

# Oasis Irrigation Equipment Co. Ltd.

P-6, Scheme-VI M(S) C.I.T Kolkata-700 054, Ph: 033-23648812

Email: [sales@oasisirrigation.in](mailto:sales@oasisirrigation.in) / [info@oasisirrigation.in](mailto:info@oasisirrigation.in)

Website: [www.oasisirrigation.in](http://www.oasisirrigation.in)

To,  
Valued Tea Planters

Sub: Enhancement of Tea Quality by Ozonation

Sir,

In today's competitive environment Tea Manufacturers are in the lookout and keen to implement methods/improvements to produce better quality of product with higher shelf life. Methods of improvisation in tea processing includes reduction in processing durations and enhance production, improvement in microbiological quality of product and lesser micro-contaminations in the environment to enhance the quality of the product.

## The major problem associated with tea processing

Certain amounts of micro-organisms are always associated with any food product and the same holds good for tea also. The Micro-Organisms grow at a faster rate and deteriorate the product quality, with respect to its original quality characteristics as well as preserving freshness and shelf life. Major problem lies in the area of processing machineries, where small particles of tea leave entangle into machine component and spread around. These particles in the due course are also sources of Micro-Biological contamination.



Tea fermentation is primarily an Oxidation Process and to promote the process during fermentation, lot of air is available around the product. Fresh air is again a source of contamination and increase the microbial load on the product.

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We are taking this opportunity to submit to your esteemed self, the details about the technology of Application of Ozone in Tea Processing for Quality Enhancement and Improved Realisations by its features of Microbial Disinfection in CTC stage and Improvement of Oxidation in Fermentation stage.

We have been inducing ozone in tea processing with the help of our customised machines been developed with extensive R&D for application in tea since more than a decade. **No other process or system can eradicate microbial contamination to the tune of Ozonation without leaving any trace or deteriorating the product, as ozone naturally converts itself back into oxygen within a time frame, after serving well in its goal.** It has been proven in tea companies where our Ozonation systems are installed, that appearance of tea is brighter during processing and also in the cup as well as infusion, resulting in value addition to a big extent. Our Ozonation systems are of state-of-the-art technology and are being increasingly installed by various tea processors, as vast improvement in the produce pertaining to appearance, quality & shelf life has been evidently testified.



It so happens that you put all your efforts to harvest the best leaves from the garden after incurring heavy expenditure in inputs in order to eradicate elements which may deteriorate their quality and then bring these leaves inside the factory. Again during manufacturing, certain microbes like bacteria, fungi, mold, yeast etc cause the unseen havoc by their spoilage and deteriorate the original quality characteristics of tea and its appearance at this stage. This large shortfall is eliminated if this contamination is being checked. Ozone is of proven use at this stage as it is the powerful oxidizing agent which doubly helps in oxidation at the fermentation stage and enhances the fermentation process as well quality characteristics of the product. Reports also show that inducement of Ozone, minimizes pesticidal residues up to a significant extent. Application of ozone has now become an essential means that can prevent any kind of microbial attack on food products.

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With the change of time and new FSSAI norms, food processors have been stringently checking on any kind of contamination inside their processing area. With the advent of ozone in food processing, it has now become mandatory for food processing sector to utilize the miraculous benefits of Ozone.

Ozone does not leave any trace. It converts itself back into oxygen within a span of time, well after serving in its goal.

All the above usages of ozone are being reflected to be of optimum benefit in the final product of tea of which transcends up to the cup.

Of late, many planters are realizing the three fold benefits of ozone, as a

- I. **Strong disinfectant,**
- II. **Optimum oxidizer, &**
- III. **Long run quality enhancer for improved keep quality and shelf life.**

Ozone also helps in removing smoke taints and unsolicited odors. Large buildings and places like five star hotels take use of ozone to diminish smoke odor and improve indoor air quality. Hospitals and many other food processing sectors including water treatment are quite dependent upon ozone for their disinfecting and other needs. Large PSU's utilize ozone at their food grain storage facilities. Our systems do not even require any consumables.



Sir, what our valued clients understand is that **if a garden making 10 lacs kgs of made tea per annum achieves a hike of an average of Rs.5 per kg in price from Ozonisation, then it gains Rs.50 lacs annually with a onetime Capex of a small sum, in comparison of the total gain.** Rs.5 hike can go up-to Rs.20 with the advent of proper Ozonisation as admitted by the Senior Manager of a reputable tea company.

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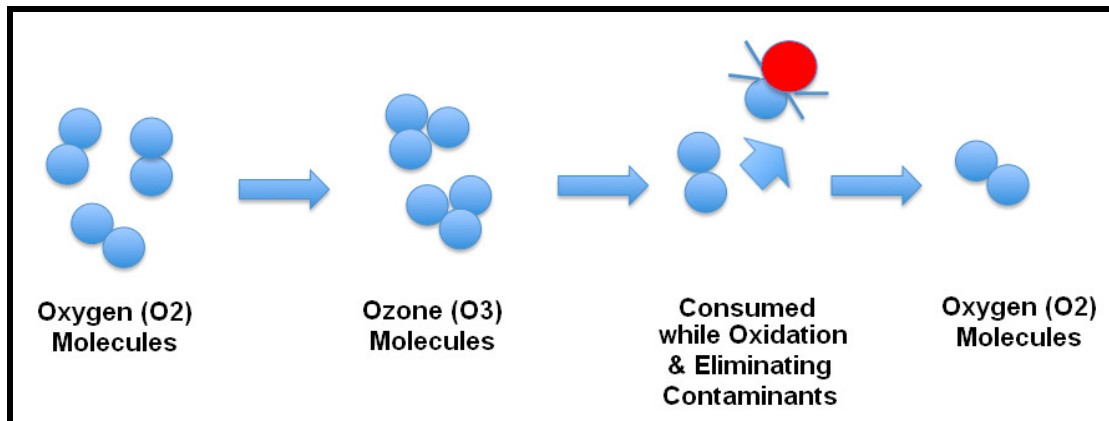
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The systems are running successfully at many Tea Companies of repute, Local Planters, Quality Makers, Bought Leaf Factories, etc., and many new projects are coming up with planters and factory owners in Assam as well as North Bengal who are keen to optimize their produce quality and increase its value in order to reap exponential gains in the long run.

Our systems are of state-of-the-art technology developed with rigorous R&D for application in tea processing which is a high moisture and variable temperature zone and our systems induce electronic as well as mechanical operations in such a way that they deliver a hassle free run, surpassing any hindrance from these variables and are guaranteed in performance, where you can at-once witness vast improvement in your produce pertaining to appearance, liquor, infusion & shelf life. The systems are trouble free do not require any consumable. Apart from that, we also have a sound technical and servicing team based in Jorhat.

We are furnishing below few more details for your kind perusal.



## **The Present Practice**

An Air blower is normally installed closer to the CTC machine, blowing air near the rotary portions and closer to the entangled particles of Tea into the machine. To control the Microbial contaminations, process of blowing steam and disinfectant chemicals are utilized. Both these options are a recurring expenditure, leave traces and reduce product quality.

## **Ozone will help in the above many problem**

Ozone being tri-atomic oxygen is a very strong oxidizer, efficient Broad-Spectrum Microbiological Control Substance, having powerful Oxidizing and Disinfecting Property. It destroys harmful bacteria, viruses, cysts and pathogens in the air or any food product in a very short duration. Ozone is very

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effective in the moist environment. The fermentation process will also be continually optimised and the bacterial growth in the area can be retarded to a great extent. As a result, the Fermentation duration is reduced, as reported by our clients. Microbial load is also substantially lower, making a superior product with an enhanced aroma, appearance and infusion. The productivity can be increased by 20% to 30% by reduction of fermentation duration

## Kind of Ozone System suitable for Tea Processing?

### **Ozone Environmental Sterilization Closer to CTC machine**

An Online Ozonation System can be installed at the inlet of the blower from which air will be passing, and the oxygen of the air will be converted into Ozone. Ozone mixed air will be blown close to the CTC Machine or the main air duct of CFM. Ozone will disinfect the environment and subsequently the component of the machine. As a result of the sterile environment, microbiological load on the air and the machine component will get drastically reduced ultimately providing improved hygienic environment also for the processing of the tea.



### • Improved oxidizing and sterilized CFM

For improving the oxidized and disinfecting environment, ozone is impregnated by virtue of controlled ozone diffusion. In addition, microbiological load which also came reduced from CTC stage provides an improved quality product in shorter duration.

We trust that you would be keen to adopt this dual-featured quality control technology for up-gradation and value addition in the produce of your Tea Factory. We shall be glad to receive your valued order or a call for further quarry or the discussion

### Contact :

H. C. Jain, Executive Director  
Kolkata,  
M : 94330 59250

Saqib Ansari, Consultant–Ozone Application  
Jorhat,  
M : 9854215858



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## CREDENTIALS



Meleng Tea Estate

Jay Shree Tea & Industries Ltd.



MEL/CER/11-12/

August 10, 2011

### TO WHOM IT MAY CONCERN

The concept of ozonator has shown positive improvement in brightness of Tea.

GENERAL MANAGER,  
MELENG TEA ESTATE.

# Oasis Irrigation Equipment Co. Ltd.

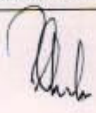
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## CREDENTIALS

| Item Code  | Description                        | PR. No. | Delivery Date | Quantity | Unit of Measure | Price Per Unit INR | Value of order INR |      |
|--|------------------------------------|---------|---------------|----------|-----------------|--------------------|--------------------|------|
| <b>Main store Nahortali ,Nahortali TE , DikomDikom</b>   |                                    |         |               |          |                 |                    |                    |      |
| CPFMZZ0024   | Ozonator, Oasis make, model DP1010 |         | 10/11/2016    | 2        | NUMBERS         | 345,837.38         | 691,674.76         |      |
| <b>Gross Value</b>   |                                    |         |               |          |                 |                    | <b>691,674.76</b>  |      |
| CST  | 0%                                 | 0.00    | VAT           | 0%       | 0.00            | Discount           | 0%                 | 0.00 |
| Packing  | 0%                                 | 0.00    | Freight       | 0%       | 0               | Forwarding         | 0%                 | 0    |
| Excise Duty  | 0%                                 | 0       | Others        | 0        |                 |                    |                    |      |
| <b>Total Value</b>   |                                    |         |               |          |                 |                    | <b>691,674.76</b>  |      |
| <b>Payment Terms</b>   | 90-10% RCP 30D/INST                |         |               |          |                 |                    |                    |      |
| <b>Delivery Terms</b>  | FOR DESTINATION                    |         |               |          |                 |                    |                    |      |
| <b>Special Instructions:</b><br>RATES ARE INCLUSIVE OF ALL TAXES & DUTIES.<br>"C" FORM WILL BE ISSUED BY US.                         |                                    |         |               |          |                 |                    |                    |      |
| For terms & conditions of the order,CST/VAT Registration number,please see overleaf.   |                                    |         |               |          |                 |                    |                    |      |
| <b>NOTE: Bills are to be submitted along with xerox copy of purchase order at Amalgamated Plantations Private Limited,Guwahati,C</b> |                                    |         |               |          |                 |                    |                    |      |
| Pre pro Amalgamated Plantations Private Limited  |                                    |         |               |          |                 |                    |                    |      |



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**Corp. Office :** Christan Basti, G.S. Road, Guwahati, Assam, India - 781005  
**Ph :** +91 361 7106600, **Fax :** +91 361 2341618  
**Regd. Office :** 1 Bishop Lefroy Road, Kolkata, West Bengal, India - 700020. **CIN :** U01132WB2007PTC112852  
[www.amalgamatedplantations.co.in](http://www.amalgamatedplantations.co.in)

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## PURCHASE ORDER

**Hirajuli Tea Company Limited**  
A/C Hirajuli Tea Estate  
Regd. Office : Chatterjee International Centre,  
9<sup>th</sup> Floor, Suite No. A-1, 33A J.L.Nehru Road  
Kolkata - 700 071, Tel : 4070-4044/2226-3118  
E-Mail: [hirajuli@rediffmail.com](mailto:hirajuli@rediffmail.com)  
Ref: HTCL:2017-18:027

**Gardens :**  
**Hirajuli Tea Estate**  
P.O. Darrang Panbari,  
Sonitpur-784111(Assam),  
Tel: 03712-246618/16/28  
GST No: 18AABCH0479E1ZQ  
Dt.23.12.2017

**M/s Oasis Irrigation Equipment Co. Ltd**  
P6, Scheme VI M (S) C. I T.,  
Kolkata-700054  
Email: [info@oasisirrigation.in](mailto:info@oasisirrigation.in) PH:2364-8812

Ref: Your Quotation No:OIEL/HTS/17-18/735 dated 22.12.17

Dear Sir,

We have the pleasure to place our order for the supply of followings:-

| S.No. | Particulars   | Qty          | Rate               | Amount           |
|-------|---|--------------|--------------------|------------------|
| 1     | Ozonator, Housed in a single S. S. Cabinet of 18 swg with a capacity of 10 gm Ozone/hour to be run on A.C current of 220 volt | 1            | 295000.00          | 295000.00        |
|       |   |              | Less: Discount @5% | 14750.00         |
|       |   | <b>Total</b> |                    | <b>280250.00</b> |

### TERMS & CONDITIONS

1. The rate are Ex our Dhekiajuli Works
2. GST -As applicable
3. Warranty 1 Year against any manufacturing defect
4. Delivery: Will be delivered by 15th January, 2018

### PAYMENT TERMS

1. Rs.140000/- Advance against Order  
(Cheque No. 003024 dt.23.12.17 of HDFC Bank Park St.Branch)
2. Balance after installation

Note : If the above material supplied is found to be below standard in quality or spurious in nature is liable to be rejected without referring and will be returned to you at your cost

### Notes:

To be Despatched to : The Manager, Hirajuli Tea Estate,  
P.O. Darrang Panbari, Dist. Sonitpur, Assam

DESTINATION DHEKIAJULI

INVOICE IN FAVOUR OF The Manager, Hirajuli Tea Estate,

Prop: Hirajuli Tea Co. Ltd.

P.O. Panbari, Darrang Dist. Sonitpur, Assam.

For Hirajuli Tea Company Ltd.

  
Authorised Signatory

Copy to: Manager, Hirajuli Tea Estate



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To,  
Oasis Irrigation Equipment Co. Ltd.  
P-6 Scheme VI M (S) C.I.T.  
Kolkata-700054

**Subject: Purchase Order**

Dear Sir,

We are Pleased to place our order for 3 nos OASIS Ozonators for our each CTC machine as under:

"Oasis" Ozonator model SP0015 with inbuilt Air Drier and Oil free Compressor in a S.S. Cabinet.

## HIGHLAND EXIM PVT. LTD.

T +91 353 250 1090 / 1114  
E [info@mbgroupindia.co.in](mailto:info@mbgroupindia.co.in)  
CIN U15400WB2008PTC127396  
Dated: **GST No. 19BAACCH1055M1ZG**

| Design Specification            |                     |
|---------------------------------|---------------------|
| Feed gas Supply                 | AIR                 |
| Feed gas flow required          | 7-10 LPM            |
| Nominal ozone production on air | 15gm/hr 3-4 wt%     |
| Outlet gas flow                 | 7-10 LPM            |
| Cell cooling                    | Forced Air Cooling  |
| Make of cabinet                 | Stainless Steel     |
| Operational indicator           |                     |
| Power on                        | Red Led             |
| Ozone on                        | Green Led           |
| Blown Fuse                      | Red Led             |
| Ozone Regulator                 | 1 No.               |
| Ozone Display                   | 1 No (Digital)      |
| Flow Meter                      | 0-10 lpm Adjustable |
| Main Electrical Connection      |                     |
| Power                           | 620 Watts           |
| Voltage/ Hz                     | 220+ 15%/50Hz       |
| Phase                           | Single              |
| Humidity/ Temperature           | < 90%/0-40 c        |
| Dimensions                      |                     |
| Total Dimensions (L X W X H)    | 770 X 700 X 300     |
| Shipping Weight                 | 50 Kg Approx        |
| Operating Weight                | 45 Kg               |
| Ozone gas outlet                | 6mm                 |

### Terms & Conditions:

1. The rate are Ex – Siliguri Transporter's godwon
2. Machines shall bear a warranty of 1 year for any manufacturing defect.

HIGHLAND EXIM PVT LTD

Thanking You  
*Mansaf*  
Director

Corporate cum Correspondence Office : Orchid Square, 4th Floor, S.F. Road, Siliguri -734005 (W.B.), India  
Registered Office : 6, Lyons Range, Unit No.2, 5th Floor, Kolkata - 700001 (W.B.), India

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## **Potential of ozone utilization for reduction of pesticide residue in food of plant origin. A review.**

Balawejder M<sup>1</sup>, Antos P, Sadko S.

### **⊕ Author information**

### **Abstract**

Residues of plant protection products can be nowadays found in almost all samples of fruits as even if their application was carried out with respect to standards of Good Agricultural Practice. The intake of these compounds with food of plant origin may result in various disorders and diseases. Since the use of plant protection agents seems unavoidable, it is necessary to treat contaminated food material to eliminate or reduce residues content within food products. Ozone is utilized for elimination of biological and chemical contaminants in various environmental matrixes. Since its utilization in food industry has been permitted many experiments were conducted in order to determine its efficiency and side effects on food quality. The goal of this paper is to contribute to a discussion on the ozonization as a process leading to reduction of pesticide residues on plant surface.

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## **Report of Factory Manager to Management on the Working & Benefit of Ozonator**

----- Forwarded message -----

From: <[apareek@mldgroup.in](mailto:apareek@mldgroup.in)>

Date: Nov 2, 2016 7:53 PM

Subject: Trial of Ozonator at Bateli Tea Estate

To: "Ggdalmia" <[ggdalmia@me.com](mailto:ggdalmia@me.com)>

Cc: "Chatterjee Ashok" <[achatterjee@mldgroup.in](mailto:achatterjee@mldgroup.in)>, "Debojit Sir Bora" <[debojit@mldgroup.in](mailto:debojit@mldgroup.in)>, "[tamulypradip11@gmail.com](mailto:tamulypradip11@gmail.com)" <[tamulypradip11@gmail.com](mailto:tamulypradip11@gmail.com)>

Sir

We have conducted trials of Ozonator in our Bateli Tea Estate in old processing facility and following are our observation

Trial started on 29 October in CTC line no. 1 with own leaf, ozone was set at 5 m3 per hour and result were compared with CTC line no 2 Control.

- a. Appearance of drier tea was at par in control and ozonated tea, however more bloom observed in ozone treated tea.
- b. Infusion was better in ozone treated tea than the control CTC 2 infusion
- c. Liquor was superior in ozone impregnated tea compare to control, brightness and briskness was also better in ozonated tea
- d. Over all superior results seen in ozone treated tea.

on 30th October one Extra line of ozone was given in same facility line no 3 CTC where bought leaf processed at par with new factory

- a. Oxidation started quite smoothly as night temperature was 20°C and in module 1st, normally it start in 2nd and half module position without ozone.
- b. Appearance was compared with new factory facility as the same leaf was processed (control), it found better appearance in ozonated tea.
- c. Infusion was bright in ozonated tea compare with control.
- d liquor was brisk and bright coloury compare to control which was dull and coloury.
- e. trial @ 7m3 ozone also conducted but results are not consistent, that may be needed in december manufacture.

Finding

Its worth to have more ozone unit in new facility to get brighter and brisker infusion and liquor. Quantification of value addition by ozone was beyond the scope of these experiments.

Warm regards

Ashok Pareek