
Natural Decentralised Waste Water Treatment Systems
Treatment of domestic and non-toxic industrial waste water
Integration of anaerobic and aerobic processes
No mechanical parts within the system
Full odour control, low energy requirement
No input of chemicals
No complex maintenance procedures
Auroville Centre for Scientific Research
csr@auroville.org.in

Settler

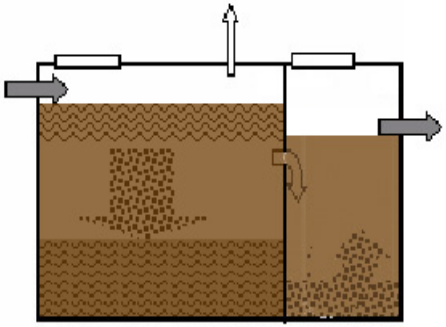
Pre-treatment
Settler

First-treatment
Baffled Tank

Second-treatment
Anaerobic Filter

Third-treatment
Planted Gravel Filter

Post-treatment
Polishing Ponds



- Separates the liquid from the solid
- Retention time is only 1.5 to 2 hours.
- Pollution reduction is around 30%

Baffled Tank

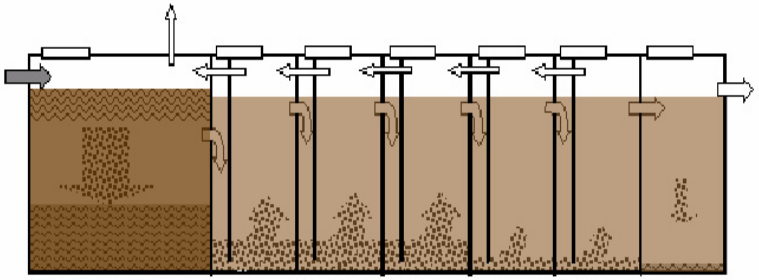
Pre-treatment
Settler

First-treatment
Baffled Tank

Second-treatment
Anaerobic Filter

Third-treatment
Planted Filter

Post-treatment
Polishing Ponds



- Effluent moves from top to bottom through identical sized chambers
- Retention time is ~ **24 hours.**
- Pollution reduction is around 80%

Anaerobic Filter

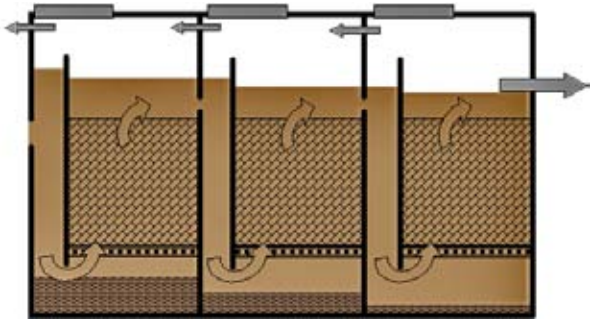
Pre-treatment
Settler

First-treatment
Baffled Tank

Second-treatment
Anaerobic Filter

Third-treatment
Planted Gravel Filter

Post-treatment
Polishing Ponds



- Effluent moves through filter material (cinder) from top to bottom
- Retention time is around **20 hours**.
- Total pollution reduction is around 90%
- CPCB standards are met, but the effluent still has an odour

Vortex-Dewats System

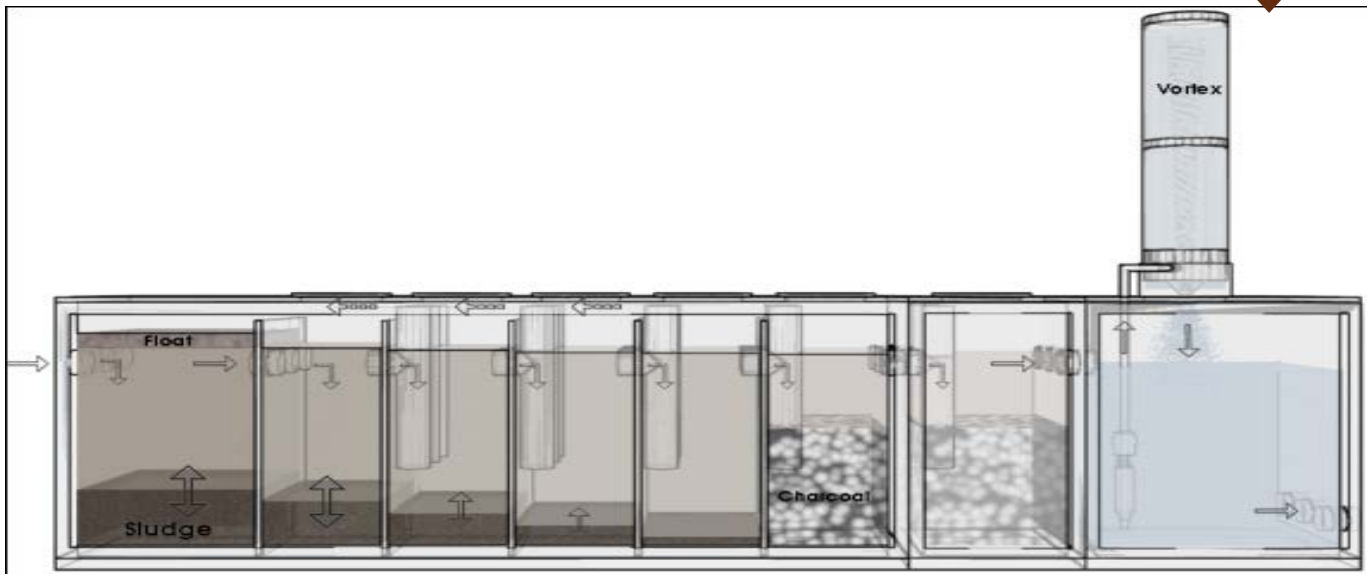
Pre-treatment
Settler

First-treatment
Baffled Tank

Second-treatment
Anaerobic Filter

Third-treatment
Vortex System

Optional
Post-treatment
Polishing Ponds



- A vertically positioned tube with a funnel shaped bottom element
- Inside the tube a natural occurring self-purification effect from the effluent takes place during the continuous swirling movement.
- Pollution reduction is 95%


Aravind Eye Hospital – 500 m³/d


Vortex-Dewats



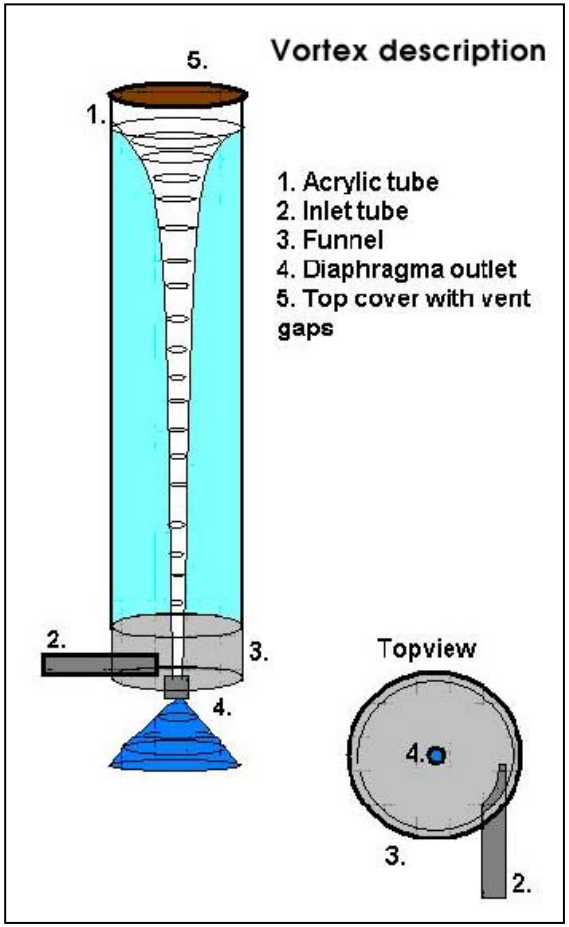
A vortex system mimics a natural occurring phenomena in nature

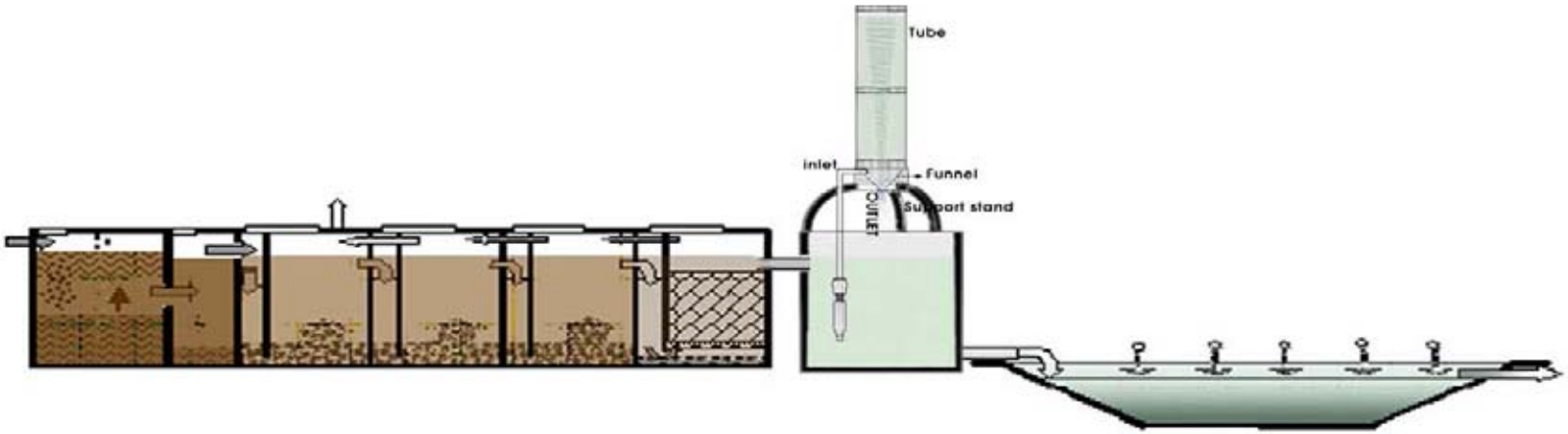
Thereby **effectively eliminating odour**.

meeting statutory discharge requirements with a pollution reduction upto almost 95%

a naturally occurring self-purification with oxygenation of the effluent takes place due to the continuously swirling motion of the vortex.

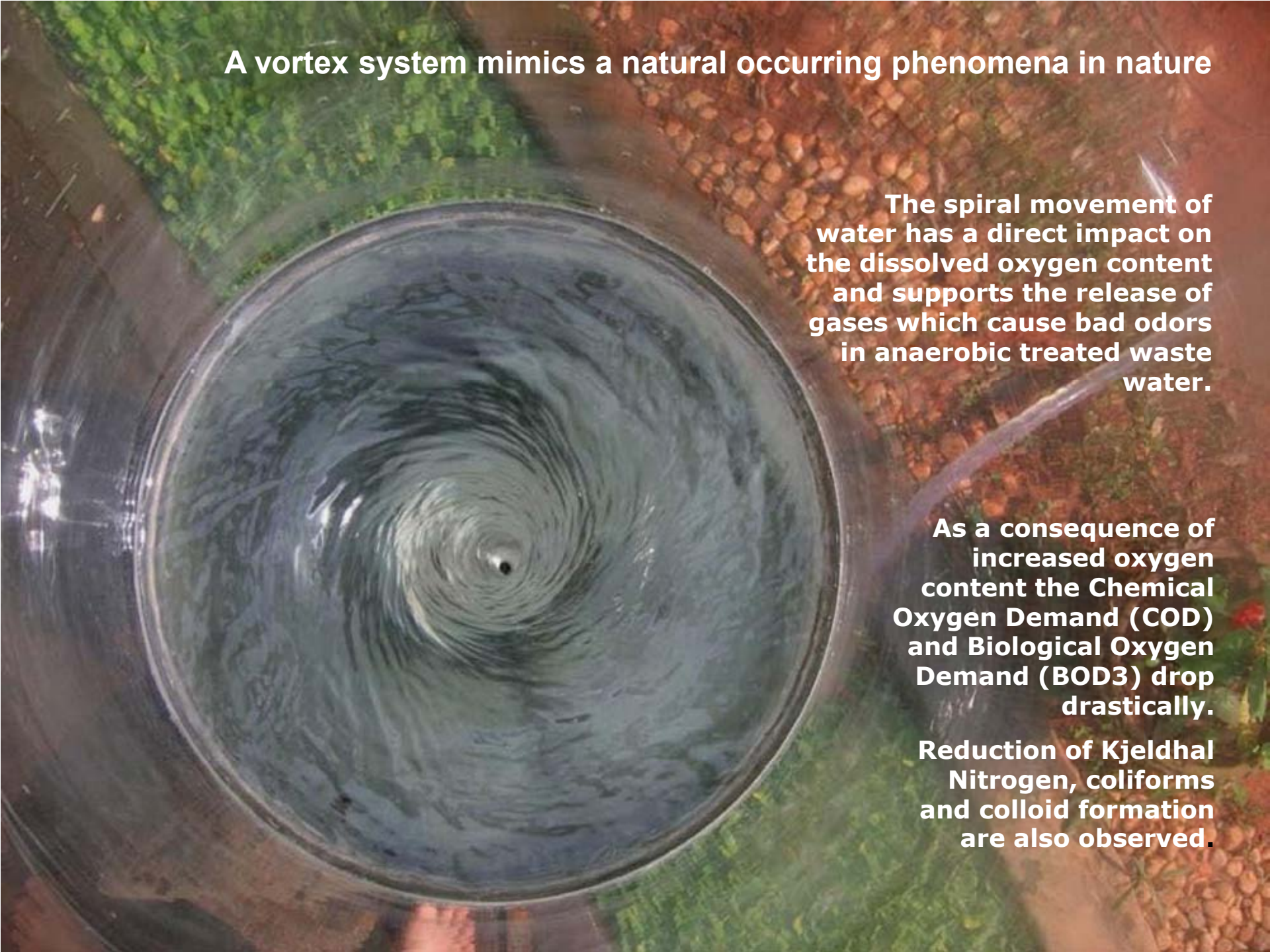
The system can be **scaled - up or down**, according to varying waste water volumes is **exceptionally energy efficient at a fraction of the energy cost** compared to conventional operated treatment plants


Vortex description
5.
1.
1. Acrylic tube
2. Inlet tube
3. Funnel
4. Diaphragma outlet
5. Top cover with vent gaps
2.
3.
4.
Topview
4.
3.
2.


Tube
inlet
Funnel
Support stand
Outlet

Citadyne vortex, 10 m³
Domestic effluent


Acrylic tube - 8mm
60 cm dia /1.8 m height
1.5 HP submersed pump
Counterclockwise inlet
Diaphragm outlet
Flow rate approx. 10 m³/hour



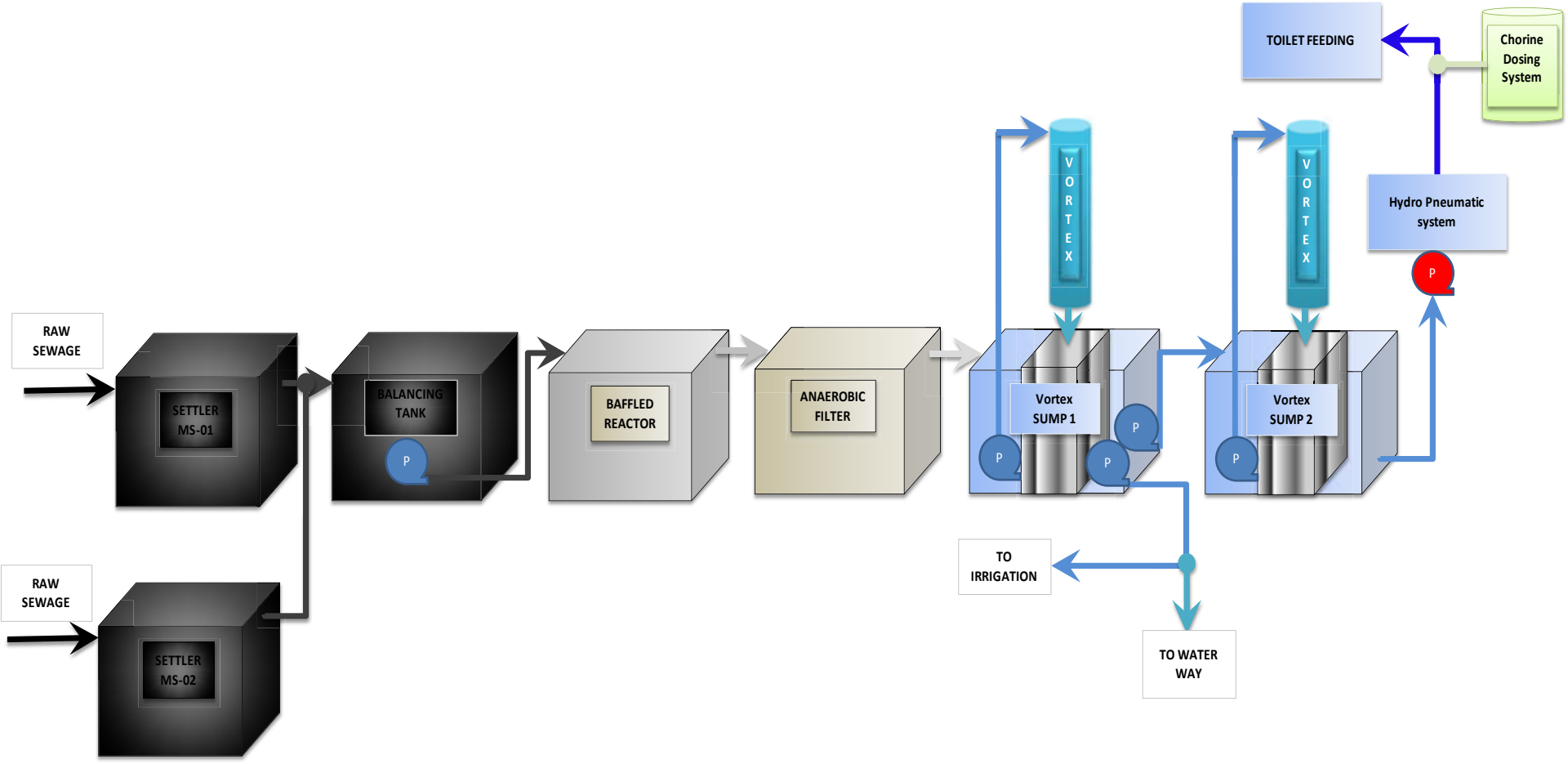
A vortex system mimics a natural occurring phenomena in nature

The spiral movement of water has a direct impact on the dissolved oxygen content and supports the release of gases which cause bad odors in anaerobic treated waste water.

As a consequence of increased oxygen content the Chemical Oxygen Demand (COD) and Biological Oxygen Demand (BOD3) drop drastically.

Reduction of Kjeldhal Nitrogen, coliforms and colloid formation are also observed.

Flow Diagram for STP – 980 m³/d




Vortex systems : 120 m² / hour
Prefabricated ferrocement
1 meter dia / 2 meter height


VBHC Bangalore 740 m³/d


‘And justify the light on Nature’s face’