



Enabling the Blue Revolution

Ozonators for Aquaculture

Shrimp Hatcheries



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Technozone Environmental Solutions Pvt. Ltd.

INDIA

Middle East

USA

Shrimp Hatcheries

The main reasons for using ozone in Aquaculture Hatchery water treatment are:

- Disinfection by destroying the microorganisms/pathogens completely and permanently inactivate virus
- Partial or total oxidation of dissolved matter
- Micro-flocculation of organic matter
- Destabilisation of colloidal matter
- Precipitation of dissolved matter

Ozone is a very powerful bactericide and viricide and, unlike other agents such as chlorine, it does not leave any undesirable residues requiring subsequent complex treatment. An ideal method of disinfecting water is by ozonation in a contact tank prior to use.

In practice, ozone immediately starts to attack the oxidizable components it comes into contact with. This property makes it a very powerful disinfectant. Because the process only leaves "oxygenated" products and oxygen, it is particularly well suited for hatchery water where the presence of undesirable elements after treatment could have grave consequences.



Ozone is a very powerful oxidizer with more than 50% the oxidizing potential of chlorine bleach and several times faster action, so very short contact time is required. The half life of ozone is less than 20 minutes, so, much less aeration time is required compared to chlorine, which requires 24 hours to 36 hours.

A natural disinfectant, ozone is replacing traditional chemical oxidants in a growing number of industrial processes, including food, beverage, dairy and seafood processing. Ozone destroys all common pathogenic organisms through natural processes of oxidation, disinfection, and decomposition to oxygen (O₂).

Using Ozone has been proven to:

- Significantly increase yield per batch
- Reduce the cycle time by 4 days per batch
- Result in Increased overall hatchery productivity

As the strongest, technically producible oxidising agent it fulfils further functions apart from disinfection. During the ozonation process ozone is consumed completely and breaks down again into oxygen.

Ozone Advantages:

- Increase D.O. (Dissolved Oxygen)
- Reduction of Diseases
- Reduce Ammonia and Nitrite
- Better quality of shrimp seed
- Higher Standard of Environmental Control

Other benefits:

- Reduces and eliminates chemical storage, handling & associated risks & costs
- Reduces man power requirements and removes variations in water quality due to manual mixing of chlorine.
- Effective over a wide range of pH and does not change the pH
- Does not corrode the existing system unlike chlorine
- Environmentally ideal practice, so makes the industry sustainable

TES Air Disinfection Ozonators:

- Kills all microbes (Bacteria, Virus), moulds, fungus etc., in the air.
- Can be used effectively in the Maturation sections, Naupli production areas, and post-larvae(PL) rearing areas.
- Stops cross infection and spread of air borne germs and virus by Killing micro-organisms permanently.
- Very useful for daily use and for fumigation process between batches
- Portable, so they can be used in different sheds at different times as needed
- Automatic timer controlled on/off functions. This ensures round the clock disinfection and ensures safe levels of ozone in working areas. The safety norms are 80-100 ppb. This level ensures high enough level for disinfection and low enough for safety of staff and comfortable working environment.
- For total fumigation and disinfection of sheds between batches, higher levels are used. In this fumigation process ozone gets to every corner and crack in the sheds which are otherwise difficult to clean and disinfect manually



Effluent Treatment System (ETS) or Discharge Water Treatment

Effluent discharge into the open sea adjacent to a hatchery without any treatment increases risks of disease. Treatment of the effluent before discharge is required. Proper treatment and disposal of hatchery discharge will help ensure sustainability of the industry, reduce disease problems within the hatcheries and help avoid conflicts over water use with other industries and users. The water intakes of some hatcheries are located quite close to the effluent discharge of other hatcheries. (Source: Improving Hatchery Practices in India- FAO 2009)

The discharge water can be treated with Ozone as required to complement existing systems, to completely meet all the norms for the discharge water quality parameters set by state pollution control boards, Coastal Aquaculture Authority Etc.,

- Using Ozone is a well recognised practice for treating industrial effluents, especially in textiles, pharmaceuticals, food processing industries.
- This works especially well for organic loads and where the COD and BOD are high.
- Ensures disease and bacteria free discharge water
- Reduces large effluent storage tank requirements for extended treatment
- Reduces extended holding times
- Avoids use of chlorine and subsequent de-chlorination steps

TES Ozonators:

We are the only manufacturer in India, using in-house developed Glazed CERAMIC coating technology for the electrodes. The electrode is the heart of an Ozonator.

Typically other ozonators use GLASS electrodes, which tend to have a very short life of a few months, before they crack or puncture, in the ozone formation process. Most other sources of Ozonators are resellers of the product imported from china, etc., and do not have any control on the quality of the product.

We manufacture all our products at our factory in Chennai, TN, where we have an in-house Research and Development team. This allows complete control over the quality of the product.

Some of our customers include:

- BMR Hatcheries (multiple locations along the east coast, Nellore, Chennai, Marakanam, etc.,)
- Sathagiri Hatcheries, Venkatsai Hatcheries, BTS Hatcheries, BGR Hatcheries, Kakinada, AP
- Devi Fisheries Ltd., Kakinada, AP.
- Venture Hatcheries, Pondicherry
- Several others and we also export our product to several countries

Product Features:

- All TES Ozonators come fully integrated with the required oxygen concentrators and chillers to get the highest concentration of ozone
- Ozone is produced on site, as and when required and integrated into the treatment process. So, no storage and no handling necessary
- No use of chemicals at all

Capacities : 20, 40, 60, 80 Tons/Hr and above

Service: While we pride ourselves in the quality of our products, and expect them to perform without fail, we realise that not all operating parameters are under control. So we have an able and always ready, factory trained service team at our customer's call. Mostly, these service engineers are setting up new installations, but can easily be sent to service any of our existing installations. In addition to a standard first year warranty we also offer annual maintenance contracts (AMC) for a number of years, as required.



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