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BioShaft Sludgeless Wastewater Treatment System

A Green Innovation in Wastewater Treatment
Solving Afghanistan's Lack of Sewer system Problem

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Overview

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- Conventional wastewater treatment produces significant amounts of sludge
  - Must be additionally treated and disposed of
  - Approx. 35% of the operating costs and 25% of the capital costs of a conventional wastewater treatment plant are devoted to the pressing, dewatering, transportation and disposal of sludge.
- The BIOSHAFT System technology overcomes these types of problems

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Design

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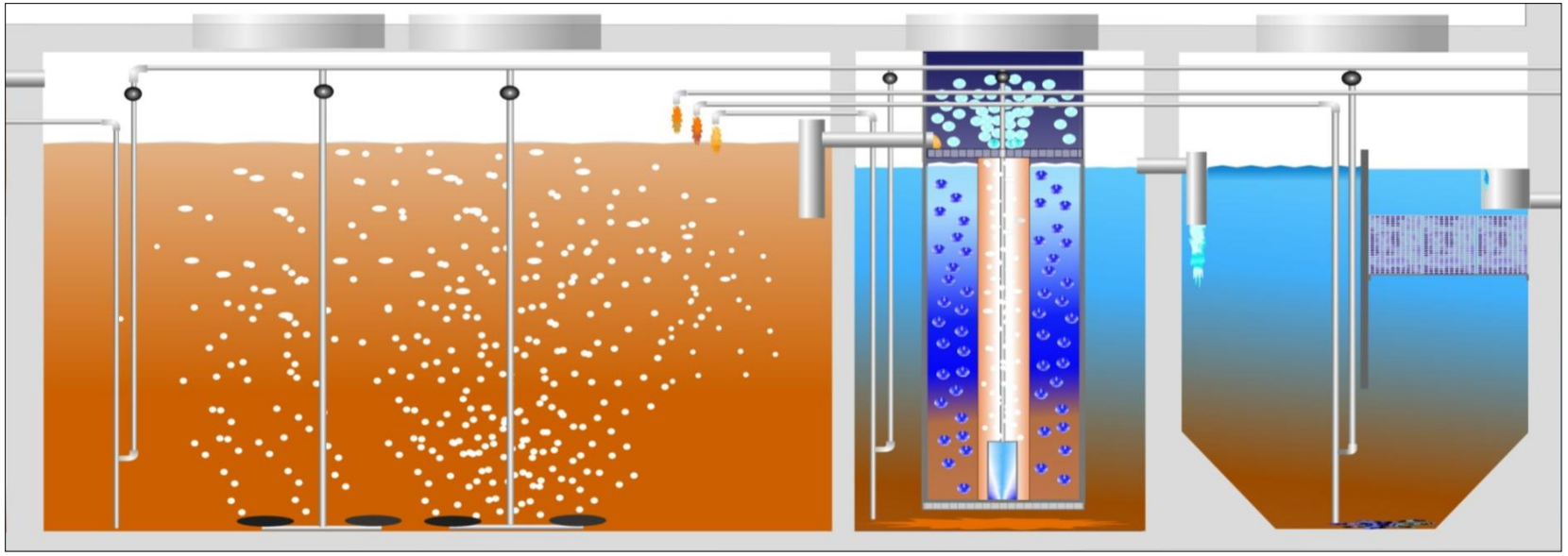
- Design of the Turbo MBBR BIOSHAFT SYSTEM is simple.
  - The main advantage of the T-MBBR system is the ***reduction of Sludge and elimination of odor using minimal*** electromechanical components.
  - 3 steps: Aeration/Digestion, disintegration though bioreactor, clarifier/purification



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Advantages

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- Large reduction in energy consumption (< 50%).
- Requires less land compared to conventional activated sludge plants of the same capacity.
- Eliminates odors, due to high concentration of the dissolved oxygen created by the system.
- Lower capital cost, due to simplicity of design.
- Low noise emission

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Advantages

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- Lower maintenance and operational cost, due to less energy consumption and mechanical components.
- Easy Expansion due to the modular nature of the HANS BIOSHAFT® SYSTEM Turbine which provides
- phased installation or expansion where appropriate with high levels of flexibility.
- Underground installation. Particularly useful where land is at a premium cost, where no visual
- disturbance is required or where extreme temperature exists.

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Custom Sized

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Containerized

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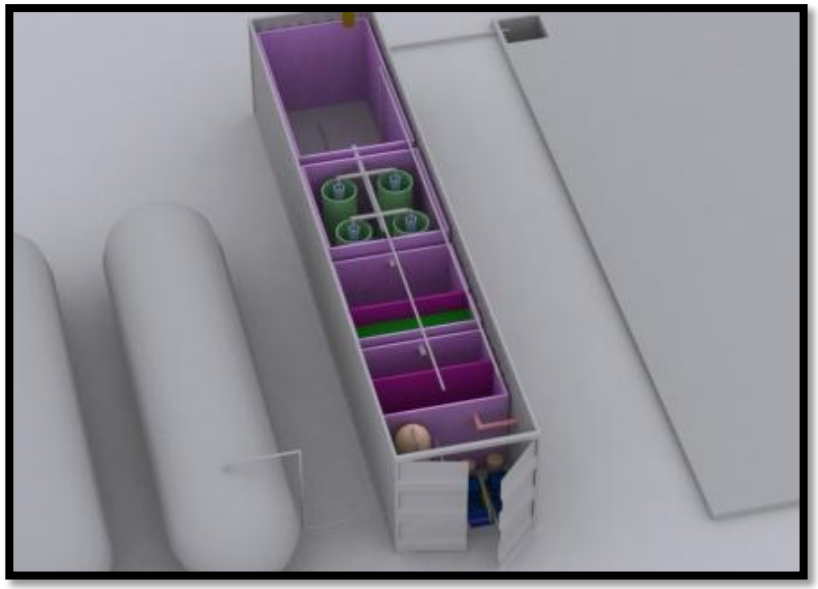

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Small Footprint

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Photograph comparing land requirements of 1500 population conventional Activated Sludge Treatment System (RED) with 3000 population BioShaft System (GREEN)