McCain Foods India Pvt. Ltd.

Presenters

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McCain Foods Purpose

"Celebrating real connections through delicious, planet-friendly food."

Project Title:

CO2 Emission Reduction by Reducing Organic Load in Aerobic Treatment process of Waste Water

- Sustainability at the heart of McCain.
- Published first India Sustainability Summary Report in June 2021.
- Global Sustainability Strategy formulated in 2019- 50% absolute reduction in scope 1&2 by 2030.
- India roadmap aligned to global strategy.

Waste Water Treatment at McCain India

Project Summary

- Reduced the CO2 emission by reducing electricity consumption in waste water treatment plant.
- Initially **21** surface aerators installed in Aerobic Treatment system having capacity of 40 HP of each.
- At a time 17-18 Nos. of aerators were in operation.
- We reduced the oxygen requirement by reducing the organic load in aeration lagoon by reducing the organic Total Suspended Solids (TSS) and BOD.
- Today we are operating only **9 to 11** aerators.
- Overall electricity consumption reduced in the Aeration Lagoon by **15%**.

About the Project

- **Trigger**: McCains commitment to mitigate the climate impact of our plants. Global strategy formulated by Senior Leadership Team (SLT) and cascaded to regional level. Project conceived by the India Environment Team, helmed by the Plant General Manager.

- **Uniqueness of the project:** Reduction in Electricity requirement in Biological Treatment Process i.e. Activated Sludge Process, which contributes to CO2 Emission. 1st plant among 50 McCain plants worldwide to implement it.

- **Date of commencement, Date of completion of project compared with initial planned dates:** Planned in July 2020 and commenced in Sept 2020. The project has been completed and is sustainable.

- **Major milestones of project :**
  - Increased the retention time of effluent to improve the settling of Solids organic in nature
  - Modified the Centre feed Drum of Primary Clarifier and V notch over the Primary clarifier
  - Ensured Uniform/laminar flow to avoid hindrance in Particle settling
  - Segregation of effluent stream having lower solid content from primary clarifier
  - Tweaking in coagulation and flocculation process to improve the zone settling considering the particle settling velocity governed by Buoyant force, Drag Force and gravity force.

Challenges

1. Technical:

- Reduction in organic load.
- Settling Process of organic suspended solids in primary clarifier.
- Acclimatization of Microbial culture for Bio sorption, Bio oxidation, Biofloculation, Nitrification and denitrification process in Activated Sludge Treatment Process
- Microbial Kinetics - Microscopic Evaluation of Healthy and desirable microbes and their control required for the process

2. Administrative:

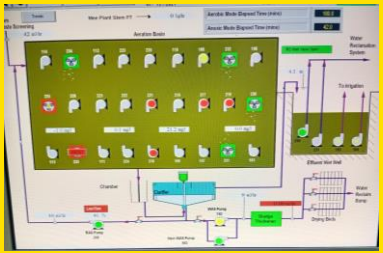
- Limited availability of resources – human and financial.

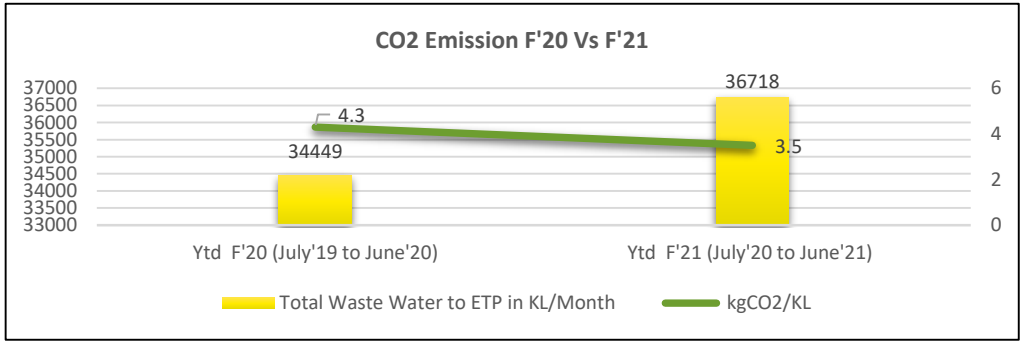
3. Maintenance:

- Since the operation pattern of machines was going to change. FMEA for change operation had to be done to prepare a back up.
- Modifications in effluent carrying pipe line was done to eliminate the velocity hindrance in settling of organic matter containing solids before Activated Sludge Treatment Process.

Tangible Benefits

- Electricity consumption reduced in Aeration Lagoon by **15%**.
- Reduced **19%** CO2 Emissions/KL
- SCA- Generated savings of **Rs.3.5 Lakhs/Month.**





Year	Particulars					
	Average Waste Water KL/Month	Average Kg COD/Month before Primary Clarifier	Average Kg COD/Month after Primary Clarifier	COD % Reduction	Avg. Kg CO2/kl	CO2 Emission % reduction
F'20	34449	8704	5959	31.5	4.3	19
F'21	36718	8110	4584	43.5	3.5	

Intangible Benefits

People/society benefits: Contribution in reduction of GHG emission by reducing electricity consumption.

Moral /motivation: Recognition to Environment Team by India and Global Leadership Team.

Skill upgradation: Technical capabilities, Communication skills enhanced.

Attitude shift/development: Changed status quo. Global more appreciative of India efforts. Huge boost to employee morale.

Others: Environment friendly, sustainable development, reduced maintenance, reduced risk, safety increased as aerators reduced.

Replication potential of project within sector

Replication potential and progress of project assimilation cross functional / within group companies: High and can be used in any industry.

Evidence on where and when implemented with photos before/after: Not available

What next for spreading benefits? : Further strengthening the implemented process and exploring scope of improvement in other areas.

Steps initiated: Data review and discussion is under progress to cover the other areas also for reduction in CO2 emission by reducing electricity consumption.

Achievement sharing mode: demo/forum/seminars: This is the first time presenting the project outside of the organization.

Other knowledge sharing platforms: Not yet. Plan to publish it in our next sustainability report and post on social media.

Achieving national benchmarks/ Standards

Table data summary pertaining to two competitors above you and two competitors below you: Not available.

Environment parameter: energy/water/carbon/toxicity and emission: CO2e, energy.

Comparison on Men/Material/Methods/Technology/ Measurement: Not available

Major Learnings

- Process operation and control on GHG emissions.
- Learning on generating savings with existing resources.
- Deployment of cost-effective, energy-efficient technologies.
- The barriers to improving energy efficiency are formidable. Overcoming these barriers will require sustained initiative.

Environmental Performance Evaluation (EPE)

- **1. Management performance indicator (MPI) of the plant**

  Energy, CO2e reduction as KPIs for relevant employees.

- **2. Operational performance indicator (OPI)**

  CO2 Emission reduction/kl of Effluent: As mentioned in result emission of 4.3Kg CO2/kl of effluent in 2020 while in 2021 it is 3.5 Kg CO2/kl of effluent

- **3. Environmental condition indicator (ECI)** -
  - Air-SOx, NOx, SPM10, PM2.5,
  - Water-COD, BOD, TSS, TDS, pH, Chloride, Oil and Grease