SEGRA CONFERENCE
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Presented By:
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Three Critical areas to consider

- Environment
- Future

- Financial
- Owners

- Social Perspective
- Users
CRITICAL DRIVERS

Environmental Requirements for - All

- Reduce Emissions
  - From Process
    - Gases / Odours
  - To Facilitate Process
    - Electricity
- Reduce Space
- Solid Waste Disposal
- Increase Reuse
  - Solids
  - Liquid – Recycled water

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CRITICAL DRIVERS

- Social - Consumers
  - Lower cost for Water and Waste Water Treatment
  - Less Restrictions
  - Stable Secure Water Supply
  - Reduce Visual Impact of WWTP
  - Reduce Smell
  - Ability to decentralize infrastructure
  - Reduce time and costs to develop infrastructure for new sub divisions and or remote communities
CRITICAL DRIVERS

- Financial - Owners
  - Reduce OPEX
  - Reduce CAPEX
  - Reduce Time to Construct
  - Reduce Maintenance requirements
  - Minimise requirement to build for tomorrow in high growth areas
- Gain Revenue Streams
- Long service life for Plant and Equipment
Environmental Opportunities

- **Reduce Emissions by**
  - Addressing and changing the processes that produce the issues
    - CO₂
    - Methane
    - NO₂
  - Reducing the power consumption of the facilities
  - Reducing Odour from the facilities

- **Minimise Solid Waste Disposal by**
  - Changing the biomass from sewage to a potential energy source or land augmenter rather than a problem
  - Looking at the energy potential of the biomass and then identifying where in the process it has a tangible value
  - Looking at new technology that is capable of converting this stored energy into power
Social Opportunities

- Lower cost for Water and Waste Water to rate payers by:
  - Lower Capex.
  - Lower Opex.
  - Build what you need for today rather than building for tomorrow
    - Reduces underutilized expensive infrastructure.
    - Decentralized facilities that reduce head works costs and development costs which are passed on to people who purchase land.

- Provide a Stable Secure Water Supply by
  - Reuse of wastewater to replace drinking water in non essential areas
Financial Owners - Opportunities

• CAPEX
  • Major factors
    • Civil Infrastructure
    • Time and cost to design individual plants
    • Large purpose built components
    • Process Risk

• Minimise requirement to build for tomorrow in high growth areas
Financial Owners - Opportunities

Solution – Technology that is:

- Expandable in modules
  - Allows plant to be expanded as and when the revenue is there to support it
- Pre-engineered
  - A Henley home rather than an Architect designed home
- Built in quality controlled manufacturing facilities where:
  - Costs can be reduced and controlled
  - Quality maintained and controlled
  - Time minimised

E&OE
Case Study Adelanto, California

- To double the size of their existing 6,760,000 litre/day secondary level treatment facility required the purchase of an additional 10 acres (~40,000m²).
- The 11,260,000 litre/day capacity Nepsus facility was able to fit on the existing site within the red rectangle with an area of only <650m².
- The Nepsus system delivered equivalent to tertiary quality water.
- The cost of the alternate land acquisition was comparable to the end cost of the Nepsus system.
- The original existing system was going to require 1000hp to run vs 70hp for the Nepsus system.
Built with space to add 4 filtration trains (1.0 MGD) on existing pad

Combination of twelve 250,000 GPD treatment plants operating in parallel

Provides redundancy in equipment as well as in process

If one train fails, remaining 11 trains can handle overflow
Water Facts – Food for thought

- Every day at least 2 billion tons of sewage, industrial and agricultural waste is estimated to be discharged into the world’s water ways.
- 90% of all waste water flows into coastal zones contributing to growing marine dead zones – already covering 240,000 km². Additionally the number of biologically dead rivers is increasing, presenting a political imperative to enforce regulatory controls.
- Demand for safe water is growing exponentially – By 2025 one third of the world’s forecast population of 8 billion may not have access to safe drinking water.
- Inefficient water practices currently result in the rate of water consumption exceeding the rate of population growth.
- Supply is limited - Only 0.25% of the world’s water is fresh giving rise to significant government commitments to infrastructure investment.
Conclusion

The Standard approach to WWT is no longer environmentally or financially responsible and needs to be addressed so as to achieve significant cost, energy, space and GHG reductions.

Opportunity

Current advancements in technology do have the capability to deliver on this statement.

Road Block

“No one has lost their job by suggesting or designing a standard system” Quote from unnamed consultant
THOUGHTS TO PONDER

Through inaction you breed complacency
Through complacency you stifle innovation
Through stifling innovation you........

Live with what you have and constantly complain about the quality and cost never taking responsibility for the fact that you had the power to change it and didn’t

The challenge is for Asset owners, Regulatory Authorities, Government and Industry to collaborate to achieve a result that delivers what the community needs and wants without compromising the integrity of the system.

Is it achievable? Yes
How do we achieve it? Embrace change