



Unlock Hidden Savings

Water and Wastewater Treatment Plants

JONATHAN MANN, BUSINESS DEVELOPMENT MANAGER

About Alpheus

For over 30 years the Alpheus team have been helping customers to deliver operational efficiencies, extend asset lifecycle, achieve compliance and increase resource reuse for a sustainable future.

Our Expertise

WATER TREATMENT SYSTEMS

WASTEWATER TREATMENT

ANAEROBIC DIGESTION (AD)

WATER RECYCLING & REUSE

Our Services

OPERATIONS & MAINTENANCE

ENGINEERING & DESIGN

CONSTRUCTION & DELIVERY

LIQUID WASTE RECYCLING



Overview

1. Industry concerns and priorities
2. Opportunities for adding value to the bottom line
3. Key areas to target
4. Alpheus Approach
5. Hain Daniels Case Study
6. Glenmorangie Case Study
7. Optimisation Opportunity Review resource
8. Q&A



Poll

What are your business's priorities for 2024?

- Cost reduction/efficiency improvement
- New product development/expansion
- Sustainable packaging
- Carbon reduction / Net zero
- Recruitment

Industry Concerns & Priorities



PERSISTENT INFLATION

On average, total production costs increased by 9.2% over the Jan-Mar 2024, while selling prices rose by 4.3%. For the year to March 2025, manufacturers expect their costs to rise by 2.1% and prices by 1.1%.



RECRUITMENT & STAFF COSTS

50% of Food and drink businesses are experiencing difficulties recruiting people with the required skills. Labour shortages remain higher than those in wider manufacturing and the UK.



SUSTAINABILITY FOCUS

Decarbonisation remains high on the agenda together, with sustainable packaging (reducing plastic) as a key focus.



INNOVATION & GROWTH

- Growing sales to UK markets (84%)
- Developing new products, including packaging (53%)
- Restructuring operations to remain competitive (31%)
- Becoming more energy efficient(20%)

Opportunities for Cost Reduction

Energy

Reducing consumption through optimisations and innovative asset management.

Increased energy production from on-site Anaerobic Digestion plant.

Processing capability

Innovative improvements can increase production capacity – for expansion or new products.

Optimising recycled water can reduce mains water costs and improve production capacity.

Compliance

Staying comfortably within your consent is the best way to avoid fines, reputational damage and disruption to site operations.

Discharge

A poor-performing plant will incur higher Modgen Costs if discharging to sewer, or potential fines if discharging to the environment.

Recycling more water will lower discharge costs.

Disposal

Poor maintenance and a lack of plant biology monitoring can increase tanker disposal costs.

In severe cases, significant savings can be made on emergency disposal and elimination of factory disruption.

Reinvestment

Good asset management will prolong the life of assets and equipment – freeing up the budget for further optimisations.

Poll

What costs relating to your wastewater treatment plant are causing the most concern?

- Energy costs
- Maintenance and repair costs
- Disruption from poor performance
- Discharge/waste disposal costs
- Consumables/chemical costs

Key areas to target for cost reduction

A plant running effectively isn't always running efficiently.

Energy Use

Long-term trending of energy consumption will enable the identification of gradual or repeated spikes in energy use.

Any increase in energy use is a signal that your assets are working harder than they should.

Control Settings

Inappropriate automated Cleaning In Place (CIP) settings can drive energy costs up and reduce asset lifespan significantly.

Using real-time data and predictive analytics helps identify potential problems before they occur, improving reliability and reducing downtime.

Plant Biology

Biology is at the heart of the treatment process.

Monitoring, understanding and managing plant biology enables appropriate adjustments to be made to improve efficiency.

Maintenance Plans

Formal plans for maintenance incorporating increased activity for critical assets, can lengthen asset lifespan, ensure optimum efficiency, and reduce downtime.

The early implementation enables maximum benefit.

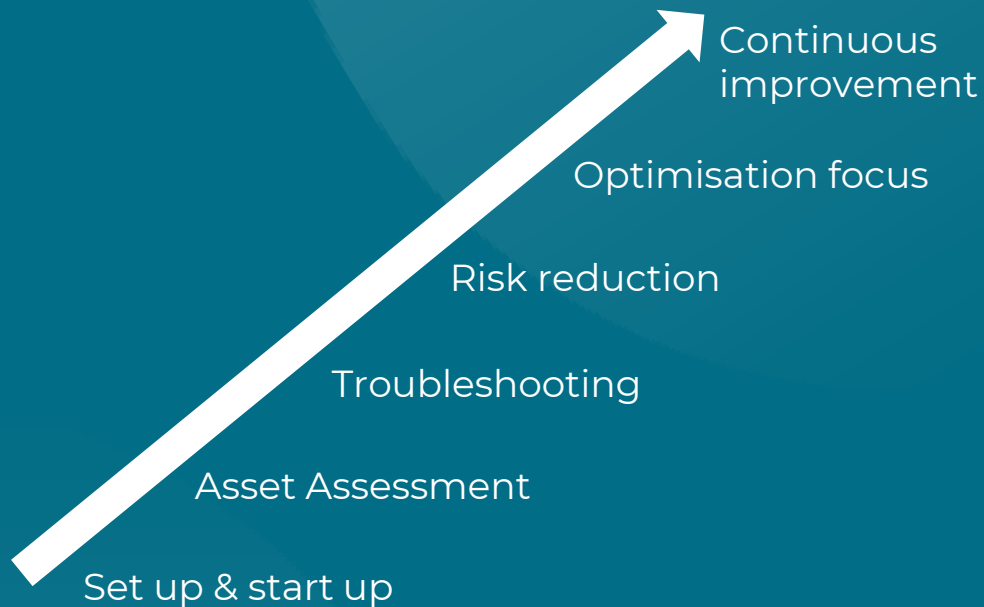
Chemical Use

Closely monitoring the treatment process and analysing data can identify areas to fine-tune such as adjusting chemical dosages, mixing/aeration rates and settings to improve efficiency.

This often delivers significant savings.

Alpheus Approach

OPTIMISATION PROCESS



CORE VALUES



Safety

- Planning
- People & Training
- Duty of Care



Quality

- Contract Management; Planning; Efficiency
- Environmental Protection and Compliance
- Focus on customer goals



Delivery of:

- High standards of workmanship
- Customer satisfaction
- Strong work ethic and teamwork



Leading with Data and Science

A complete, and scientific, review of assets and processes enables Alpheus to identify and propose specific actions to deliver significant OPEX reductions. Metrics will vary from plant to plant, but would typically include:

- Plant biology via detailed microscopy
- Bacteria health
- Sludge analysis
- Organic load rating
- pH levels
- Chemistry
- Treatment Process
- Asset condition

Bakkavor Meals, Boston

THE PROCESS

- A full review of the equipment, treatment process stages, and plant biology was carried out. This included in-depth microscopy and laboratory analysis to understand bacteria health.
- The analysis revealed an extremely high sludge age.
- To address this, the technical team calculated optimal targets for food-to-mass, MLSS and sludge age.
- Our delivery team devised concise plans to enable gradual change to the characteristics of the biology to achieve these new targets.
- The chemistry highlighted an opportunity to reduce chemical costs by over 75% through improved chemical selection and procurement.
- As a result of the optimised sludge age and lower MLSS levels, the delivery team were able to:
 - Significantly reduce the aeration rate
 - Reduce Cleaning-In-Place requirements (due to improved membrane permeability)

THE OUTCOME

- ✓ 23% reduction in energy consumption and cost
- ✓ 76% reduction in chemical costs
- ✓ Increased asset lifespan and groundwork laid for future optimisation.

We now know the costs incurred to our business relating to water treatment and have the flexibility in the contract to dictate how, where and who we purchase from. Alpheus has also helped us lower the hidden costs of water treatment, for example, our energy and trade effluent costs have decreased since we entered a partnership with Alpheus.

Alongside decreasing costs, Alpheus has worked with us to optimise and modernise our plants to deliver quality and efficiency improvements.

The biggest improvement has been the increased visibility and the collaborative way we work together. Alpheus has been open in everything they do and opened the doors on the process for people in our business who were previously uninitiated in the world of water treatment.

As a business, it's really important to understand the processes that lead to big costs within your business. Alpheus has helped us in gaining and sharing that knowledge across the business for common benefit.

Michael Widdop
UK Water Treatment Manager
BAKKAVOR GROUP

[Read Case Study](#)

“Alpheus exceeded our best expectations as a partner in running our AD plant...gas production has increased, and they have improved our filtration system. They constantly look to reduce chemical usage, so we've removed the entire chemical usage for the digestate removal from the reactor. We no longer use any acid or polymer in our by-product disposal...and have a far more efficient system that works for the local farmers who take our digestate to fertilise the fields.”

ED THOM, DISTILLERY MANAGER



[Read Case Study](#)

The Glenmorangie Company, Tain

THE PROCESS

A comprehensive analysis prompted changes to:

- pH settings.
- Membrane cleaning regimes.
- Optimisations in plant biology to improve gas production (i.e. closer management of VFA's and FOS/TAC).

THE OUTCOME

- ✓ £80k reduction in chemical use.
- ✓ Reduction in energy use by 1500kWh per day.
- ✓ Increase in membrane lifespan allowing postponement of planned membrane replacement and reallocation of budget to further optimisation.
- ✓ 30% increase in Biogas production.

Hain Daniels, Cambridge

The previous AD system had been struggling to treat effluent efficiently due to the AD reactors' capacity and biomass retention issues. The key issues to address were:

- Significant under-utilisation of the Combined Heat and Power unit.
- Increased Mogden trade effluent costs associated with the discharge of effluent to the public sewer.

As Hain Daniels had plans to introduce a new line imminently and import waste to the site, they were keen to upgrade their system to resolve these issues, improve performance and ensure capacity for the future.

THE PROCESS

- Alpheus managed the design, build and commissioning of the new AD/Treatment plant – without disruption to production.
- Alpheus assumed responsibility for the Operations and Maintenance of the plant-based on our track record in performance optimisation and Process Safety credentials.

THE OUTCOME

- ✓ Increase in total flow via the Anaerobic Digester by two-thirds (66%).
- ✓ Consistently high COD removal at >85%.
- ✓ 15% improvement in methane produced in biogas (from 65% to >75%)
- ✓ Reduction in Modgen trade effluent costs by over £30k per month.



15%

IMPROVEMENT IN
METHANE PRODUCTION

From 65% to **<75%** methane
composition in Biogas



<£30k

REDUCTION IN MONTHLY
MODGEN CHARGES

Predicted to deliver over **£400k**
in savings over 12 months



Questions?

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