



FLAGSHIP DHAKA CETP (BD) LTD (FDC)

INTRODUCTION to FDC & ENVIRONMENT and WATER SOLUTIONS

FDC is a company with Bangladesh, French & Singapore Investors. In March 2009, Bangladesh Export Processing Zone Authority (BEPZA) contracted FDC to build, own and operate Dhaka's first Central Effluent Treatment Plant (CETP) for 30 years. The construction of the CETP was completed in September 2011 and commercial operations began on 1st February 2012. It treated an estimated 15,000m³/day of effluent to serve the collective needs of around 100 companies in the old zone of Savar's Dhaka Export Processing Zone (DEPZ). The CETP has since increased its capacity and completed a pipeline joining the old and extension zones. It now receives around 21,000m³/day. FDC has applied for, expects to receive regulatory permission to receive and treat over 35,000M³/day of effluent.

TEXTILE INDUSTRY ECOLOGICAL CHALLENGES

The Bangladesh Ready Made Garment (RMG) sector accounts for over US\$ 28 billion in foreign revenue for the country. This ecological challenges caused by this industry include:

- a) utilizing copious amounts of water and is dependent upon deep tube aquifer reserves for the water, particularly, the in the dyeing and washing process,
- b) generating effluent that is considered hazardous to the environment, as it includes synthetic organics and heavy metals. The pollution caused by such effluent has been extremely damaging to the ecosystems; fouling rivers and waterways, contaminating the limited arable land and polluting potable water sources,
- c) conventional activated sludge process (ASP) uses chemicals was considered that are costly increase the Total Dissolved Solids parameter, which would lead to major complications to meet the landfill and Regulatory inland waterway discharge standards.

Flagship Dhaka Central ETP (BD) Ltd's Solutions

The effluent is treated to meet Dept. of Environment (DoE) regulations and discharge into the inland waterway. Although a minimum requirement, CETP persistently achieves Buyer Standard Requirements and DETOX testing for persistent. While BEPZA has no plan to re-cycle the water FDC has grown to design, engineer and commission various types of RMG buyer required ETP's. All of FDC Green designs cater to Local & International requirements for future Recycle/Reuse of industrial wastewaters. The CETP employs an innovative and unique

combination of extended aeration and electro-coagulation to achieve the desired treatment results. We have coined the term Bio-Electric Process to differentiate it from other conventional treatment process. Not only is it energy efficient, it is extremely compact incorporating empirical and field proven contaminant reduction steps. On any given plot of land, one can achieve three times the capacity with Bio-electric compared to conventional treatment processes. This cost effective solution is therefore ideal for high density cities where land is premium and produces an output with bulk removal of most contaminants that operationally and economically effects water reuse equipment. Bio-electric ETP processing has proven to be an effective and clean approach as pretreatment for expected Reuse needs.

Over the years, the Bangladeshi authorities have taken great strides in controlling the pollution caused by this effluent. The World Bank, IFC and other international NGO's have lent considerable assistance to the Bangladeshi government to find ways to improve and control pollution. More stringent regulations, enforcement and auditing have been put in place, factory owners are much more aware of the dangers and foreign customers have been putting pressure on the factories to ensure environmental compliance and a move to Reuse. Numerous free trade zones have been set up to promote foreign investment mostly in the textile & garment sector. These zones known as Export or Economic Zones are administered by the Prime Ministers' Office. The challenges to build the CETP were varied and many.

The initial challenge was the plot allocated to build the CETP. It was 16,000m² of swamp that had been used as dumping ground for unabated wastewaters and sludge over the last 15 years. A four meter deep hole in the ground! Draining the site and clearing the muck took over six months due to the difficult operating conditions and the seasonal monsoon.

The CETP initial treatment concept envisaged the use of conventional ASP. This had to be abandoned due to space and poor contaminant removal performance. Further, it would not allow for increased volumes. It would be impossible to tackle the effluent parameters using ASP within the space constraints. A compact and efficient secondary treatment process was needed to meet the challenges within the same footprint. Fortunately, a ready solution was at hand through FDC's related company Flagship Corporation Far East Pvt. Ltd. in Singapore. The Company had already developed an in-house technology called Electro Contaminant Removal (ECR) that had proven to be extremely effective in handling effluent from waste streams from textile and other similar manufacturing sectors.

By incorporating ECR as the secondary treatment process to before and after oxidation systems, the drastically reduced hydraulic retention time of intended ASP process was still within acceptable oxidation reduction limits. Furthermore, operating cost was found to be still within the acceptable range.

Convincing the authorities on the efficacy of the ECR was not difficult given that the ECR was already being used by a good number of high capacity, international quality textile factories in Bangladesh producing for MNCs such as Marks & Spencer, H&M and Zara. These clients as well as others in Asia were more than happy to give their testimony of how the ECR and Flagship ETP solutions helped them be environmentally compliant and be the clear partner-of-choice for the MNCs. This was a winner for the authorities who are keen to meet the needs of all Enterprises in both DEPZ zones that today generate close to 43,000M³/Day effluent.