



'Fish processing Industry's obnoxious smell removal '!

1. Background

This is a flagship company of marine products, commenced its full-fledged operations in 2007. The company was able to carve a niche for itself as a quality fishmeal and fish oil Production Company amongst its global clients through its quality processes and making the full use of its location advantage. The factory is located midway between major ports of Kanyakumari and Ratnagiri. Production capacity is 600 MT of Fish processing /day.



1.1 About Site

This is mainly for animal feed & not for human feed. Fish, waste fish in the form of chopped head of the fish are received, unloaded and processed in particular area but not segregated in Plant. So there is enough time for the decay of the fish and generation of obnoxious smell. Lot of water is used for the cleaning of vehicles. The unloaded fish are taken to conveyor using machinery.

Production Area is divided in three lines – A, B and C. Each line has Cooker – Press Machine and Dryer. Raw material is taken in Cooker first and cooked for 1 hour using indirect steam. After cooking, raw material is fed in Press Machine, where cooked fish is squeezed to remove water along with Oil. The oil and water coming out of this is taken in Tri canter. The pressed fish is then fed in dryer to make dried powder. Cooker – Press Machine – Dryers have individual vapor lines where all the vapors are taken to the Scrubber using Blowers having Electric Load of 30 KW.

2.1 Problems Identified

- Condensate water has very obnoxious smell.
- Vapors coming out of blowers have strong ammoniacal smell with high pH.
- Production line have manageable but putrefying smell.
- Unloading area has strong Putrefying Smell.

Trials and Treatments Done for Condensate Water:

Tank has capacity of 20 m³ with pump of 20 m³ per hour flow. Water from tank is recirculated continuously to release to ETP treatment. Hot condensate water is generated in production and fed to condensate tank through separate line.

Table 1 : Production highlights

No	Production	Generation of Water	Generation of Oil	Generation of Dried Fishmeal	Generation of Condensate Water
1	1 MT	0.7 MT	0.1 MT	0.2 MT	0.55 MT

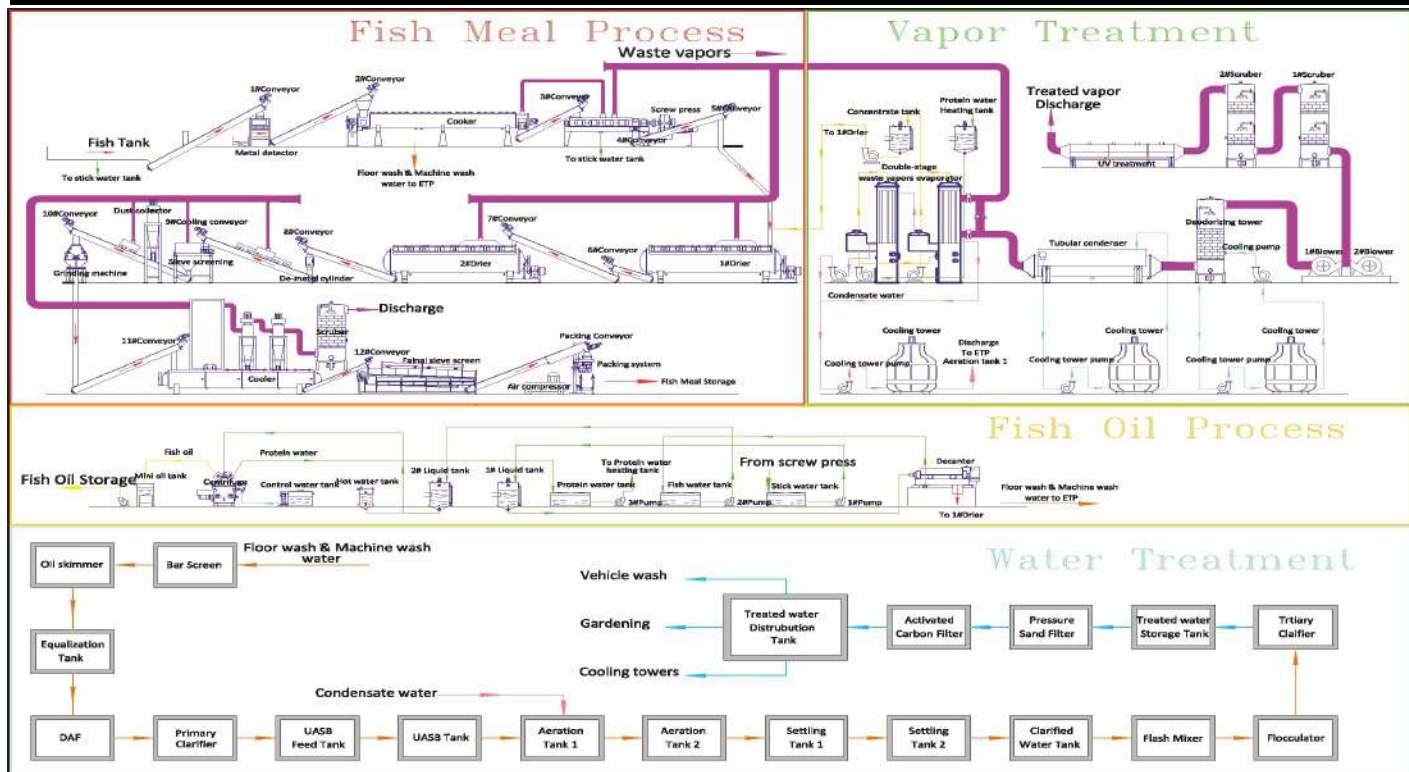
Inefficient treatment

- Lemon fragrance was added in condensate water. 3 lit of fragrance based Lemon solution was fed in Condensate tank in 24 hours.
- But this was only masking odour. At present this was insufficient & company officials were keen to improve this.
- Application of UV cabinete, Ozone treatment, hypochlorites trials were a failure.

2. Challenge

Generation of Condensate Water–

- The water which is received from the press machine is taken into the Tri Canter.
- In Tri-canter Oil, Water and Sludge are separated.
- Fish oil is taken in Oil tank and water is taken in the evaporators.
- In evaporators, 80 % of the water is taken out using steam in jacket. Rest 20 % is the thick protein water which is again fed in Dryer to get dried material.
- The remaining in the form of condensate stick water.
- Condensate stick water steam is cooled in condenser and taken in the condensate water tank.



3. Special Technical Solution

Mr Yogesh Kulkarni, Mr Ashutosh Vadanagekar, Mr Ajinkya Brahmane, Ms Monika Singh were team members from Amalgam Biotech, had provided solution with demonstrations and field support, site visits and consistent service commitments with product 'Nutriserve Rapid Oxidizer'

Observations

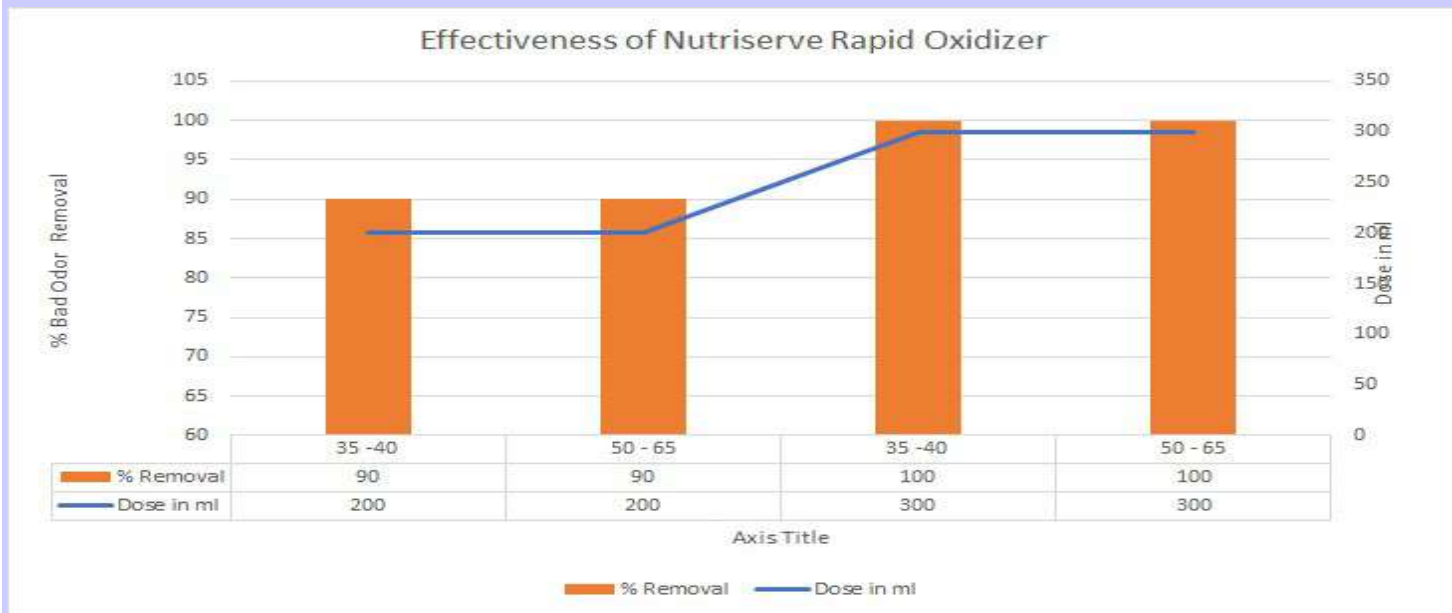
Smell of the condensate water - cold & hot is checked immediately after treatment and after time 30 mins cooling it to RT

N o	Quantity of Condensate Water	Temperature	Nutriserve Rapid Oxidizer
1	100 Lit	35 - 40	200 ml
2	100 Lit	35 - 40	300 ml
3	100 Lit	50 - 65	200 ml
4	100 Lit	50 - 65	300 ml



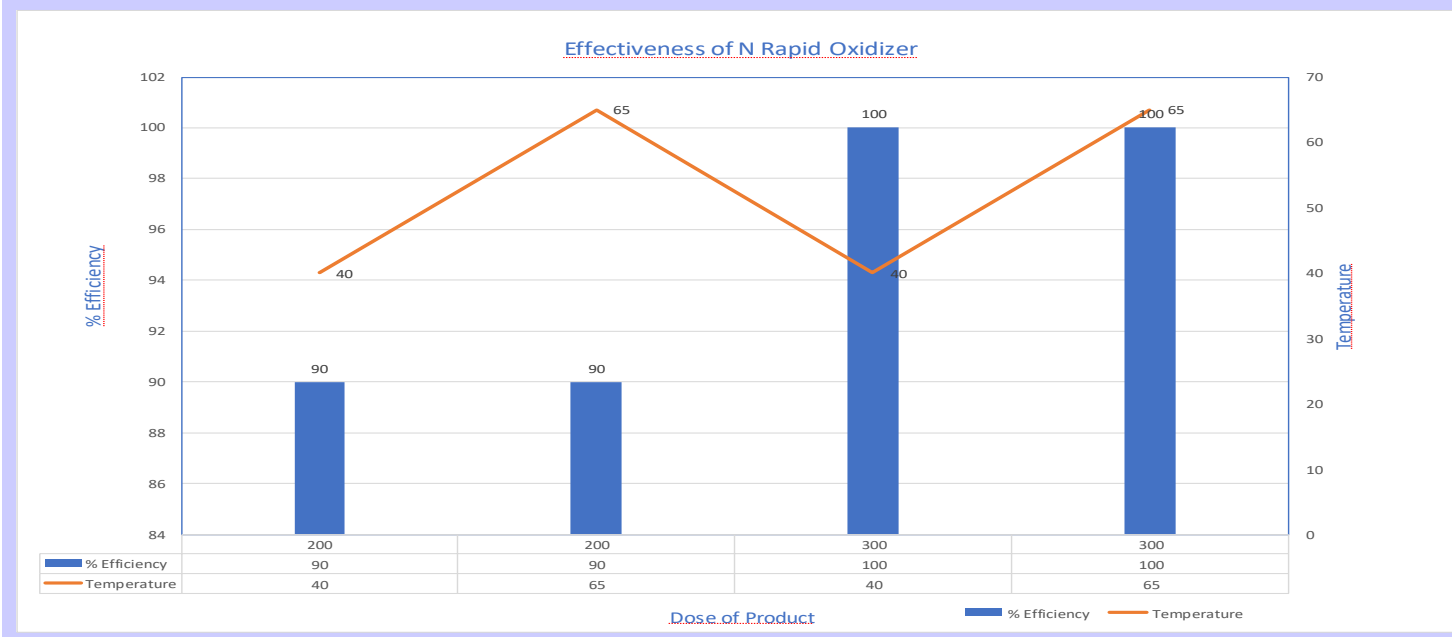


Graph 1 : Effectiveness of Nutriserve Rapid Oxidizer- % Removal : Dose



No	Quantity of Condensate Water	Temp.	Nutriserve Rapid Oxidizer
1	100 Lit	35 - 40	Very little Obnoxious Smell was observed
2	100 Lit	35 - 40	Smell of Chemical dosed was observed
3	100 Lit	50 - 65	Very little Obnoxious Smell was observed immediately after treatment. After cooling of Condensate water, smell of chemicals dosed was observed
4	100 Lit	50 - 65	Very little Obnoxious Smell was observed immediately after treatment. After cooling of Condensate water, smell of chemicals dosed was observed

Graph 2 : Effectiveness of Nutriserve Rapid Oxidizer- % Efficiency : Temperature





Success Story

- 1 Kg Nutriserve Rapid Oxidizer is sufficient enough for the treatment of the condensate
- The putrefying smell is generated due to the rotten flesh of the fish. It is generating amines having very low threshold value
- Depending on the quality of the fish to be processed, quantity of the fish to be processed obnoxious smell is released from raw material
- Hence it needs prudence in usage of the Nutriserve Rapid Oxidizer products taking all points in consideration

Same observations were drawn by site Managers

- 100 liters of prepared material is fed @ 4 liter per hr to see the treatment efficacy.
- This treatment is done for 3 consecutive days.
- As the treatment is continued, condensate water smell is reduced to 10 to 15 % of original.
- At a particular night, site personnel missed the treatment and both persons noticed increased obnoxious odour.



Product Application Summary & Benefits

- Condensate water treatment suggested by Amalgam is very effective
- Treatment has advantages as it is techno-commercially viable, 30% cost reduction.
- Treatment gave no load on existing ETP
- Clarity of condensate water increased, No increase in TDS.
- High temperature of condensate was creating very uncomfortable situation for employees as well as people residing near factory. Environmental conditions improved.
- No complex chemistry is involved
- This treatment removes 80% of bad odour with contact time of less than 20 mins
- No additional costs, Easy dosage.

Nutriserve Rapid Oxidizer is an excellent odour removing water additive !!!