

## **BiOWiSH™ Aqua**

# **BiOWiSH™ Aqua Improves Effluent Quality**

Helps South Korea Slaughterhouse Meet Stricter Discharge Limits

### **Executive Summary**

#### **Findings**

The introduction of BiOWiSH™ Aqua into the bioaugmentation process helped a South Korea slaughterhouse meet effluent compliance standards. Before BiOWiSH™ Aqua, the slaughterhouse was faced with significant capital expenditure and third party operation costs to meet the compliance standards set by the Korean Environmental Office. With the improvements generated by BiOWiSH™ Aqua and small process modifications, these expenditures have been postponed leading to substantial expense avoidance.

Over the course of 10 weeks, BiOWiSH™ Aqua implementation led to reduced BOD, COD, SS, TN, and TP by 76%, 76%, 89%, 85%, and 61% respectively. In fact, the process worked so well that the slaughterhouse met compliance within 6 weeks.

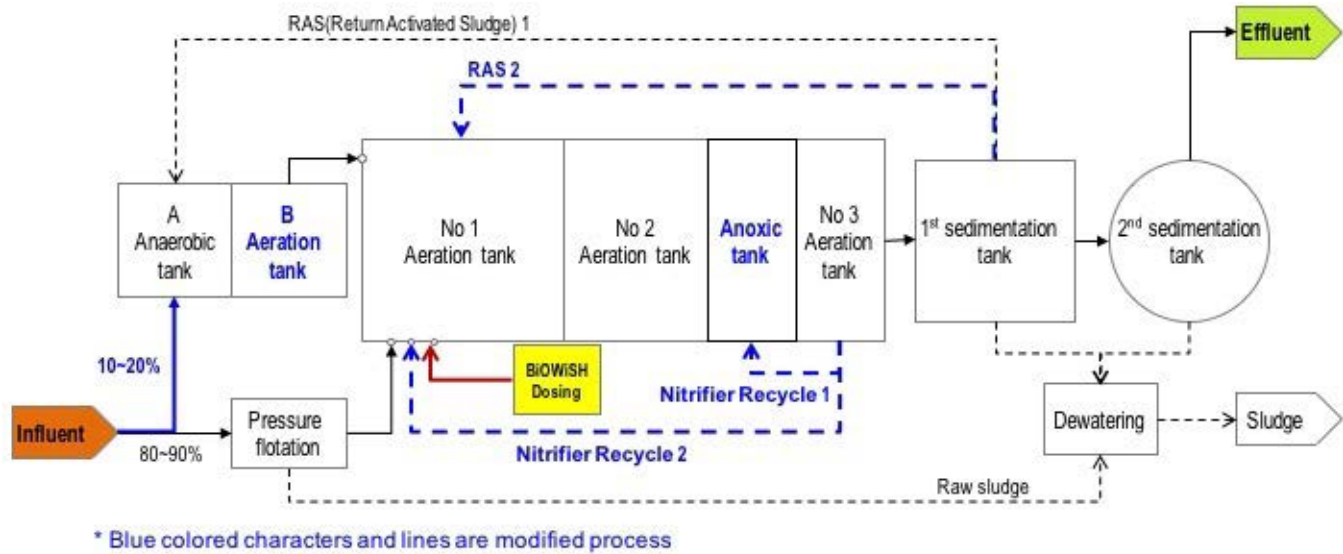
#### **Background**

Located in the Choongchung province, South Korea, this slaughterhouse has grown its processing capacity by 30% over the past few years. The present rate of 1600 pigs per day meant its waste generation increased from 190 to 300 m<sup>3</sup>/day. Last year the Korean Environmental Office declared the industrial park housing this slaughterhouse a clean environment control zone. Larger waste loads and stricter discharge limits meant management faced significant capital expenditure and third-party operation fees to meet environmental compliance.

#### **Solution**

BiOWiSH™ local partner Smart Bio Korea (SBK) provided an alternative solution. Introducing small-process modifications and implementing a bioaugmentation program using BiOWiSH™ Aqua, SBK proposed a 10-week program to achieve effluent compliance.

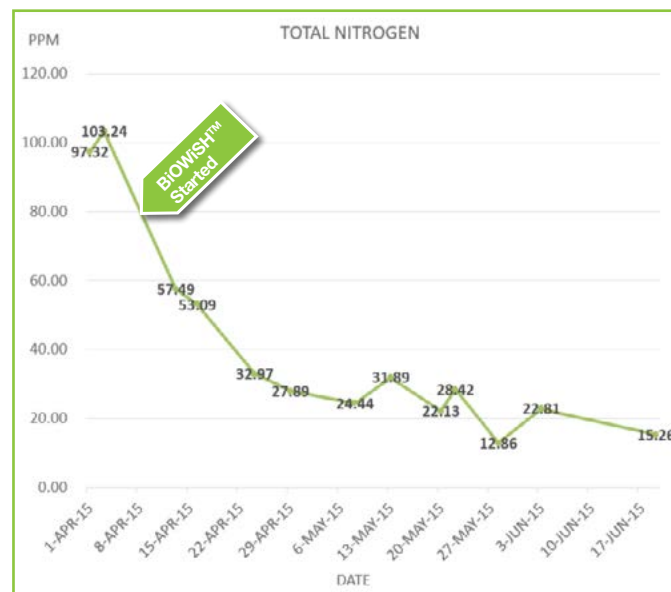
The following process schematic shows modifications (blue) and BiOWiSH™ Aqua dosing:



## Results

The introduction of additional sludge recirculation streams as well as the anoxic stage provided the ideal conditions for BiOWiSH™ microorganisms to boost biological carbon degradation and heterotrophic nitrification/denitrification. This resulted in lower COD, BOD, TN and TP values in the effluent.

	BOD mg/l	COD mg/l	SS mg/l	TN mg/l	TP mg/l
Discharge Limit	40.0	50.0	40.0	30.0	4.0
Initial Value	105.0	156.8	124.0	103.2	7.5
6 Weeks	32.1	48.8	18.0	22.1	1.5
10 Weeks	24.8	37.2	13.5	15.3	1.6
Reduction	76%	76%	89%	85%	61%

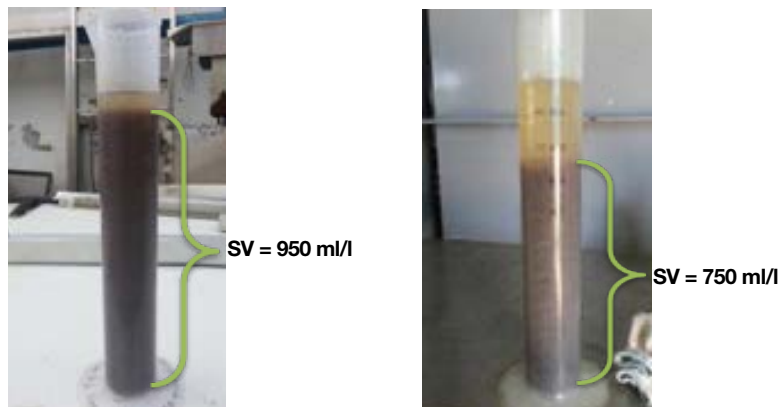


Reduction in effluent Total Nitrogen over the 10-week period.

## Discussion

A few weeks into the trial period, plant operator and site manager reported improved settling in the secondary clarifier.

SV30 values had improved from 950 ml/l to 750 ml/l in a few weeks:



## Key Benefits

- Improved effluent quality with all parameters within compliance limits using existing plant infrastructure.
- Program cost offset by lower sludge production and energy expenditure per ton of effluent treated.
- Improved effluent clarity.
- Improved plant stability reported by operator.
- Planned expansions for the treatment units have been postponed; this means significant capital avoidance.

## Contact

### BiOWiSH Technologies

Tel: +1 312 572 6700

Fax: +1 312 572 6710

Email: [wastewater@biowishtech.com](mailto:wastewater@biowishtech.com)

Web: [biowishtech.com](http://biowishtech.com)



[www.biowishtech.com](http://www.biowishtech.com)

BiOWiSH™ is a registered trademark of BiOWiSH Technologies International, Inc. v\_2