

# PIVOT

*URBAN SANITATION EVOLVED*

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Mainstreaming Citywide Sanitation • 5 April 2016

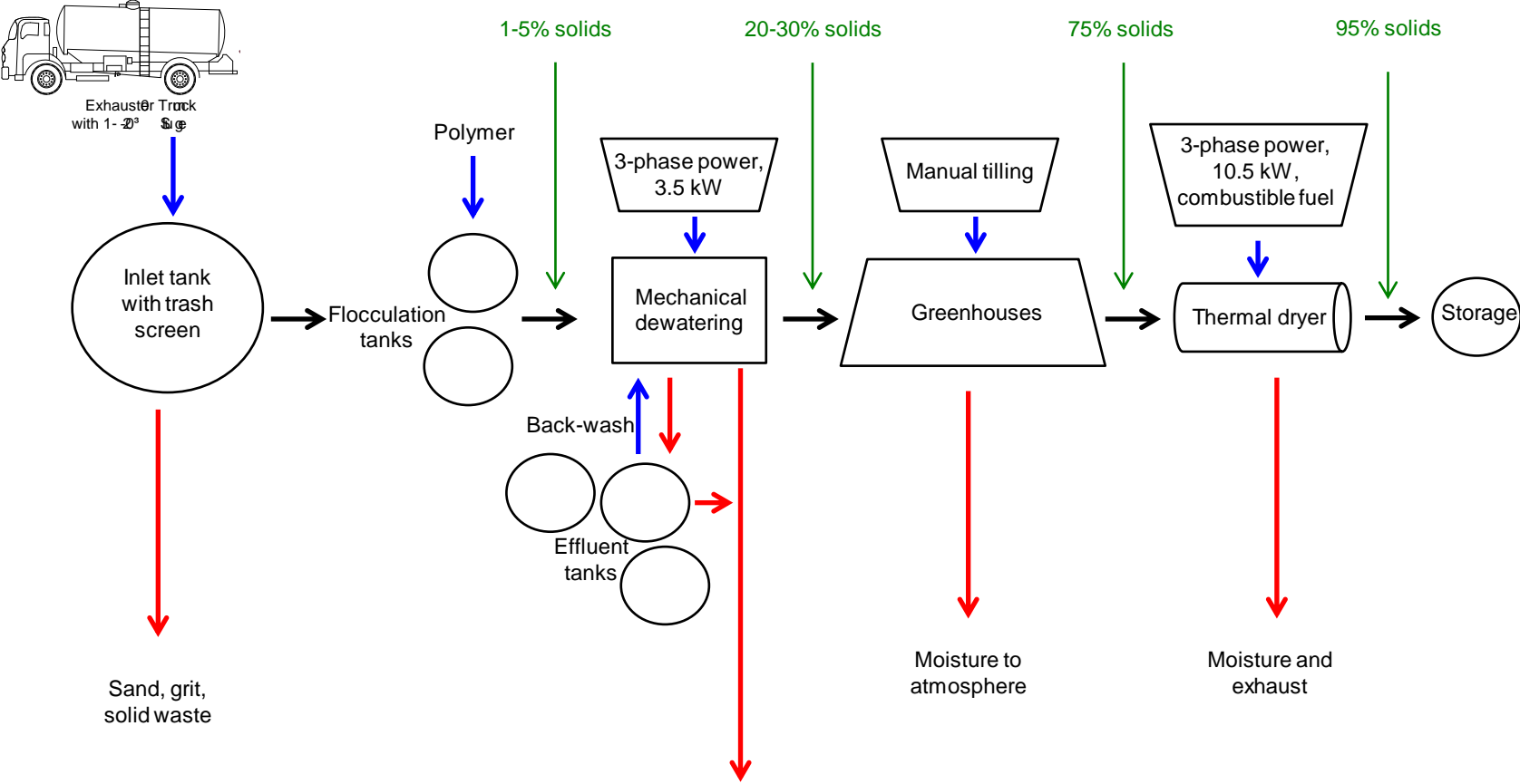
# PIVOT

*URBAN SANITATION EVOLVED*

Pivot is the answer to this



# Pivot Works process flow



Effluent for treatment

Indicative treatment technologies that will be evaluated for performance, cost-effectiveness, and footprint

- Stabilization Ponds
- Trickling Filters
- Sand Filters
- Membrane Filtration

# Pivot aims to deliver the world's lowest cost waste treatment

## 1. Radical reorganization of treatment process

- Extract costly-to-treat solids and BOD at head of process, reducing downstream treatment requirements and rendering aerated treatment processes obsolete
- Significant savings in capex, footprint, and opex

## 2. Revenue generation

- Reuse-led plant design leads to maximum resource recovery
- Entire opex covered through sale of fuel – treatment is the byproduct of our manufacturing process



# Dewatering renders high-strength FS weak and homogenized



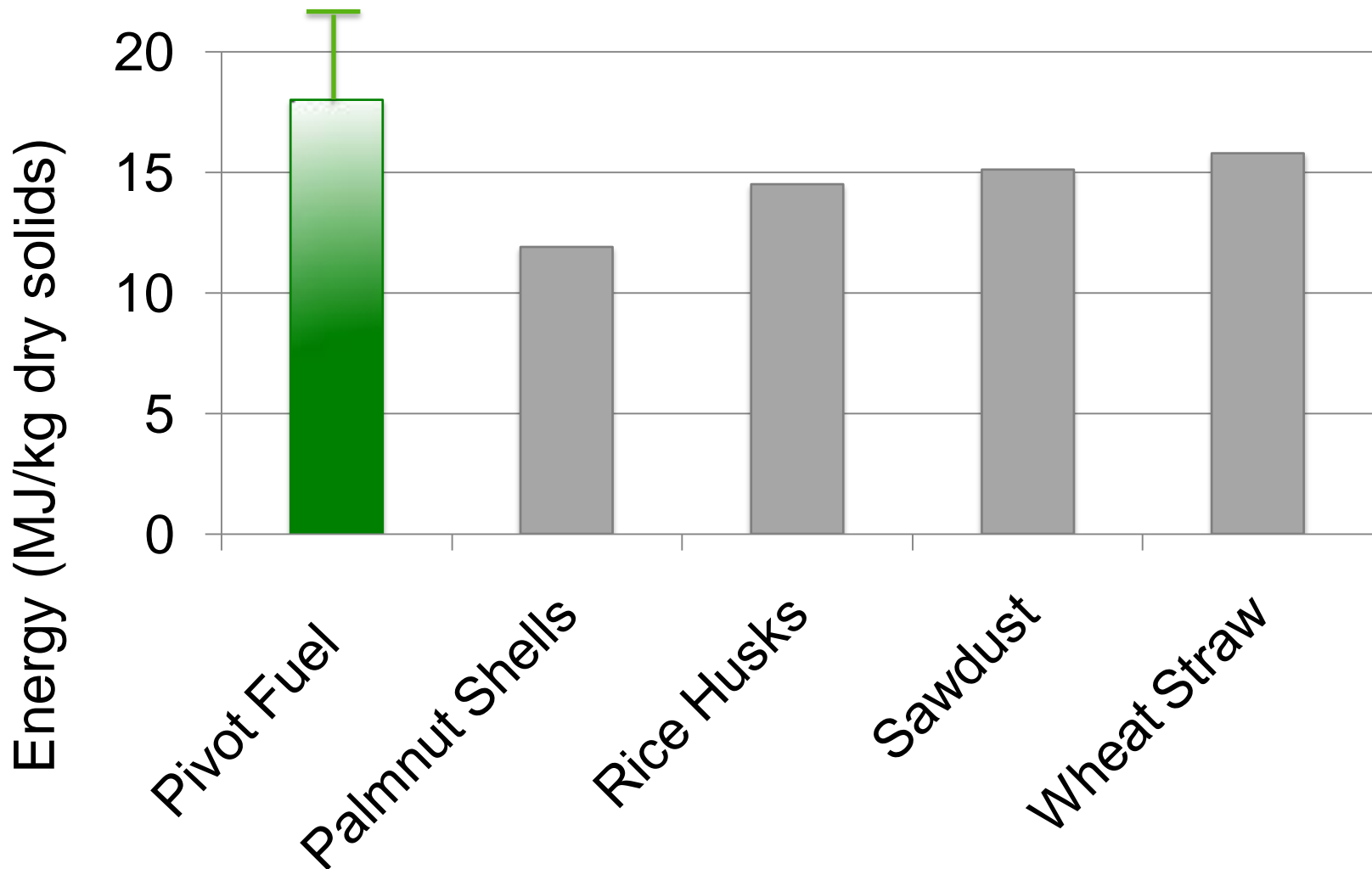
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  - Extract costly-to-treat solids and BOD at head of process, reducing downstream treatment requirements and rendering aerated treatment processes obsolete
  - Significant savings in capex, footprint, and opex
2. Revenue generation
  - Reuse-led plant design leads to maximum resource recovery
  - Entire opex of large plants covered through sale of fuel





# Pivot Fuel is superior fuel



# First burning trial at Utexrwa, Kigali

## Pivot Fuel performance:

- 0.5 t Pivot Fuel in steam boiler
- 30 min to reach 5 barr boiler pressure

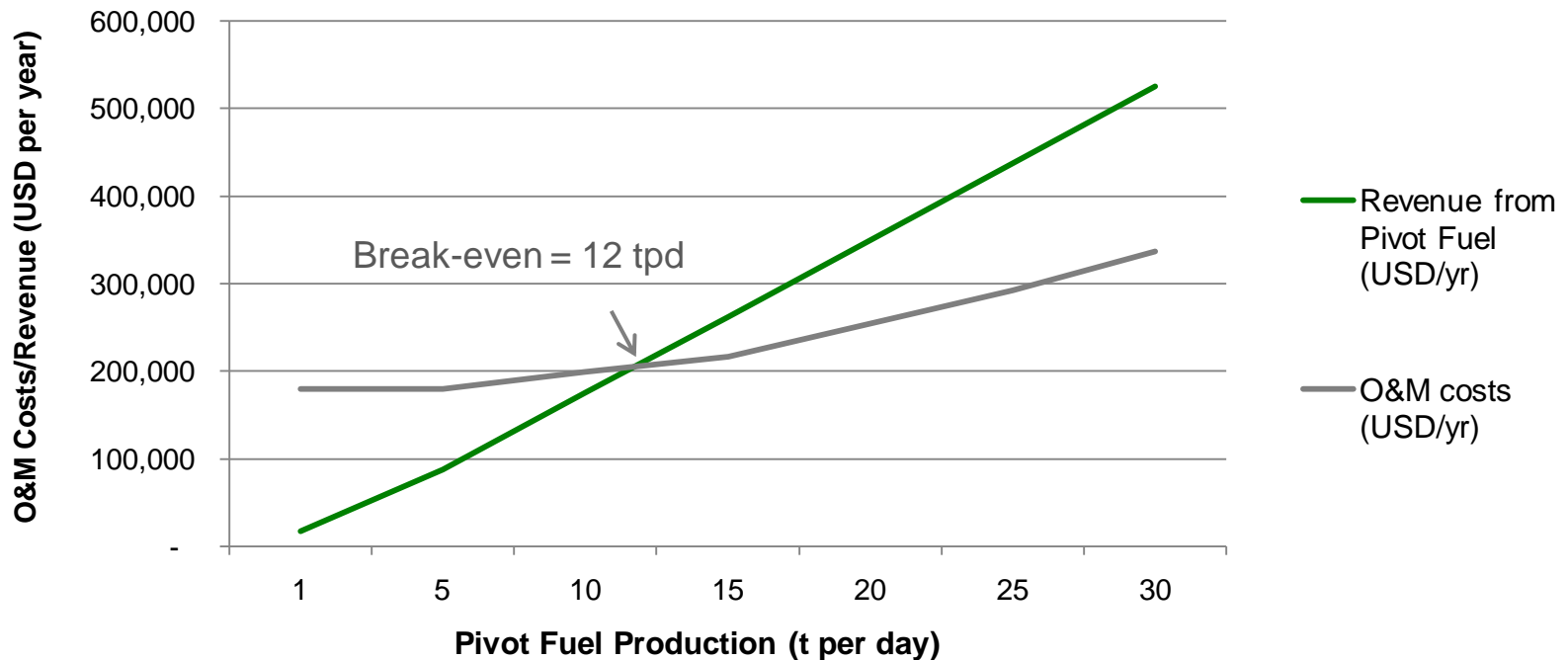
= 1/3 the time of sawdust!

## Operator feedback

- “This stuff is strong!”
- Easy to load – no dust
- No odor



# Opex vs. revenue



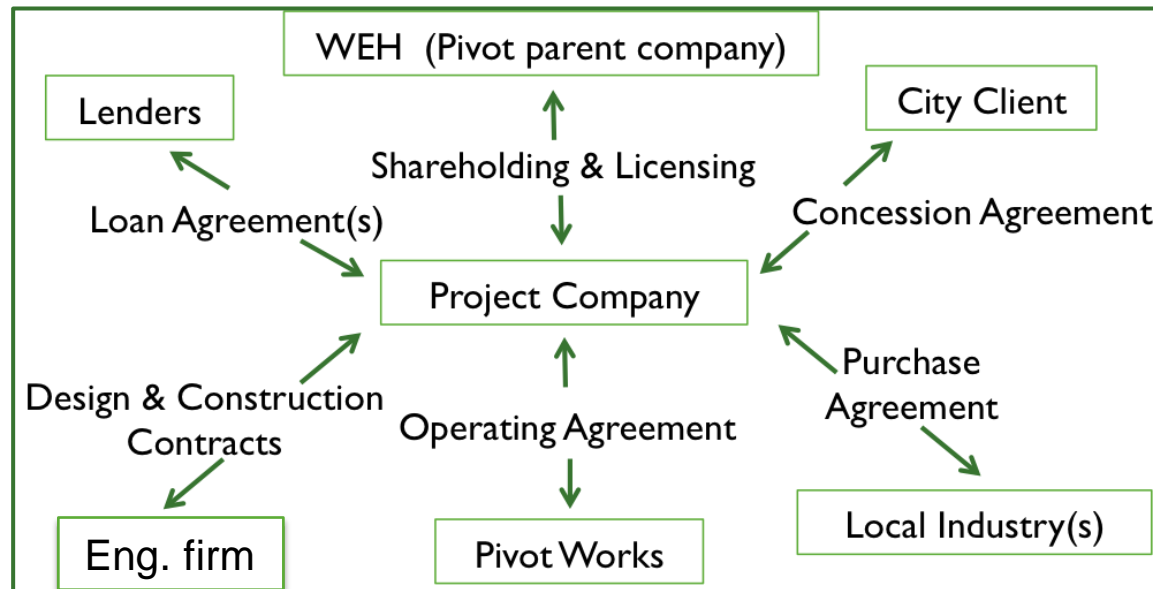
What does 12 t Pivot Fuel mean?

- 1100 m<sup>3</sup> fecal sludge/day at 1.5% solids
- 340 m<sup>3</sup> fecal sludge/day at 5% solids

→ Pivot Works is a solution for large urban areas

# Growth via a unique PPP model

Key costs	Source finance/revenue	Responsible party
Plant design, capital & construction	DFI loan/grant; mission-related investment	Client city – any repayable portion of funding recovered via long-term fixed-fee to lender or project company
Plant operation & maintenance	Sale of Pivot Fuel (>75%); tipping fees	Pivot Works





# Next steps & key priorities

- Further driving down production costs
- Designing optimized effluent treatment – working with CH2M
- Quantifying cost reduction in capex & opex compared to conventional alternatives
- Building pipeline for expansion

# Some of our partners



**BMW Foundation**

Herbert Quandt



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