‘ZERO WASTE’ TECHNOLOGIES FOR POTASH FERTILIZERS FROM DISTILLERY WASTES - SUSTAINABILITY WITH PROFIT
PRESENTING JOINTLY THE TECHNOLOGY FROM WASTE TO WEALTH

100% SUSTAINABILITY CONTRIBUTING TO THE CIRCULAR ECONOMY
About CSIR - CSMCRI
- CSMCRI has several granted patents - a top national R&D laboratory of India
- Well equipped state-of-the-art Research Centre and Laboratory
- Fully armed Knowledge Resource Centre & Research Oriented Library
- 75+ Scientists; 150+ Research Scholars
- 200+ publications; 20+ Patents
- Ranked among top 500 Global Institutions for Research
About Chem Process
• Established by highly qualified technical-design professionals & management specialists with core competence and rich experience
• Design, manufacture, erection, commissioning of custom designed process equipment
• Having unparalleled expertise on vacuum, evaporation, crystallization, drying, desalination, heat transfer and other related technologies
• Workshop comprises of state-of-the-art manufacturing & testing facilities
• Supported by in-house R&D and Laboratory facilities
BRIEF

350+ distilleries

Molasses → Fermentation + Distillation → Ethanol 2.5 bn lit. pa

Spent Wash 30-35 bn lit. pa

Dark colour, obnoxious odor, very high BOD, COD, TDS (15%)

Water polluting industry (CPCB, MoEF & CC, GoI)

Rich in potassium 0.29 mn t K₂O pa (pan-India)

• Ground water contamination
• Soil degradation & loss of agri-productivity
• Stress on river water quality & ecosystem
WHY POTASH IS IMPORTANT

The potassium sulphate market reached a valuation of US$ 4,742.0 Mn in 2021.

India is projected to account for **11.3%** of the global potassium sulphate market share in 2029.

The U.S. is anticipated to account for a market share of **9.2%** in the global potassium sulphate market share by 2029.

**Unmet Need: Indigenous Potash Fertiliser Manufacturing Capacity**

Global potash production: 38.8 mmt K₂O

- **Canada**: 29%
- **Russia**: 19%
- **Belarus**: 16%
- **China**: 11%
- **Germany**: 8%
- **Others**: 17%
- **Others**: 17%

Major potash producing countries
(U.S. Geological Survey, Mineral Commodity Summaries, January 2016)
<table>
<thead>
<tr>
<th>CURRENT ‘ZLD’ TECHNOLOGIES LIMITATIONS</th>
<th>EVAPORATION + INCINERATION</th>
<th>BIO-METHANATION + EVAPORATION + COMPOSTING</th>
<th>BIO-METHANATION + EVAPORATION + SPRAY DRYING</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Extremely High &amp; Unaffordable CAPEX</td>
<td>• Inconsistent &amp; Sensitive</td>
<td>• Complete Water Loss, more than 70% to atmosphere</td>
<td></td>
</tr>
<tr>
<td>• Energy Guzzler</td>
<td>• Long re-establishment</td>
<td>• Low Thermal Efficiency, Loss of heat, Biogas utilized to achieve 250°C</td>
<td></td>
</tr>
<tr>
<td>• Heavy Design</td>
<td>• Methane Emissions</td>
<td>• Cuts down benefit of Bagasse savings</td>
<td></td>
</tr>
<tr>
<td>• Maintenance prone</td>
<td>• Flaring - Air Pollution</td>
<td>• Highly Hygroscopic product, difficult Storage</td>
<td></td>
</tr>
<tr>
<td>• Frequent Shutdowns</td>
<td>• Labor intensive</td>
<td>• Along with Water, Volatile organics, NH3 and other Off-Gases Harm the Environment</td>
<td></td>
</tr>
<tr>
<td>• Captive Power Plant Compulsory</td>
<td>• Seasonal Issues</td>
<td>• Ash Disposal needed</td>
<td></td>
</tr>
<tr>
<td>• Ash Disposal needed</td>
<td>• Compulsory utilization of Bio-Gas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Non-Profitable</td>
<td>• High Quantity of Press Mud required, limits the benefits of Press Mud to Bio-Gas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Loss of Organics and Minerals</td>
<td></td>
<td>• Along with Water, Volatile organics, NH3 and other Off-Gases Harm the Environment</td>
<td></td>
</tr>
<tr>
<td>• Loss of 40% water</td>
<td></td>
<td>• Along with Water, Volatile organics, NH3 and other Off-Gases Harm the Environment</td>
<td></td>
</tr>
</tbody>
</table>
THE SOLUTION

TECHNOLOGY - 1
RECOVERY OF PDM / FCO GRADE POTASH FROM DISTILLERY SPENT WASH
THE SCHEME OF OPERATIONS - PDM / POTASH

Spent Wash

Evaporation

Concentrated Spent Wash

Pre-treatment

Organic separation

Organic-rich cake

Regeneration

CMS

Evaporation

Recovered Water (for Recycling)

IPL Field Trial in Gujarat. (~ 10% yield improvement, better produce)

Validated entire process at plant; fully operational by Aug/Sep, 2019

Treated Spent Wash

PDM / FCO Grade Potash

Lean Spent Wash

Evaporation

Water

Recovered Water
THE SOLUTION

• The Solution is a unique revolutionary patented process which will be implemented for the first time in the history of Molasses based Distilleries.

• This process will recover valuable products from the Spent Wash:
  - FCO Grade SOP based PDM (Granulated) with > 14.7% K2O Content
  - De-Salted Organics, which is a perfect alternate to Molasses in Cattle Feed Binding
  - FCO GRADE ‘POTASH’ (K₂SO₄)
What is Potash Derived from Molasses (PDM) Criteria?

According to:

Schedule 1 of FCO, Specification of Fertilizers: Part A - Section 1 (C), Point 5.

5. Potash Derived from Molasses
(i) Moisture per cent by weight, maximum 4.79
(ii) Total nitrogen, per cent by weight, minimum 1.66
(iii) Neutral ammonium citrate soluble phosphate (as P$_2$O$_5$), per cent by weight, minimum 0.39
(iv) Water soluble potash (as K$_2$O), per cent by weight, minimum 14.70
### ADVANTAGES & COMPARISON OF PDM FROM VARIOUS TECHNOLOGIES

<table>
<thead>
<tr>
<th>Parameters</th>
<th>PDM powder from CSIR-CSMCRI process ‘SOP’ based</th>
<th>PDM from Spray dry powder of Concentrated Spent-wash</th>
<th>PDM from ESP Ash (FCO Grade) from</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Appearance</td>
<td>SOP Based powder</td>
<td>MOP Based Powder</td>
<td>MOP Based Powder</td>
</tr>
<tr>
<td>Granulation</td>
<td>Easy to granule and make FCO grade fertilizer, with SOP and Calcium rich minerals.</td>
<td>Very Hygroscopic in nature. Difficult to make granulate., KCl &amp; bentonite is added for making granulation</td>
<td>Easy to granule</td>
</tr>
<tr>
<td>% of K2O in solid</td>
<td>&gt; 14.7%</td>
<td>&gt; 14.7%</td>
<td>&gt;14.7%</td>
</tr>
<tr>
<td>Nature</td>
<td>No hygroscopic in nature</td>
<td>Very Hygroscopic in nature</td>
<td>No hygroscopic in nature</td>
</tr>
<tr>
<td>Ca2+</td>
<td>&gt; 10-12%</td>
<td>&gt; 1-2%</td>
<td>&gt; 1-2%</td>
</tr>
<tr>
<td>SO4</td>
<td>&gt; 45-55%</td>
<td>&gt; 3-5%</td>
<td>&gt; 3-5%</td>
</tr>
<tr>
<td>Cl-</td>
<td>&lt; 2%; Low chloride salt</td>
<td>&gt; 5%</td>
<td>&gt; 5%</td>
</tr>
<tr>
<td>pH</td>
<td>4.0-5.0</td>
<td>7.0 -8.5</td>
<td>&gt; 8</td>
</tr>
<tr>
<td>Ca, SO4 macro nutrient</td>
<td>Containing high amount of SO4 and Ca, improves soil health and crop yield</td>
<td>Containing low SO4 and Ca.</td>
<td>Containing low SO4 and Ca.</td>
</tr>
<tr>
<td>Chloride Toxicity</td>
<td>Due to low Cl contain it is very favorable for Chloride sensitive crop.</td>
<td>Due to high Cl contain it is very unfavourable for Chloride sensitive crop.</td>
<td>Due to high Cl contain it is very unfavourable for Chloride sensitive crop.</td>
</tr>
<tr>
<td>Process</td>
<td>The process is green, low carbon footprint, low energy and very cost effective.</td>
<td>Required very high energy for spray dry. High carbon foot print process</td>
<td>High carbon foot print process</td>
</tr>
<tr>
<td>Soil pH</td>
<td>This powder acidic nature, which is reduced the alkalinity of the soil. Hence improve the soil heath and nutrient uptake capacity of plant.</td>
<td>This powder alkaline in nature, which makes soil more alkaline.</td>
<td>This powder alkaline in nature, which makes soil more alkaline.</td>
</tr>
<tr>
<td>Nutrient Avalability</td>
<td>Acidic pH of powder helps more availability of nutrient P, Zn, Fe, Cu, Mn B</td>
<td>Alkaline of pH makes nutrient (P, Zn. Fe, Cu, Mn, B) deficiency for plant</td>
<td>Alkaline of pH makes nutrient (P, Zn. Fe, Cu, Mn, B) deficiency for plant</td>
</tr>
</tbody>
</table>
DPV CERTIFIED BY NDRI, KARNAL AS CATTLE FEED BINDER TO REPLACE MOLASSES

MOLASSES PRICE RISE IS ENVISAGED FOR THE CATTLE FEED INDUSTRIES DUE TO THE ETHANOL POLICY OF ‘GOI’

OUR ‘DPV’ AS MOLASSES SUBSTITUTE IS TO TAKE 100% CATTLE FEED MARKET
APPROVAL FROM ICAR-NDRI, KARNAL & ADVISORY FROM MINISTRY OF ANIMAL HUSBANDRY TO USE ‘DPV’ AS CATTLE FEED BINDER

De-Potash Vinasse
A Replacement of Cane Molasses
As a Cattle Feed Binder

Evaluation & Comparison Report
On Effects and Performance of Cattle Feed
With De-Potash Vinasse v/s Cane Molasses
On Lactating Murrah Buffaloes

By ICAR-National Dairy Research Institute
Karnal-132001 (Haryana), INDIA.

OFFICE MEMORANDUM

F.No. R-24014/10/2019-DER_ANLM
Government of India
Ministry of Fisheries, Animal Husbandry and Dairying
Department of Animal Husbandry and Dairying

Karshi Bhawan, New Delhi-110001
Dated : 18th Nov 2020

Subject: Advisory for use of DPV in cattle feed formulation

With increasing thrust in the Government of India’s Ethanol Blending Programme, the availability of molasses for livestock feed is likely to be diminished. Moreover, there is an urgent need to identify and develop supply chain logistics for alternate binder(s) vis-à-vis molasses to meet the requirements of cattle feed industries operating in the states having total prohibition.

2. CSIR-Central Salt and Marine Chemicals Research Institute and M/S Chem Process System Pvt. Ltd., through collaborative research, have developed process for production of De-Potash Vinasse (DPV) from distillery spent wash. Crude protein and mineral content of DPV is higher than that of cane molasses. Based on encouraging results regarding composition, mechanical strength of pellets and palatability studies, ICAR-National Dairy Research Institute (NDRI) evaluated possibility of using DPV in cattle feed formulation in lieu of molasses and recommended that DPV can be safely incorporated in cattle feed formulation as an alternative to molasses.

3. In this backdrop, Department of Animal Husbandry & Dairying (DAH&D), GOI, initiated stakeholder consultation – with representation from Line Ministries, National Dairy Research Institute, National Dairy Development Board, Cattle Feed Industries and Distilleries – to deliberate and decide upon the potential usage of DPV in cattle feed production.

4. After detailed review of NDRI’s report - “Comparative evaluation of De-potash Vinasse and Cane sugar molasses a cattle feed pellets binder and its effect on performance in lactating buffaloes” and subsequent discussions, general consensus has been reached endorsing NDRI’s recommendation that DPV can be used as an alternative binder for cattle feed pellet. It was also
## OPERATING ECONOMICS - 60 KL Distillery

<table>
<thead>
<tr>
<th>Distillery Capacity</th>
<th>60 KLPD</th>
</tr>
</thead>
</table>

### CAPACITY
- 600 TPD RAW SPENT WASH DISTILLARY

### OPERATING HRS PER DAY
- 22 HRS

### OPERATING DAYS
- 250 DAYS

<table>
<thead>
<tr>
<th>SR. NO.</th>
<th>DESCRIPTION</th>
<th>UNIT</th>
<th>OPERATING - B HEAVY</th>
<th>OPERATING - C HEAVY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>UTILITIES</td>
<td>PER DAY</td>
<td>PER YEAR</td>
<td>UNIT RATE</td>
</tr>
<tr>
<td></td>
<td>STEAM</td>
<td>TON</td>
<td>100</td>
<td>25000</td>
</tr>
<tr>
<td></td>
<td>POWER</td>
<td>KW</td>
<td>6500</td>
<td>1625000</td>
</tr>
<tr>
<td>2</td>
<td>CHEMICALS</td>
<td>185000</td>
<td>4625000</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>MANPOWER</td>
<td>20000</td>
<td>5000000</td>
<td>9,450,000.00</td>
</tr>
<tr>
<td>4</td>
<td>MAINTENANCE</td>
<td>20000</td>
<td>5000000</td>
<td>6,750,000.00</td>
</tr>
<tr>
<td></td>
<td>TOTAL OPERATING COST</td>
<td>123,858,517.50</td>
<td>113,890,140.77</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>PRODUCTION</td>
<td>PDM</td>
<td>TON</td>
<td>11.0</td>
</tr>
<tr>
<td></td>
<td>DPV</td>
<td>TON</td>
<td>97.0</td>
<td>24250</td>
</tr>
</tbody>
</table>

### TOTAL EARNING
- 183,500,000.00
- 167,500,000.00
### Molasses Base

<table>
<thead>
<tr>
<th>Molasses Base</th>
<th>Revenue Generated - Rs. / L of Alcohol</th>
<th>Expenses Incurred - Rs. / L of Alcohol</th>
<th>Profit Earned - Rs. / L of Alcohol</th>
</tr>
</thead>
<tbody>
<tr>
<td>C - Heavy</td>
<td>12.00 to 12.50</td>
<td>7.0 to 7.5</td>
<td>4.5 to 5.5</td>
</tr>
<tr>
<td>B - Heavy</td>
<td>12.50 to 13.00</td>
<td>7.0 to 7.5</td>
<td>5.0 to 6.0</td>
</tr>
</tbody>
</table>

- Considering 250 operating Days
- 22 hours of Dairy Operation
TECHNOLOGY COMPARISON

PDM recovery technologies

1. The Spray Drying Technology
2. The CSMCRI - CHEM Technology

This is a generalized Comparison, considering the basis as 60 KLD Distillery - Spent wash Generated 600 KLPD (1:10 water ratio)

Total Solids (TS) : 10%
K content : 1%
Spray Drying Technology: Distillery Capacity: 60 KLD Alcohol: 156 KL
Operation: 250 days/Year

**Spray Dry Solid:** (Wt. ~30 T) K: 16-20%

- Very Hygroscopic
- Not Suitable for granulation

* 20-30% Spray dry solid
* KCl for balance K
* Bentonite

> Revenue: 1.0 Lac/day
Spray Dry Salt: 0.9 Lac (@ 3 Rs/Kg)
Bagasse: 0.1 Lac (@ 2 Rs/Kg)
> Total cost (Steam, Electricity: 0.51 L/d)
> Total Earning: 0.8 L/d; 1.3 Cr/ Yr
CSMCRI - CHEM Technology: Distillery Capacity: 60 KLD Alcohol: Operation: 250 days/Year

- RSW 600KL
  - TS: ~10%
  - K: 1%

- Concentrated (TS: 55%)
  - 120 KL

- Condensate
  - 480 KLD
  - T: 45-55 °C

- Press mud Digester/Spent wash digester/CPU

- Non Hygroscopic Easy granulated

- PDM Solid (~15 T)
  - K: 20%

- Our Technology

- Animal Feed binder (~85 T)

- CPU Load reduction 40%

- Press mud (48 T) Bio-digester

- Biogas (~14000 m3)

- Bentonite

- PDM FCO grade (~21 T)
  - K2SO4 base PDM
  - Chloride content <2%
  - Ca, SO2 enrich nutrient

- >> Revenue: 6.7 Lac/Day
  - Animal Feed Binder: 5.95 Lac (@7 Rs/Kg)
  - Mixed salt: 0.75 Lac (@5 Rs/Kg)

- >> Total cost (Steam, Electricity): 3.5 Lac/day

- >> Total Earning: 3.2 Lac/day; 8.11 Cr/Yr
<table>
<thead>
<tr>
<th>MEE</th>
<th>Incineration</th>
<th>CPU</th>
<th>Bio-composting</th>
<th>Other Additional Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Removal of colloidal organics &amp; major inorganics would result in</td>
<td>Removal of inorganics will drastically reduce the cost of Boiler and its</td>
<td>Condensate at 60°C can be directly fed</td>
<td>Eliminates composting and need of</td>
<td>Increased no. of days</td>
</tr>
<tr>
<td>reduced scaling and foaming</td>
<td>operation.</td>
<td>to Press mud for Bio-Gas</td>
<td>press mud.</td>
<td>of operation - resulting</td>
</tr>
<tr>
<td>Retrofitting with MVC based on Steam, Power and Water Cost.</td>
<td>High calorific value organics can easily burn in normal boilers - No need</td>
<td>Savings in approx. 50% water</td>
<td>Elimination of composting will</td>
<td>in add'l ethanol prod'n</td>
</tr>
<tr>
<td>Improved thermal efficiency of MEE due to better heat transfer</td>
<td>of exotic metallurgy and heavy auxiliary power requirement</td>
<td></td>
<td>make extra land available for</td>
<td>and revenues</td>
</tr>
<tr>
<td></td>
<td>Eliminates tube failure, choking &amp; clinkering due to removal of potash and</td>
<td>Reduction in CPU Size - Benefits in</td>
<td>cultivation of sugarcane.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>other organics</td>
<td>Capex &amp; Opex</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Elimination of frequent shutdowns &amp; scaling</td>
<td>Augmented CPU performance</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Augmentation CPU performance</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CSIR-CSMCRI Process Interphase Advantages with Existing ZLD Technologies**

- Savings in approx. 50% water
- Elimination of composting will make extra land available for cultivation of sugarcane.
- De-potash organics as molasses substitute in Animal Feed Formulation
- FCO grade fertiliser viz. K2SO₄/ PDM.
- Almost all the Water is recovered and recycled
BENEFITS

Multifold Benefits of the Solution - To The Industry

• 100% sustainable solution
• Solves the headache of Spent Wash disposal
• Distillery Working Days can be increased
• Production & Turnover can be increased
• Compliance to Pollution Control ZLD Norms
• Profitable Process giving additional earnings to the Distilleries
• Will eliminate huge investment in Incineration Boilers and associated operation & maintenance
• Requirement of fresh water would greatly decrease
THE SOLUTION

TECHNOLOGY - 2
RECOVERY OF FCO GRADE POTASH (K₂SO₄) FROM INCINERATION BOILER ASH
THE PROCESS FLOW for SOP FROM INCINERATED ASH
# THE ECONOMICS (60 TPD ASH)

## UTILITY

<table>
<thead>
<tr>
<th></th>
<th>Unit</th>
<th>Per Hour</th>
<th>Per Day</th>
<th>Per Year</th>
<th>Price/unit</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steam</td>
<td>Kg</td>
<td>1300</td>
<td>26000</td>
<td>884000</td>
<td>2.2</td>
<td>19,448,000</td>
</tr>
<tr>
<td>Power</td>
<td>KW</td>
<td>875</td>
<td>17500</td>
<td>5950000</td>
<td>2.7</td>
<td>16,065,000</td>
</tr>
<tr>
<td>Chemicals</td>
<td>Kg</td>
<td>183.5</td>
<td>3670</td>
<td>1247800</td>
<td>14.2</td>
<td>17,718,760</td>
</tr>
</tbody>
</table>

A  Total Cost per Year  53,231,760

## MANPOWER

<table>
<thead>
<tr>
<th></th>
<th>Unit</th>
<th>All Shift</th>
<th>Per Month</th>
<th>Per Year</th>
<th>Price/unit</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant Incharge</td>
<td>No</td>
<td>1</td>
<td>100000</td>
<td>1200000</td>
<td>-</td>
<td>1,200,000</td>
</tr>
<tr>
<td>Supervisor</td>
<td>No</td>
<td>3</td>
<td>50000</td>
<td>1800000</td>
<td>-</td>
<td>1,800,000</td>
</tr>
<tr>
<td>Operator</td>
<td>No</td>
<td>10</td>
<td>25000</td>
<td>3000000</td>
<td>-</td>
<td>3,000,000</td>
</tr>
<tr>
<td>Helper</td>
<td>No</td>
<td>18</td>
<td>15000</td>
<td>3240000</td>
<td>-</td>
<td>3,240,000</td>
</tr>
<tr>
<td>Maintenance &amp; Cleaning Cost</td>
<td>Rs.</td>
<td></td>
<td>67000</td>
<td>804000</td>
<td>-</td>
<td>804,000</td>
</tr>
</tbody>
</table>

B  Total Cost per Year  10,044,000

A+B  Total Cost  63,275,760

## Production

<table>
<thead>
<tr>
<th></th>
<th>Unit</th>
<th>Per Hour</th>
<th>Per Day</th>
<th>Per Year</th>
<th>Price/unit</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOP</td>
<td>Kg</td>
<td>645</td>
<td>12900</td>
<td>4386000</td>
<td>50</td>
<td>219,300,000</td>
</tr>
<tr>
<td>MOP</td>
<td>Kg</td>
<td>195</td>
<td>3900</td>
<td>1326000</td>
<td>17</td>
<td>22,542,000</td>
</tr>
<tr>
<td>Mixed Salt</td>
<td>Kg</td>
<td>75</td>
<td>1500</td>
<td>510000</td>
<td>5</td>
<td>2,550,000</td>
</tr>
<tr>
<td>Fly Ash Bricks</td>
<td>Kg</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Total Sell Value Per Year  244,392,000

Profit  Rs/Year  181,116,240
THE PRODUCT - FCO GRADE POTASH ($K_2SO_4$)

Crystal WHITE K2SO4 - FCO Grade, Ready to Bag
THE RESIDUAL ASH

Bricks made from Salt Free Residue Ash

- High Strength
- Long Life
- Customizable
- Low Cost

Paver Blocks

Parking Tiles

A GREAT VALUE ADDITION TO YOUR CSR ACTIVITIES, BRICK-WALL, COMPOUND SOLUTIONS FOR FLOOR AND LOW RISE REQUIREMENT
BENEFITS

Multifold Benefits of the Solution - To The Farmers / Society

• Improvement of land health and increased agricultural production
• The farmers land which gets contaminated due to disposal of Ash along with Compost will stop
• Ground water contamination will be eliminated
• 100% water soluble, white crystalline appearance, purity >96%
• Fresh water requirement will reduce drastically for industries thus making additional water for use of irrigation & society
• Reduction of Air & Water Pollution in totality
ADL (Aurangabad Distillery Limited, Walchandnagar, Maharashtra.

**THE 1ST COMMERCIAL PLANT**

- Distillery Cap : 60 KLPD
- Raw Spent Wash treatment : 400 KLPD
- FCO Grade Potash ($K_2SO_4$): 3.1 TPD
- DPV (Desalted Organics) : 40 TPD (55%)
MESSAGE FROM THE PM - SHRI NARENDRA MODI

AWARDS & ACCOLADES

Technology Innovation Award
- presented by
The Honorable President of India - Shri Ramnath Kovind

‘Ready For The Big League’ ...
Award

Star SME Award