Column

# Zero Liquid Discharge: A Success Story of Tirupur Textile Cluster

By **Asif Ashraf**

*The BGMEA delegation visiting Central Effluent Treatment Plant (CETP) in Arulpuram.*

The RMG and textile sector is not only the biggest export earner and employer of Bangladesh but also the leader in many advance initiatives in the country. In its journey of about 35 years RMG sector has emerged as one of the bona fide destination for apparel sourcing in the world. In recent years Bangladesh RMG industry has proactively taken the issue of environmental sustainability as one of the core areas to address. The sector always welcomed new initiatives conducive to its ultimate goal of being a sustainable industry.

Regional cooperation in the area of technology transfer has always created positive impacts due to the similarity of socio-economic and cultural context. In the area of waste water treatment Tirupur Textile cluster has shown some landmark success in the South Asian region. To share the advancements of the two neighboring countries the Institute of Industrial Productivity (IIP) India has organized an exposure visit and study tour. A five-member BGMEA delegation led by Faruque Hassan visited India from 13-18 September. The delegation includes Managing Director of Urmi Group Asif Ashraf, Managing Director of PN Composite Tapan Kumar Saha, Director of DBL Group Anwarul Azim, and Senior Deputy Secretary of BGMEA Md. Monower Hossain.

Tirupur is known as the knit capital of India. With a broad range of factories this knit cluster is capable of exporting all types of knit fabrics and garments. Employing around 600,000 people Tirupur exported around USD 3.29 billion in 2014-15 FY. Tirupur is a dry region with no perennial rivers; the agro-based economy is mainly dependent on rainwater. To ensure sustainable business and decrease pollution load in the environment Tirupur Textile cluster started their journey towards Zero Liquid Discharge (ZLD) back in 2005. It was a huge challenge that time for the textile belt to implement ZLD, but due to strong policy and financial support from the central and state government of India they succeed in implementing ZLD in their industry. It is a unique success story in the South-Asian region.

Bangladesh on the other hand is a water-rich region with lots of monsoon rains and rivers. The country has around 1700 wet processing units in the textile sector that consume around 1500 billion liters of groundwater annually. Moreover, this consumed water is discharged in the surface water body resulting in severe pollution in the adjacent rivers and depletion of

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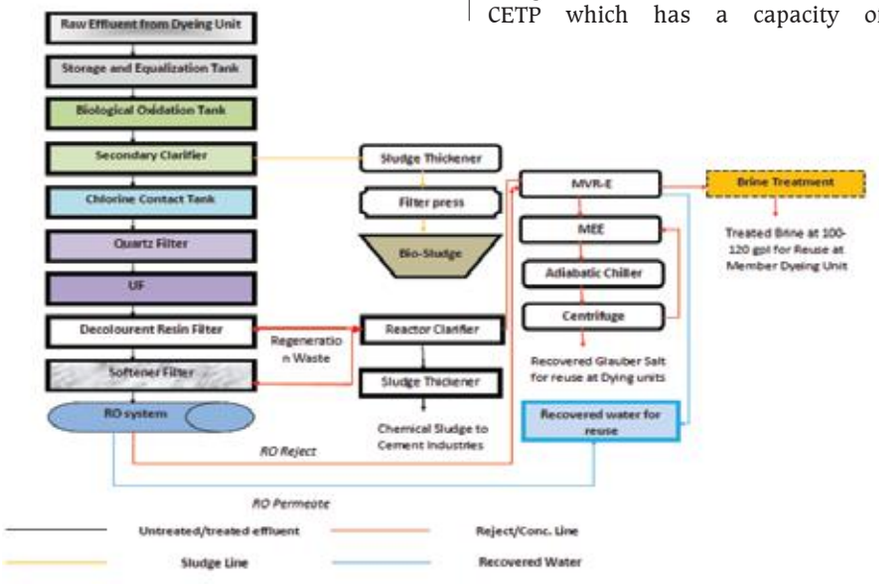
groundwater aquifers. BGMEA along with its development and business partners are trying proactively to improve the situation.

The BGMEA delegation reached Chennai on 13 September and participated in a session with the Tamilnadu Water Investment Company (TWIC) in Chennai, India. The delegation was briefed about ZLD process and different aspects which include policy mandate with respect to ZLD in India, technical and financial viability of ZLD, barriers and challenges in implementation, advantages of ZLD and etc. The session was conducted by Sajid Hussain who is the Chief Operating Officer, TWIC. He explained that water scarcity, water economics and regulatory guidance lead to the innovation of ZLD process. He also revealed that adopting zero waste discharge makes ZLD process more viable. After the session, the delegation paid a courtesy visit to Harmander Singh, Principal Secretary to the Ministry of Handlooms, Handicrafts, Textiles, and Khadi Department, at Chennai Secretariat. Mr. Singh appreciated the initiative of collaborative learning and sharing of relevant knowledge with neighboring countries in South Asia. The interactions mainly focused on the development of textile industry in both India and Bangladesh.

After the session in TWIC, the delegation flew to Coimbatore district to see the ZLD plants in the Tirupur cluster. The delegation visited two of the ZLD Plants to observe the technical demonstration of ZLD. The delegation also visited Chinnakkarai CETP which has a capacity of processing 8 MLD and caters to the load of 29 neighboring textile units. The delegation visited another CETP which was located in Arulpuram. The CETP with 5.5 MLD capacities caters to the effluent management demand of 22 textile units in that area. During the visit the delegation learned about the ZLD-CETP and its technicality along with life of membranes and resins in reverse osmosis and resin filters processes. The role of renewable energy in supporting ZLD systems were also explored and discussed with TWIC.




Process flow diagram of a typical ZLD plant

## The major processes involved are:

1. Collection and homogenization: Effluent collection from different sources and homogenization in single tank.
2. Biological oxidation: After the ph correction (neutralization) the effluent is fed to biological oxidation tank where the BOD, biological oxygen demand and COD chemical oxygen demand are corrected. An online meter helps in close monitoring of the parameters.
3. Clarifier: The biological oxidation is followed by clarification. The effluent is fed to the clarifier tank and remained undisturbed for a cycle time of 24 hours. In this duration, the suspended solids in the effluent start settling down due to density difference and clarified water with lesser TSS is obtained.
4. Quartz filtration: From the clarifier the effluent solution is charged into the quartz filters, resin filters for ultra filtration. The softener output acts as feed to the RO system.
5. Reverse Osmosis: The softened effluent is fed to the Reverse osmosis modules to get permeate and concentrate. The RO permeate is stored in recovered water tanks and concentrate is fed to the evaporation section for further treatment and recovery.
6. Mechanical Vapor Reactor: In the Mechanical vapor reactor the filtration is achieved by indirect thermal heat transfer between heating media and the treated effluent inside the reactor. The steam is circulated in the outer jacket of reactor as a heat source. The condensate collected is the output of the system. The

*BGMEA delegation holding meeting with the President of Tirupur Exporters Association (TEA).*

concentrate of evaporator is further crystallized and salt is recovered after the centrifuge governed separation of Glauber salt. The residual effluent is sent to the solar evaporation panels.

We found these two CETPs very planned and functional. On the other hand in Bangladesh context we are already doing most of the steps they are doing. We just need to add the reverse osmosis and salt recovery steps to go for ZLD. The day after CETP visit the delegation visited the Tirupur Exporters Association (TEA) at Tirupur and met TEA President Dr. A Sakthivel. The idea of meeting TEA was to understand the development process of the cluster as one of the major export hubs for textile industry and to discuss various factors which have led to commencement of first of its kind ZLD facility for textile sector in the world. The President of TEA appreciated the initiative of knowledge transfer to neighboring countries and stressed that the need of such a system for the industry is inevitable considering the global situation. Mr. Faruque Hassan congratulated TEA for successfully implanting ZLD in Tirupur. After that, the delegation visited a modern readymade garment processing unit namely M/s Maharaja Palanisamy Garments in the Netaji Apparel Park, Tirupur. The delegation looked at the resource efficiency part along with the manpower resource management practices in the unit.

The success of ZLD in India is not solely an industry success, rather it was highly fueled by conducive policy of the Indian Government and heavy subsidy from the Central and State government of India. In Tirupur textile cluster case the cost of the CETPs has been subsidized as much as 70%-75% of which 53% came as special grant. India sets a very rare example that environmental sustainability is a shared responsibility rather than just Industry. It is expected that Bangladesh RMG industry will also be able to implement the ZLD system in near future with policy, finance and technical support from the Government of Bangladesh and the major development partners.

Faruque Hassan said: "BGMEA is trying to comprehensively look into all the gaps we had. We are trying to achieve our aspired goal of USD 50 billion of RMG exports in 2021 sustainably and become a leader in green industrialization." "We need to collaboratively work with the government and partners; the sector has to be owned by all the stakeholders concerned," he added.

Nowadays environmental sustainability is an integrated part of global business landscape and is a key strategic area nationally and internationally. Bangladesh is at its take-off phase of industrialization and one of the lowest carbon emitters of the world, but at the same time is the most vulnerable country to climate change. Standing on this paradoxical juncture we are trying to become more and more sustainable considering the global environmental situation. Recently the Prime Minister of Bangladesh Sheikh Hasina won the 'Champions of the Earth Award' for her proven leadership in addressing the impacts of climate change. We believe we will definitely be able to make Bangladesh RMG industry a model of green industry in the world.

*Asif Ashraf is the Managing Director of Urmi Group.*

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