UDDT – Infirmary Hospital, Balit (Phillipines)

Project location	Infirmary Hospital, Balit, Phillipines
Planning institution	EcoSan Club Consulting KG, Austria
Supporting agency	BBM, Austria
Project period	2003 - 2005
Number of users	
Technology applied	<p><u>UDDTs</u>: indoor UDDTs with special toilet seat for sitting; urine is collected in a separate piping system (PVC DN 50, min. slope 1%) and stored in PVC tanks; dried faeces will be stored in containers of 60cm diameters and a height of 60cm. The containers are made of perforated metal sheets lined with fabric material. The processing vault is sufficiently large to provide space for two containers, one being used and the other one drying further. Still the dried faeces need a secondary composting step to be ready for safe reuse. For this purpose and also to store other wastes before treatment/disposal a waste treatment area is provided.</p> <p>Picture 11: UDDT block outside..    Picture 12: Indoor UDDT..</p> <div style="display: flex; justify-content: space-around; align-items: center;">   </div> <p><u>Urinal</u>: water less urinals for all toilets potentially used by men.</p>
Costs	--
Operation & Maintenance	Care takes employed by the hospital.
Further details	--