Implementing New Technology in Sanitation

Peter Janicki

Janicki Bioenergy

JANICKI
INDUSTRIES

Founded by Peter & Susan Janicki in 1993

▶ Locations in WA & UT
▶ 800 Employees
▶ 135 Engineers
▶ State-of-the-Art Facilities
▶ R&D
▶ Project Management
▶ Engineering Design & Analysis
▶ Composite & Metal Mfg.
▶ Large Scale, High Precision

Advanced
Composite
Parts & Tools
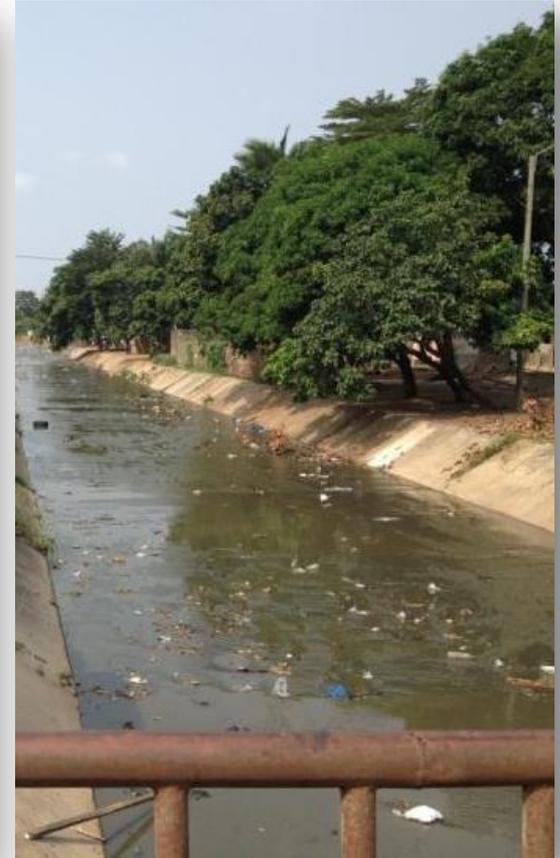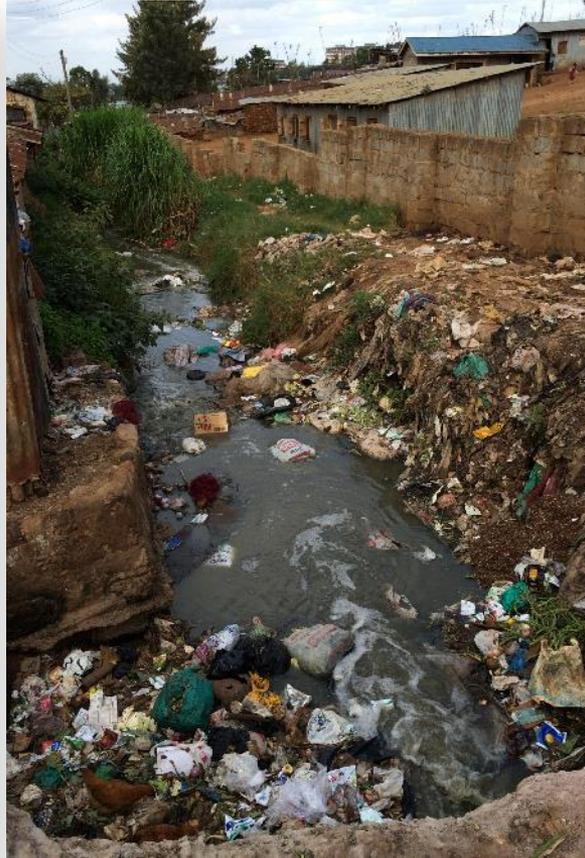
What Sanitation Problem?

Pit Latrine in Africa

Cleaning Out Pit Latrines in Africa

Polluted Gutters & Waterways

Kibera Slum, Kenya

There are approximately 2.5 million slum dwellers in about 200 settlements in Nairobi

The Accepted Gold Standard Cannot Work

Treatment plant in Seattle for less than two million people

Even if the capital cost could be paid for, could the world afford the water with this solution?

We would need a really big hammer

Omni Processor Inputs and Outputs Today

Inputs   Outputs

Fecal
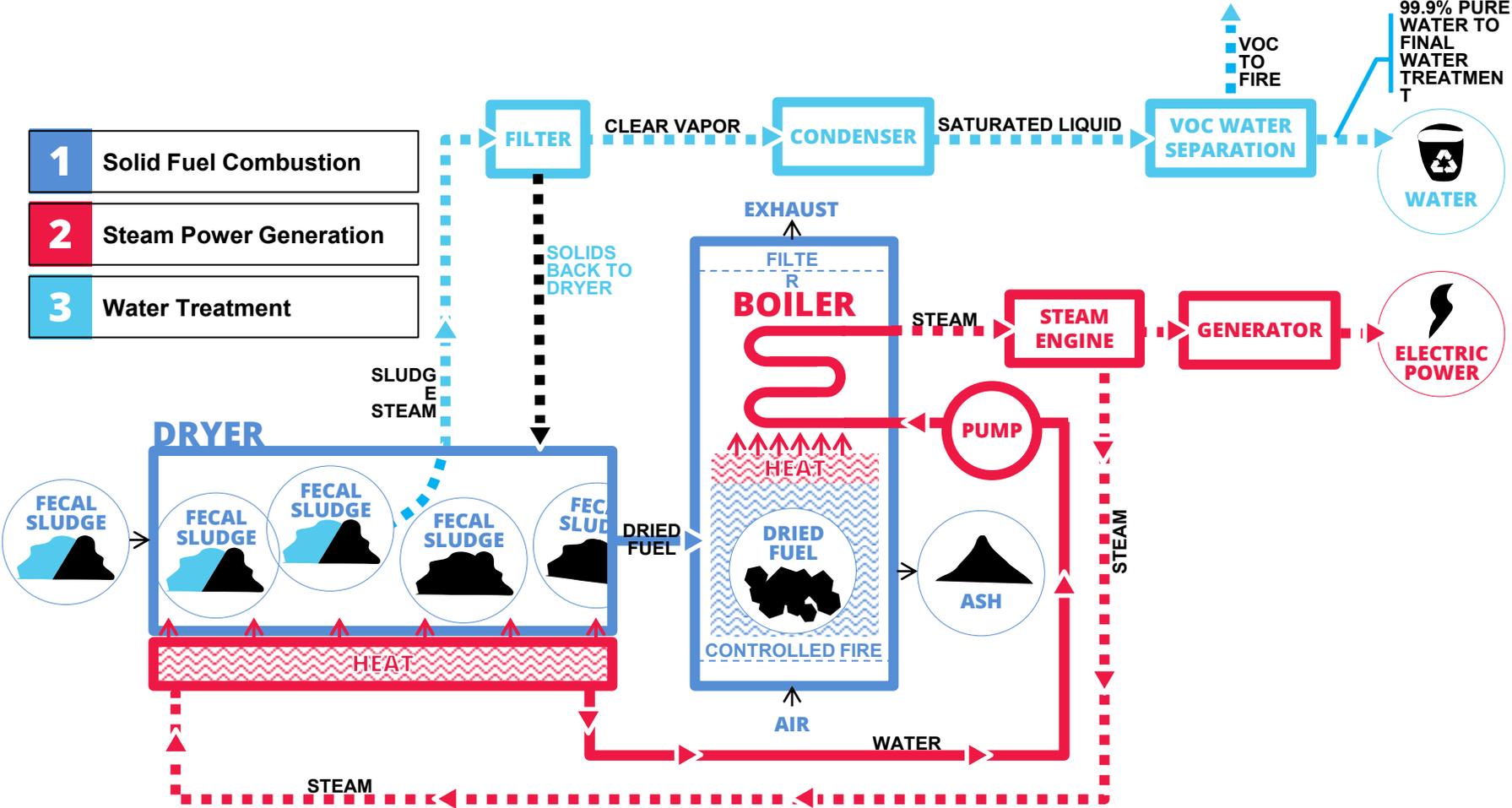Sludge   Electricity

Thickened   Clean Water
Sludge   Heat

Garbage   Ash

FSM4

Technology Schematic
Scalable System

1	**Solid Fuel Combustion**
2	**Steam Power Generation**
3	**Water Treatment**

FILTER

CLEAR VAPOR

CONDENSER

SATURATED LIQUID

VOC WATER SEPARATION

VOC TO FIRE

99.9% PURE WATER TO FINAL WATER TREATMENT

WATER

SOLIDS BACK TO DRYER

EXHAUST

FILTER

BOILER

STEAM

STEAM ENGINE

GENERATOR

ELECTRIC POWER

SLUDGE STEAM

DRYER

FECAL SLUDGE

FECAL SLUDGE

FECAL SLUDGE

FECAL SLUDGE

FECAL SLUDGE

DRIED FUEL

HEAT

DRIED FUEL

PUMP

ASH

STEAM

HEAT

CONTROLLED FIRE

AIR

WATER

STEAM

FSM4

Water Treatment

Flight
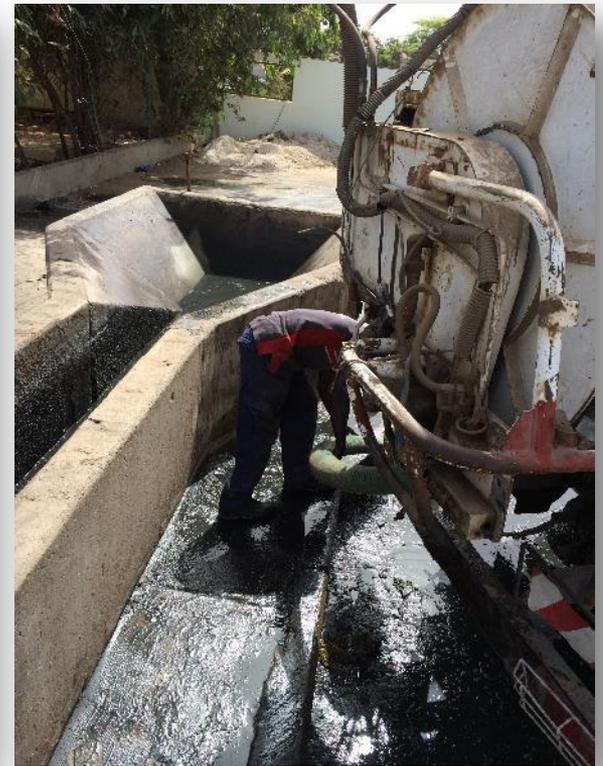
Beginning

Today

FSM4

Why have we not had the same kind of innovation in sanitation?

Maybe it is just not that glamorous
Some policy makers are very risk adverse

It Takes Teamwork to Innovate
Engineering Teams Working with Policy Makers & Funding Organizations

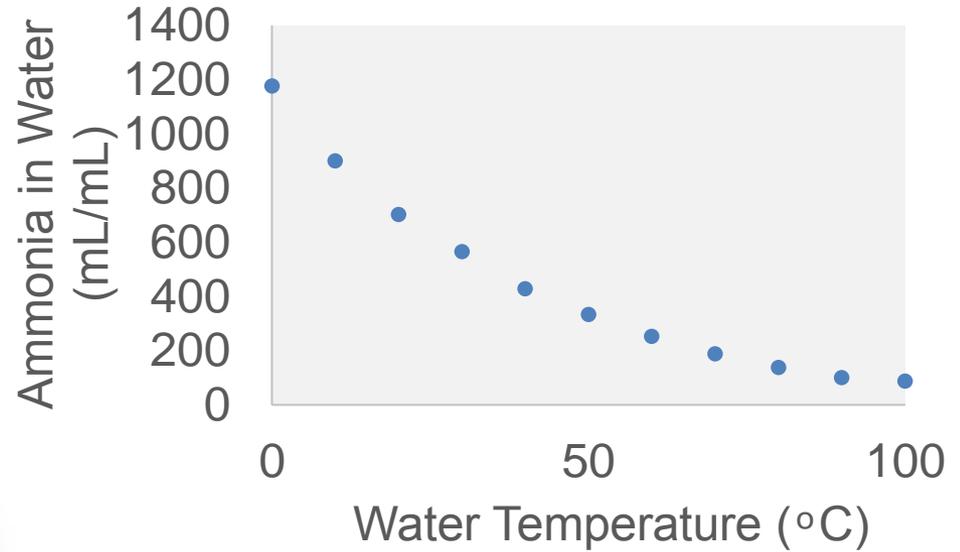Crazy people in West Africa that are very excited about fecal sludge

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Phosphorus Recovery

The Phosphorus Content in the Ash from the Janicki Omni Processor is Greater than 14%

Ammonia Recovery

As the saturation temperature is approached, the solubility of gases in solution diminishes significantly

My Ultimate Goal: 100% Water Reuse

Typical Waste Water Treatment Systems in the U.S. Have Remained Fundamentally Unchanged in the Last 75 Years
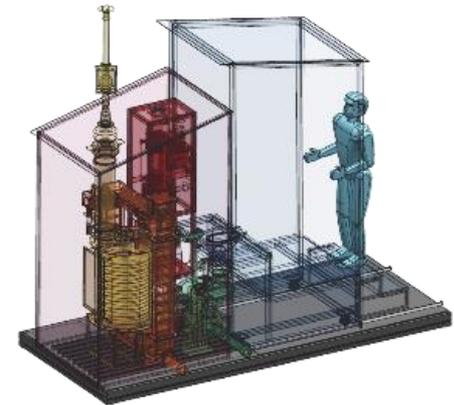
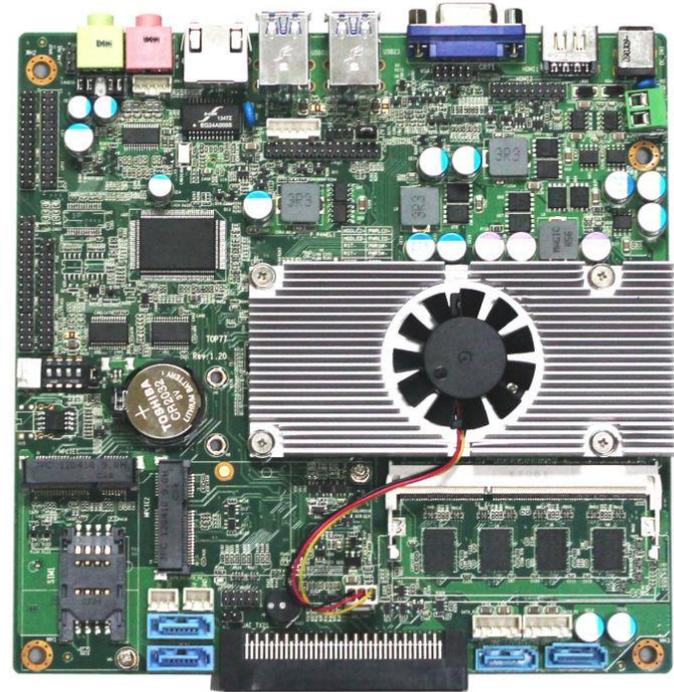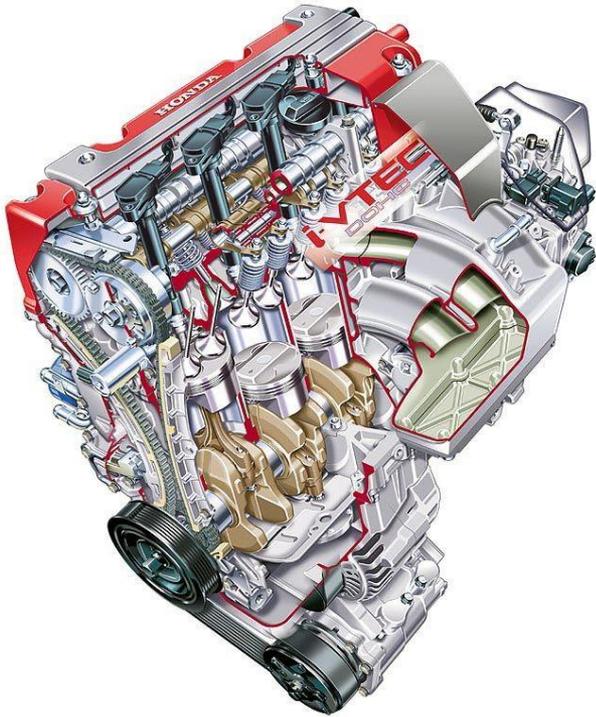# Treatment from Large Industrial Size down to Household Size

100k-200k+
People

50k-100k
People

5
People

Mature technology can be phenomenally complex

Like Engines and Computers the OMNI processor is going to get 1000X better

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Imagine if you could see into the future!

We, all Together, need to Fund and Focus Talent on this Problem

Our global engineering capacity is amazing…