

# Industrial Wastewater Reclamation Technology for Irrigation in a Water-Scarce City

**Prof. Dr. Dr. K-U Rudolph**

*Co-ordinator of thr UN Water DPC Working Group on CD in Water Efficiency*

## *Namibia / Windhoek*

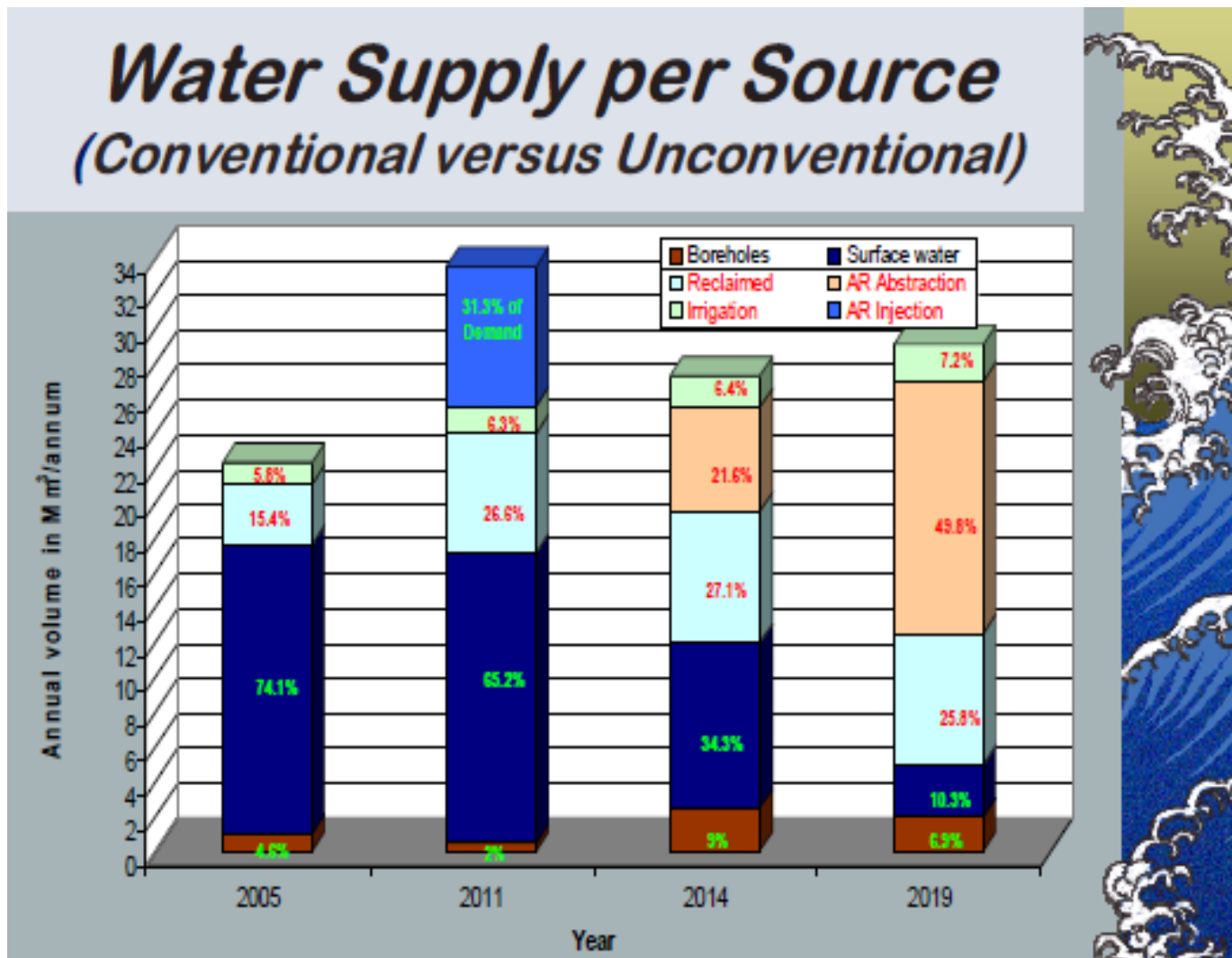
- *Area* **825 000 km<sup>2</sup>**
- *Population* **2 000 000**
- *Average rainfall mm* **250**
- *Average evaporation* **3700 mm**
- *Windhoek Capital City*
- *340 000 inhabitants @ 5% per year*



## *Semi Purified irrigation*

- *Dual pipeline length 75 km versus approximately 1 800 km water lines.*
- *Since 1993, Replaced 5.8% of potable supply with filtered sewage effluent*
- *Unrestricted irrigation landscaping, sports fields & parks*
- *Treatment train: Secondary sewage, coagulation, flocculation, DAF, sand filtration and chlorination.*

# Primary and Secondary Raw Water Resources



# Land Use and Land Value for Economic Dvypm.

## *Landscaping & Sports fields*



# Pilot Plant with Fine Screen and MBR in Containers



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26.09.2011

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UNJAMS SEWAGE WORKS  
ENTRY PROHIBITED  
TRESPASSERS WILL  
BE PROSECUTED



















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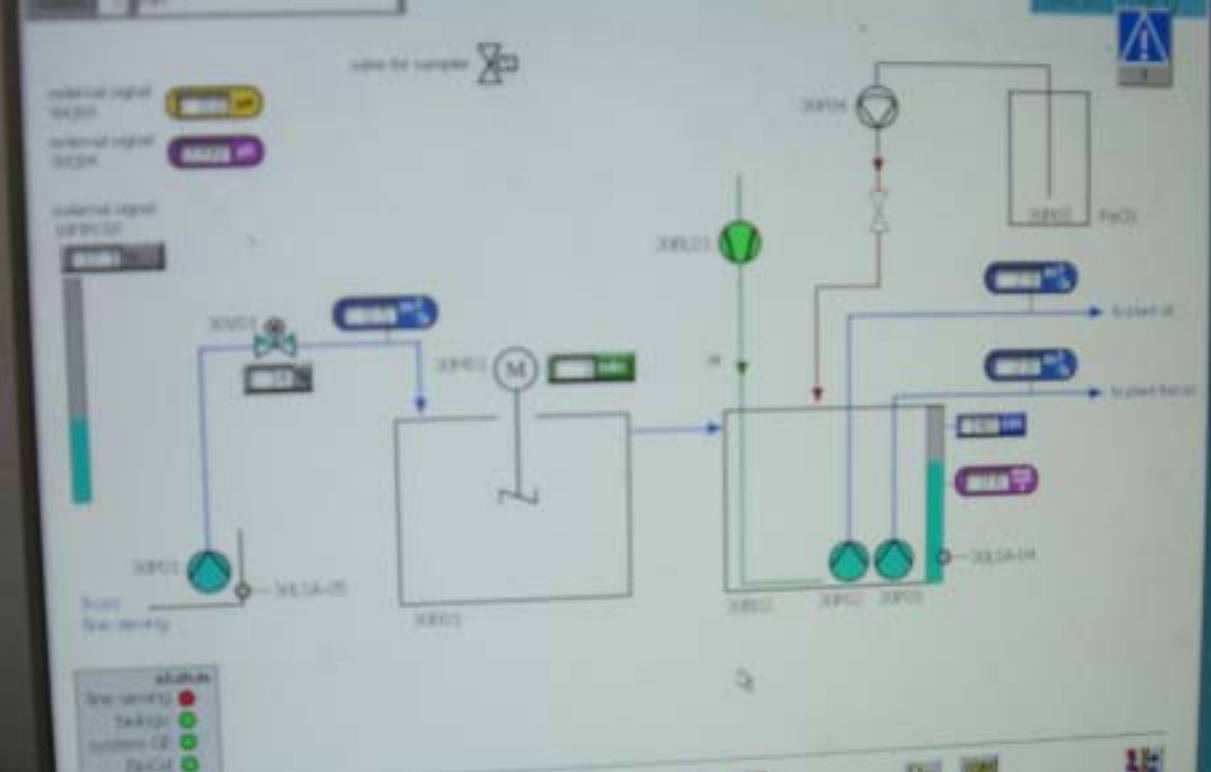










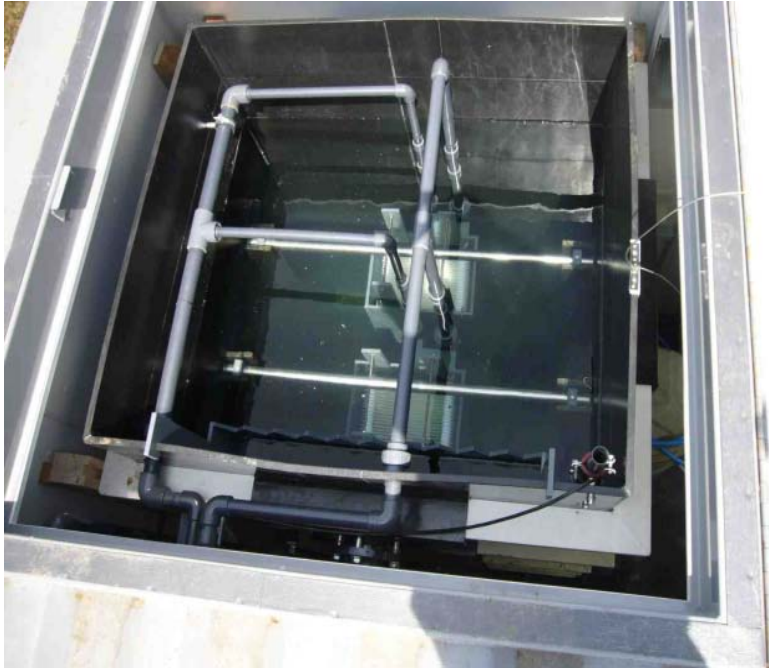


Windows taskbar and desktop icons are visible at the bottom of the screen. The taskbar shows the Start button, several application icons, and the system tray with the date and time (11:44). Desktop icons include 'Programme', 'Netzwerk', and 'Lokalverlauf'.





# The Pilot MBR - Bird Eyes View





# One of the Membrane Units



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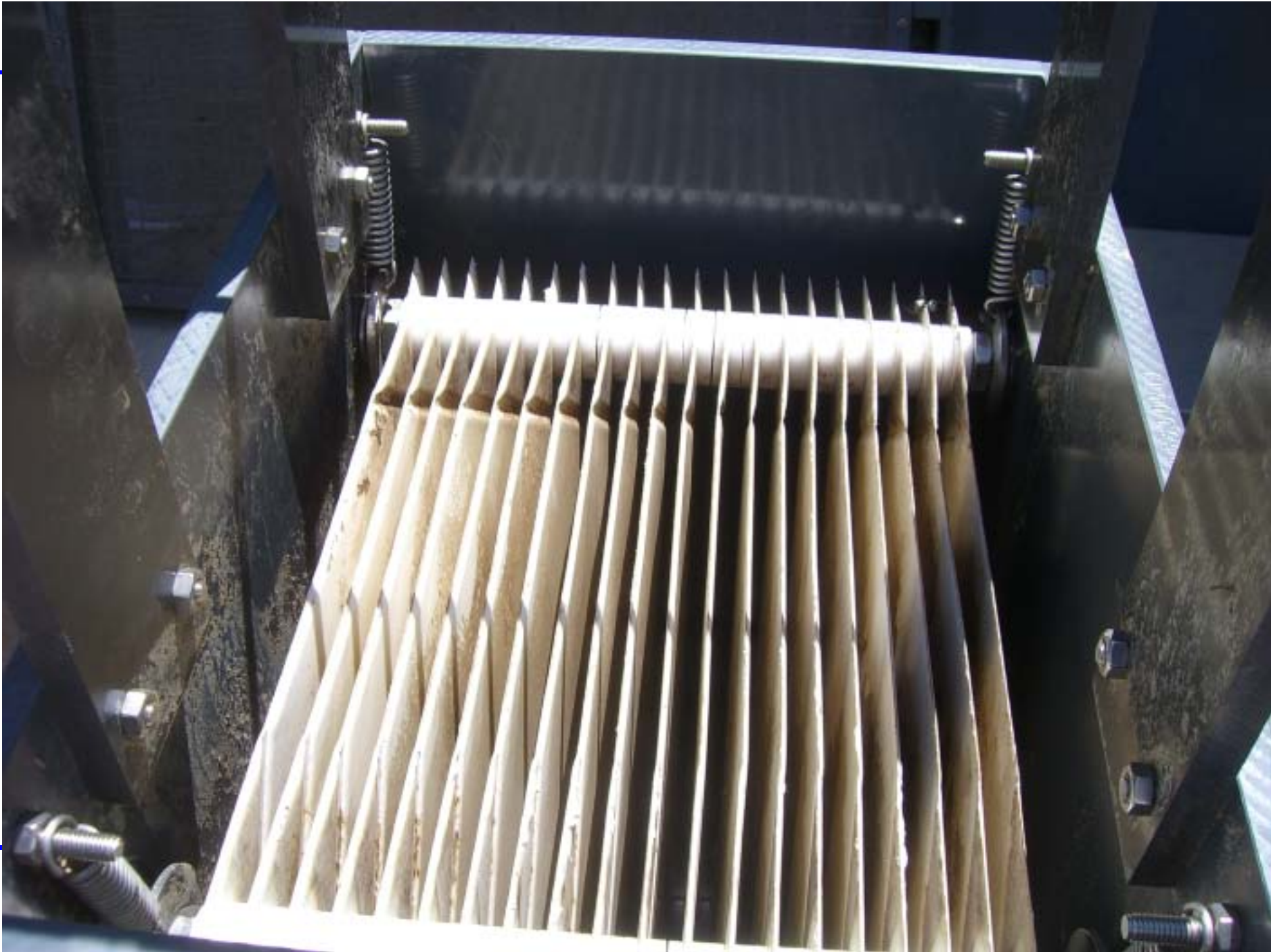
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# WRTP UJAMS: Power; Chemicals, Waste

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