

# **Case Study of The Ugar Sugar Works Ltd.**

# **Ethanol plant at glance -**

## **New Plant & Machinery -**

1. Ethanol Production capacity - 840 KLPD
2. Fermenter Capacity – 10 Nos. x 1800 m<sup>3</sup>
3. Distillation – 3 Streams 280 KLPD each
4. Spent wash evaporator 1500 M<sup>3</sup>/day to concentrate spentwash from 4 to 45 brix
5. UV
6. Spent wash Spray dryer 4500 ltr/Hr.
7. Ethanol storage 2 crore ltrs.
8. Grain Handling Milling – 300 KLPD.
9. Liquefaction
10. Decantation
11. DDGS Dryer

# **Ethanol plant at glance -**

## **Existing Infrastructure & Utilities -**

1. Power & Steam spared from existing Sugar & Cogeneration plant.
2. Concentrated defecated Syrup from Sugar Plant.
3. Digesters.
4. Spent wash Evaporators.
5. Effluent Treatment Plant.
6. Softener Plant.
7. Technical Staff

# Operation Strategy

## SEASON -

| DISTILLERY        | 840 KLPD                                       |
|-------------------|------------------------------------------------|
| CANE CRUSHING     | 18000 TCD                                      |
| COGENERATION      | 56 MW                                          |
| FEEDSTOCK         | SYRUP - 125 TPH<br>(From existing Sugar Plant) |
| STEAM REQUIREMENT | 100 TPH<br>(From existing Cogen Plant)         |
| POWER REQUIREMENT | 5 MW<br>(From existing Cogen Plant)            |

## Steam, Power & Syrup Distribution –

| Steam Pressure<br>(kg/cm2) | Steam Temp.<br>(Deg C) | Quantity<br>(TPH) | Activity              |
|----------------------------|------------------------|-------------------|-----------------------|
| <b>1.2</b>                 | <b>127</b>             | <b>68</b>         | Wash to RS            |
| <b>1.2</b>                 | <b>127</b>             | <b>12</b>         | Spent wash Evaporator |
| <b>3.5</b>                 | <b>148</b>             | <b>20</b>         | RS to Ethanol         |
|                            |                        | <b>100</b>        | Total                 |

| Power (MW) | Activity                |
|------------|-------------------------|
| <b>4.2</b> | Distillery Unit         |
| <b>0.7</b> | Evaporator & Dryer Unit |
| <b>4.9</b> | Total                   |

| Syrup (TPH) | Activity                      |
|-------------|-------------------------------|
| <b>125</b>  | Defecated Syrup to Distillery |

# Operation Strategy

## OFF - SEASON -

| DISTILLERY        | 300 KLPD           |
|-------------------|--------------------|
| FEEDSTOCK         | GRAIN (FCI - Rice) |
| STEAM REQUIREMENT | 45 TPH             |
| POWER REQUIREMENT | 3.5 MW             |

## Steam Distribution –

| Steam Pressure<br>(kg/cm2) | Steam Temp.<br>(Deg C) | Quantity<br>(TPH) | Activity                     |
|----------------------------|------------------------|-------------------|------------------------------|
| <b>1.2</b>                 | <b>127</b>             | <b>18</b>         | Wash to RS<br>& Liquefaction |
| <b>1.2</b>                 | <b>127</b>             | <b>6</b>          | Spent wash Evaporator        |
| <b>3.5</b>                 | <b>148</b>             | <b>5</b>          | RS to Ethanol                |
| <b>3.5</b>                 | <b>148</b>             | <b>16</b>         | DDGS Dryer                   |
|                            |                        | <b>45</b>         | Total                        |

## Power Distribution –

| Power (MW) | Activity                           |
|------------|------------------------------------|
| <b>1.3</b> | Distillery Unit                    |
| <b>2.0</b> | Mill, Evaporator & DDGS Dryer Unit |

# Challenges overcome –

## Execution –

1. Project is executed during Corona period.
2. 1600 Piles of 9 meter depth had been penetrated in black cotton soil within short time span of 60 days in spite of heavy rains.

# Operation –

1. Fermentation cycle time : overcome by addition of 1 no. of Fermentor.
2. Steam pressure fluctuations: overcome by installing PCV in exhaust steam line.
3. Syrup quality parameters like VA & So2 content : overcome by modifying juice distribution system to get defecated syrup.
4. Skilled & experienced manpower : overcome by adopting proper training to existing staff and appointing new young staff.

We were able to achieve the mile stone of 840 KLPD project in record time of 8 months by virtue of round the clock team work in spite of challenges faced as mentioned above. **Success of this plant has resulted in to new concept of using 1.2 kg/cm<sup>2</sup> low pressure steam to distillation plant which can be easily diverted from any sugar complex.**

This was possible with the support of all management team of USWL & M/s Regreen Excel. We the USWL Project execution team under the eminent & visionary leadership of Shri Chandan Sir produced 8.46 Cr. Liters of Ethanol in first season.

**Thank You**