

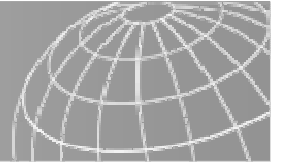
Waterless urinals: a proposal to save water and recover urine nutrients in Africa

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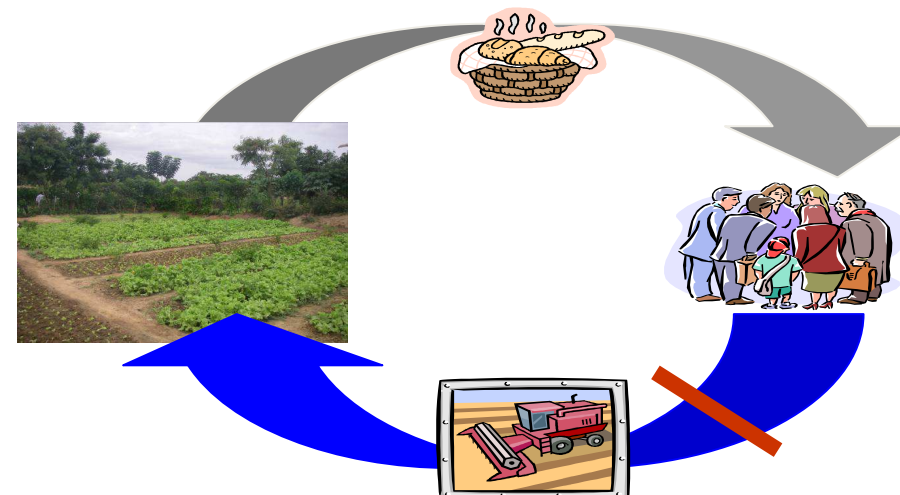
Peter Dahm

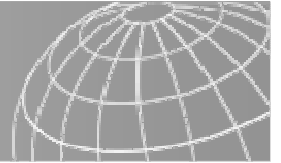
Addicom (Pty) Ltd
South Africa
info@addicom.net
www.addicom.co.za



Activities of the GTZ-ecosan programme

1. Collecting and disseminating knowledge and information on ecosan worldwide
2. Mainstreaming, awareness raising and capacity development
3. Supporting ecosan pilot, demonstration and up-scaling projects
4. Secretariat of the Sustainable Sanitation Alliance (SuSanA)





Why have waterless urinals for men?

1. To reduce water consumption and wastewater production (conventional urinals use 4-6 L per flush)

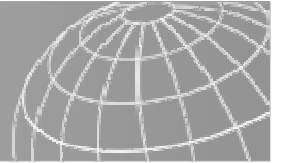
Connected to sewer

2. To collect pure urine (for use as fertiliser)

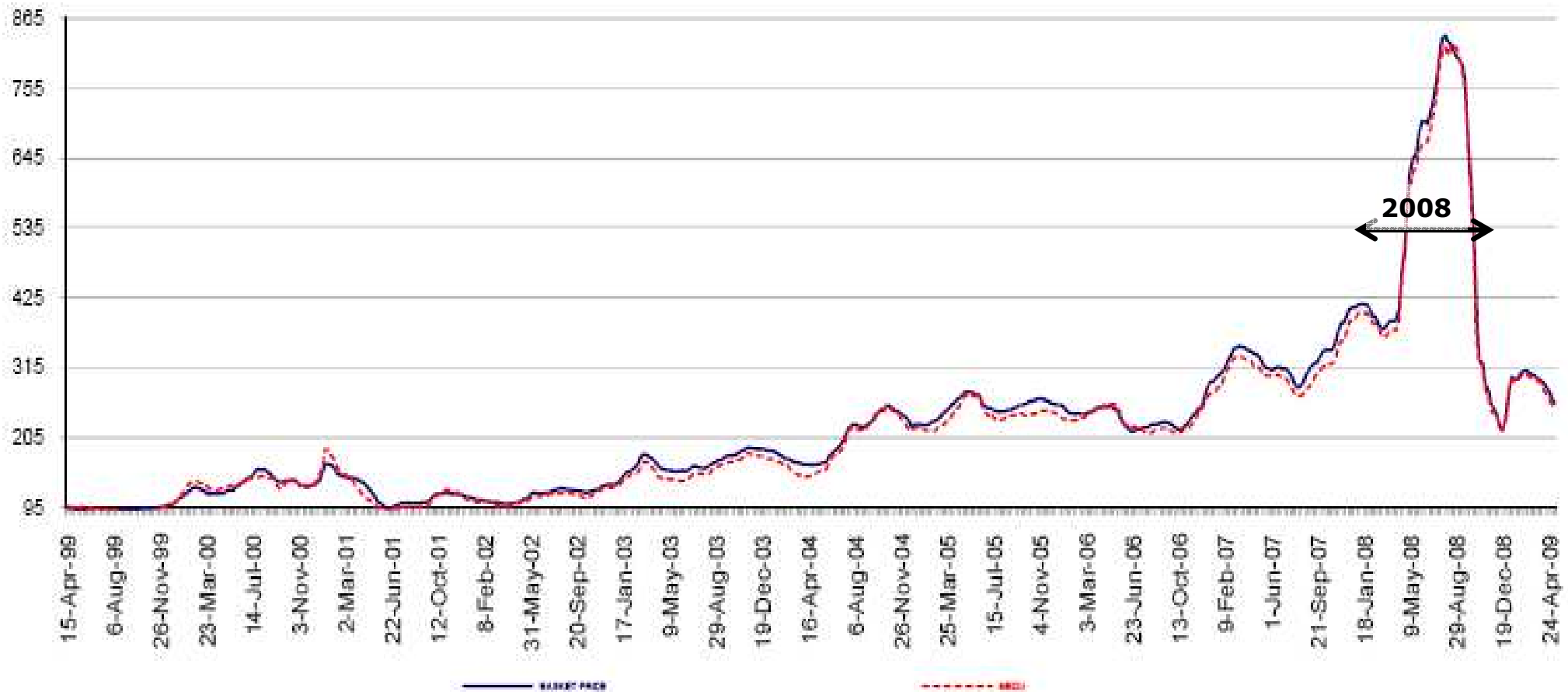
Connected to urine storage tank (ecosan)

→ Mostly used at public places (schools, restaurants, soccer stadiums etc.), or in conjunction with UDD toilets





Increasing and volatile fertiliser prices (granular urea basket price in USD per metric ton)



Source: <http://fertilizerworks.com/html/market/TheMarket.pdf>

**Example: Ceramic
waterless urinals used in
Europe
(relatively expensive)**



Uridan



Keramag Centaurus



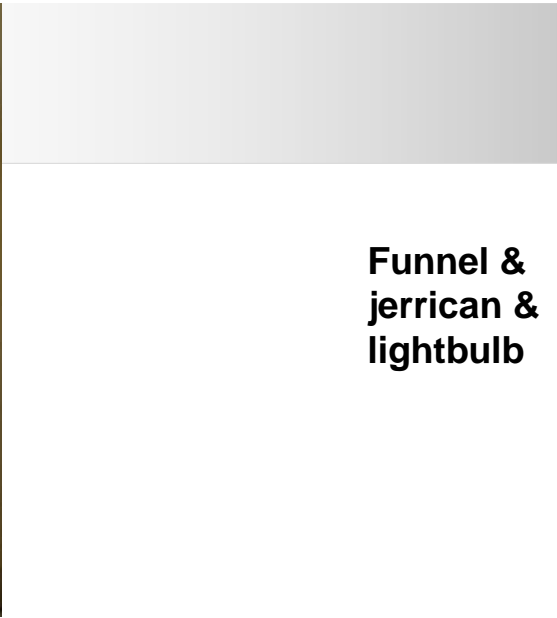
Low cost waterless urinals in Africa (here: Burkina Faso)



CREPA Ecosan_UE project, Ouagadougou



CREPA head office in Burkina Faso



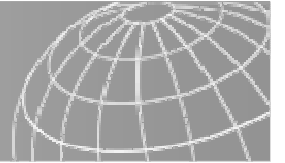
Funnel & jerrican & lightbulb



Amsterdam, The Netherlands

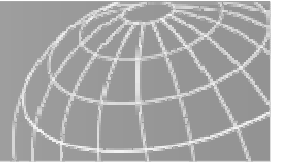
South Africa (source: Addicom)





What is needed for user acceptance?

1. No odour or same odour level as water-flushed urinals
2. Easy to clean, minimal maintenance (of relevance for cleaning staff)



Stopping odour from surfaces

1. Appropriate surface of the urinal bowl (smooth, non-stick)
2. Correctly designed interrelation between urinal bowl and the drain fitting to minimise crevices where urine can accumulate
3. On operational level: a thorough maintenance regarding the bowl and the odour blocking device

Blocking odour coming from sewer or urine storage tank

today

1. Flat rubber tube seal
2. Curtain valve seal (patented as: "Eco-Smellstop" or ESS)
3. Sealant liquid (blocking fluid)
4. Home-made options: ping-pong ball in funnel; cut-off condom

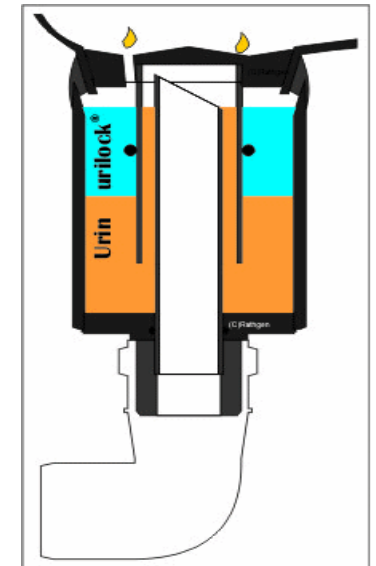
1.



2.

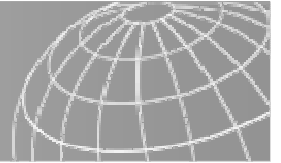


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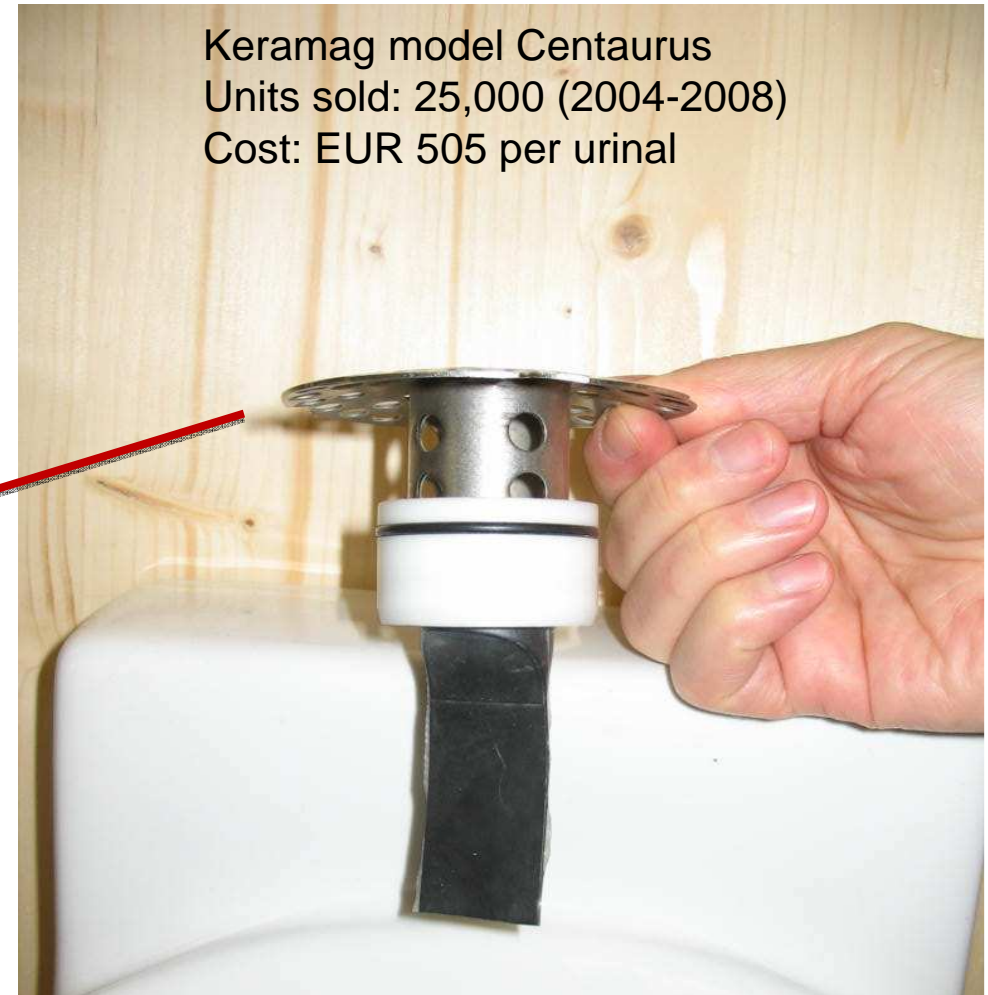


4.





Flat rubber tube seal: opens when urine flows through

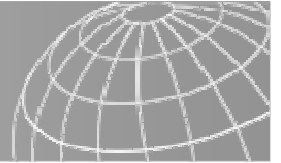




Flat rubber tube in Keramag waterless urinal

EUR 17 for replacement rubber tube,
should last about 1 year





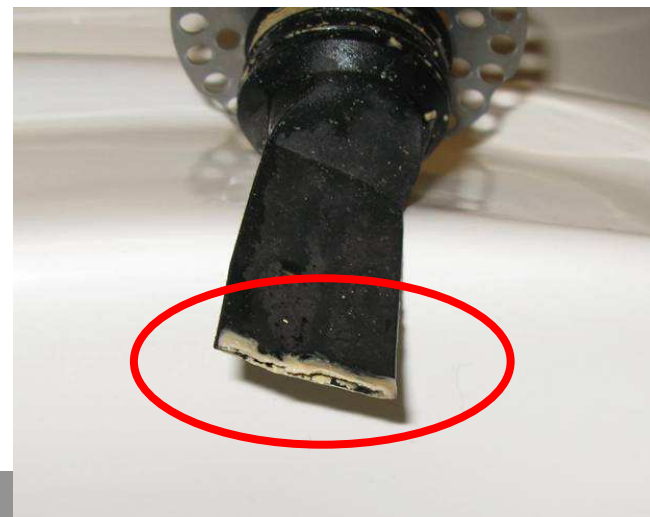
But: Neglected maintenance ! (not cleaned for many months)

Should be: daily, weekly or monthly, depending on frequency of use

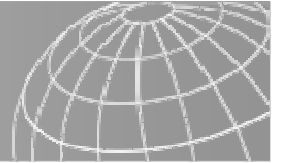


Soft urine stone precipitates

Germany



Delft, The Netherlands



Example for low-cost plastic urinal: at taxi rank in Johannesburg, South Africa



SVR-M urinal with Eco-Smellstop
Units sold: 32,000
Cost: EUR 41

Source: Addicom

A modern bathroom: my bathroom in Frankfurt !



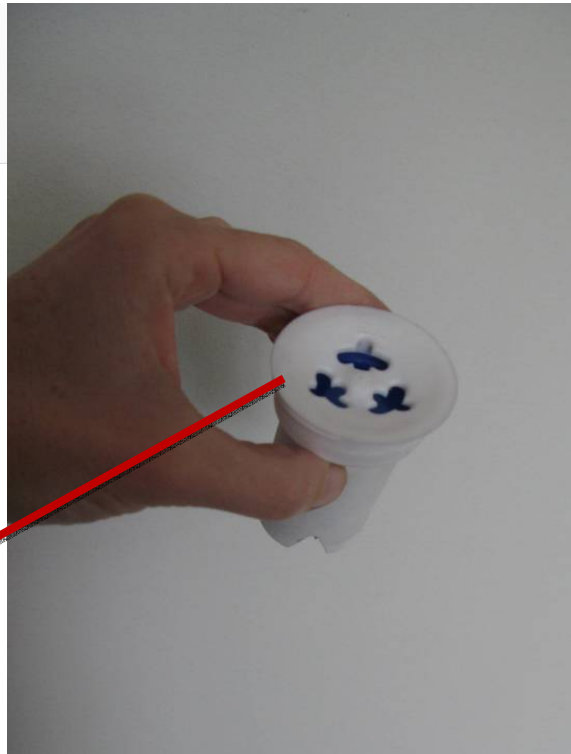
Waterless
urinal with
ESS

25 L urine
storage
tank



UDD toilet (Separett)





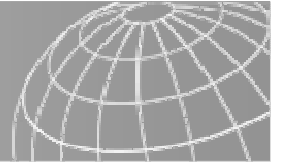
After 3 months of (light) use:
No deposits



Eco-Smellstop (ESS)

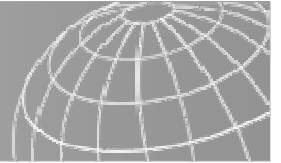
Current cost: EUR 15

Units sold: 90,000 (they are also used in
F. Ernst AG urinals)



The Eco-Smellstop can
also be used in UDDTs
(urine-diversion
dehydration toilets)

Berger UDDT with ESS

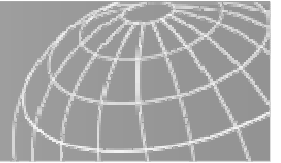


Challenges for waterless urinals in Africa

1. Knowing that they exist and work
2. Buying the right product – minimise maintenance requirements
3. Ensuring that the necessary maintenance is carried out

How much do we value water?

- » Flush urinals: water flushes away solid particles
- » Waterless urinals: humans clean them in regular intervals; water is saved



Application of urine as a fertiliser (neat or diluted with water)



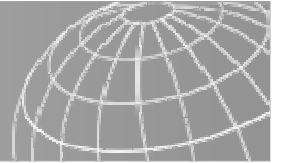
Sweetcorn fertilised with urine



Yield increases up to 30 %

Urine fertilisation in the Philippines

More photos: www.flickr.com keyword: "urine reuse", ecosan

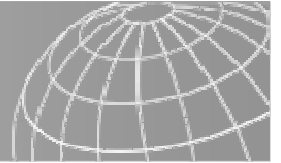


Summary

1. Waterless urinals are increasingly replacing water-flushed urinals in Germany and other countries
2. Waterless urinals can be cheap or expensive (many different suppliers)
3. Correct maintenance is crucial for odour control
4. Waterless urinals are the easiest first step towards ecosan
(even if urine use in agriculture is not yet implemented)



“every drop counts!”
(source: CREPA)



Thank you!

www.gtz.de/ecosan and www.susana.org
www.flickr.com (keyword: ecosan)



On behalf of
**Federal Ministry
for Economic Cooperation
and Development**

partner of

sustainable
sanitation
alliance