

Current Situation of Processing Industry

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(PSTPA)

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Current Situation

Dyeing industry is **'dying'** industry.



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Why should I worry about dyeing ?

Textile Processing – An important value addition in the textile supply chain.

When a part of the supply chain is affected, it affects competitiveness of the entire industry.

Why should I worry about processing ?

Does it really affect me as a

- Spinner
- Knitter
- Garment Exporter

It will. It has already affected some !!!

Why should I worry about processing ?

Typical Tirupur exporters statement:

Cost of processing is very high in India compared to China, Bangladesh, etc.

It is affecting our competiveness when we compete with other countries for orders.

Problems Affecting Processing Industry

1. Cost Effectiveness due to

“Zero Liquid Discharge”

Curse of ZLD

Zero Liquid Discharge (ZLD)



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Curse of ZLD

ZLD is possible, but not feasible.

Any system has to be:

1. Technically feasible.
2. Environmentally friendly.
3. Economically viable.

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Curse of ZLD

In terms of

“Economics”

Curse of ZLD - Economics

Typically process house

Effluent Capacity : 5,00,000 Litres / day

ETP Investment (ZLD) : Rs.5,00,00,000

Production per day : 5,000 kg / day

Monthly production : 1,20,000 kg / month

(24 working days)

Curse of ZLD - Economics

| | |
|--|-----------------|
| Monthly repayment | : Rs. 8,33,333 |
| (Assuming 5 yrs uniform repayment) | |
| Monthly Interest Cost (@ 12 %) | : Rs. 3,00,000 |
| (Average of 5 yrs diminishing interest) | |
| Total | : Rs. 11,33,333 |
| <u>Cost per kg = Rs. 11,33,333 / 1,20,000 = Rs. 9.50</u> | |

For interest and repayment alone !!!

Curse of ZLD - Economics

Running Cost (per m³ i.e. 1000 litres)

| | |
|--------------------------------------|-----------|
| Primary + Membrane Process | : Rs. 100 |
| Evaporation Cost | : Rs. 75 |
| (15% Reject @ 0.50 ps / lit) | |
| Membrane Replacement Cost | : Rs. 7 |
| (Assuming replacement every 2 years) | |
| Total | : Rs. 182 |

Per kg of fabric (@ 85 litres) : Rs. 15.50 / kg

Curse of ZLD - Economics

Total cost per kg of fabric

| | |
|---------------------------|-------------|
| Interest + Repayment Cost | : Rs. 9.50 |
| Running Cost | : Rs. 15.50 |
| TOTAL | : Rs. 25.00 |

This does NOT include:

– Solid waste disposal cost

Curse of ZLD – Economics

Because of difficulty in technical possibility ...

Loosing at least 4 days every month ...

i.e. 4 working days for every 24 working days.

Rs. 25.00 per kg is actually Rs. 30.00 per kg

(i.e. $25.00 * 24 / 20$)

Curse of ZLD - Economics

To move ZLD from possibility to feasibility,
ETP Consultants asks us to double the capital
investment.

Which makes the cost per kg of fabric as:
 $\text{Rs. } 25.00 + \text{Rs. } 9.50 = \text{Rs. } 34.50$

Is textile industry ready to absorb this cost ?

Curse of ZLD - Economics

Beware !!!

Current situation is either:

Entire ZLD cost is not incurred (or)

Entire ZLD cost is not fully transferred.

When compliance become tight,
competitiveness of the textile industry will be
in jeopardy.

Curse of ZLD

In terms of

“Environment”

Curse of ZLD - Environment

Public & judiciary assumes ZLD is environmentally friendly.

In a way (i.e. In terms of liquid discharge), yes.
But, ZLD has its own ugly face !

It is in our own interest, we should educate policy makers.

Curse of ZLD - Environment

1 kg of wood = 2.8 kg of steam.

1 kg of steam = 3.5 litres of RO Reject.

To evaporate 1000 lit of RO Reject,
 = $1000 / (3.5 \times 2.8)$
 = 102 kg of wood.

Curse of ZLD - Environment

Tirupur CETP Capacity= 10.435 Crore Lit

RO Reject = 15% of 10.435 Crore Lit
 = 156.5 Lakh Lit

Quantity of wood req.= $156.5 \times 100 \times 102$
 = 15,96,300 kg.

Assuming, each truck contain 10,000 kgs, we
 need 160 truck load of wood every day !

Curse of ZLD - Environment

This is just for Tirupur CETP.

Add Tirupur IETP, Perundurai, Erode, Karur, etc..



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Curse of ZLD - Environment

In addition to that, add the huge amount of electricity required for ZLD.

Today, electricity energy has very high energy foot print.



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Curse of ZLD - Environment

Economical impact of deforestation

Cost per tonne of wood

(Good sized mull velli wood)

Year 2007 - Rs. 1,700

Year 2010 - Rs. 3,200

These costs are passed on to the textile supply chain affecting its competitiveness.

Problems Affecting Processing Industry

2. Cost Effectiveness due to

“Lack of Technical Skill Set”

Lack of Technical Skill Set

Processing industry is a high energy consuming industry.

But, how many process house has authenticated data on

- Steam energy consumption per kg
- Water consumption per kg
- Electricity consumption per kg
- Steam generation efficiency
- Steam distribution efficiency

Lack of Technical Skill Set

We do not authenticated benchmark for comparison and to improve ourselves.

We do not have adequate number of knowledgeable technicians to guide us. (Either in utilities, processing, ETP).

Limited number of technicians leads to higher manpower cost, ultimately affecting cost and competitiveness.

Cost Competitiveness of Processing Industry

Till now cost was not important ...

We were huge profit making industry ...

Not anymore !!!

Not able to meet their ends, many low end / low cost processing units are disappearing.

Cost Competitiveness of Processing Industry

Unless processing industry is made cost competitive, it will affect competitiveness of the textile supply chain.

How Exporters helped us ...

By not caring about us,
Until they started getting hurt.

At least now, thanks to YET – India,
We have a forum to express our views.

Processing Industry Weakness

Processing industries are mostly small and
medium scale.

Huge numbers, but very fragmented industry.

Each associations having their own stands.

No lobbying power.

How Exporters can help us

We need your help

Only your \$\$\$ lobbying power can help us to take our concerns to politicians, officials, judiciary, etc.



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Possibilities in Effluent Treatment

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Possibilities in Effluent Treatment

1. Exotic Methods

Deep Well Injection, ZEROS, etc.

- Totally new concepts to India. Investment risk is high.
- Convincing the technocrats, bureaucrats, judiciary is not so easy.

Possibilities in Effluent Treatment

2. Marine Discharge

- Suitable only for the dye houses located near sea. Not suitable for inland areas.
- No clarity on what to discharge ? Don't imagine that fish will survive in RO Reject.
- Convincing the technocrats, bureaucrats, judiciary and more specifically public is not so easy.

Possibilities in Effluent Treatment

3. Discharge at 2100 TDS

- Impossible to reach this TDS, unless effluent is diluted to 20%.
- May be (?) mixed with domestic sewage as in developed countries.
- But do we have infrastructure to support this proposal ?

Possibilities in Effluent Treatment

4. Discharge with Potassium

- Use Potassium instead of Sodium.
- Sodium kills plants. Potassium is fertilizer.
- Currently under trial : PSTPA – TNPCB, Perundurai – Erode Collector – SITRA.
- Bad economics. (Additional cost of Rs.40/- per kg)
- Convincing the technocrats, bureaucrats, judiciary is not so easy.

Possibilities in Effluent Treatment

5. Zero Liquid Discharge

- Known devil is better than unknown angel.
- No need to convince anybody.
- Need more research to:
 - Reduce running cost.
 - Increase operational efficiency.

Need of the hour

Central Textile Processing Research Institute (CTPRI)

Central Textile Processing Research Institute (CTPRI)

Independent,
Government Controlled,
Research & Development Body.

Can also be funded by industries in textile
supply chain.

Central Textile Processing Research Institute (CTPRI)

- Can study ZLD based on technical feasibility and environment friendliness.
- Suggest ways to reduce cost of running ZLD.
- Being an independent government body, can guide Judiciary better, compared to NGOs who has no technical background.

Central Textile Processing Research Institute (CTPRI)

- Can bring necessary technical expertise to the industry and help us to cut cost.
- Can help to train necessary technicians, which the industry is severely lacking.

Conclusion

Hope we all can work together ...

So that we ALL can succeed !!!



| PSTPA - YET - Presentation | | |
|--|--------------------|--------------------|
| Calculation on Repayment and Interest | | |
| ETP Capacity (m3/day) | 500 | |
| Capital | Rs. 5,00,00,000.00 | |
| Repayment Months | 60 | |
| Repayment per month | Rs. 8,33,333.33 | |
| Interest Rate | 12% | |
| Interest per month | Rs. 3,00,000.00 | |
| | | |
| Year | Principal | Interest |
| 1 | Rs. 5,00,00,000.00 | Rs. 60,00,000.00 |
| 2 | Rs. 4,00,00,000.00 | Rs. 48,00,000.00 |
| 3 | Rs. 3,00,00,000.00 | Rs. 36,00,000.00 |
| 4 | Rs. 2,00,00,000.00 | Rs. 24,00,000.00 |
| 5 | Rs. 1,00,00,000.00 | Rs. 12,00,000.00 |
| Total | | Rs. 1,80,00,000.00 |

| | |
|-----------------------------------|------------------|
| Total Cost (Repayment + Interest) | Rs. 11,33,333.33 |
| Production Per Month | 1,20,000.00 |
| Cost per kg | Rs. 9.44 |

| PSTPA - YET - Presentation | |
|-----------------------------------|------------------|
| ETP Running Cost | |
| ETP Capacity (m3/day) | 500.00 |
| Electricity Cost | Rs. 3,50,000.00 |
| Chemical Cost | Rs. 3,50,000.00 |
| Maintenance Cost | Rs. 1,50,000.00 |
| Manpower Cost | Rs. 1,50,000.00 |
| Total | Rs. 10,00,000.00 |
| Effluent Per Month (m3) | 10,000.00 |
| Running Cost Per Month | Rs. 100.00 |

| PSTA - YET - Presentation | | | | | |
|--------------------------------------|------------------|------------------------------------|------------------|---------------------|-------------------------|
| ETP Membrane Replacement Cost | | | | | |
| ETP Capacity (m3/day) | | 500 | | | |
| Total Membrane Cost | Rs. | 36,43,250.00 | | | |
| Life Cycle of Membranes (month) | | 48 | | | |
| Replacement cost per month | Rs. | 75,901.04 | | | |
| No. Of working days | | 24.00 | | | |
| Effluent per month (m3) | | 12,000.00 | | | |
| Replacement cost per m3 | Rs. | 6.33 | | | |
| | | | | | |
| Membrane Type | No. Of Membranes | Cost Per Membrane (CIF Chennai) | Duty & Clearance | Total Cost | Total Cost (INR) |
| UF | 14 | \$ 1,650.00 | 30% | \$ 30,030.00 | Rs. 15,01,500.00 |
| RO - I (Brackish) | 30 | \$ 600.00 | 30% | \$ 23,400.00 | Rs. 11,70,000.00 |
| RO - II (Sea Water) | 15 | \$ 650.00 | 30% | \$ 12,675.00 | Rs. 6,33,750.00 |
| RO - III (Sea Water) | 8 | \$ 650.00 | 30% | \$ 6,760.00 | Rs. 3,38,000.00 |
| TOTAL | 67 | | | \$ 72,865.00 | Rs. 36,43,250.00 |
| | | | | | |
| Conversion Rate (US \$ to INR) | Rs. | 50.00 | | | |

| PSTA - YET - Presentation | | | | | | |
|--|-----------------------------|-----------------------|----------------|-------------------|------------------|----------------------|
| Sodium Vs Potassium - Cost Comparison | | | | | | |
| Chemicals | Chemical Price /Kg | Pretreatment | | Dyeing | | Total Cost/Kg |
| | | Dosage % | Cost/Kg | Dosage % | Cost/Kg | |
| Sodium Hydroxide | Rs. 17.00 | 1.5 | Rs. 0.26 | 0.9 | Rs. 0.15 | Rs. 4.37 |
| Sodium Chloride | Rs. 4.00 | | | 48 | Rs. 1.92 | |
| Sodium Carbonate | Rs. 17.00 | | | 12 | Rs. 2.04 | |
| Potassium Hydroxide | Rs. 60.00 | 1.5 | Rs. 0.90 | 1 | Rs. 0.60 | Rs. 41.46 |
| Potassium Sulphate | Rs. 64.00 | | | 42 | Rs. 26.88 | |
| Potassium Carbonate | Rs. 109.00 | | | 12 | Rs. 13.08 | |
| Note : For Dark Colour | | | | Difference | Rs. 37.09 | |
| Chemicals | Pretreatment(In Gpl) | Dyeing(In Gpl) | | | | |
| Sodium Hydroxide | 2.5 | 1.5 | | | | |
| Sodium Sulphate | | 80 | | | | |
| Sodium Carbonate | | 20 | | | | |
| MLR = 1:6 | | | | | | |
| * GPL converted in to Percentage for calculation purpose (Percentage = (Gpl * MLR)/10) | | | | | | |