



PARAMOUNT LIMITED



...A Total Water & Environment Management Company

Outline



PARAMOUNT

- About us
- Corporate Presentation
- Manufacturing Facilities
- Spectrum of Technologies, Products & Services
- Accreditations
- Milestones on our journey
- Landmark Projects
- Our valued Clientele

History Matters



PARAMOUNT

“We are Large Enough to Meet any of Your Challenges & Small Enough to Understand all Yours Needs”

PARAMOUNT is **5 decades young company** & a leading player Globally in Water, Waste Water & Emission Control space with history of pioneering & innovative technologies & landmark projects.

1960 Mr. K. G Tuli & Mr. D. B. Patel formed **PARAMOUNT CONSTRUCTIONS** with its areas of operations as Consulting as Structural Eng. , Building Constructions & Residential Complexes.

1962 Started **EPC** of Housing Complexes for Industries & Industrial construction, OH Tanks & Pumping Stations.

1968 Entered the field of **Design Build Operate** of Sewage treatment plant with **Large STP** for a Municipal Corporation.

1975 Entered the field of **Design Build Operate** of Industrial Effluent Treatment Plants with a large **CETP** for a Petro Complex.

Continue

History Matters



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1976

Christened the Company as "**Paramount Pollution Control Ltd.**"
Establishment of **R & D Centre**
Commencement of **POLCON LIMITED** – State of Art Manufacturing Facilities

1981

First & Largest of its kind **D. M. Water Treatment Plant** for then a Largest Refinery in India.

1986

Technical Collaboration with **M/s Andersen 2000 Inc, U.S.A** and entered Business of Air Pollution Control and Hazardous Waste Incinerators.

1989

Technical collaboration with **M/s Pilkenrood Water Treatment [B.V] Holland** and started Designing and Manufacturing Advanced Oil Water Separation Systems.

Continue

History Matters



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“We are Large Enough to Meet any of Your Challenges & Small Enough to Understand all Yours Needs”

PARAMOUNT is **5 decades young company** & a leading player Globally in Water, Waste Water & Emission Control space with history of pioneering & innovative technologies & landmark projects.

1993 Technical Collaboration with **M/s ETA Process Plant [U.K.]** - Now **M/S KOCH GLITCH [U.K.]** for Design and Manufacture of Plastic Media for Bio - Tower.

2000 Company rechristened **“PARAMOUNT LIMITED”** to express entirety of its operations in current form.

2006 Restructured itself to under take **Large Engineering & PMC** Assignments for International Market.

2009 Collaboration with **PSC Environmental Services, USA** for Chemical Cleaning technologies

2010 **India’s Largest** Industrial Waste Water Treatment & Recycle Plant at **M/s. Mangalore Refinery & Petrochemicals Ltd.**

And the growth goes on.....

Profile



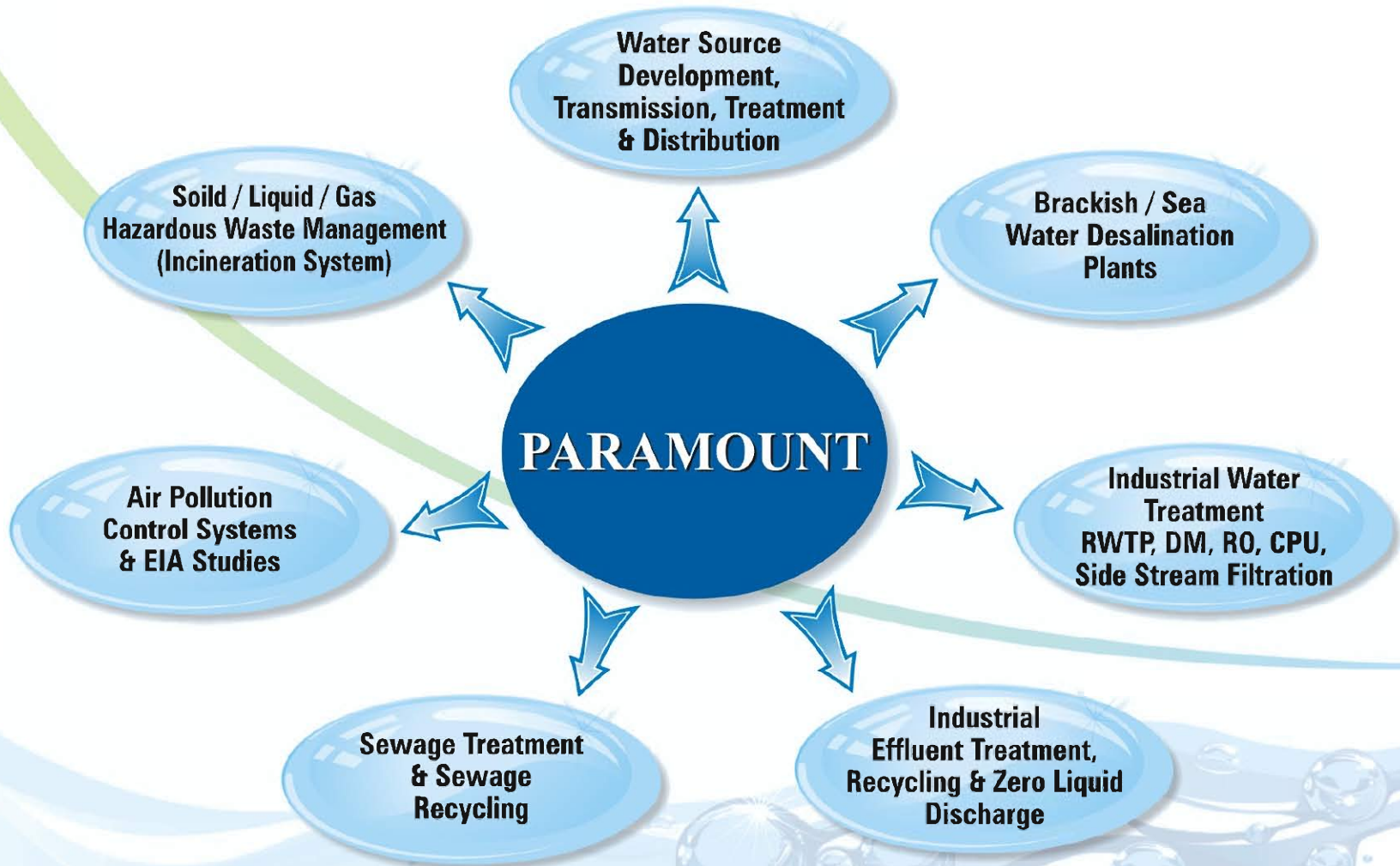
PARAMOUNT

- Offices in Vadodara (HQ), Chennai, Mumbai, New Delhi & Oman
- Started in Feb., 1962
- Over 300 Projects
- ISO 9001 : 2015 Certified Company
- ASME U, S, R & NB Code Authorized Manufacturing Facilities
- 250+ Water Specialists & Engineers with an average experience of 20+ years.
- Professionally Managed Organization
- www.paramountlimited.com

Business Areas



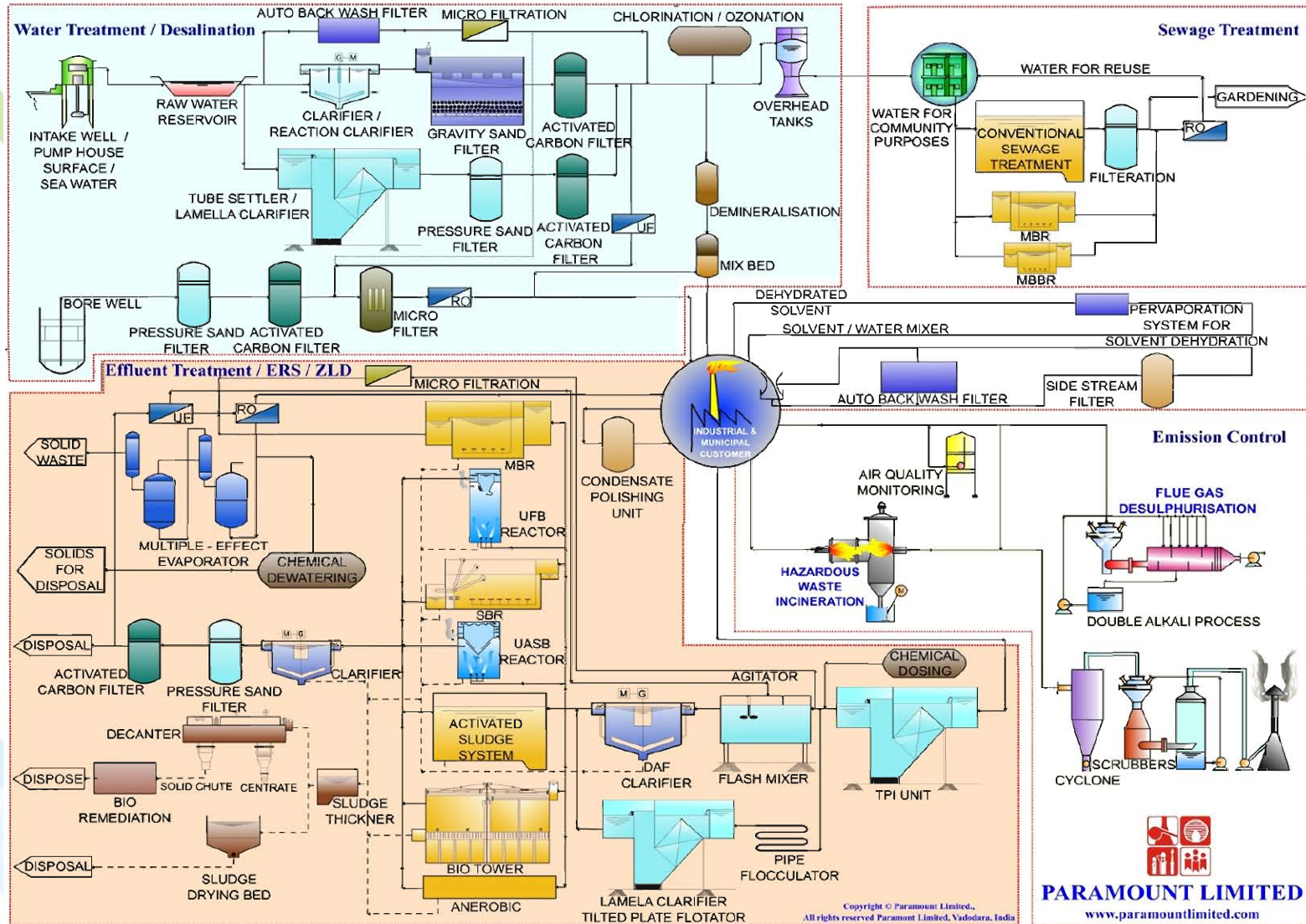
PARAMOUNT



Water & Environment Technology / Processes from Paramount



PARAMOUNT



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PARAMOUNT LIMITED
www.paramountlimited.com

Scope of Services



PARAMOUNT

Concept to Commissioning

In every project phase ...

Project Development

- Feasibility studies
- Environmental impact studies
- Lab / pilot studies
- Pilot and demonstration plants
- Project Management Consultancy

Design & Engineering

- Conceptual design
- Process design
- Basic design
- Design review
- Front End engineering
- Detailed engineering
- Special engineering
- Retrofit design

Manufacturing

- Pressure Vessels
- Heat Exchangers
- Process Equipments
- Process Skids

Project Execution

Design & Build

- Turn Key
- EPC

Equipment Supply

Construction Management

- Project Management
- Procurement Assistance
- Inspection Supervision
- Supervision & Commissioning

Operation & Maintenance

- Operation Management
- Optimisation
- Trouble Shooting
- De-bottlenecking
- Operation & Maintenance
- HSE Services
- Operational Support & Technical Services

...we are your partners !

Paramount Group's ASME U & S – R & NB (NBBI) Code Stamped Manufacturing Units



PARAMOUNT

Polcon Equipments



Baroda

Total Plant Area: 13000 m²

Paramount Technologies



Baroda

Total Plant Area: 9000 m²

Paramount ONEIC



Oman

Total Plant Area: 10000 m²

ASME U & S Code Stamp Accreditation



PARAMOUNT

The American Society of Mechanical Engineers



CERTIFICATE OF AUTHORIZATION

The named company is authorized by The American Society of Mechanical Engineers (ASME) for the scope of activity shown below in accordance with the applicable rules of the ASME Boiler and Pressure Vessel Code. The use of the ASME Single Certification Mark and the authority granted by this Certificate of Authorization are subject to the provisions of the agreement set forth in the application. Any construction stamped with the ASME Single Certification Mark shall have been built strictly in accordance with the provisions of the ASME Boiler and Pressure Vessel Code.

COMPANY:

PARAMOUNT LIMITED
Manufacturing Unit-1
Shed No. 521, GIDC, Makarpura
Vadodara, Gujarat 390 010
India

SCOPE:

Manufacture of pressure vessels at the above location and field sites controlled by the above location (This authorization does not cover impregnated graphite)

AUTHORIZED: September 14, 2021
EXPIRES: September 14, 2024
CERTIFICATE NUMBER: 36036

Board Chair, Conformity Assessment

Managing Director, Conformity Assessment



CERTIFICATE OF AUTHORIZATION

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COMPANY:

PARAMOUNT LIMITED
Manufacturing Unit-1
Shed No. 521, GIDC, Makarpura
Vadodara, Gujarat 390 010
India

SCOPE:

Manufacture and assembly of power boilers at the above location and field sites controlled by the above location

AUTHORIZED: September 14, 2021
EXPIRES: September 14, 2024
CERTIFICATE NUMBER: 36036

Board Chair, Conformity Assessment

Managing Director, Conformity Assessment

The American Society of Mechanical Engineers



R & NB Mark Authorization of National Board of Boiler & PV Inspectors



PARAMOUNT

**THE NATIONAL BOARD
OF
BOILER & PRESSURE VESSEL INSPECTORS**

Certificate of Authorization



This is to certify that
PARAMOUNT LIMITED
Manufacturing Unit-I
Shed No. 521, GIDC, Makarpura
Vadodara, Gujarat 390 010
India

is authorized to use the R Symbol in accordance with the provisions of the National Board Inspection Code and NB-415, Accreditation of "R" Repair Organizations.

All activities within the scope of this Authorization shall be controlled by the above location.
The scope of this Authorization is limited to:

Metallic
Repairs and Alterations
At
Shop and Field Locations



Certification Number: 6957

Issue Date: September 23, 2021
Expiration Date: September 14, 2024

Executive Director 

**THE NATIONAL BOARD
OF
BOILER & PRESSURE VESSEL INSPECTORS**

*Certificate of Authorization
to Register*



This is to certify that
PARAMOUNT LIMITED
Manufacturing Unit-I
Shed No. 521, GIDC, Makarpura
Vadodara, Gujarat 390 010
India

is authorized to apply the "NB" mark and register boilers, pressure vessels or other pressure retaining items with the National Board.

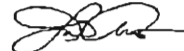
The scope of Authorization is limited to items manufactured in accordance with:

ASME Designator(s): S, U

Issue Date: September 29, 2015

Revision Date: September 14, 2021

This Certificate of Authorization to Register will remain in effect as long as the manufacturing organization holds a valid Certificate of Authorization issued by the American Society of Mechanical Engineers.

Executive Director 



Equipments Manufactured



PARAMOUNT

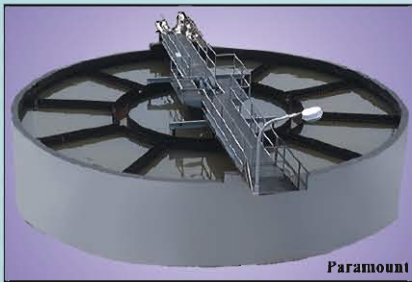


Aerators



Pressure Filter

- Aerators
- Pressure sand filters
- Tanks & vessels
- Activated Carbon Filters



High Rate Solid Contact Clarifier



Oil-Water Separator (CPI)

- Agitators/Mixers
- Clarifiers/Thickeners
- Oil Separator Mechanism



Clariflocculator



Vacuum Drum Filter

- Sludge Mixers
- Clariflocculators
- Vacuum Drum Filters

Equipments Manufactured



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Paramount



Paramount

Dosing Skid

**Skid Mounted
Dosing Systems**



Paramount

Skid Mounted CPU System



Paramount

Skid Mounted Recycle System

**Skid Mounted
CPU & Recycle System**

Packaged Plants & Systems



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Mix Bed & Dosing Skid (CPU)



Package STP



Condensate Polishing Unit (Krishi)



Multi Effect Evaporator



Dissolved Air Flotation

- Tilted Plate Interceptors & Separators
- Activated Sludge Package Plants
- Air Flotation Unit (DAF)
- Packaged Sewage Treatment Plants
- Incinerators
- Mutli Effect Evaporator

Packaged Plants & Systems



PARAMOUNT



Reverse Osmosis



SO₂ Scrubber

- Membrane Based MF/UF/RO Packaged Systems
- SO₂ Scrubber
- Coiled Pipe Flocculator
- Plastic Media Biotowers
- Flue Gas Desulphurisation (FGD)
- Trickling Filter Arms



Coiled Pipe Flocculator



Trickling Filter Arms

Our Backbone – R&D Centre

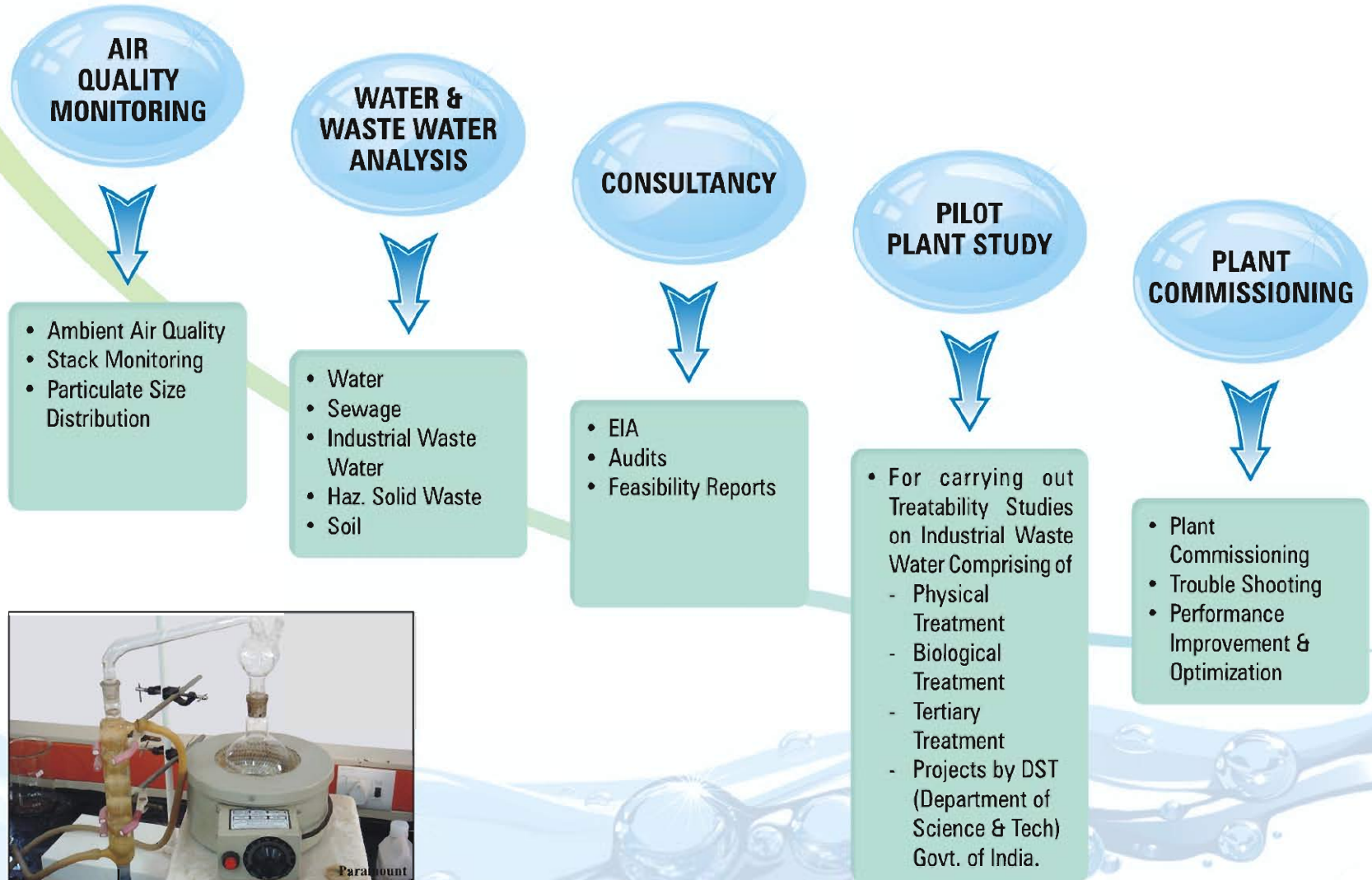


PARAMOUNT



Recognition by:

- **Dept. of Science & Technology (Govt. of India)**
- **Central Pollution Control Board**
- **State Pollution Control Boards**



Processes Developed at our R&D Centre



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- Development of first TPI in India way back in 1985
- Conversion of High Concentration Ammonia to Nitrate in Refinery & Fertilizer Waste Water
- De-nitrification of High Concentration of Nitrate (N) in Fertilizer Plant to a Level of 10 mg/lit.
- Conversion of High Concentration of Thiosulphate to Sulphate in Petrochemical Effluent
- Degradation of Hydrocarbon, Sulfide, Phenol
- Anaerobic Process for Treatment of Pharmaceutical Waste Out of Fermentation, Formulation Type of Processes.

Advanced Instrumentation Lab



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**Lab Scale Pilot Plant Unit
for UASB Reactor**

Research & Development Lab



PARAMOUNT



Relation Ship Based Approach



PARAMOUNT

- More than 50 years of partnering between two founder families
- Sole Banking with Indian Overseas Bank since 1960
- Relationship with Technology innovators
 - Andersen 2000 INC - 18 Years
 - ETA Process Plant UK - 16 Years
 - Biothane International - 7 Years
- Ensuring customer loyalty by delivering excellence in performance



WHY Paramount . . .



PARAMOUNT

- Technology based Company
- In-house R&D, Engineering, Manufacturing, Construction, Operations (Complete Control over the Value Chain)
- Manufactures Own Process Equipments
- In-depth know how & understanding of all unit Processes involved, Hence able to offer optimized Solution for any Complex Environmental problems
- Proven track record of 50 years of 100% successfully performing installations
- Our ongoing investment in human resources and technology makes us LARGE enough to appreciate challenges and SMALL enough to know every detail involved in any Project. Simply put – “We are SMALL enough to care, BIG enough to deliver.”

Paramount – a recognized Project Management Consultant (PMC) Worldwide in Water & Waste Water Management



- **Conceptual Design**

- **Front-End Engineering Design**



- **Detailed Engineering**

- **Advanced Process Solutions**



- **Project Management Expertise**

- **HSE Services**



- **Design & Engineering Competence with all global standards & codes like Shell DEP, ASME, BS, IS, Merkblatter, DIN EN , JIS, GHOST(R)**
- **Project Management**
 - PRIMAVERA
 - M. S. Project
- **3D Plant Design & Layout Package**
 - PDS[®]: Premier Plant Design and Layout & Piping Package
- **Heat Exchanger Design & Simulation**
 - HTRI[®]: Premier Heat Exchange Design & Analysis Package
- **Mechanical Design**
 - PVElite[®]: Columns, pressure vessels & U Code Stamp Vessels
 - E-Tank : Storage Tank Software for API-650, API-620, API-653

PRIMAVERA
ORACLE[®]



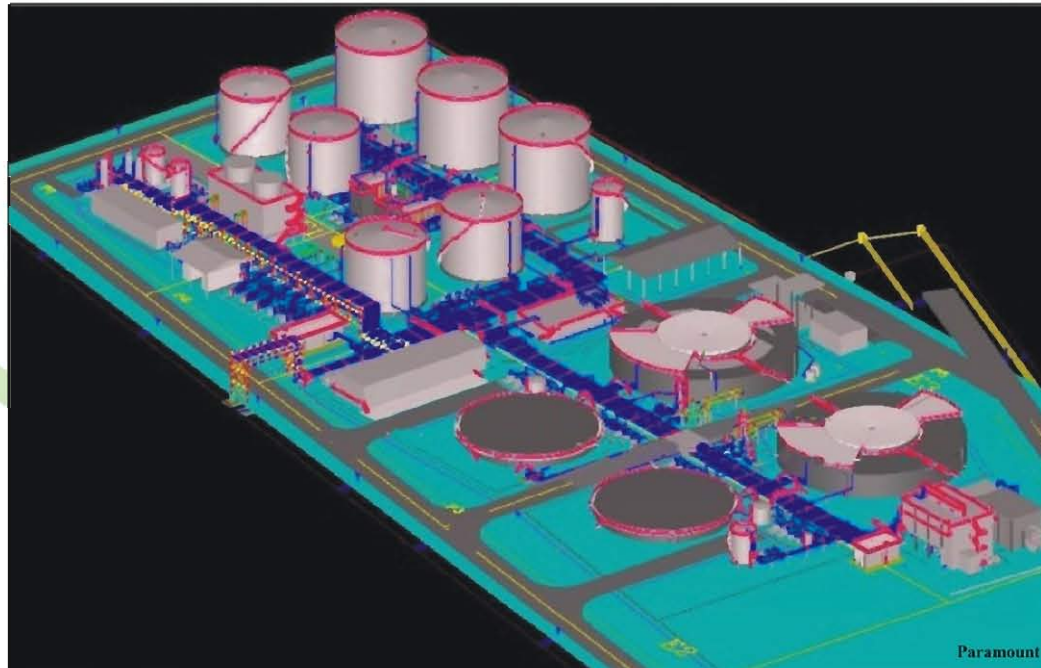
- **Electrical Design**
ETAP : Enterprise Software Solution for Power Systems
- **Structural / Civil Design:**
- **STAAD Pro V8i SS6 :**
(IS + BS + US) - For design of most of Civil/structural units including tanks, buildings, shed etc. with Indian, British & American codes of practice. For design of retaining wall, foundation/ footing in any material - concrete, timber, steel, masonry & foundation Work
- **STAAD Section Wizard/DTO:**
For working out properties of any shape section



Stronghold of Paramount – Project Management Consultancy (PMC)



PARAMOUNT



MAA Refinery (Kuwait): 818 m³/hr

**PARAMOUNT – A LEADING
PROJECT MANAGEMENT CONSULTANT (PMC) IN
WATER & WASTE WATER MANAGEMENT & TECHNOLOGIES**

Milestone PMC Projects – KNPC, Kuwait



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MAB Refinery (Kuwait): 900 m³/hr

Procurement Assistance including:

Preparation of Specification for Mechanical Equipment, Piping, Valves & Special Electrical Equipment & Material, Instrument for Floating Inquiries.

- Technical Evaluation of Vendor offers, checking & review vendor prints.
- Meeting with end client (KNPC) to facilitate approval of documentation.
- Preparation of As built Drawing for all Disciplines.

Total Project Cost: US\$ 200 million

Paramount PMC Cost : 30 Cr INR (US\$ 6.5 million)

The entire ETP engineering design is as per Shell DEP for all new facility and as per KNPC standards for modification in existing Refinery area.

Paramount scope of PMC work included following:

- Process Design -Detailed Civil design (STAAD Calculation & Drawings)
- Mechanical Equipment Engineering
- Piping Engineering
- Electrical Engineering
- Instrumentation Engineering
- Preparation and Finalization of the new RETF Plot Plan.
- Facilitation of HAZOP Study.



De-Hazing / Moisture Control System at Kuwait Refinery

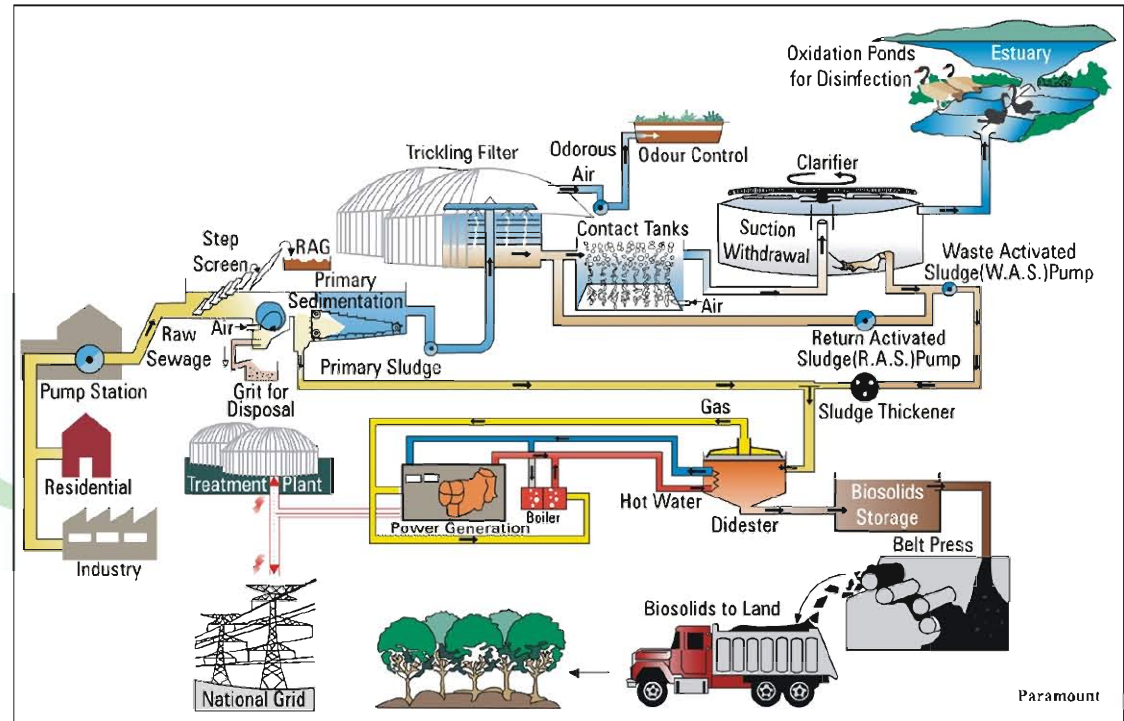
Milestone PMC Projects – Ebara, Japan



PARAMOUNT

Detailed Engineering Services for 200 MLD Sewage Treatment Plant for EBARA Corporation Japan for city of Asthana – Kazakhstan with scope of work as under:

- Process design
- Mechanical equipment engg.
- Piping engg.
- Electrical engg.
- Instrumentation engg.



Procurement Assistance including:

Preparation of specification for Mechanical Equipment, Piping, Valves & special Electrical Equipment & Material, Instrument for Floating Inquiries.

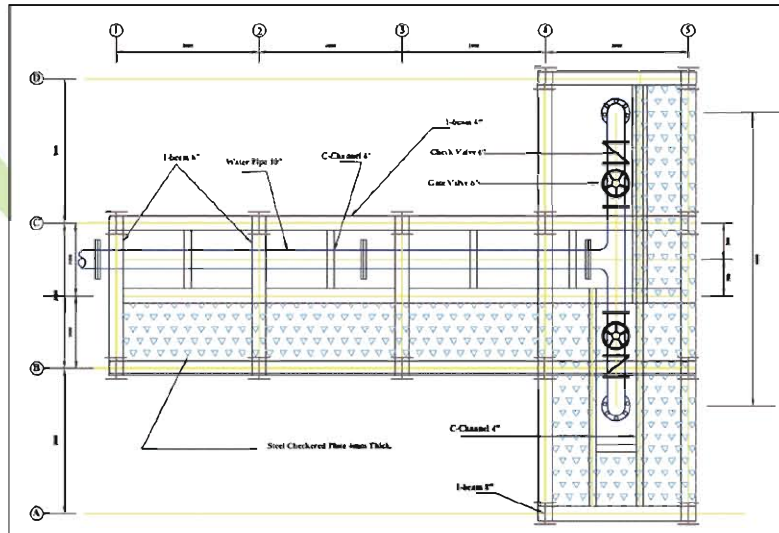
- Technical Evaluation of vendor offers, checking & review vendor prints.
- Preparation of As built drawing for all disciplines.

Milestone PMC Projects – IPCL, Gandhar



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Indian Petrochemicals Corporation Ltd.



Water Supply scheme for
Gandhar Petrochemicals Complex
Bharuch District

22.0 MGD (100.0 MLD)

- **Client :**
Reliance Industries Limited
(Formerly Indian Petrochemicals
Corporation Ltd. (IPCL) Gandhar,
Bharuch.)
- **Capacity :**
22.0 MGD (100.0 MLD)
- **Project Cost :**
16 Million US\$

- **Project :** Project Feasibility Study and finalization of Narmada Water Intake System, Pumping and Transmission of Water (70 kms) to Water Reservoirs at Plant site.
- **Scope of Work :**
 - Feasibility Study
 - Survey
 - Design, Detail Engineering & Construction Supervision

Water Treatment



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Raw Water Treatment Plant at GNFC, Bharuch

Over 5 Decades of Performance in

- Source Development
- Intake System
- Water Storage Reservoirs
- Water Treatment
- Water Distribution



110 MLD Intake Channel, RW Reservoir & WTP for ONGC

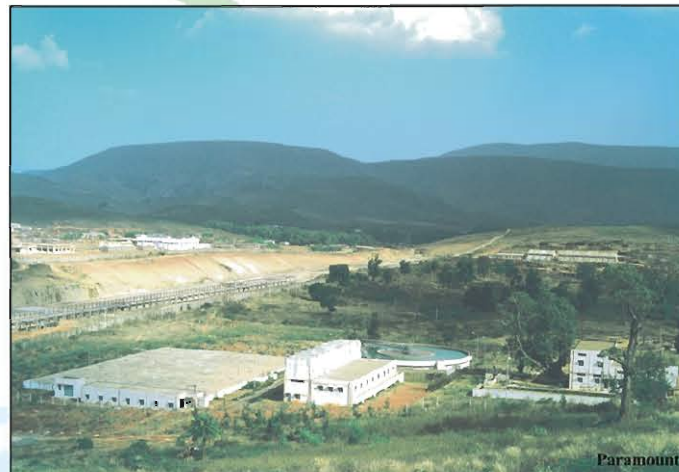
Water Treatment Plant



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Intake Well at NALCO



Raw Water Treatment Plant at NALCO

- **Client :**
National Aluminium Co. Ltd.
(NALCO), Damanjodi, Orissa.
- **Project :**
Permanent water supply scheme
for NALCO complex at Damanjodi.
- **Capacity :**
10 km Intake System + 28 MLD
WTP
- **Scheme :**
Intake well – Approach Bridge –
Pump House – 10 km pipe line –
Aeration – Flash Mixer –
Clariflocculator – Rapid Gravity
Sand Filter – Chlorination

Water Treatment Plant



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RWTP with overhead tank at Madurai

- **Client :**
Tamil Nadu Water Supply & Drainage Board (TWAD Board)
- **Project :**
Madurai Water Supply Project at Pannaipatti (World Bank Aided Project).
- **Capacity :**
2983.33 m³/hr. (71.6 MLD)

- **Scheme :** Raw Water Treatment Plant comprising:
 - Aerators
 - Flash Mixer
 - Clariflocculators
 - Rapid Gravity Sand Filter
 - Chlorination System
 - Overhead Tank

Water Treatment Plant



PARAMOUNT



RWTP with overhead tank at Salem

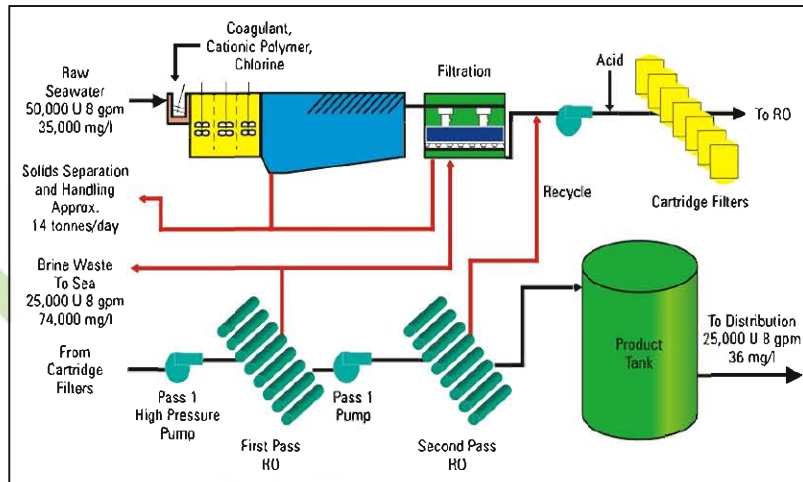
- **Client :**
Tamil Nadu Water Supply & Drainage Board (TWAD Board).
- **Project :**
Salem Raw Water Treatment Plant at Kombarankadu (World Bank Aided Project)
- **Capacity :**
3679 m³/hr (88.3 MLD)

- **Scheme :** Raw Water Treatment Plant comprising:
 - Aerators
 - Flash Mixer
 - Clariflocculators
 - Rapid Gravity Sand Filter
 - Chlorination System
 - Overhead Tank

Water Treatment - Pre-Treatment for Desalination



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Pre Treatment for SWRO:

- **Flocculation/ Sedimentation:** Flash/ Rapid Mixers, Dissolved Air Floatation, Tube/ Lamella Settlers, High Rate Solid Contact Clarifiers (HRSCC)
- **Filtration:** Deep Bed Media Filtration, Disc Filters, Self Auto Cleaning Filters, Ultra Filtration, Micro Filtration
- **Chemical Dosing Programme:** Shock Chlorination, Primary Coagulant (Ferric Chloride), Cationic Polymer, Sodium Hypochlorite (Biocide), Sulphuric Acid (pH adjustment), Sodium Bisulphate (Chlorine neutralization)

Paramount's Milestone Reference:

- 700 m³/hr at Gujarat Electricity Board

Water Treatment - RO Membrane Systems (Desalination Plant)



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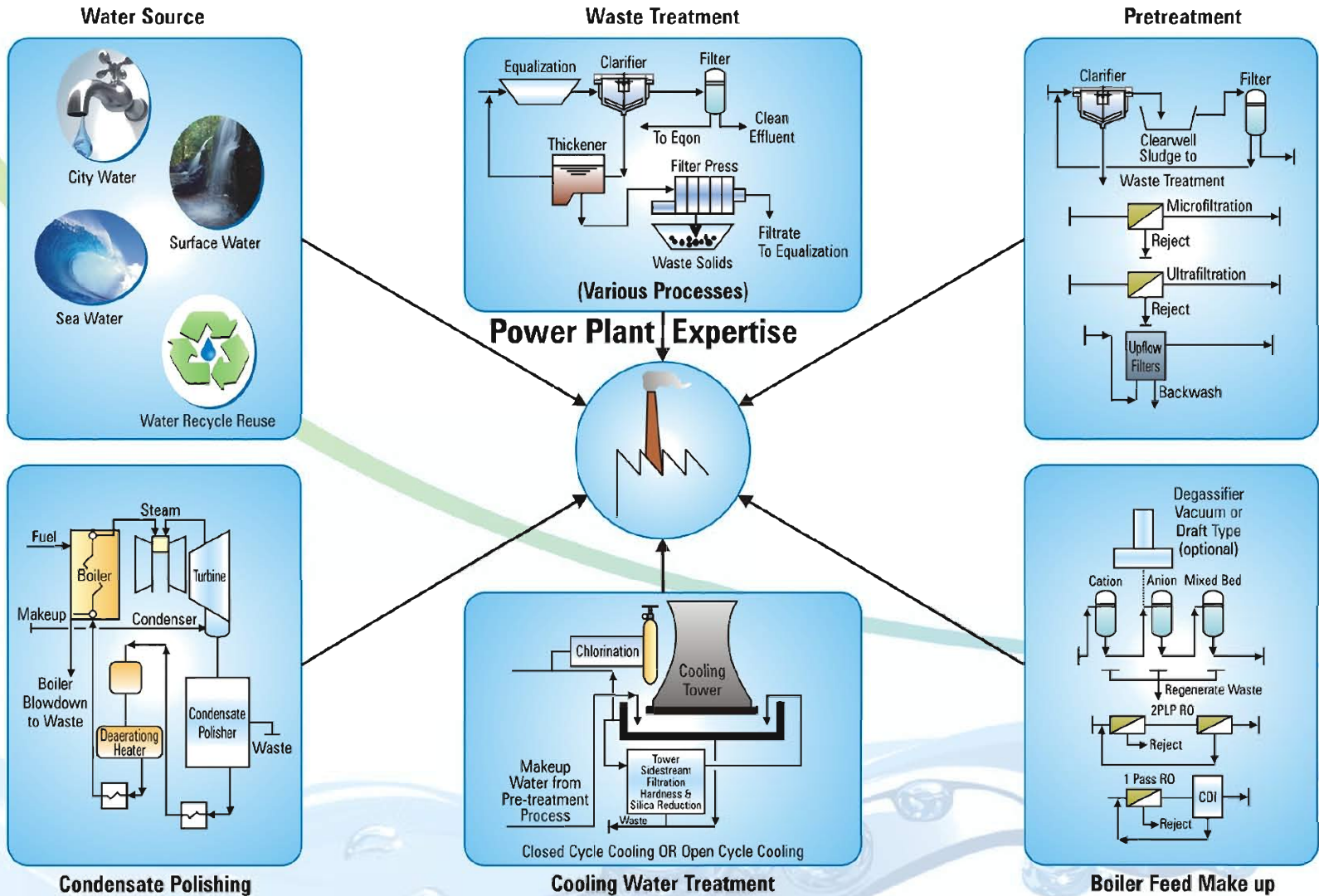
Desalination Plant

- **Project :**
RO Oman Plant
- **Client :**
PDO - OMAN
- **Capacity :**
1800 m³/day
- **Scheme :**
Brackish Water Containerized
Reverse Osmosis Plant
comprising Pretreatment (DMF,
Dosing System, MCF), Reverse
Osmosis System & Post
Treatment (pH correction & UV
Sterilizer system).

Power Plant Expertise



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Demineralisation Water Plant



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D. M. Plant 600 m³/hr, 4 chains of 150 m³/hr



D. M. Water Storage Tanks

- **Client :**
Reliance Industries Limited
(Formerly Indian Petrochemicals Corporation Ltd. (IPCL) Baroda.)
- **Project :**
D. M. Water Plant Package for
Gandhar Petrochemicals Complex
- **Capacity :**
4 streams of 150 m³/hr
(600 m³/hr)
- **Product Water Quality :**
Conductivity < 0.2
microsiemens/cm &
Silica < 0.01 ppm
- **Scheme :**
Pre Treatment – PSF – WAC –
SAC – DG – WBA – SBA – MB
(4 chains)

Demineralisation Water Plant



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- **Client :**
Oil & Natural Gas Corporation Ltd.,
Hazira
- **Capacity :**
3 x 100 m³/hr.
- **Scheme :**
Pretreatment – ACF – PSF – SAC
– WBA – SBA - MB

Demineralisation Water Plant



PARAMOUNT



- **Client :**
Oil & Natural Gas Corporation Ltd.,
Hazira
- **Project :**
CoGen Maur in Gas Processing
Complex
- **Capacity :**
3 x 100 m³/hr.
- **Product Water Quality :**
Conductivity < 0.5 μ s/cm
Silica < 0.02 ppm
- **Scheme :**
ACF – SAC – DEG – WBA – SBA –
MB

Demineralisation Water Plant



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- **Client :**
Bharat Heavy Electricals Limited,
Ranipet
- **Project :**
North Chennai Thermal Power
Project, TNEB
- **Capacity :**
 $3 \times 90 \text{ M}^3/\text{hr}$
- **Product Water Quality :**
Conductivity $< 0.1 \mu\text{s}/\text{cm}$
Silica $< 0.01 \text{ ppm SiO}_2$
- **Scheme :**
DG – SAC – SBA – MB
(3 streams)

Condensate Polishing Unit (CPU)



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- **Client :**
Gas Authority of India Limited
(UP Petrochemical Complex, Pata)
- **Project :**
EIL, New Delhi
- **Capacity :**
2 x 220 m³/hr

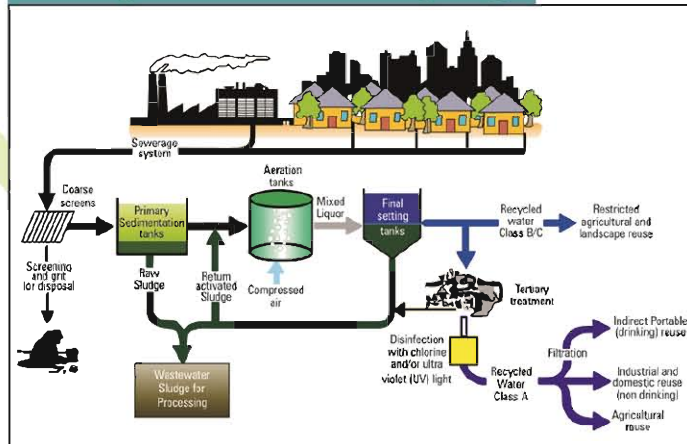
- **Client :**
Kirishi Hydrocracker Russia
- **Project :**
ABB Lummus, Netherlands
- **Capacity :**
3 x 100 m³/hr
- **Product Water Quality :**
Conensate De Oilers
(Merryground System)

Waste Water Treatment & Recycling Plants – Municipal Sewage



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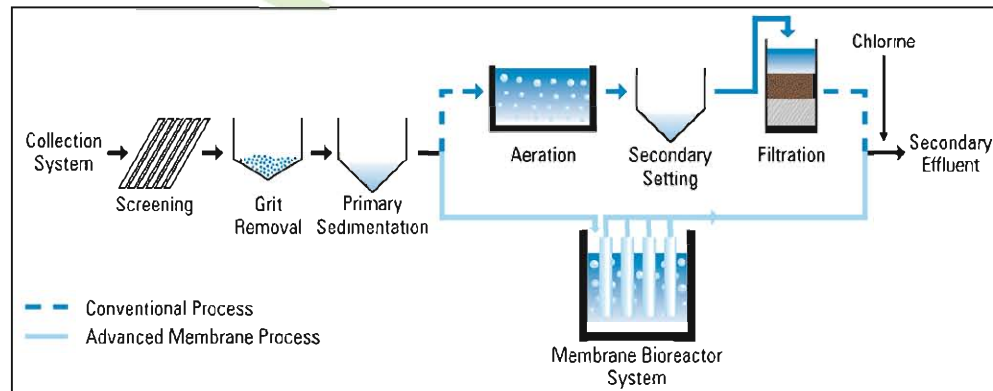
Sewage Treatment & Recycling



PMC of 74.4 MLD STP for Rajkot Municipal Corp



28 MLD STP at Wadi for Municipal Sewage & Industrial Effluents



Waste Water Treatment & Recycling Plants – Municipal Sewage



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- **Project :**
Turnkey execution of Sewage Treatment Plant at Tarsali.
- **Client :**
Vadodara Municipal Corporation,
Vadodara, Gujarat.
- **Capacity :**
52 MLD
- **Scheme :** Design, Engineering, Supply, Construction, Installation, Testing & Commissioning of Sewage Treatment Plant complete Mix Activated Sludge System comprising of Screening, Grit Removal, Primary settling, Aeration Tank, Secondary Clarifier & Anaerobic Digesters & with 6 years O&M contract.

Waste Water Treatment & Recycling Plants – Industrial Effluents

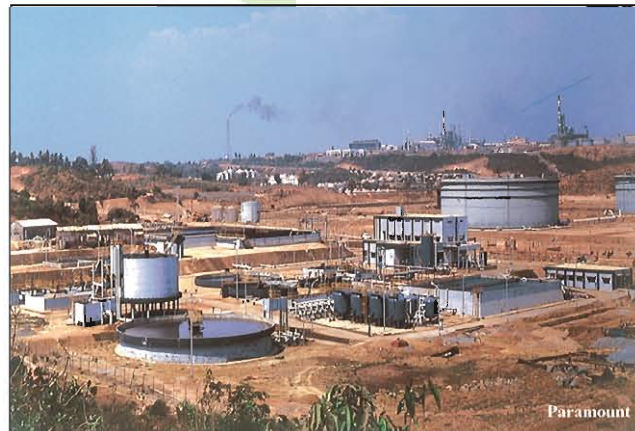


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Industrial Effluents Treatment & Recycling



15 MLD CETP at Thane Belapur TTC Industrial Area



ETP of Mangalore Refinery & Petrochemicals Ltd., Mangalore Phase I

Industries Served

- Refineries
- Oil & Gas
- Petrochemicals
- Chemicals
- Pharmaceuticals
- Food & Beverage
- Pulp & Paper
- Metals & Mining
- Textiles
- Sugar/Distilleries
- Electronics
- Tannery
- Fertilizers
- Power

Biological Processes (SBR & Bio-Tower)



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Sequential Batch Reactor (SBR)
Mangalore Refinery & Petrochemicals Ltd., Mangalore(MRPL)



Plastic Media Bio-Tower
Alembic Limited, Gujarat

- **Client :**
Mangalore Refinery & Petrochemicals Ltd.,
Mangalore
- **Project :**
Effluent Treatment Plant with treated water
Recycle in Refinery
- **SBR Capacity :**
600 m³/hr
- **Client :**
Alembic Limited, Gujarat
- **Project :**
Effluent Treatment Plant for Pharmaceutical &
Bulk Drugs
- **Bio-Tower Capacity :**
3000 m³/day

Biological Processes (Membrane Bio Reactor)



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Flat Sheet Membrane
Mangalore Refinery & Petrochemicals Ltd., Mangalore (MRPL)

- **Client :**
Mangalore Refinery & Petrochemicals Ltd.,
Mangalore
- **Project :**
Effluent Treatment Plant with treated water
Recycle in Refinery
- **MBR Capacity :**
600 m³/hr (Flat Sheet Membrane)

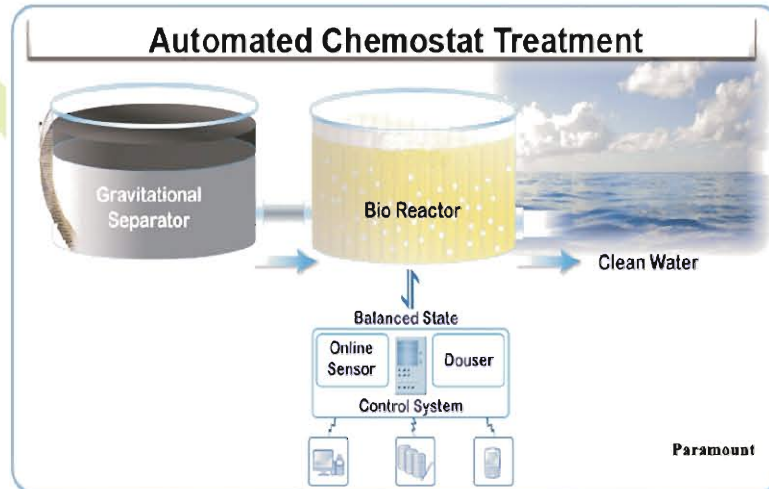


Hollow Fibre Membrane
Sanofi Aventis, Gujarat

- **Client :**
Sanofi Aventis, Gujarat
- **Project :**
ETP with Zero Liquid Discharge System for API
Unit (Bulk Drugs)
- **MBR Capacity :**
200 m³/day (Hollow Fibre Membrane)

Biological Processes (Automated Chemostat Treatment)

“First Refinery ETP with Unique Biological Process”



Bharat Petroleum Corporation Limited, Kochi, Kerala.

- **Customer :**
Bharat Petroleum Corporation Limited,
Kochi Refinery, Kochi, Kerala.
- **Consultant :**
Engineers India Ltd.
- **Capacity :**
700 m³/hr
- **Project Value :**
INR 1140 Million

Salient Features

- Tailored bacterial cocktail
- Low bacterial concentration throughout the process
- Full automation of monitoring and control

Advantage

- No effects of High COD Fluctuation in Waste Water
- Can work as high as TDS 40000 ppm
- Produces half the amount of Bio Sludge
- Can degrade oil from 1000 ppm to as low as 2 ppm

Biological Processes (Anaerobic Technologies)



PARAMOUNT



Anaerobic Upflow Fluidised Bed Reactor (UFB)
Orchid Pharma & Chemicals Ltd, Chennai

- **Client :**
Orchid Pharma & Chemicals Ltd, Chennai
- **Project :**
Bio-bed an Anaerobic Treatment facility
for Treatment of Highly Organic Waste
Water for a API Plant.



Upflow Anaerobic Sludge
Blanket Reactor (UASB)
Alembic Limited, Gujarat

- **Client :**
Alembic Limited, Gujarat
- **Project :**
ETP for Effluent from
Molasses Distillery, Erythromycin
& Penicillin Plant.
- **Capacity :**
120 m³/day

Bio Remediation



PARAMOUNT



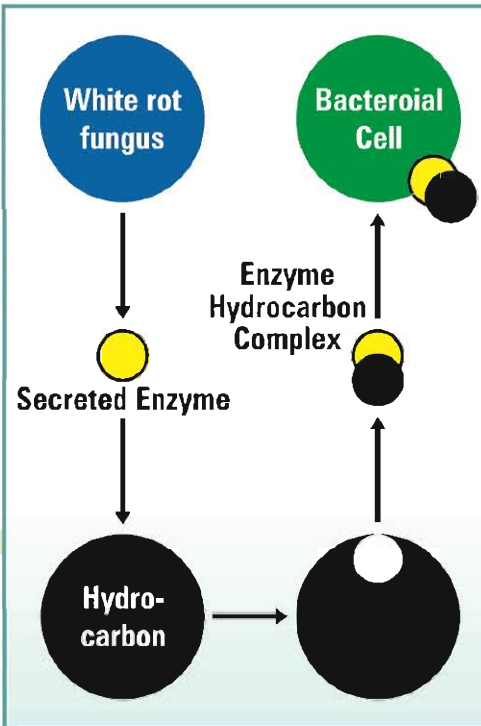
Bio-Remediation at
M/s. Mangalore Refinery & Petrochemicals Ltd.

Oily and Chemical Sludge from Oily Effluents if dumped as land fill can damage Soil & Water table due to its Toxic Leachate.

Bio remediation is a principle adopted to utilize Microbial action to reduce the Total Petroleum Hydrocarbon from the Sludge & convert as non Hazardous Land fill Bio sludge.

Microbes in a confined atmosphere maintaining appropriate nutrients enhance the Bioremediation procedures.

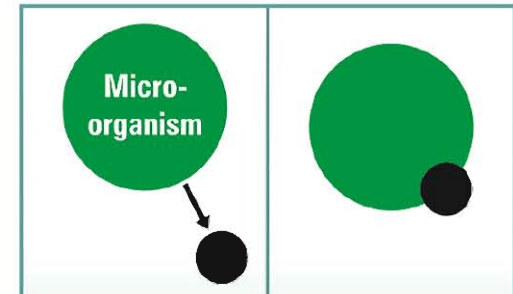
Enzymes Enhanced Bioremediation



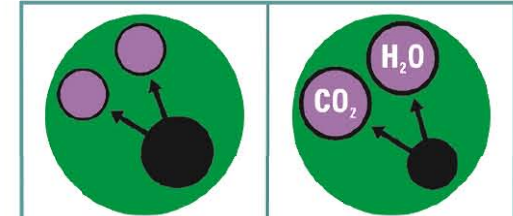
Paramount's Milestone References:

- MRPL Phase-III Capacity : 1000 M³/yr

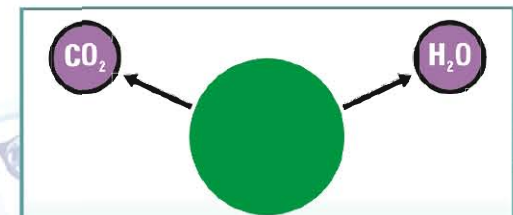
Petroleum Bioremediation



Microorganisms eat oil other organic contaminant



Microorganisms digest oil and convert it to CARBON DIOXIDE (CO₂) & WATER (H₂O)



Microorganisms give of CO₂ and H₂O

Wet Air Oxidation (WAO)



PARAMOUNT



MRPL, Mangalore Wet Air Oxidation Plant 5 m³/hr



ONGC, Hazira 1 m³/hr
Wet Air Oxidation Plant

Paramount's Milestone References:

- MRPL, Mangalore
- ONGC, Hazira

- Spent caustic effluent from Refinery generally contains high levels of Sulphidic, Cresylic & Naphthenic contaminants.
- Oxidation of contaminants is the methodology followed for WAO treatment.
- The effluent is subjected to partial Oxidation with the help of diffusing compressed air & steam. The vent gas is passed through an activated carbon filter before vent to atmosphere for prevention of odour.
- The second step is Oxidation in the presence of a strong catalyst in an Oxidation Reactor.
- Further Oxidation of the contaminants by treatment with a strong oxidizing agent in a Reaction Chamber is final step to treat the effluent before disposal.

Volatile Organic Component (VOC) Control



PARAMOUNT



- Oil in Effluent from Refinery consist varied variety of Hydrocarbon that will liberate Volatile Organic components to atmosphere from the Oily Effluent and may create a combustibile atmosphere.
- VOC system is required to reduce VOC components vent to atmosphere by 90% as per CPCB norms.
- The method uses Activated Carbon as Adsorbents for removal of VOC gas.
- VOC Adsorption is an Exothermic reaction and adequate safety system is combined for safe operation.

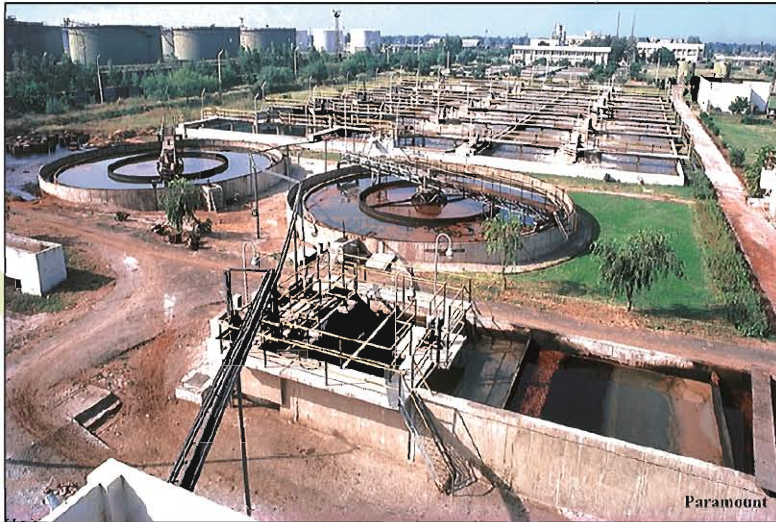
**Paramount's
Milestone Reference:**

- **MRPL Phase-III Capacity:
4000 nm³/hr**

Waste Water Treatment Plant – Industrial Effluents



PARAMOUNT



- **Project :**
Integrated Waste Water Treatment Plant at Petrochemical Complex.
- **Client :**
Reliance Industries Limited (Formerly Indian Petrochemicals Corporation Ltd., Baroda.)
- **Capacity :**
1000 m³/hr.
- **Scheme :** Design, Engineering, Supply, Construction, Installation, Testing & Commissioning of Integrated Waste Water Treatment Plant comprising Bar Screen, Grit Chambers, TPI Unit, Equalization tank, DAF System, Plastic Media Biotower, Flash Mixer, Aeration System, API Oil Separators, Clarifloculators, Biological Treatment of extended Aeration type Activated Sludge Process, Surface Aerators, Secondary Clarifier & Sludge Thickener.

Waste Water Treatment Plant – Industrial Effluents



PARAMOUNT



- **Project :**
Integrated Waste Water Treatment Plant at Refinery Complex.
- **Client :**
Indian Oil Corporation Ltd., Baroda.
- **Capacity :**
1600 m³/hr

- **Scheme :** Design, Engineering, Supply, Construction, Installation, Testing & Commissioning of CETP on Turnkey basis comprising free oil separation in TPI oil separator, Physico Chemical Treatment in DAF followed by 2 stage biological system with plastic media bio tower as 1st stage followed by Activated Sludge Process operating under extended Aeration Process & final polishing by PSF & ACF followed by Chlorination.

Waste Water Treatment & Recycling Plant – Industrial Effluents



PARAMOUNT

**A unique “Refinery ETP with Recycle System” - First of its kind with combination of all latest Technologies
- SBR / MBR / UF / RO / VOC Control System / Bio Remediation / Wet Air Oxidation.....**



One of India's Largest Industrial Waste Water Treatment & Recycle Plant at M/s. Mangalore Refinery & Petrochemicals Ltd. (Phase III Refinery Project).

- **Customer :**
Mangalore Refinery & Petrochemicals Ltd.
(Phase III Refinery Project).
- **Consultant :**
Engineers India Ltd.
- **Capacity :**
1000 m³/hr
- **Project Value :**
INR 1600 Million

- **Scope :** A Project on “Concept to Commissioning Basis” with Complete Scope of Design, Engineering, Procurement, Supply, Manufacturing, Construction & Erection of Civil & Structural, Mechanical, Electrical, Piping & Instrumentation Works, Testing Commissioning & PG Test of WWTP & Recycle Plant.

Waste Water Treatment & Recycling Plant – Industrial Effluents



PARAMOUNT



Paramount

Control Room for ETP & Recycle Plant at
M/s. Mangalore Refinery & Petrochemicals Ltd.



Paramount

RO Skids at M/s. Mangalore Refinery & Petrochemicals Ltd.

Key Features of Project :

- Largest UF/MBR + RO Plant of its kind in India.
- 75% of Refinery Effluent reused for Cooling Tower & DM Application.
- Combination of latest Technologies of PT - SBR – MBR - RO for Oily Water & PT - DMF - ACF - UF - RO for CTBD and DM Regeneration Water.
- Most Ecofriendly “VOC Control” Technology and “Bio Remediation Sludge Treatment Technology.
- A Unique Wet Air Oxidation Technology used in Plant for High Sulphide removal.
- Over 15000 m³ of RCC Work.
- Over 1000 MT of Site Fabricated 6 Nos. Storage Tanks of Capacities varying form 1100 m³ to 3500 m³.
- Fully DCS Controlled Plant.

Paramount – A Leading Player in Produced Water Treatment for Oil & Gas Industry



PARAMOUNT

Water Injection & Produced Water Treatment Capabilities for On/ Offshore Platforms



Water Re-injection system & ETP for ONGC, Karaikal, Pondichery



Water Re-injection Plant & ETP for ONGC, Mehsana

- **Water Re - Injection Systems :**

Sea Water Lift Pumps & Coarse filtration, Chlorine Generators, Pre Treatment Systems, Deaeration packages, Chemical Storage, Dosing & Injection.

- **Produced Water Treatment Capabilities :**

Tilted Plate Oil/ Water Plate Separators, Dissolved Air / Gas Flootation Systems, PSF/DMF/ACF, Ceramic Membrane Filtration Systems.

Membrane based Systems (ETP Recycle)



PARAMOUNT



Paramount

Micro Filtration



Paramount

Nano Filtration

- **Project :**
Design, Engineering, Manufacture, Supply, Erection & Commissioning of Waste Water Recycle System using MF followed by RO followed by NF.
- **Client :**
Asahi Songwon India Pvt. Ltd.
(Pigment Manufacturing Unit)
- **Capacity :**
1000 m³/day
System Recovery 82%

Membrane based Systems (ETP Recycle)



PARAMOUNT



Two Stage RO System

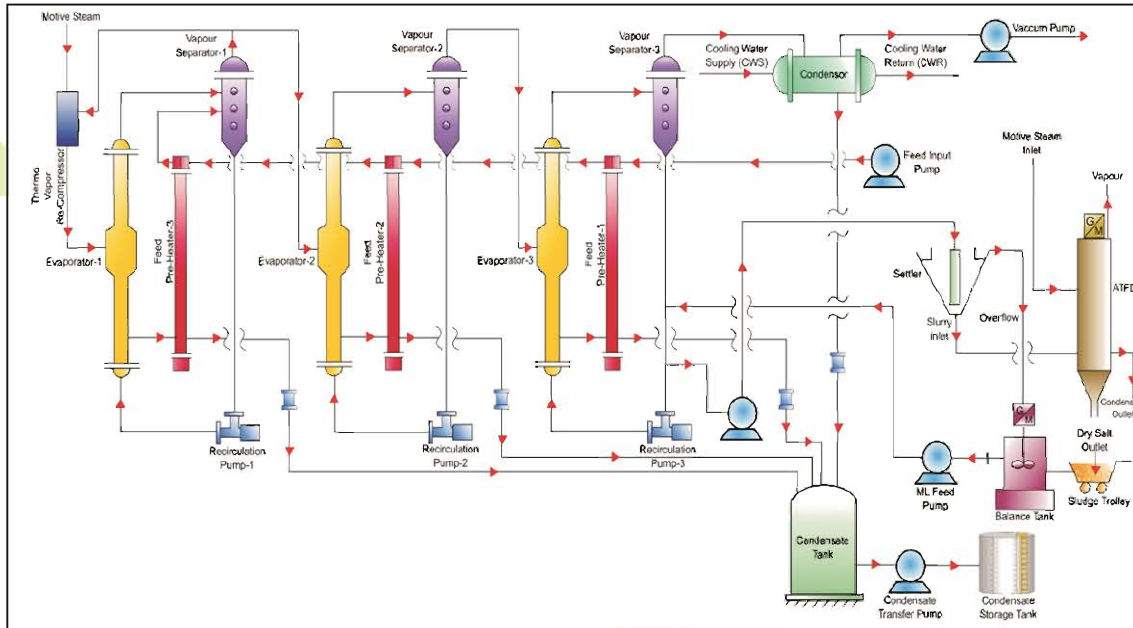
- **Scheme :** Iron Removal Filter – DMF – Dosing System – MCF – 1st Stage RO – Dosing System for 2nd stage – MCF – 2nd Stage RO – post pH Correction.

- **Project :**
Design, Engineering, Manufacture, Supply, Erection & Commissioning of Waste Water Recycle System using RO.
- **Client :**
Sandoz, Thane, Mumbai.
(Bulk Drug & Pharmaceutical Products)
- **Capacity :**
400 m³/day
System Recovery 85%

Zero Liquid Discharge System - Multi Effect Evaporator



PARAMOUNT



- **Project :**
Design, Engineering, Manufacture, Supply, Erection & Commissioning of Waste Water Treatment, Recycle & ZLD System using RO, followed by Stripper, Multi Effect Evaporator with ATFD.
- **Client :**
Sanofi India Limited, (API Unit)
- **Capacity of Evaporator :**
100 m³/day

- Forced Circulation Evaporator
- Combination of Mechanical or Thermo Vapor Recompression & Pre Heater to Optimize Operation
- Steam Stripper to take care of high VOC
- An economical, reliable and simple technology has become the need of the hour for treating the high TDS containing effluents from R. O. plants and process effluents.

Multi Effect Evaporator - Sanofi India Limited



PARAMOUNT



Mazda Colours Ltd



PARAMOUNT



- Forced Circulation Evaporator
- Combination of Mechanical or Thermo Vapor Recompression & Pre Heater to Optimize Operation
- Pusher Centrifuge to generate dry solids
- An economical, reliable and simple technology has become the need of the hour for treating the high TDS containing effluents from R.O. plants and process effluents.

- **Project :**

Design, Engineering, Manufacture, Supply, Erection & Commissioning of Waste Water Treatment, Recycle & ZLD System using RO, followed by Stripper, Multi Effect Evaporator with Pusher Centrifuge.

- **Client :**

Mazda Colours Ltd., Roha, Mumbai

- **Capacity of Evaporator :**

7.5 m³/hr

Hazardous Waste Incinerator



2000 T/Yr Incinerator at Reliance Industries Ltd., IPCL, Baroda



2000 T/Yr Incinerator at Indian Oil Corporation Ltd., Paradip

Types of Wastes

- Solid
- Semi Solids
- Liquids
- Fumes / Acid Gases
- Sludges

Types of Incinerator offered

- Fume / Acid gas Incinerator
- Rotatory Kiln Incinerator
- Solid Waste Incinerator
- Liquid Waste Incinerator

Emission Control



PARAMOUNT

Flue Gas Desulphurisation (FGD)



Large FGD unit at Hindustan Copper

- **Capacity :**
1000 - 10,00,000 Nm³ / Hour
- **Inlet SO₂ Levels :**
Upto 80,000 ppm
- **Outlet SO₂ Levels :**
Upto 1 ppm

Double Alkali Process for Caustic Recovery

Applications :

- **Power Plant**
- **Copper / Zinc / Aluminium / Gold Smelter**
- **Boiler**
- **Oil Fired Furnaces**
- **Pet Coke Calcination**
- **Sulphuric Acid Plant**

Process Application by Membranes



PARAMOUNT

- **Desalination**
- **Effluent Recycle**
- **Chemical Industries:**
Dyes Desalting & Concentration;
Concentration of valuable products in aqueous solutions.
- **Textile Industries:**
Salt Recovery from dyes
- **Paper Industries:**
Lignine concentration
- **Plating Industries:**
Metal Concentration
- **Vegetable Oil Industries:**
De-waxing & De-Gumming of Vegetables
- **Dairy Industries:**
Milk Concentration, Desalting of whey & Concentration, Lactose Concentration, Removal of Milk traces from condensate water & To produced the recycle quality of water from treated waste water.

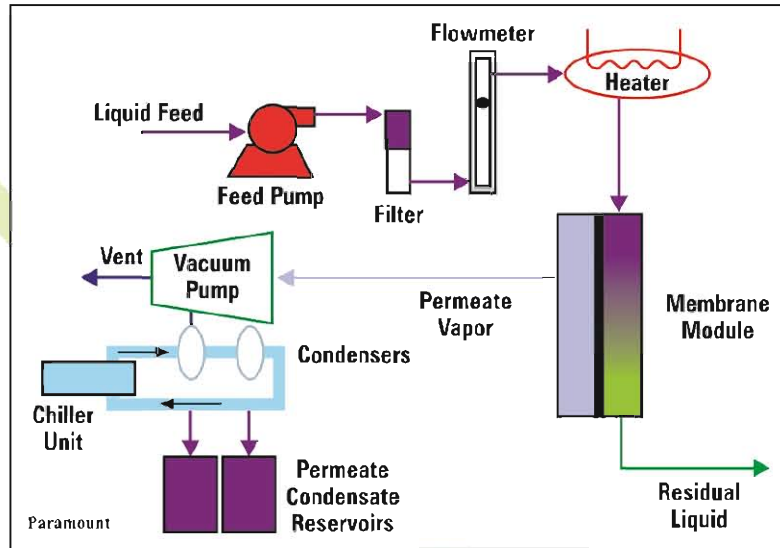
Separation Process	Reverse Osmosis	Ultrafiltration		Particle Filtration				
	Nanofiltration	Microfiltration						
Relative Size of Common Material	Aqueous Salt	Milk Proteins	E-Coat Pigment	Whole Broth Cells				
		Gelatin	Red Blood Cells	Fat Micelles				
	Metal Ion	Endotoxin Pyrogen	Bacteria	Activated Carbon				
	Synthetic Dyes	Virus	Oil Emulsion					
	Lactose (Sugars)	Colloidal Silica	Blue Indigo Dye	Cryptosporidium				
			Giardia Cyst	Human Hair				
	Microns	0.001	0.01	0.1	1.0	10	100	1000
	Approx. Molecular Weight	100	200	1,000	20,000	100,000	500,000	1 MM

- **Sugar & Distilleries:**
Sugar cane Juice clarification & concentration & Rectified Sprit to Absolute Alcohol by Pervaporation System.
- **Pharmaceutical & Bulk Drugs:**
Dilute Solution Concentration, Concentration of Enzymes & antibiotics, Recovery & Concentration of precious products from mother liquor.

Pervaporation



PARAMOUNT



- Pervaporation is a process in which a liquid stream containing two or more components is placed in contact with on one side of a non-porous polymeric or ceramic membrane while a vacuum or gas purge is applied to the other side. The components in the liquid stream absorb into the membrane, permeate through the membrane, and evaporate into the vapour phase (hence the word pervaporate). The vapor, referred to as "the permeate", is then condensed. A concentrate and vapor pressure gradient is used to allow one component to preferentially permeate across the membrane.
- Pervaporation is used for breaking azeotropes, dehydration of solvents and other volatile organics, organic/organic separations such as ethanol, IPA or methanol removal, and wastewater purification.



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Expert Technological Services to Hydrocarbon Industry



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Technical collaboration with PSC, USA
for Chemical Cleaning program for Hydrocracker,
SRU, CCU & CDU Units of BPCL Refinery, Mumbai



Commissioning Assistance at
Bharat Oman Refineries Limited



EPC Execution of Gas Gathering Station for ONGC

Our International clientele includes



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Client

- Petroleum Coke Industries (Kuwait)
- Sawfan Petroleum Technologies Co. WLL (Kuwait)
- Ahmadiyah Contracting & Trading Co. (Kuwait)
- Consolidated Contracting Co. (Oman)
- Metito Overseas Ltd. (UAE)
- FFE Minerals (USA)
- EBARA Corp. (Japan)
- ENPPI (Egypt)
- Tokyo Engineering (Japan)
- Pan Century (Malaysia)
- Aquatech International
- Plant Engineering Construction Pte. Ltd. (Singapore)
- Punj Lloyd (India)
- Esmil Process Systems (U.K.)
- DHV Water (BV) (Netherlands)
- TNO (Netherlands)
- Bechtel (USA)

- Stone & Webster (USA)
- Novartis
- Sanofi Aventis
- Bayer Corp Science Ltd.

Project Executed for

- Petroleum Coke Industries (Kuwait)
- Kuwait Oil Co. (Kuwait)

- Kuwait National Petroleum Co. (Kuwait)
- Oman Refinery (Oman)
- South Paras Oil Basin (Iran)
- Green Coke Calcination Co. (Iran)
- Asthana Water Supply Sewerage Project (Kazakhstan)
- Total (France)
- Tokyo Engineering (Niger)
- Pan Century (Malaysia)
- Mitsubishi Engg. (Phillipines)
- Bulk Liquid Terminal Products (Singapore)

- Tank Store Petroleum Pulan Busing (Singapore)
- Shell (U.K.)
- Krishi Hydrocracker (Russia)
- TNO (Netherlands)
- Petroleum Company of Trinidad and Tobago Ltd. (West Indies)
- SABIC (Saudi Arabia)
- Novartis
- Sanofi Aventis
- Bayer Corp Science Ltd.

Our association with Consultants include



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- ABB Lummas Golbal B. V. Netherlands
- Jacobs, Mumbai
- Fluor Daniel, Netherlands
- Toyo Engineering (I) Ltd., Mumbai
- Kvaerner Power Gas, Mumbai
- UHDE India Ltd., Mumbai
- Worley Parsons, Oman
- Bechtel, USA
- DHV Water, Netherlands
- Ciba - Geigy, Basel, Switzerland
- Engineers India Ltd. (EIL)
- Tata Consulting Engineers (TCE), Mumbai

Thank You



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