Ozone Nanobubble (O_3-NB) Treatment Dramatically Improves Poultry Processing Wastewater Quality

Poultry processing wastewater is typically high in organic load, suspended solids, nutrients, and pathogens due to blood, fats, proteins, and sanitisers. This creates high BOD/COD, low dissolved oxygen, odours, and compliance challenges for treatment ponds. Nano Bubble Technologies (NBT) trialled its O_3-NB system on samples from two priority ponds at one of Australia's leading poultry producers. The technology delivers ultra-fine ozone-filled nanobubbles (<80 nm) that provide superior oxidation, pathogen inactivation, and solids removal without chemicals.

The 6-hour O_3-NB treatment delivered outstanding pollutant removal across both ponds through powerful hydroxyl radical oxidation, nanobubble flotation, and disinfection. Results far exceed conventional treatment performance, achieve regulatory compliance (especially Pond 6), and significantly improve aesthetics and odour generation potential. The commercial-scale system proposed for the site will ensure low-maintenance, cost-effective operation for high-volume poultry wastewater.

Client: Leading Australian Poultry Producer

Unit Type: Single-Cell O_3-NB System

NB Installation: December 2025 (Lab-based at NBT facility)

Pond Size: 4 Meg (Pond 2), 2 Meg (Pond 6)

Benefits: Both pond samples showed significant reductions in BOD, COD, TSS, Ammonia, E. coli, Coliforms, Pseudomonas, Turbidity, Total Carbon, and full EPA compliance was achieved

Key Benefits Achieved

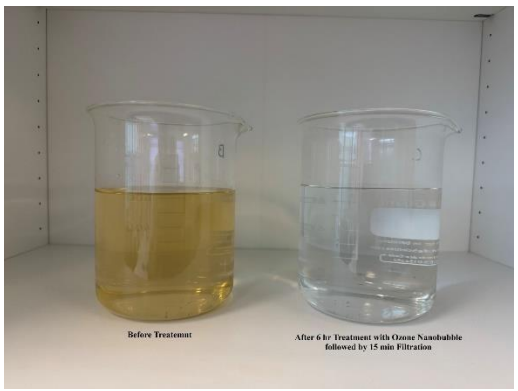
Pond 2 (highly polluted):

- **BOD**: 640 → <5 mg/L **(–99.2%)**
- **COD**: 4,100 → <50 mg /L **(–98.8%)**
- **TSS:** 1,300 → <10 mg/L **(–99.2%)**
- **E. coli**: 160,000 → 55,000 MPN/100 mL **(–65.6%)**
- **Pseudomonas:** 57,000 → 250 cfu/100 mL **(–99.5%)**
- **Turbidity**: 460 → 8.4 NTU **(–98.2%)**
- **Total Carbon:** 230 → 68 mg/L **(–70.4%)**

Colour Reduction (Pond 2)

Pond 6 (EPA-critical pond):

- **BOD:** 230 → <5 mg /L **(–97.8%)** — well below EPA limit of 80 mg/L
- **COD:** 90 → <50 mg /L **(–44.4%)**
- **TSS:** 12 → <10 mg/L **(–16.7%)** — well below EPA limit of 100 mg/L
- **pH**: 8.1 → 7.3 (now within 6.5–8.5 EPA range)
- **E. coli & Faecal Coliforms***:* ~20,000–21,000 → <10 cfu/100 mL **(>99.95%** inactivation)
- **Ammonia as N**: 89 → 14 mg/L **(–84.3%)**
- Full EPA compliance achieved for BOD, pH, and TSS



Colour Reduction (Pond 6)

Colour Reduction

- ***Pond 2-Before treatment***: dark brown, opaque
- ***Pond 2: After 6-hour O_3-NB + 15 min filtration***: clear, almost water-like

The 6-hour O_3-NB treatment delivered strong pollutant removal, meeting compliance and improving odour and water quality. The system offers a low-maintenance, cost-effective solution for poultry wastewater.

www.nanobubble.com.au