



## Shubham Case Study – Hyfun Foods

Effluent Treatment Plant – 350 KLD (ZLD)

### ABOUT HYFUN

Hyfun Foods Pvt. Ltd. is the producer of French Fries and Potato Specialities. Located at Mehsana, Gujarat, India, Hyfun has grown to become a leader in the frozen food industry. Products are used by leading fast food chains, hotels, restaurants, catering companies.



#### Expected Generated Effluent:

High COD - 10000 PPM  
High Oil & Grease - 50 PPM  
Varying pH

Use of Treated Water:  
**Reuse in product Manufacturing**

Sensitivity of Treated Water: **High**

Hospital wastewater containing infectious, pathogens, toxic, biodegradable and radioactive contaminants that can cause pollution and health problems hence its treatment should be done in efficacious way.

Many preservatives, color, salts, oil, etc. are added as per the requirement of production of products, this adds to the pollution load on the plant hence complete aerobic or anaerobic process do not work . Hence to reduce the parameters efficaciously and to reuse the water again in the process needed high skills and good management of the existing space and proper designing of plant.



## CHALLENGES FACED

- **High COD**

IC reactor was provided to remove excess of the COD and the organic contents so as to reduce load on the further process.

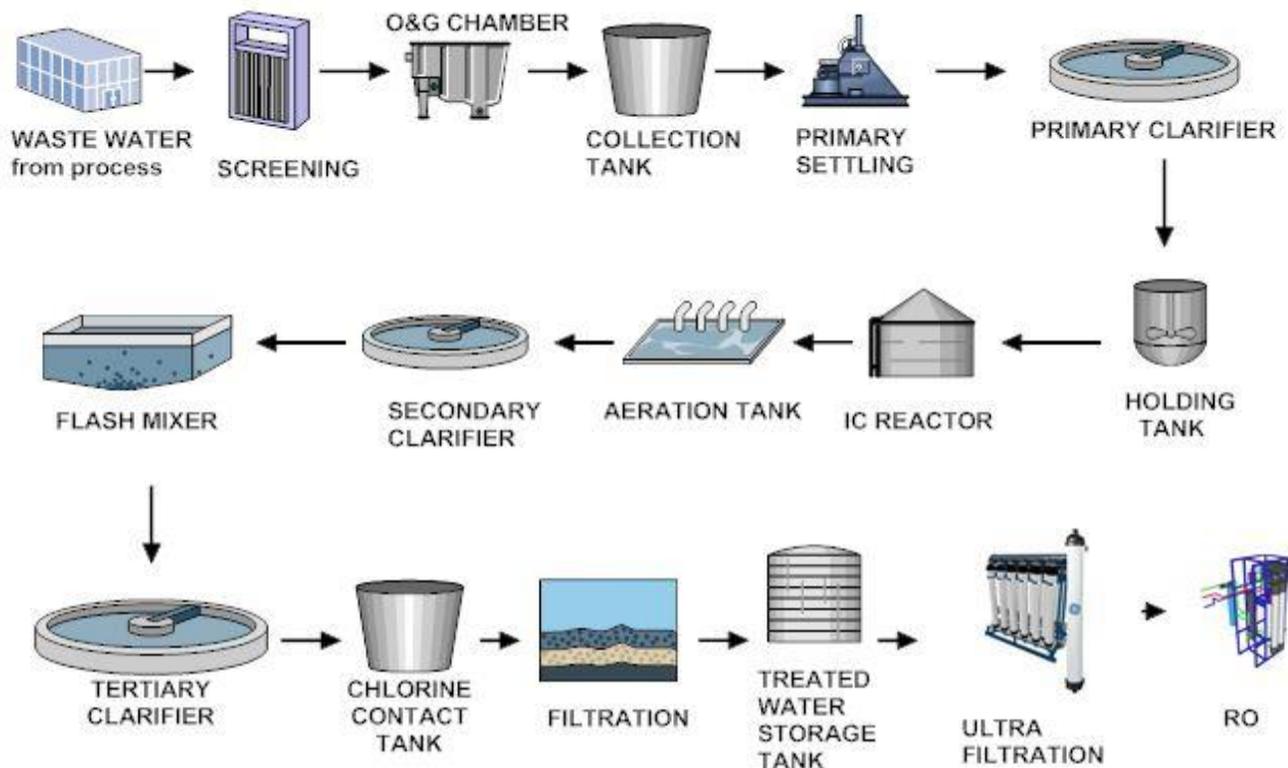
- **Oil content**

To remove the oil and grease proper oil & grease removal system was to be provided. It is therefore preferable to provide primary physicochemical treatment, using different coagulant and coagulants aids thus reducing the organic load on secondary biological treatment.

- **Varying pH**

Physicochemical wastewater treatment techniques are applied for the removal of heavy metals, oils and greases, suspended matter and emulating organic substances, organic and inorganic components, difficult to decompose, nonpolar organic substances, toxic pollutants or high salt concentrations etc. which needs **constant pH** for their proper operation and the chemical reaction.

## PROCESS FLOW DIAGRAM



## PROCESS SUMMARY

**Primary Treatment:** Initially the effluent is passed through the screening for the removal of the floating impurities and then oil and grease removal mechanism is provided as its content is very high. After that it is collected in the collection tank so that to overcome the varying loads.

**Secondary Treatment:** Then the chemical dosing is done as to maintain the pH for appropriate clarification, then it is passed to the holding tank. Then in IC reactor the high COD is reduced to greater extent as in aeration tank the high organics won't be treated. In the secondary clarifier reduces the load of the rest of the solids. Flash mixing tank is provided then to reduce the rest of the organics and sludge is settled which is treated by filter press.

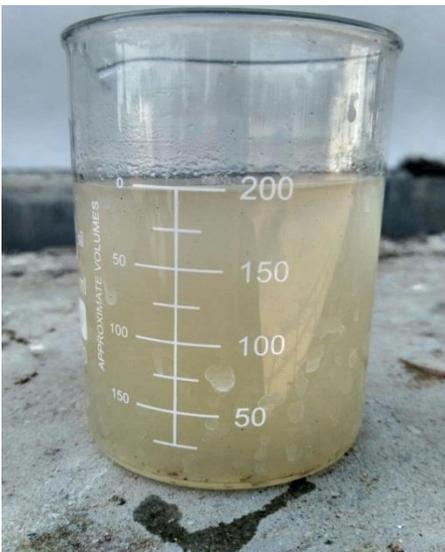
**Tertiary or Advanced treatment:** In the filtration the rest of the odor turbidity and the suspended solids of the effluent is treated and it is stored in the treated water storage tank. Finally the ultrafiltration and the RO is provide to use that water in the process again.

### ETP INLET

Flow - 300 m<sup>3</sup>/day  
pH - 4.5 – 8.5  
BOD - 300 – 350 mg/l  
COD - 7000– 10,000 mg/l  
TSS - 150 – 250 mg/l  
O&G - 15 mg/l

### ETP OUTLET

Flow - 250-300m<sup>3</sup>/day  
pH - 6.8  
BOD - 20  
COD - 39  
TSS - 7  
O&G - NIL



## ERECTION ACTIVITY OF IC REACTOR

Height – 25 Meters  
Diameter – 3 meters



## SUMMARY

In spite of having high oil & grease and COD the plant was designed which could handle heavy loads of the organics and the chemicals which was treated by us.

The wastewater treatment plant is located in an area surrounded by a good natural environment, and advanced treatment is incorporated into the plant to reuse the water in the process and as it is the potato chips manufacturing company the food should use the very high purity water for the usage in the plant again. Hence ultrafiltration & RO was provided.

The plant is running very well and giving outstanding results.

