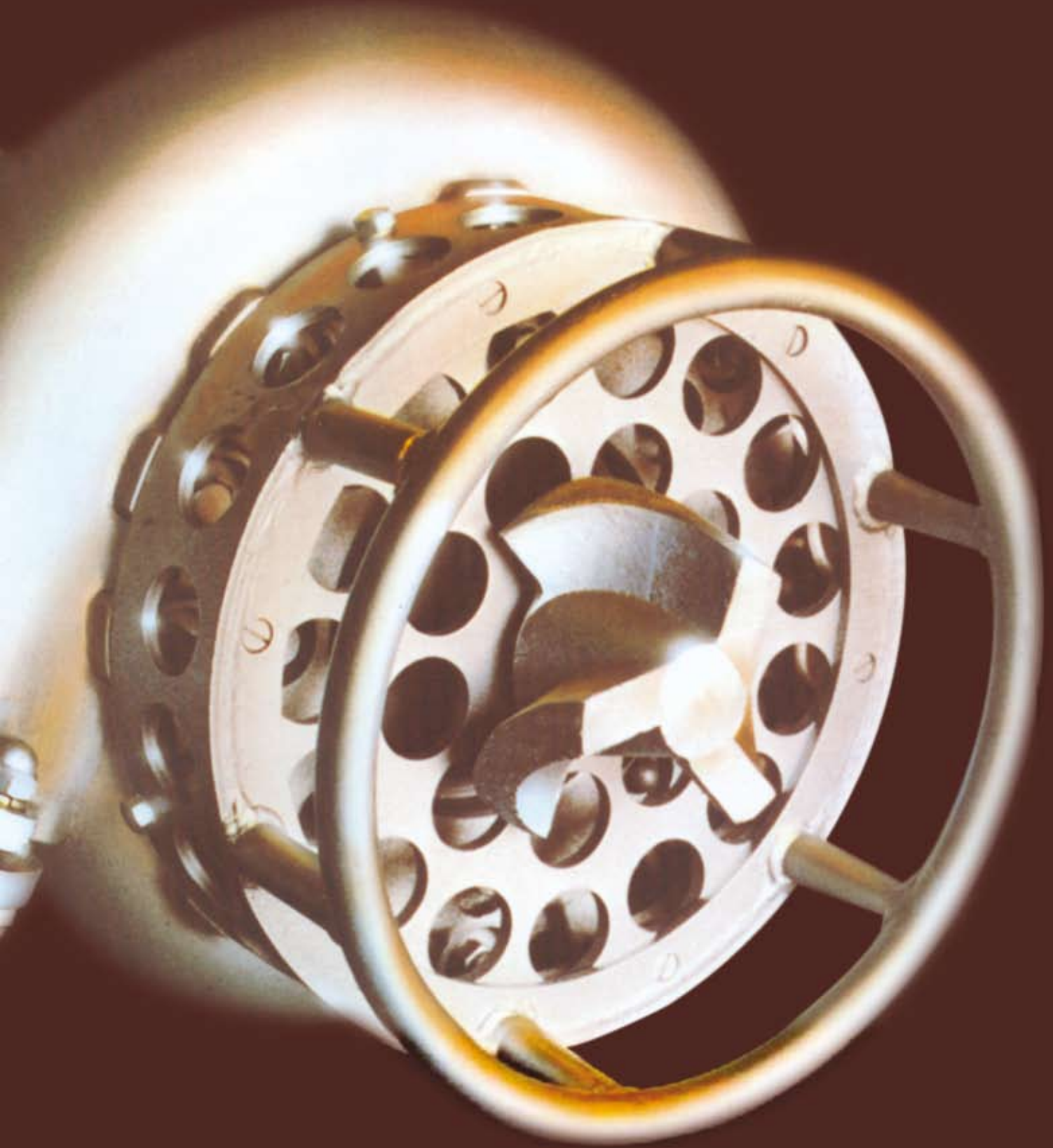


**ALL PUMPS
WERE NOT
CREATED EQUAL**



Toyon



*The ultimate solution to your
solids handling problems*

ALL PUMPS WERE NOT CREATED EQUAL

PRESENTING

THE TOYO PUMP

Moving slurries using pumps is a well known technology; using pumps to transfer low density slurries is also common. What is **NEW** is using a pump to agitate materials from rest, whip it into a slurry and pump it at high densities continuously and to comparably long distances -

ALL IN ONE SINGLE OPERATION.

THIS IS THE TOYO PUMP.

The TOYO pump is a Submersible, agitator sand pump. Built very sturdily with extra ordinary features for use in rugged, difficult and exacting service conditions.

The TOYO PUMP, with its built-in mechanical agitator, has been specially designed to pump solids that have settled. The rotating custom built agitator of TOYO pump moves the solids from rest, whips it into a dense slurry and directs a highly concentrated and continuous flow of material into the impeller. This is then pumped out.

The TOYO PUMP incorporates many unique features which sets it apart from other pumps

- The TOYO PUMP is provided with a protective screen, which prevents ingestion of oversize solids.
- Special seals are used to withstand pressure / temperature.
- The excellent metallurgy of wearing parts ensures long life.
- The efficient performance of pumps can be maintained for long periods by adjusting the clearance between the impeller and impeller disc.
- Unique shaped pump parts made of abrasive resistant materials.
- All wearing parts made of special alloys extra thick for longer life.
- Compartmentalised construction to minimize parts subject to abrasion.

The standard range TOYO PUMP DPF / DP Series can effectively handle solids upto 120mm dia., head and depth of 30 Metres. TOYO's special range pumps can operate at much greater depths and head.

The TOYO PUMP combined with booster slurry pumps are used to transport material over longer distances.

The TOYO system is easily the most cost effective method of converting stationary material into a pumpable state and transporting it – **all at a fraction of the costs of conventional methods.** Its simplicity and ease in operation makes the TOYO system universally acceptable.

Typical applications of TOYO PUMPS include:

- Dredging of Fishing Harbors and Minor Ports;
- Mineral/Iron Ore Processing Plants
- Steel Plants - mill scales, sludge / slag pumping
- Coal Ash Handling in Thermal Power Stations
- Civil Constructions - Dredging & Caisson Well sinking
- Rivers / Inland Waterway Dredging
- Hydropower / Irrigation Reservoir Deepening/Desilting
- Sewage Disposal, Water Treatment Plants, etc.

The standard TOYO PUMPS range consists of the DPF/DP (Light & Dredge Pump Series) and ET series of Pumps. Special Range includes the Deep Sea Pumps; the DPE Series & DV Series. TOYO accessories - The TOYO Agitators & TOYO Excavators – PK & EPK Series are used to increase the area of agitation and / or output of solids.



KEY FEATURES OF THE TOYO PUMP

1. AGITATOR

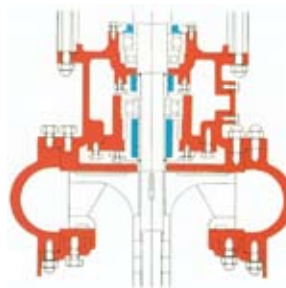
The unique feature of the Toyo Pump is its patented built in mechanical agitator. Specifically designed to agitate the solids that have settled and whip it into a thick slurry. A high concentration of this slurry is then directed into the impeller, which is then pumped out.

This is precisely where conventional pumps fail to deliver.



2. PUMP CASING & SEALS

The pump casing, which is subjected to very high wear and tear, is made from abrasion resistant alloy material specially developed by Toyo after decades of experience. Compartmentalised construction allows for specific replacement of worn out parts. Pump seals are special type to withstand the pressure and operate in self contained fluid reservoir.



3. GRAVEL SIZES

The Toyo Pump effectively handles solids upto 120mm dia., depending on models.



Size : 10 - 35 mm Dia; Dis. Dia 100 mm



Size : 35 - 60 mm Dia; Dis. Dia 150 - 200 mm



Size : 35 - 120 mm Dia; Dis. Dia 200 - 250 mm

4. SAND COLLECTION FROM SEA

The Toyo DP(A) Deep Sea Series is specially designed to collect sand from the Sea at depths of 90 metres and even more. Capacities range from 720 to 1500 M3 per hour of **SOLIDS - SAND**.



THE TOYO DREDGING SYSTEM

The TOYO Dredging System typically consists of:

1. TOYO Pump (with Control Panel for larger Models).
2. Floating Pontoon
3. Delivery Pipeline with Floaters.
4. Flexible Hose to connect TOYO Pump outlet to delivery pipeline.
5. Power Winch for lifting & lowering TOYO Pump
6. Generator/ Electric mains supply
7. Direction Control Winches, tools & tackles.

The TOYO Pump is suspended from an A frame attached to the pontoon using a Power winch. The power supply is connected to the control panel. The pontoon is anchored using the manual direction control winches. The pump outlet is connected to the flexible hose which in turn is connected to the delivery pipeline. The pump is started and lowered into the water. Water is first pumped and when the pump is lowered further, sand is pumped out.

In sites containing large concentrations of clay, TOYO EXCAVATORS may be required. Two types of TOYO EXCAVATORS are available – PK Series & EPK Series.



A typical pontoon arrangement.



A typical ladder arrangement.

THE TOYO RANGE

The TOYO PUMP range consists of the ET Series, DP(Light) Series, DPF/ DP (Dredge Pump) Series, DP(A) – Sand Collection Series, the DV Tank Mounted Series, the DPE Series and TOYO Accessories.

THE TOYO ET SERIES

The TOYO ET series are intended for intermittent use where the project requirements are small. Typical applications include de-silting of raw water intake pump house, cooling water channels in thermal power stations, pits de-silting, coal ash ponds de-silting, settling tanks de-silting, storm water drains clearing, dewatering operations etc.



Range	: 1- 20 HP
Capacities	: 6 - 120 M ³ /Hr.
Discharge dia	: 50 - 150 mm
Head	: 6-20 mtrs.
Size of Solids	: 10-30 mm dia
Applications	: Intermittent pumping of slurry in processing plants, Steel plants, Thermal power plant, Minerals processing etc.

THE TOYO DP (LIGHT) SERIES

The TOYO DP Light series is a modified version of TOYO ET Pump series. DP Light Series incorporates the compartmentalised construction of the DP series. The applications are same as that of ET Series. DP Light series pumps is used where increased working hours are required.



Range	: 3- 10 HP
Capacities	: 30 - 60 M ³ /Hr.
Discharge dia	: 80 - 100 mm
Head	: 7-20 mtrs.
Size of Solids	: 14-20 mm dia
Applications	: Processing plants of Steel / Minerals, Coal, Bauxite etc.

THE TOYO DPF / DP (DREDGE PUMP) SERIES

The TOYO DPF / DP Dredge Pump series is the commonly used versatile pumps for dredging and de-silting. The application includes dredging in Fishing Harbours, Minor Ports, Jetties, Shipyards - docks and quaysides etc. De-silting of intake water channels in Paper Mills, Thermal Power Stations, Aquaculture farms as well as de-silting of reservoirs of hydro electric dams. Designed for continuous operation.



Standard Range	: 15 - 150 HP
Capacities	: 90 - 720 M ³ /Hr.
Discharge dia	: 100 - 250 mm
Head	: 8-40 mtrs.
Size of solids	: 35-120 mm dia
Applications	: Dredging in Ports / Harbour, Sea, Jetties etc. De-silting & Land Reclamation.

THE TOYO DP (A) SERIES

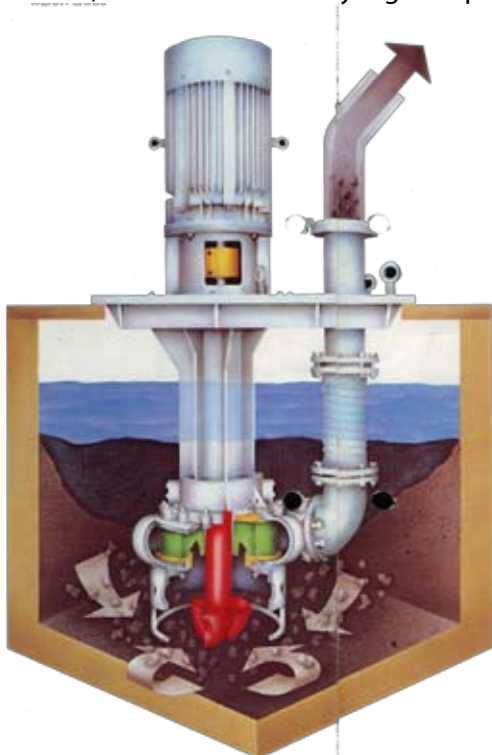
The TOYO DP (A) Pump series are the unique Deep Sea Application Dredge pumps. These are specially designed pumps and can operate to depths exceeding 90 mts. The capacities of these pumps are also huge which is necessary to ensure very high volume of sand collection in very less time. TOYO DP(A) is widely used for deep sea sand collection in Japan as well as in Europe and some parts in the Far East.



Range	: 150 - 1300 KW
Capacities	: 720 - 7500 M ³ /Hr. OF SAND
Discharge dia	: 200 - 700 mm
Head	: 8-40 mtrs.
Size of solids	: 35-120 mm dia
Applications	: Collection of Sand from Sea / River / Lakes / Dams

THE TOYO DV / DFV SERIES

The TOYO DV / DFV series is specially designed for sump operations - De-silting of sumps and agitating tanks in minerals processing industries. This series has found wide acceptance in many mineral processing plants world wide. The major advantages include continuous operation; no clogging or cavitations, continuous and very high output of solids.



	DV	DFV
Range (HP)	: 3 - 10	15 - 150
Capacities (M ³ /Hr.)	: 30 - 60	90 - 720
Head (mtrs.)	: 5 - 25	15 - 40
Shaft Length (mtrs.)	: 3 - 4	3 - 4
Applications	: Sump & Tanks De-silting	

THE TOYO DPE / DPFV SERIES

The TOYO DPE / DPFV series is used mainly for dewatering and sewage pumping applications.



	DPE	DPFV
Range (HP)	: 3 - 10	15 - 75
Capacities (M ³ /Hr.)	: 30 - 60	90 - 360
Head (mtrs.)	: 7 - 20	15 - 40
Size of Solids (mm dia)	: 14 - 25	35 - 60
Applications	: Sump & Tanks De-silting, Water Treatment Plants	

THE TOYO PUMP ACCESSORIES

The TOYO Excavators PK & EPK Series are used in conjunction with TOYO DPF / DP where soil is found to be sticky due to higher percentage of clay and DP (A) Series Dredge Pumps to increase the concentration of sand in the slurry. Different type of teeth is available in PK series depending upon site conditions and applications. OPK Series is the hydraulic version of EPK.

THE TOYO EXCAVATOR – PK SERIES



Range	: 10 - 50 HP
Type of Teeth	: A, B & D
RPM	: 24.5 - 27.3
Applications	: Attachment to Toyo Pump for pumping sticky sand mixed with clay / slit.

THE TOYO EXCAVATOR EPK SERIES



Range	: 10 - 50 HP
RPM	: 24.5 - 27.3
Applications	: Attachment to Toyo Pump for dredging sand mixed with clay / slit.

THE TOYO AGITATOR – VHA & THAF SERIES

The TOYO THA and VHA are multi - nozzle agitators, which have been proved to successfully agitate settled solids into highly concentrated slurry where many other systems have failed.

THE TOYO AGITATOR – VHA SERIES



Range	: 3 -30 HP
Capacities	: 96 - 480 M ³ /Hr.
Size of Solids	: 25 - 60 mm dia
Applications	: Agitator for Tanks, Settling Ponds etc.

THE TOYO AGITATOR – THAF SERIES



Range	: 15 - 50 HP
Capacities	: 150 -600 M ³ /Hr.
Size of Solids	: 60 mm dia
Applications	: Agitator for Tanks, Settling Ponds etc.

TOYO PUMP IN ACTION



Model : Toyo Pump DP 100 B on Pontoon
Application : Dredging in Fishing Harbour, Tadri.
Customer : Karnataka Govt. / Indo Danish Fisheries Project



Model : DP 20 with Water Jets
Application : For pumping Sand and Clay for Bridge Support Caissons
Customer : USA



Model : Toyo Pump DP 150 B on Pontoon
Application : Desilting of Hydro Electric Dam in Mexico.



Model : Toyo Pump DP 30 B
Application : Unloading of Silica from Barge.
Customer : Glass Factory, Japan.



Model : DP 50 on Oil Drum Pontoon
Application : Dredging
Customer : USA



Model : DP 50 B on Pontoon
Application : Channel Dredging in Assam
Customer : HPC, Assam, India.



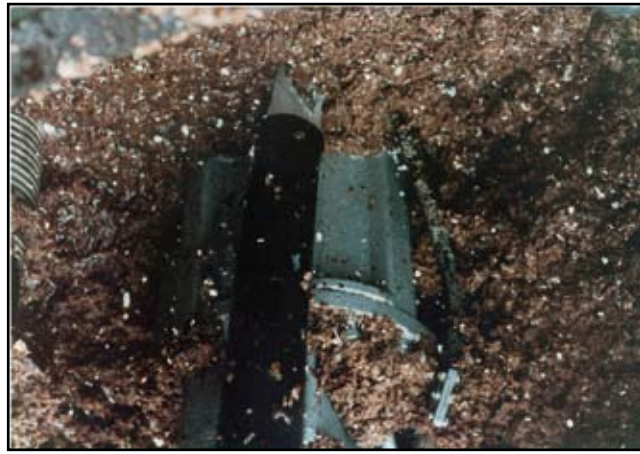
Model : DP 20 S on Pontoon
Application : Effluents Lagoon De-silting
Customer : SIV, India.



Model : DP 100 B on temporary Pontoon
Application : For sand dredging
Customer : Harbour Engg. Dept., Kerala, Neendakara
Fishing Harbour



Model : DP 50 on Pontoon
Application : Coal Separation Plant
Customer : Australia



Model : DP 15
Application : Pumping Paper Mills Sludge
Customer : USA



Model : DP 15
Application : Iron Ore Pumping
Customer : Steel Mill, Japan



Model : DP 150 B on Pontoon
Application : Dredging in Harbour
Customer : USA.



TOYO SAND COLLECTION SYSTEM



Model : DP 400 A
Application : Sand Collection from Sea
Customer : Japan



Model : DP 150 A & EPK 30 - 2 Nos.
Application : Sand Collection from Sea
Customer : Japan



Model : DP 150 A.
Application : Sand Collection from Sea
View of Shooter
Customer : Japan

TOYO EPK / PK



Model : DP 150 B & EPK 30
Application : Dredging
Customer : Europe



Model : DP 50 & EPK 10
Application : Submarine Oil
Pipeline Laying
Customer : USA



Model : DP 150 B & PK 10-4 Nos.
Application : Caisson Well Boring
Customer : Europe

TYPICAL APPLICATIONS OF TOYO PUMPS

1. DREDGING

1.1.0 Dredging Projects

- 1.1.1 Fishing Harbours
- 1.1.2 Minor Ports
- 1.1.3 Ocean Projects
- 1.1.4 Jetties
- 1.1.5 Land Reclamation

1.2.0 Desilting Projects

- 1.2.1 Hydro Electric Dam Reservoir
- 1.2.2 Quayside in Shipyard / Ports / Jetties
- 1.2.3 Intake Channels
- 1.2.4 Raw water intake channel cutting & Desilting
- 1.2.5 Intake water pump house

1.3.0 Maintenance Dredging of :

- 1.3.1 Fishing Harbours
- 1.3.2 Minor Ports / Jetties
- 1.3.3 Ocean Projects
- 1.3.4 Effluent Lagoons & Ponds
- 1.3.5 Inlet Channels

2. CONSTRUCTION

2.1.0 Foundations

- 2.1.1 Caission Well boring
- 2.1.2 Pile Boring
- 2.1.3 Pumping Slurry during piling

2.2.0 General Construction

- 2.2.1 Removal of Earth / Crushed stone
- 2.2.2 Construction of tunnels
- 2.2.3 Land reclamation
- 2.2.4 Site levelling
- 2.2.5 Transportation of Sand
- 2.2.6 Dewatering of Pits & Wells

2.3.0 Collection of Sand from River / Sea for :

- 2.3.1 Approach Roads
- 2.3.2 Construction

2.4.0 Others

- 2.4.1 Submarine Pipe laying

3. MINERALS/ORE/RARE EARTHS PROCESS PLANTS

- 3.1 Collection of raw sand with mineral / ore
- 3.2 In-process transfer of abrasive slurry
- 3.3 Pits de-silting
- 3.4 Emptying of hoppers
- 3.5 Pumping of rejects
- 3.6 Tank desilting
- 3.7 Raw water intake channel dredging
- 3.8 River / Canal dredging
- 3.9 Desilting of settling plants
- 3.10 Sedimentation basin dredging
- 3.11 Effluent treatment basin

4. MINING

- 4.1 Ore Slurry Pumping
- 4.2 De watering
- 4.3 In process transfer of abrasive slurries.
- 4.4 Washeries

5. THERMAL POWER PLANTS

- 5.1 Raw water intake canal desilting
- 5.2 Ash Disposal
- 5.3 Pits Desilting
- 5.4 Cooling water channel desilting
- 5.5 Effluent lagoon Desilting
- 5.6 Intake pump house desilting
- 5.7 Cutting new intake water channel
- 5.8 Coal handling plant pits desilting
- 5.9 Setting tanks desilting

6. SHIPYARD

6.1.0 Dry Dock Area

- 6.1.1 Desilting of dock gate area
- 6.1.2 Cleanng of dock after sand blast
- 6.1.3 Dewatering dock

6.2.0 Quayside

- 6.2.1 Desilting alongside quay
- 6.2.2 Deepening quayside area for draft

6.3.0 Utilities & Maintenance

- 6.3.1 Dewatering repair dock
- 6.3.2 Desilting entrance of repair dock
- 6.3.3 Dredging for maintenance of draft
- 6.3.4 Dredging sides & Release of stuck vessels
- 6.3.5 Reclaiming land area
- 6.3.6 Refilling of low areas

7. PUBLIC HEALTH & SEWAGE

- 7.1 Raw Water Reservoir Desilting
- 7.2 Sedimentation basin desilting
- 7.3 Storm water drains desilting
- 7.4 Pumping slurry during treatment of sludge
- 7.5 Sewage tank desilting / dewatering
- 7.6 Cutting new intake water channels
- 7.7 Dewatering of drains

8. PAPER MILLS

- 8.1 Effluent lagoon desilting
- 8.2 Raw water intake pump house desilting
- 8.3 Raw water intake channel dredging
- 8.4 Sludge removal
- 8.5 Ash slurry handling in captive power plant
- 8.6 Effluent Treatment Plant sludge removal
- 8.7 Fly ash disposal
- 8.8 Cutting new intake water channel

9. STEEL PLANTS

- 9.1 Mill Scales pumps
- 9.2 Sludge Pit desilting
- 9.3 Slag pumping

10. SAND COLLECTION

- 10.1 Collection of sand from river
- 10.2 Collection of sand from sea

