OzoneLaundrySystem

Ozone laundry system has distinct advantages over conventional chemical and hot water laundry. Commercial and industrial laundries use tremendous amount of water, chemicals and energy. They also produce hazardous waste water which needs to be further treated before reuse or disposal.

Hotels, hospitals, railways, defense have very large in-house laundries. The cost of operating these laundries is high due to labor cost, energy cost & requirement of fresh water. Along with this they also face stringent safety, health and environmental norms. Due to considerable savings in energy, water & chemical, many commercial and Industrial laundries have shifted to ozone laundry system.

More than three decades ago ozone was being successfully used in commercial and institutional laundries. Commercial washers are also ozone compatible. All internal and external parts of washer are resistant to ozone and chlorine bleach.

Day by day ozone equipments has become more and more reliable and integration is plug and play. Most of the new laundry system are becoming ozone laundry during inception and existing systems are switching over to ozonated one. This is mainly due to advantages listed below.

Advantages of ozone laundry systems:

There are distinct multiple advantages of using ozone in laundry system.

1) **Savings in Energy Cost :**

Ozone at lower water temperature is more effective in regular lightly soiled linens and other clothes. This property significantly reduces or eliminates the use of steam or hot water. For heavily soiled cloths, hot water may be required to efficiently break down greases and oil. Under these conditions ozone enhances the effect and efficiency.

A typical reduction in hot water or steam generation can be 60-100 % and energy saving can be 40 – 80 %. Ambient water washing also increases the life of the linen and reduces carbon foot print and earns significant point in LEED rating.

2) **Saving in chemical consumption :**

Ozonated laundry system requires less amount of detergent as ozone has a property of dirt oxidation and breaking of chemical bonds holding dirt particles. Also ozone significantly reduces the bleach demand since it has bleaching property. There is an addition of PH reduction chemical demand unlike advantage in chlorine bleach because ozone works on wide range of PH.

A typical saving due to reduction in chemical consumption is 20-60%.

3) **Saving in fresh water demand / consumption :**

Since ozone laundry uses less chemicals and bleach it can reduce water quantity as well reduce one or two rinse operation. During rinse operation ozone works in four ways. During rinse cycle it not only rinses the detergent but also sanitizes the linen, oxidizes odor and bleaches the fabric.

A saving in water quantity of 10-25% the conservation of water also earns lead points in green certification.

4) **Reduction in operation and labor :**

Since hot water is not required, the operation and maintenance cost and time is saved. Less labor is required because of reduction in rinse operation of heavily soiled as these cloths

demand rewashing. Due to high efficiency of ozone laundry rewashing, it can significantly reduce this demand by 70-90%.

General reduction of operation and labor can be typically 10-20%.

5) Increased life of linen due to lower :

Life of linen is naturally increased due to three factors. One, due to lesser use of strong chemicals like detergent and bleach. second use of ambient temperatures and third, shortened operation of washing and drying. The significant reduction in broken lint is immediately observed and indicates extended life.

A typical extension of linen life in hotel industry is 15-50% and in hospital is 25-65%.

6) Some additional advantages :

- Ozone washed lines are more fresh and free from any odor.
- Linens are noticeable soft and fluffier.
- Reduction in waste water quantity.
- Less waste water treatment is required for reuse or disposal. This is mainly due to insignificant by products, ozone keeps treating waste water and any residual ozone reverts back to harmless oxygen.
- Absence of hot water reduces the overall temperature of the facility and surroundings.
- Fabrics are more sanitized due to high ozone property.

7) Lower return on investment :

Lastly due to saving in energy, labor, chemical, extended linen life gives rapid return on investment.

The typical ROI can be 12 to 18 months.

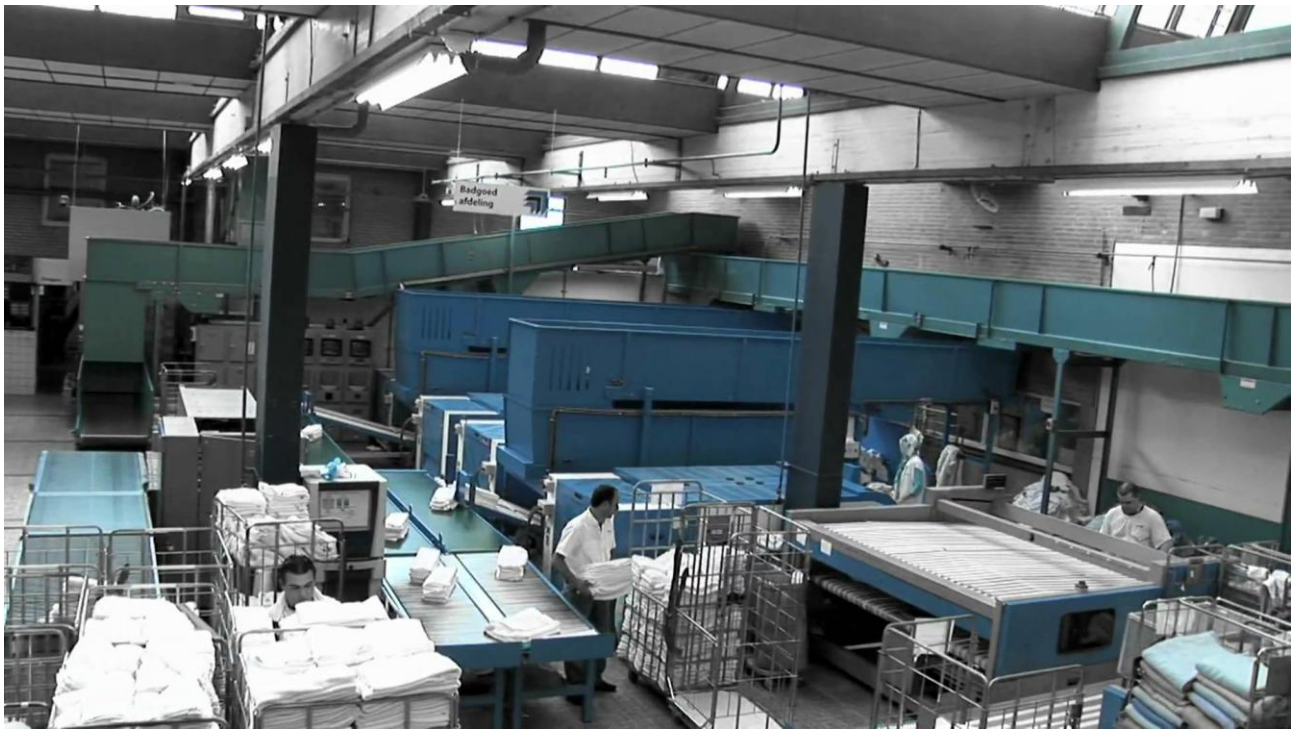
It’s the dissolved ozone, which does the trick.

Integrated centralized ozone laundry system:

In conventional ozone laundry system each washers are connoted with individual ozone generators.
This conventional ozone laundry system has inhalant draw back as listed below:

- Higher capital and operational cost.
- More space required.
- Mass transfer efficiency is extremely poor.
- Dangerous condition of un-dissolved ozone in the facility atmosphere.
- Poor quality of washing and whiteness.

Chemtronics with the help of industry experts, customer feedback and research and development has indigenously developed, Integrated & centralized ozone laundry system. This system has following stages integrated in one comprehensive centralized system for multiple washers.



Stages of Integrated centralized ozone laundry system:

- Oxygen feed gas preparation with or without built in oil fee air compressor.
- IV generation highly efficient and reliable ozone generator.
- Venturi injection – static mixer
- High efficiency mass transfer and transfer and contact tank.
- Back flow preventer for safely.
- Degassing of un-dissolved ozone.
- Residual ozone destruction to oxygen.
- ORP monitor and controller.
- Centralized Control panel.
- Ozone leakage sensor cum controller for safety.

"In ozone system Implementation, generation of high ozone concentration is vital and becomes insignificant during ozone sizing, integration and efficient mass transfer with quality feed gas & Ozone cell cooling."

System stages of Integrated centralized ozone laundry system :

Stage 1: Air compressor feeds ambient air to oxygen concentrator through moisture, dirt and oil filters / separators.

Stage 2: Pressure swing adsorption (PSA) type oxygen generator, concentrates oxygen from the ambient air and rejects Nitrogen and other impurities.

Stage 3: Concentrated oxygen is fed at the inlet of ozone generator cell. When oxygen passes through internally occurring corona, some oxygen atoms are converted to ozone gas.

Stage 4: Cold water feed pump cum ozone mixing pump, feeds raw cold water to venturi injection system.

Stage 5: When high pressure and flow water enters conical venturi, a vacuum / low pressure inside which is generated, due to it sucks generated ozone gas through back flow preventer and NRV.

Stage 6: Thought fine bubble static mixture ozonated water enters mass transfer and contact tank.

Stage 7: Any un-dissolved ozone is released automatically to ozone destruct unit, which transforms it back to oxygen.

Stage 8: Post ozone contact tank water is monitored online through ORP controller and fed to multiple laundry wasters / extractors.

System Implementation operation - ICOLS :

Integrated centralized ozone laundry system(ICOLS), is implemented and operated after proper understanding of present wash cycles, use of chemical and their quantity and type of wash load.

Depending upon load operation is optimized. For lightly soiled hotel load / linens less and mild chemicals are used with ozone. Detergent formula, water temperature and duration of operation are different compare to heavily soiled rugs, table cloths, napkins etc. One should understand that ozone is not a detergent, but a strong oxidizer. In case of very heavily soiled, load with oil, grease & fats ozone need support of detergents & in some cases hot water.

The retrofitting of ozone laundry system gets stabilized in few initial trial and error operations. Training of operational and maintainace staff in very critical and important in successful ozone laundry system.

Models of IOS:

IOS/CL – 40 to IOS/CL – 1000

We have Integrated Ozone System [IOS] for Centralized Commercial Laundry with following range:

Washer Capacity	kg [lbs]	:	20 [45] – 1,675 [3,700]
Inlet Flow Rate	m3/hr [GPM]	:	2.5 [11] – 200 [880]
Inlet Nozzle Size	Inch	:	¾ - 8

Chemtronics Technologies (India) Pvt. Ltd. has successfully designed & developed Integrated Centralised Ozone Laundry Systems for commercial & industrial washers & extractors. ICOLS are proven and time tested technology. It achieves acceptable Indoor Air Quality (IAQ) while minimizing energy consumption, and fully complying with ASHRAE, OSHA standards. Thus its unique technology integration gives ROI of CapEx in less than 2 year.

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Chemtronics has developed Integrated Ozone System for Laundry Waste Water Treatment & re-use

For more information please visit : www.chemtronicsindia.com