



A Real Value Addition

-

ηEco Approach for Fly Ash Neutralization

By

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Director, Neptune Industries Limited

A presentation
for "Fly Ash
Management"

29 Jan 2010

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Content

- **Background**
- **Proposed Approach**
- **Mutual Business Benefits**
- **Neptune Capability net**

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Background

- **Any company having substantial power requirement, is keen to implement its own captive power plant as—
Either forward Or backward integration Or as a business proposition – Independent**
- **After Reform in Electricity Act, captive power plant has become a preferred option and Energy Sector is growing at a very high speed.. And app 50% are thermal plants**

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Background

- In India presently, Total Installed Power Generation capacity is approximately 125,000 MW from all sources. Out of this 80,000 MW is from Coal Based Thermal Power Plant which is approximately 60% of the total capacity of power generation.
- Power Plants with this capacity do generate approximately 125 Million Tones of Fly Ash per Year, which is a huge quantity and certainly a very big question – how to dispose/exploit this Environmental liability.

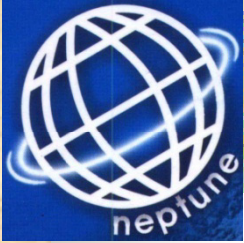
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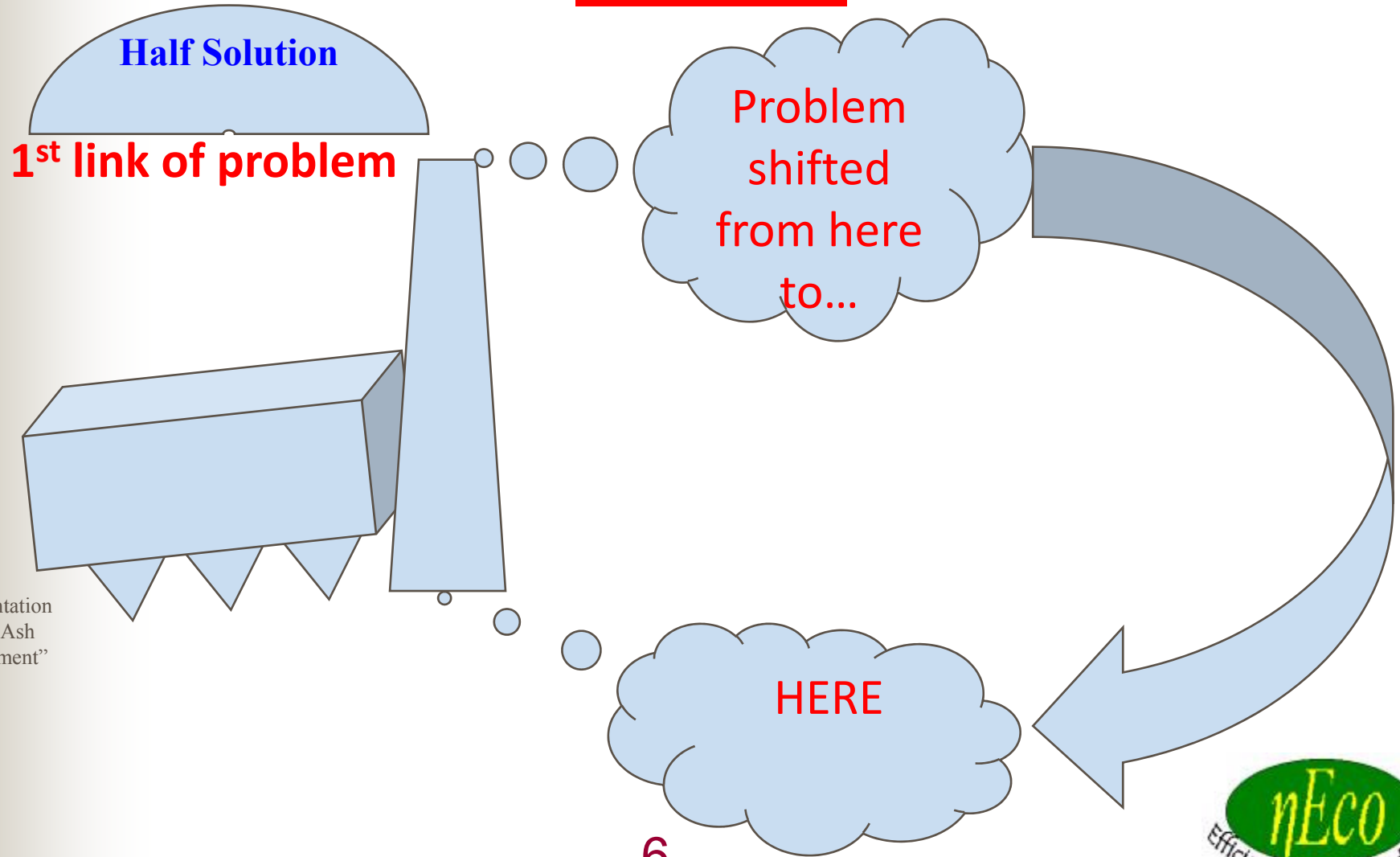
Background

- **Captive Thermal Power OR Independent Power Producer has to have ESP as mandatory equipment as per environmental notifications**
- **... The Company feels they got complete solution to combat pollution by adding an ESP in to the thermal system**
- **.... BUT ... immediately they realize that it is the shifting of the problem from one to another shoulder...**

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Problem



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Half Solution

1st link of problem

Chain of Problem

**Power Or Steam
generating Company –
gets rid of air pollution by
using ESP – but still its is
half the solution.**

– AND –

**End product is full of
problem**

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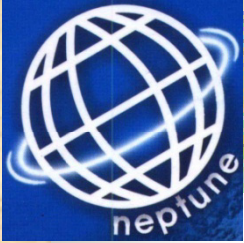
Problem

– AND –

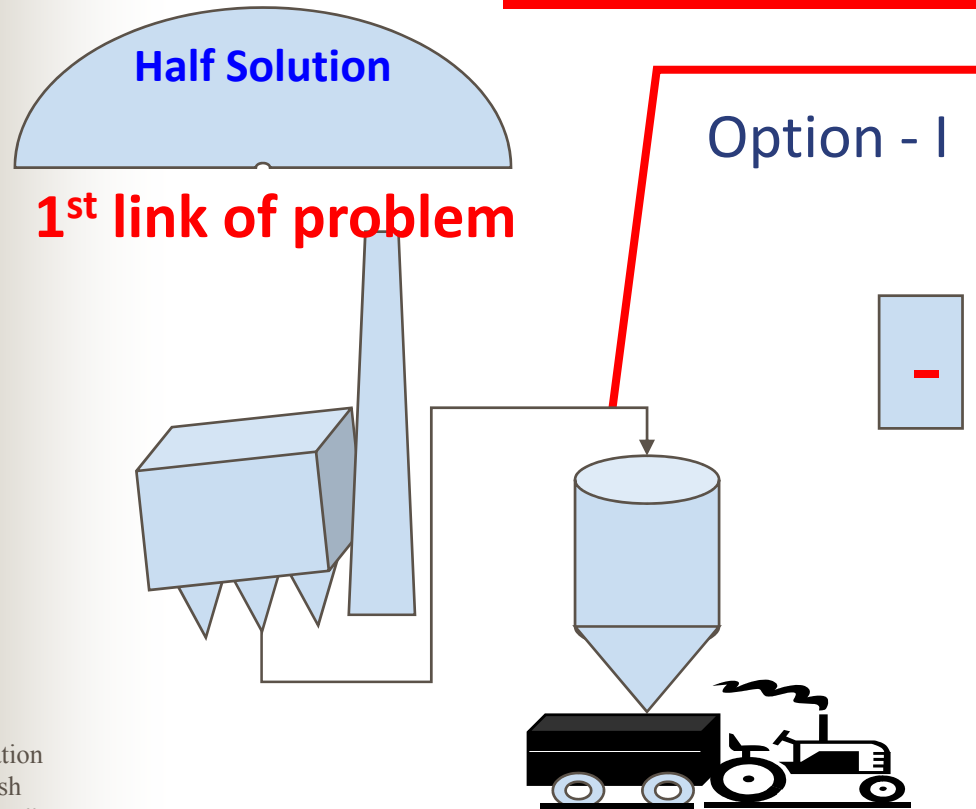
End product is full of problems...

1. Disposal of Fly Ash
2. It is environmental liability till the end use of Fly Ash
3. Any type of handling will add cost

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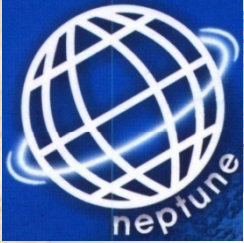
Chain of Problem



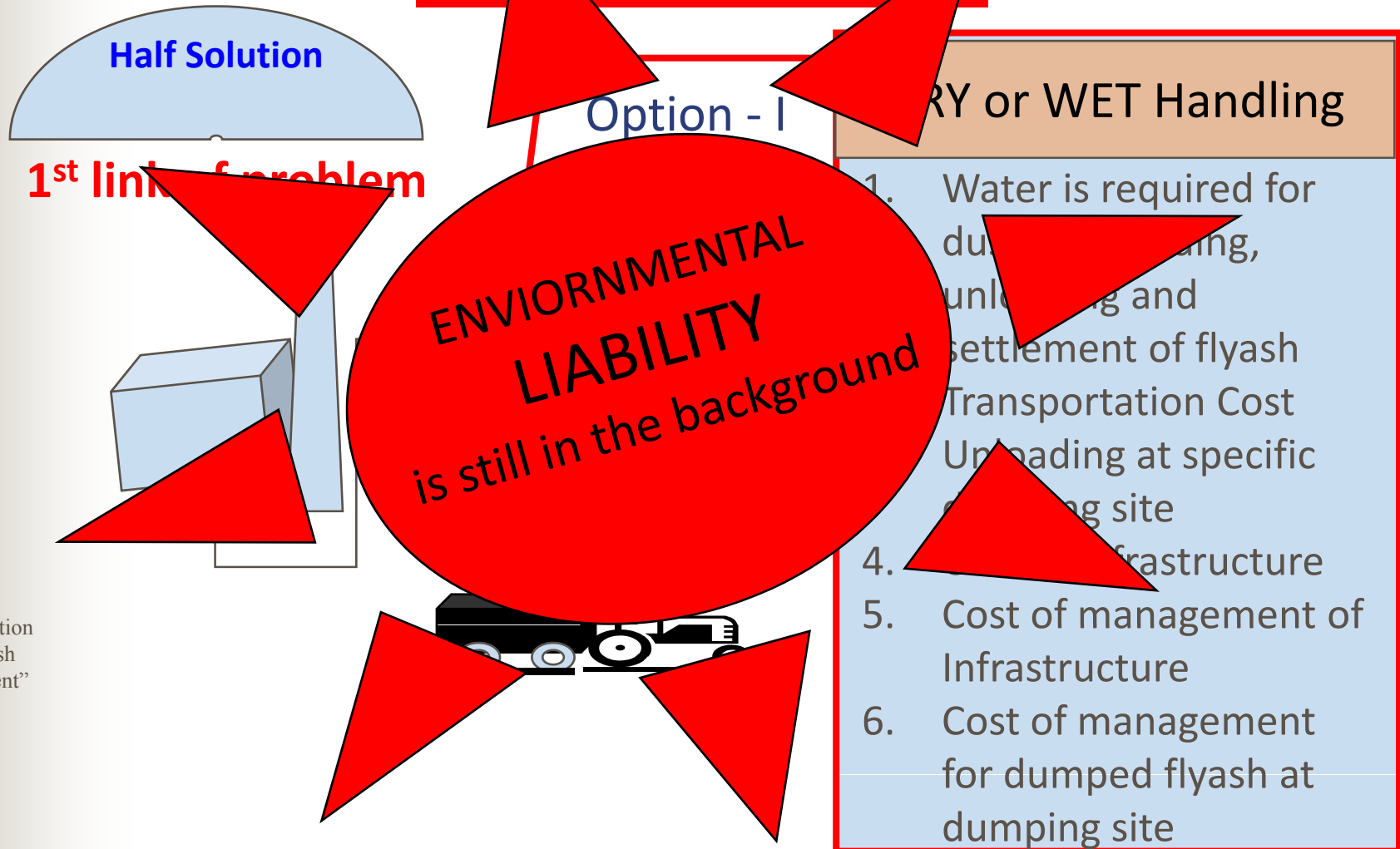
DRY or WET Handling

1. Water is required for dust-free loading, unloading and settlement of Fly Ash
2. Transportation Cost
3. Unloading at specific dumping site
4. Cost of Infrastructure
5. Cost of Management of Infrastructure
6. Cost of management for dumped Fly Ash at dumping site

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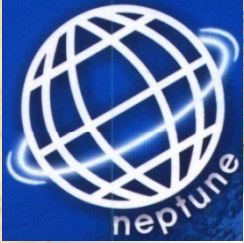


Chain of Problem

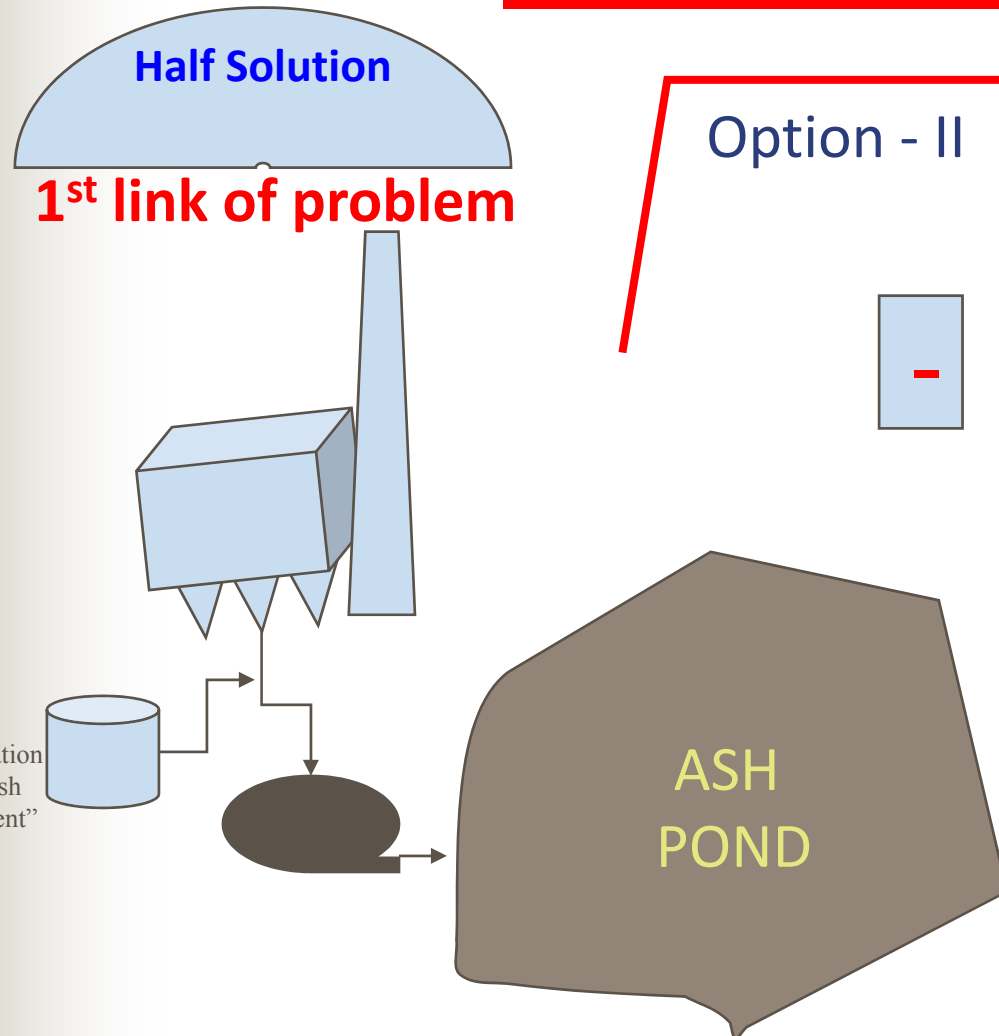


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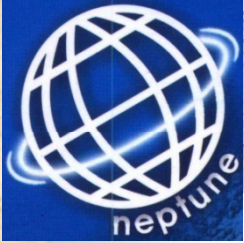
Chain of Problem



- ### Liquid / Slurry Handling
1. Water is required for Fly Ash- Slurry disposal
 2. Huge Power Cost
 3. 24 hrs O & M Cost
 4. Cost of infrastructure
 5. Cost of management of Infrastructure
 6. Cost of management for Fly Ash - slurry disposal site

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Chain of Problem



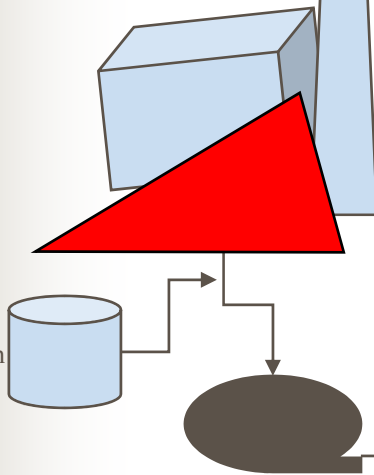
1st link of problem

Option - II

Liquid / Slurry Handling

ENVIRONMENTAL LIABILITY
is still in the background

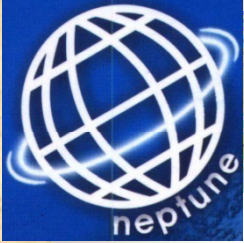
1. Water is required for Fly Ash disposal
Huge Power Cost
24 hrs O & M Cost
Cost of infrastructure
Cost of management of infrastructure
6. Management for Fly Ash - slurry disposal site



ASH POND

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Background

- Fly ash is known for environmental hazards, and its problems associated with disposal and neutralization of polluting content of fly ash.
- In a very positive look to the effective utilization of the Fly Ash - waste generated out of Power Plant, A company with a strong commitment and intention can implement an appropriate technology

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Background

- **By 2020, it is expected to reach the Total Power Generation Capacity at 300,000 MW. Again approximately 200,000 MW will be from Coal Based Thermal Power Plant and again there will be a huge generation of Fly Ash.**
- **Therefore, there is a need to find a better option to exploit this hazardous material rather than disposal. The Options are.....**

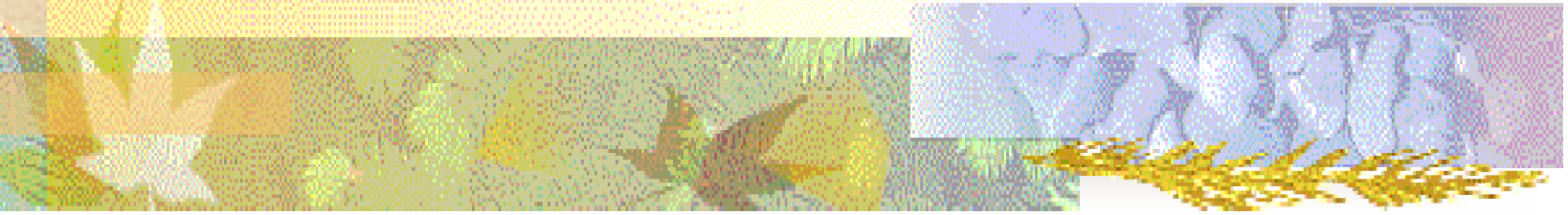
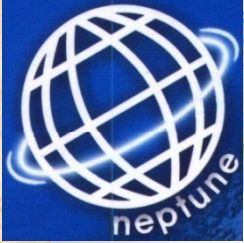
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Options...

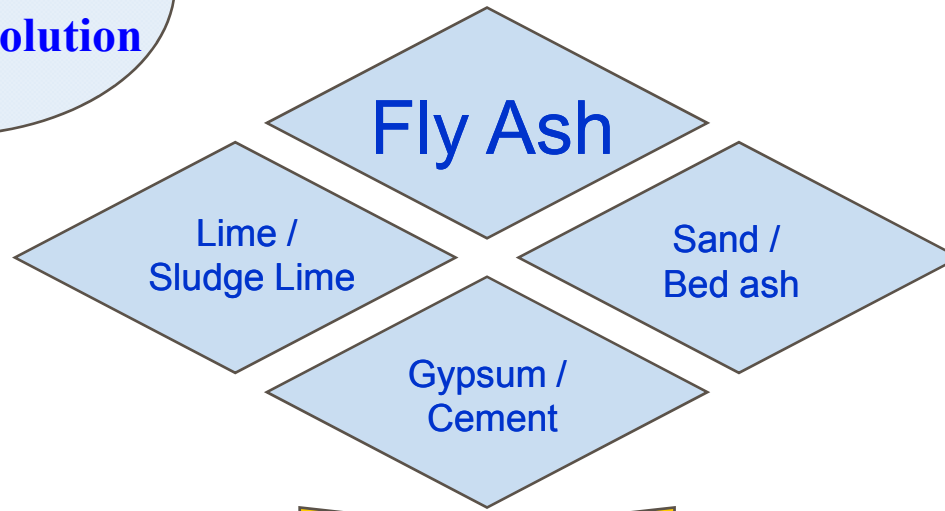
- **Fly Ash is potentially utilized in following different ways...**
 - **Manufacturing building construction products like Brick / Tile / Pavers / Block**
 - **Fly ash Cement / Fly ash as part replacement of cement**
 - **Roads & Embankments**
 - **Fill / Reclamation of low lying area**
 - **Stowing material for mine fill**
 - **Agricultural Applications**
 - **Construction of lagoon dykes , divide bunds**

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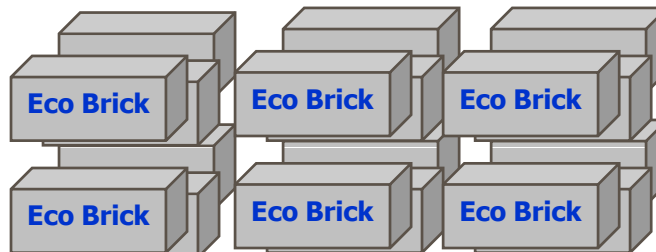


Solution

2nd Half of Solution

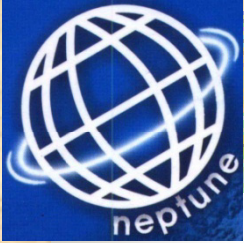


**Neptune
Brick Plant**

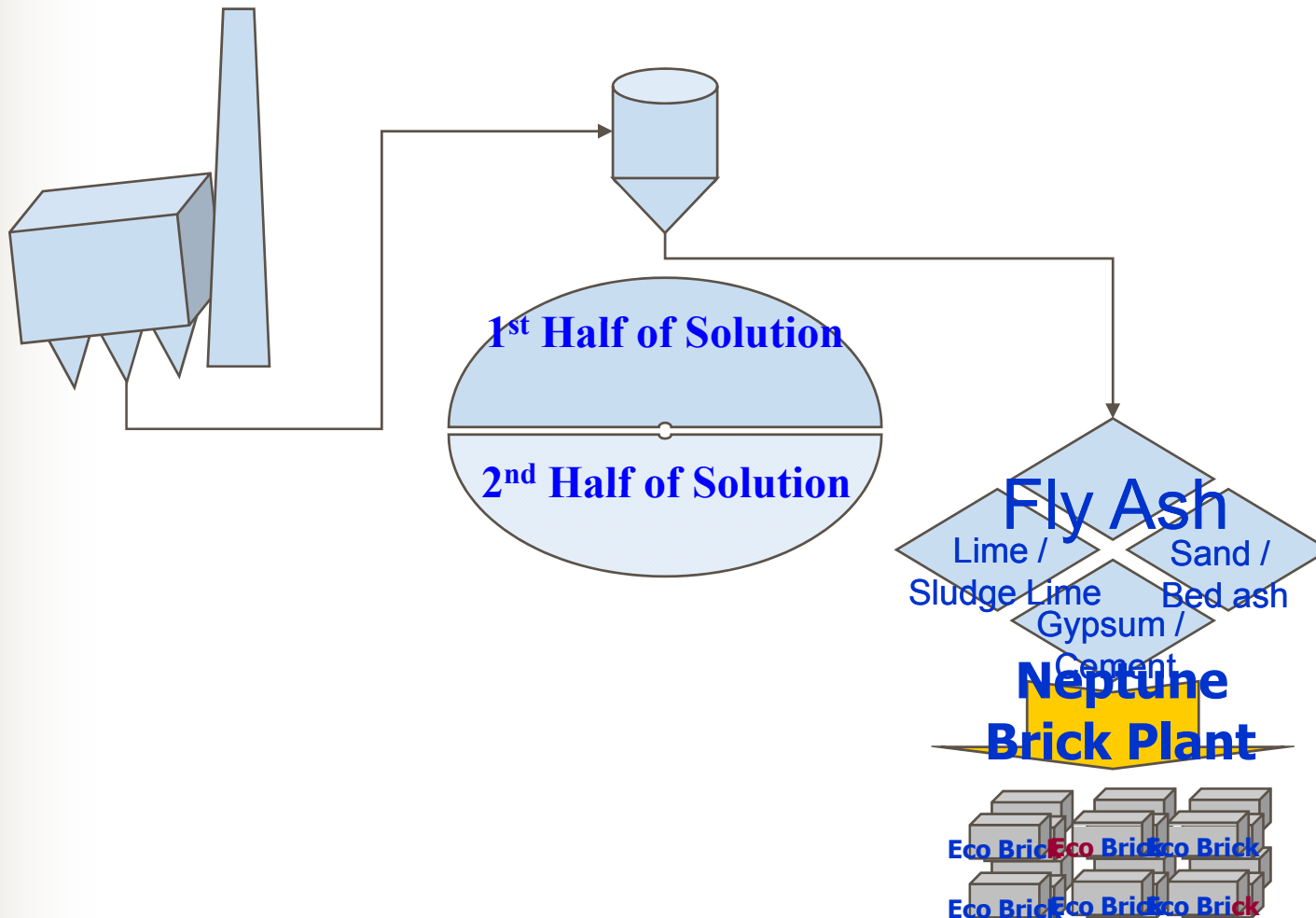


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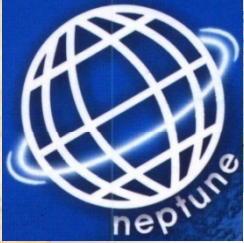


A Complete Solution



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- Dry Fly Ash Collection system itself is self justifying against Wet disposal system



And After dry Fly Ash Collection

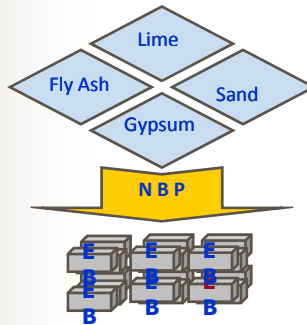
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- Waste material becomes value added product – a stage forward in value chain



And not a problem chain

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Benefit of Proposed Solution

- **Complete or almost total liability of fly ash - nearly zero discharge position**
- **Fresh capital investment for establishment of processing facility – MINIMUM AND ADDED IN CREATING ASSET**
- **Dedicated facility and long term solution**

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■ Some Myth

1. I have no problem. I can sell it at a high price to Cement Manufacturers

■ Some Facts

1. - It is not always true for every one.
- Quality of fly ash is an issue.
-
 - a. **Power:** 80,000 MW (Present Thermal Power Generation Capacity)= 80 Million TPA Fly Ash
 - b. **Cement:** 140 Million TPA Capacity = 35 Million TPA (utilization @25% of total Cement Production Capacity)

Therefore, shortfall is much more and growing at very high rate.

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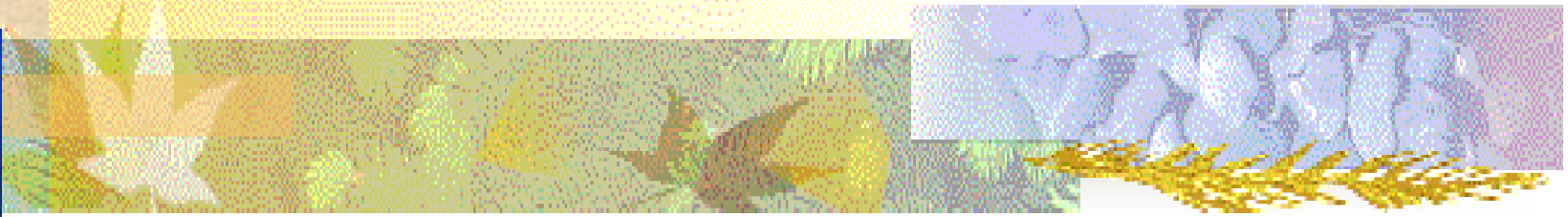
■ Some Myth

2. Installation of Brick making Plant – Very Expensive and Big Headache.

■ Some Facts

2. For an Example,
 - 300 TPD Fly Ash Utilization Plant with nEco Technology will cost approx. 3.5 Cr. (This is 0.9% of capital cost of 100 MW Plant)
 - The running cost of 300 TPD Fly Ash Utilization Plant will be approx 3.2 Cr (35 Million Bricks per Year). This is 1.8% of the fuel cost.
 - AND it will generate value added product of an equivalent value of 5 Cr.

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■ Some Myth

3. We can not/should not/ideally not be selling the Bricks.

■ Some Facts

3. But, we do sell Fly Ash.

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■ Some Myth

4. No Market of Bricks in near by area.

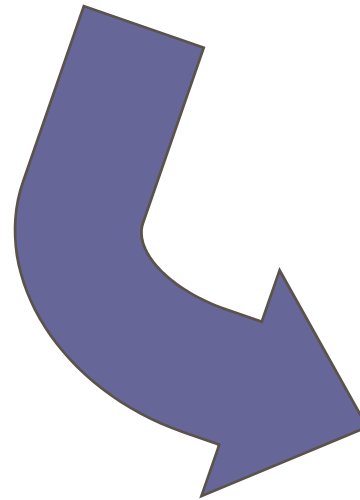
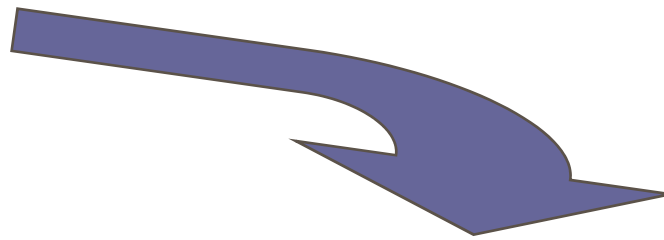
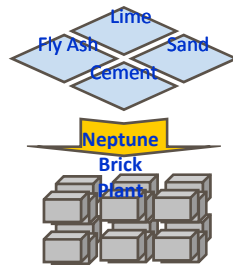
■ Some Facts

4.
 - a. Brick Market Size = 1000 Bricks/Person/Year. Therefore, 3 Cr bricks serves 30,000 Population.
 - b. Bricks can be used in Colonies , Guest Houses, Floorings
 - c. Corporate Social Responsibility
 - Re-habitation Program
 - Small Village Basic Infrastructure like: Water Pump Room, PHU Building (Public Health Unit), School etc.

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Neptune Technology



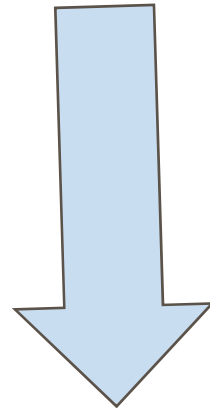
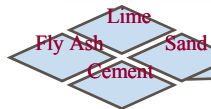
Neptune Make Brick Plant – 50 TPD as start of the project with scalability up to 1000 TPD or even more.

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Neptune Technology



➤ Raw Material

- Fly Ash : 90 - 95 %
- Cement : 5 - 10%
- Resin (nEco) : 5 % of cement

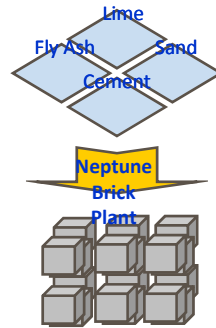
Brick Feature

- Weight : 2.75-3.00 kg
- Size : 230x110x70 mm (Or Desired)
- Comp. St. : 80-120 Kg/Cm²
- Water Ab. : 15-20 %
- Shape/Size : Uniform (+/- 1 mm accuracy)

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Neptune Technology



➤ Production Process

Raw Material feeding	⇒	Volumetric or Batching & Weighing Control Feeding
Dry / Wet Mixing	⇒	Intensive / Rapid mixing
Brick Production	⇒	By Powder compacting with world class advanced pressing technology
Green product handling	⇒	Palletizing / Car Loading System
Curing	⇒	Mechanized Mist Curing (Steam Curing)

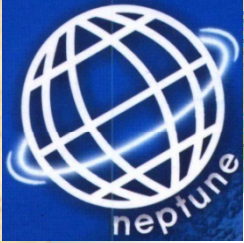
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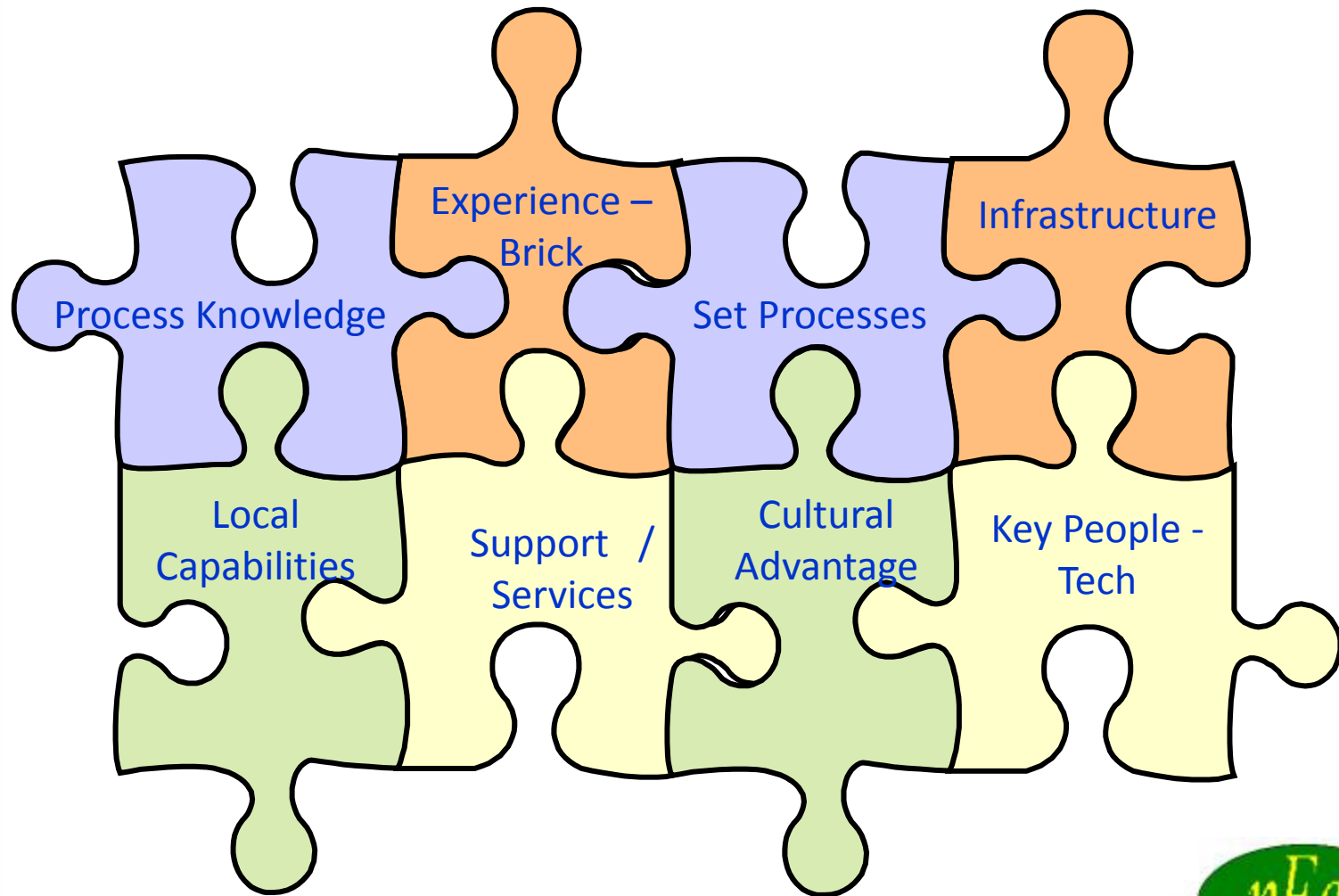
Why Neptune ?

Neptune's - Capability (safety)net

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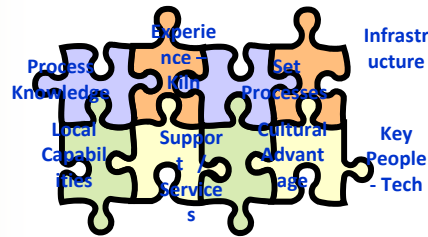
Neptune Capability net



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Neptune Capability net



Process Knowledge

- Neptune has strong engineering capabilities – in the related industry segment – like Ceramics
- Innovative, forward looking contribution for all projects which needs collaborative approach for customer

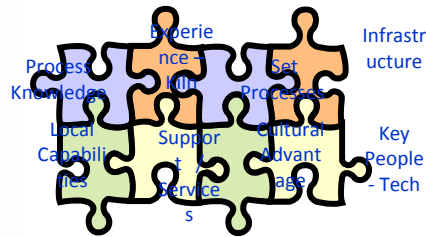
Neptune is strong engineering company – not merely a fabricator

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Neptune Capability net



Experience - Brick

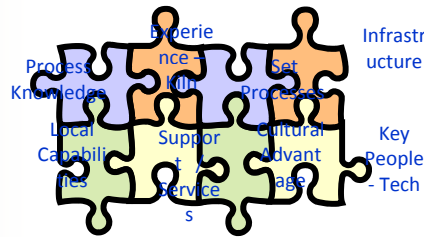
- Neptune has successfully completed various projects for Brick manufacturing

Neptune has specific exposure on Brick Manufacturing Technology – Quick understanding of requirement

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Neptune Capability net



Experience – Brick Customer List

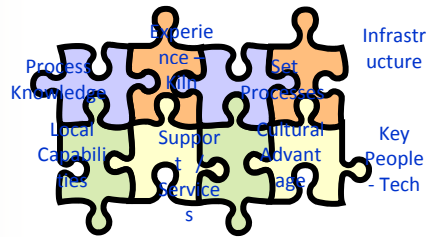
- **Jindal Steel & Power**
- **Hindalco**
- **Grasim**
- **Johnson**
- **NTPC**
- **Uniturtle, Zambia**
- **Bell Granito**

- **ATUL Limited**
- **NIRMA**
- **Orissa Sponge Irop**
- **Prakash Industries**
- **Kamachi Steel**
- **Salasar Steel**
- **Ind Synergy**
- **Birla Cellulosic**
- **Shripad Bldg. Prod and Many more.....**

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Neptune Capability net



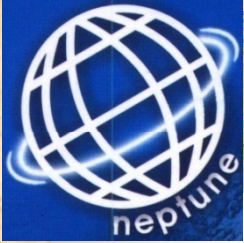
Set Business Process

- Neptune has implemented the quality control processes encompassing – materials, manufacturing, assembly, erection, commissioning trial runs, and logistics

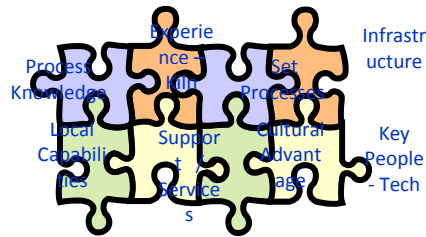
Speedier execution due to support system

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Neptune Capability net



Infrastructure

- Neptune has adequate Infrastructure capabilities to carry out such projects.
- Building and Plant –
- Equipments –
- Accessories –
- Advance Tools like – AutoCad

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Neptune has adequate own resource to handle the project of big size – No dependability -



OUR WORKS



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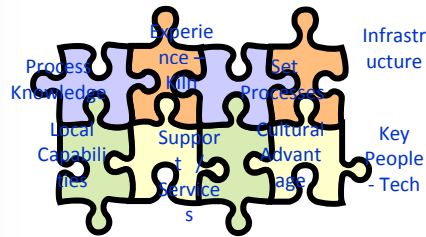
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Neptune Capability net



Local Advantage

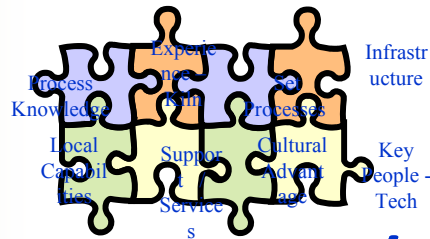
- Neptune has successfully executed and currently executing the projects all across India, there by quick site mobilization and resource streamlining.

Neptune has logistics and local specific resources lined up for timely support for project execution

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Neptune Capability net



Support / Services

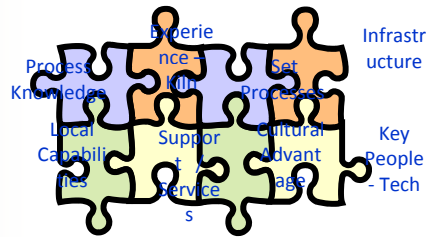
- Neptune has sound track record in supporting the customer , for all its supply
- Neptune has a practice of dedicated resource allocation as one point contact for all need

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**Neptune believes that – Customer support is –
time and mission critical for success**



Neptune Capability net



Cultural Advantage – Industry

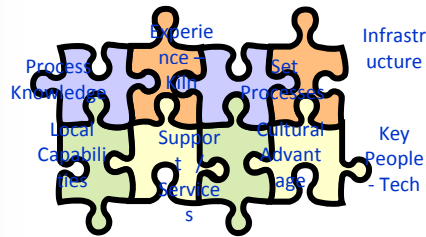
- Neptune has gained a reputation as one of the most preferred engineering company for ceramic industry.
- And for flyash brick making too..

**Neptune is part of the Ceramic industry –
Understands needs quickly**

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Neptune Capability net



Key - People

- Neptune has experienced manpower in the related field. Neptune has been successful in inheriting and cultivating the knowledge transfer of this industry

**Neptune has techno-commercial expertise –
A real value addition in a task**

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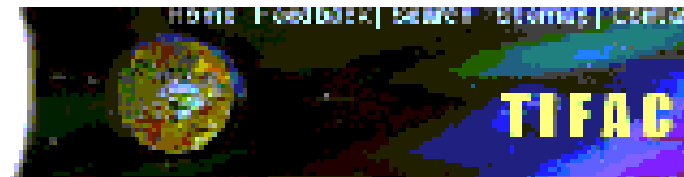
Blessings and Appreciation from.....



Central Building Research Institute

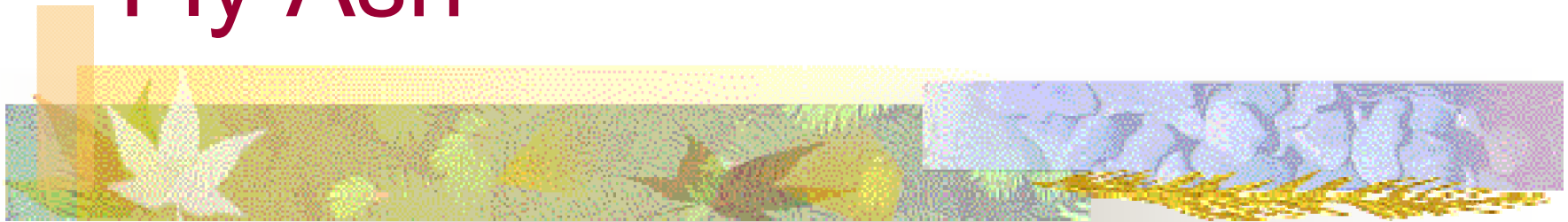


CENTRAL POWER
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Fly Ash



Turning a Problem in to an
Opportunity