

AN ISO 9001 COMPANY



*Your Window to a
Clean Environment!*

PARAMOUNT
The Environment People

CERTIFICATE



The Certification Body
of TÜV Management Service GmbH
certifies that

PARAMOUNT POLLUTION CONTROL LTD.,
PARAMOUNT COMPLEX, GOTRI ROAD, BARODA - 390 007
GUJARAT, INDIA

has established
and applies a Quality System for

Process Design, Engineering, Procurement and Construction of
Process Plants & Projects in the field of Environmental Management
such as Water & Waste Water Treatment, Air Pollution Control,
Solids & Hazardous Waste Management and Marketing of Equipment.

An Audit was performed, Report No. 24025854
Proof has been furnished that the requirements according to
EN ISO 9001 : 1994
are fulfilled. The certificate is valid until July 2001
Certificate Registration No. 12 100 9769 TMS
Munich, 1998-08-31

R. La
of TÜV Management Service GmbH
www.tuev.com



Quality Policy

Our Quality Policy is to :

Be a leader nationally / internationally in the areas of environmental management by updating technologies through our in-house R & D efforts and foreign collaborations / associations.

Maintain highest standard of ethics, honesty and integrity in business.

Provide conducive environment for growth and safety of the employees and recognise their contribution.

Foster team work and effective communication.

Strive for satisfaction and prompt service to the customers.

D.B. Patel
Jt. Managing Director

K.G. Tuli
Managing Director

ORGANISATION

The problems of Environmental Management demand the most advanced and upto date technologies because of its very wide coverage such as pollution of water, air, soil, etc. and in turn the entire ecosystems. PARAMOUNT POLLUTION CONTROL LIMITED as a multi-disciplinary engineering and consultancy organisation, has the necessary expertise and professional skills to provide most advanced and economical solutions to different environmental management problems.

Paramount's 'total turnkey' approach to provide 'a complete solution' for all the areas covered under spectrum of Environmental Management has played a major role and has to its credit many large successfully completed projects in the country and abroad.

Paramount, by virtue of their activities has come to be known as a 'Total Environment Management Company'. Paramount has two proven sources of accomplishments; one, the people, a qualified resource that represents varied scientific and engineering manpower and the other one is the R&D, the most advanced by any standards in the



*Research & Development Centre -
The Backbone of the Company*

country. This has enabled Paramount to handle turnkey assignments of any magnitude both in private as well as in public sector.

Through a continued emphasis on Research and Development, the Company has made significant pioneering contributions in developing indigenous process knowhow and in some cases it is the first of its kind in the country, to have utilised on full scale plant.



Corporate Office

The main areas of specialisation include design and execution of projects and manufacturing of equipments/systems for treatment of water and waste water including its reuse, DM water treatment including condensate polishing for industrial uses, solid and hazardous waste management, Air Pollution Control Systems and Hazardous waste incinerators. Realising the importance of Reuse and recycle of the Waste water, Paramount has entered into the advance field of membrane separation technology incorporating ultra-filtration and Reverse Osmosis Systems.

A wide range of process as well as equipment system choice is available to enable custom design of systems to meet individual needs in this area.

MAN POWER

PARAMOUNT has highly specialised and qualified professional staff with long experience in the various fields of engineering and scientific applications. It comprises of a composite team of engineers, specialists in different branches of engineering such as environmental, chemical, civil/structural, architectural, mechanical, electrical, instrumentation etc. together with personnel for Project Management and Project Executions.

They are well versed in modern design practices and techniques. Quite a few of our professional staff members are on the technical committees at the state and national levels and have published number of technical papers/articles on environmental engineering topics and related areas.



IT Department

Senior executives in technical discussion



R & D CENTRE

R&D centre of PARAMOUNT has a major share in the successful Technological Development brought out by PARAMOUNT in the last three decades. It is the most advanced Centre engaged successfully in carrying out Applied Research related to the field of environmental management in the Private Sector, and is managed by highly qualified technical personnel as well as equipped with most modern and advanced instrumentation facilities.

This centre is recognised by the Department of Science and Technology, (Government of India) and most of the Pollution Control Boards of States as well as at the Centre.

This Centre is actively engaged in carrying out R&D Works in the areas of Industrial Waste Treatment, Air Pollution Control as well as Solid Waste Management. The major activities include characterisation and process development work, generating schemes of different treatment processes of reusing industrial effluents by conducting Bench Scale and pilot plant studies.

This centre is also engaged in DST (Department of

Advanced Instrumentation Lab



Meteorological Instrumentation

Science & Technology) sponsored and other research projects for process development in Environmental Engineering and allied fields.

Some of the processes developed by this Centre has replaced the process technologies from abroad have also helped in building confidence amongst Indian Engineers.

Some of the R&D Projects worth mentioning include Biological Nitrification and De-nitrification process for removal of high concentration Ammonia and Nitrate, stabilisation of thiosulphates generated in Spent Caustic wastewater treatment to sulphate through biological treatment and Diphasic treatment of spent wash from Distillery.

Lab Scale Pilot Plant unit for UASB Reactor



CONSULTANCY

PARAMOUNT has offered Consultancy services to a number of prominent clients which include Local Bodies, State Governments, Industries both in public and private sector, World Bank, etc.

PPCL has strategic tie-ups with internationally known consultancy organisations from Europe & U.S.A.

The major thrust areas include :

- Planning and design of water transmission distribution networks
- Design and detailing of storm water and drainage networks for metro-cities
- Preparation of detailed Feasibility & detailed engineering reports for the above referred work which includes :
 - Detailed engineering
 - Cost estimates
 - Preparation of Tender documents
 - Evaluation of Technical offers
- Preparation of feasibility & detailed engineering for :
 - Industrial Waste Water Collection
 - Conveyance & Treatment for disposal & reuse
 - Municipal solid wastes
 - Hazardous wastes from industrial sectors
- Carry out treatability studies for different types of Industrial wastes for techno-commercial evaluation and to meet the statutory regulatory norms
- Environmental Impact Assessment
- Environmental Auditing for different types of industries
- Ambient Air quality monitoring
- Stack monitoring & particle size analysis
- Characterisation of water, waste water and hazardous wastes
- Detailed Engineering of mega size projects
- Project Management services which include execution and commissioning

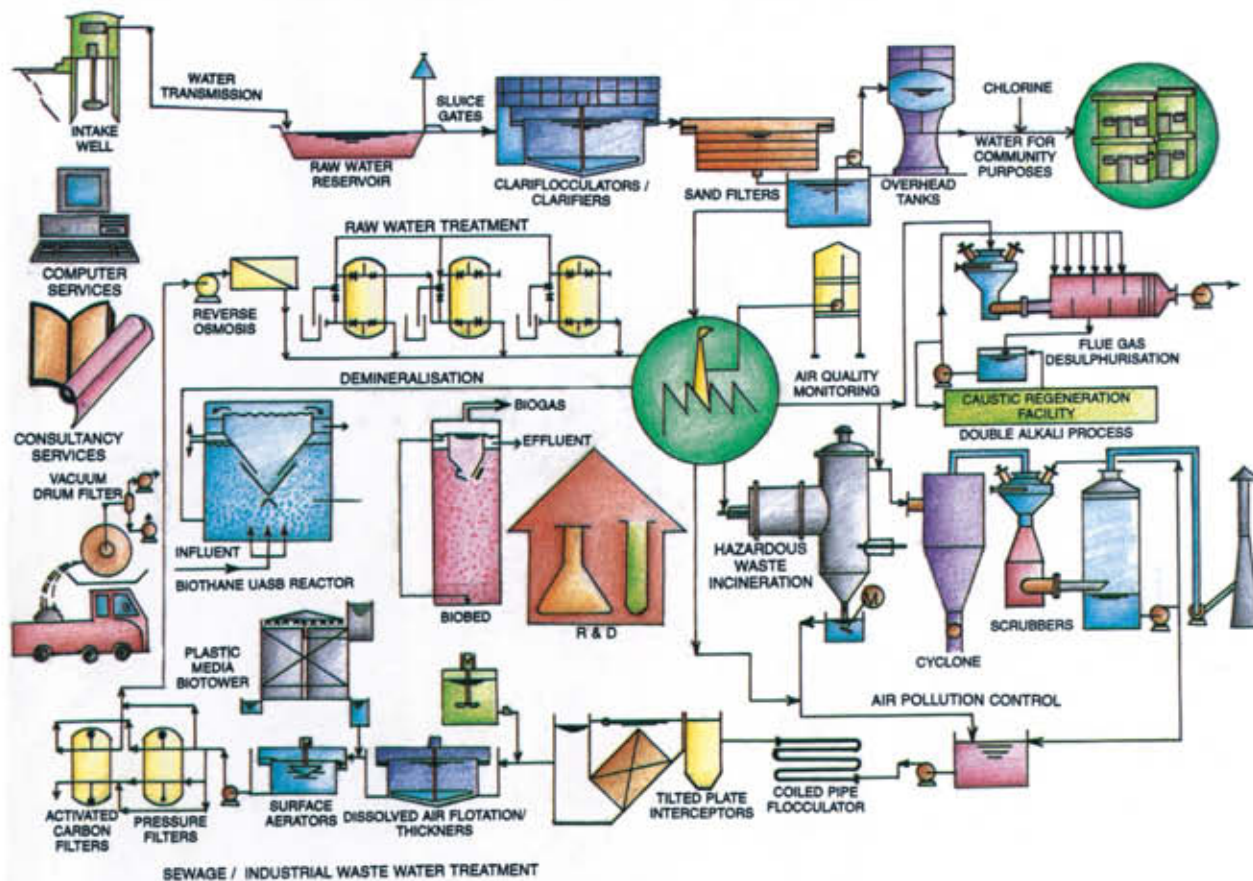


INFORMATION TECHNOLOGY (IT) DIVISION

Information Technology (IT) division of Paramount is currently active in development of software solutions using web (i.e. Internet/Intranet) technology incorporating DHTML, XML, JavaScript, Java, VBScript, ASP, ADO, ADC, ActiveX, SQL Server, Oracle, Various object models such as DOM, SOM, DHOM, VRML, VOML and various object component standards such as DCOM and CORBA.

Major areas of development include Integrated Software for EPC (Engineering, Procurement, Construction) Companies, Engineering Design and Optimization, and various business processes and Commercial applications.

SPECIALITY AREAS



- WATER SOURCE DEVELOPMENT, TRANSMISSION, TREATMENT AND DISTRIBUTION
- INDUSTRIAL WASTE TREATMENT AND DISPOSAL
- SEWAGE COLLECTION AND TREATMENT
- COOLING WATER TREATMENT
- WATER SOFTENING AND DE-MINERALISATION
- REUSE AND RECOVERY/CONSERVATION OF WATER
- AIR POLLUTION CONTROL/PATENTED SO₂ SCRUBBING SYSTEMS
- FLUE GAS DESULPHURISATION (FGD)/DOUBLE ALKALI PROCESS
- HAZARDOUS WASTE INCINERATION
- AIR & WATER QUALITY MONITORING
- SOLID & HAZARDOUS WASTE MANAGEMENT
- ENVIRONMENTAL IMPACT ASSESSMENT STUDIES
- ENVIRONMENTAL AUDITING

INDUSTRIAL WASTE WATER TREATMENT

We have successfully completed industrial effluent treatment facilities for over hundred different types of industries. The services offered include :

- LAB/PILOT SCALE STUDIES
- PROCESS DESIGN
- DETAILED ENGINEERING, EXECUTION & COMMISSIONING

WWTP's have been set up for clients from diverse industries that include :

- Petroleum Refineries
- Petrochemicals
- Chemical Fertilisers
- Dairies
- Phosphoric & Non Phosphoric Fertilisers
- Tanneries
- Sugar Mills
- Molasses Distilleries
- Pharmaceuticals
- Starch Manufacturing
- Pulp and Paper
- Cotton Textiles
- Dye Manufacturing
- Wool Processing, etc.

Common Effluent Treatment Facilities for small and medium scale industrial estates.

Depending upon the nature of effluents treatment plant configuration includes :

- Pre-treatment
- Physico-chemical treatment

Biological Treatment - single stage or two stage incorporating aerobic/anaerobic treatments.

Physico-chemical treatment including units like Tilted Plate Interceptors, Clarifiers, Clariflocculators and Air Filtration Systems, Chemical dosing and mixing facilities.

Biological Treatment include Biotowers, Activated Sludge Processes & UASB, UFB type Anaerobic processes.

Tertiary Treatment facilities incorporating Pressure sand filter and Activated carbon filters to enable reuse of waste water for industrial uses.

Bird's eye-view - Effluent treatment plant at a 6 MMTPA Refinery





Partial View of Integrated 3 Stage Waste Water Treatment Plant for Refinery (1500 m³/hr)



Wet air oxidation plant for Sulfide treatment at Gas processing complex

Central effluent treatment plant at an integrated Petrochemical complex



INDUSTRIAL EFFLUENTS

*Effluent treatment facility for heater
treater effluent water injection facility*



*Chromate removal facility for Cooling tower
blow down at a Fertilizer Complex*



Effluent treatment plant at a 6 MMTPA Refinery Complex



Reaction Clarifier for hardness removal at a Fertilizer Complex



Ammonia steam strippers at a Fertilizer Complex

Effluent treatment plant for removal of phosphates, fluorides & nitrates at a Nitrophosphate fertilizer plant



INDUSTRIAL EFFLUENTS



'Bio-bed' an anaerobic treatment facility for treatment of highly organic waste water for a Pharmaceutical plant



Ammonia Steam Stripper facility at a Fertilizer Complex

Bird's eye view of an integrated four stage (primary, anaerobic, aerobic and tertiary) treatment facility for a pharmaceutical unit





Sulphur recovery pilot plant for a Tannery unit



An integrated UASB effluent treatment facility for a Molasses distillery, Erythromycin & Penicillin Plant



Effluent treatment plant for a Polymer Unit

WATER TREATMENT

Paramount's extensive services in this area include:

- Water source selection
- Water quality analysis
- Lab & pilot scale studies
- Collection
- Transmission
- Treatment
- Distribution

Conventional/Raw water treatment system includes :

- Chemical coagulation with alum and alum with polyelectrolyte
- Flocculation and sedimentation followed by rapid sand filtration
- Disinfection with chlorination/ozonation U.V. or its combination.

Pretreatment includes :

- Chemical precipitation
- High rate filtration
- Activated carbon filters
- Microfiltration
- Ultrafiltration

Industrial water treatment includes :

- Softening
- Demineralisation
- Cooling water treatment
- Condensate polishing
- R.O. system for brackish & sea water

Conventional water treatment plant at a Aluminum smelter



Filter house at a community water treatment plant

WATER TREATMENT



Intake structure at a river bed

Water treatment plant for a large community



Bird's eye view - Water treatment plant at a Refinery



WATER TREATMENT

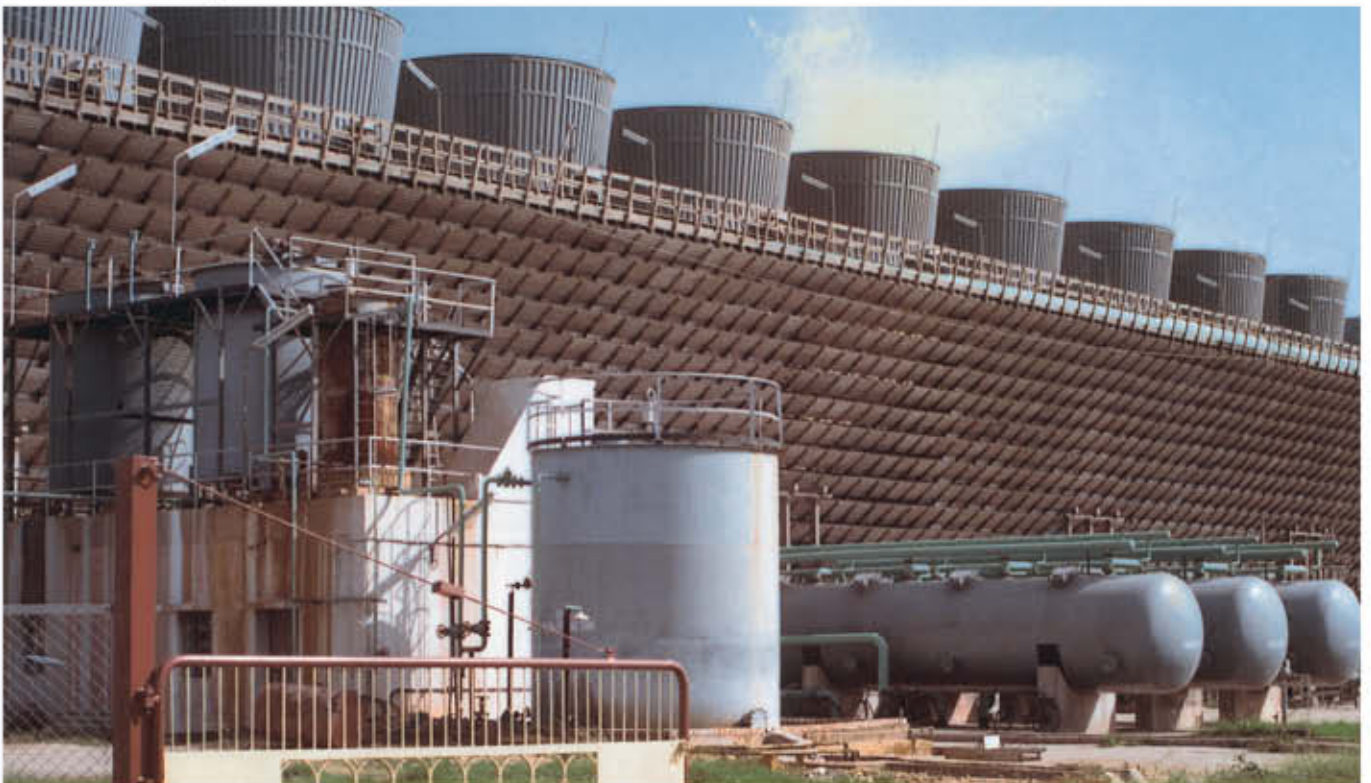


Raw water treatment plant

A battery of pressure filters as well as activated carbon filters



Side stream horizontal filters for recirculating cooling water treatment





Cascade aerator

Water treatment plant at a Fertilizers complex



View of Reverse Osmosis installation



D.M. PLANT

Standard Plants

Standard plants are skid mounted with a plant capacity 5 - 15 m³/hr for small and medium size industries such as Textile, Pharmaceuticals & Chemical, etc. for generation of steam or process water.

The package comprises combination of various units depending upon the water quality requirement and may include :

- Pressure Sand Filter/Dual Media Filter/ Activated Carbon Filter
- Upflow packed column cation/anion exchanger
- Chemical doser

Medium & large treatment scale plants involve treatments like :

- Filtration
- Demineralisation with Cation/Anion/Mix bed exchangers with counter current mode regeneration system.
- Degasser system
- Chemical dosing system

Combination of D.M. and R.O. Plant can be worked out if feed water dissolved solid exceeds 600 to 800 mg/lit.

A view of DM plant at a Petrochemicals complex 600 m³/hr





*Condensate polishing unit
at a petrochemical complex*

DM Water Storage Tanks



Dearator facility



SEWAGE TREATMENT

PARAMOUNT also offers services in the field of sewage treatment systems. The nature of services consist of design engineering, process design and turnkey projects for urban, semi-urban localities and industrial townships.

The treatment systems for the above projects consist of pretreatment for removal of floating and gritty materials, primary treatment for removal of suspended settleable solids and secondary treatment for removal of dissolved organic matter contributing to COD/BOD. The secondary treatment for these projects included conventional activated sludge process or trickling filters/biotowers with plastic media packings.

Anaerobic digestion facilities are also provided for the treatment of sludge. In few cases tertiary treatment is also introduced for getting the polished effluent



..... Package sewage treatment plant

for reuse, comprising of filtration, hardness removal and reverse osmosis system depending upon the specification and use. PPCL can also offer compact package plants for small installations. Sludge can be handled on dewatering centrifuge/belt filters and / or sludge drying beds.

..... Trickling filter for a Municipal Sewage treatment



SEWAGE TREATMENT



Plastic Media Biotower

.....



Grit separator and primary settling tank at a Municipal sewage treatment plant

.....

Package sewage plant for a colony



AIR POLLUTION

The services offered in this specialised area are based on technical know-how acquired from our Collaborators M/s. Andersen 2000 Inc. U.S.A who are one of the world's reputed leaders in Emission Control Technology. System offered includes

Particulate removal :

- Wet/Dry cyclone separators
- Bag filters
- Low energy venturi scrubbers
- High energy venturi scrubbers (Fixed and variable throat)

Gaseous pollutant removal like SO_2 , HCl, HF, Cl_2 , H_2S , P_2O_5 , HCN, HBr, Br_2 , mercaptans, etc.

- Packed towers
- Spray towers
- Disc & doughnut scrubbers
- Horizontal baffled scrubbers
- Ejector scrubbers
- Combination of above

Special Systems

HEAF (High Efficiency Air Filter) for removal of Sticky, Tarry, Oily, Liquid Aerosols, VOC, Sub-micron particulate matter from exhaust gas for applications where conventional scrubbers fail to meet the emission standards.

Patented CHEAF (Cleanable High Efficiency Air Filter) for removal of ultrafine soluble particulate matter to achieve most stringent emission standards and to remove visible flume from stack.

This system can be used for emission control of Ammonium Nitrate, Urea Prilling Tower Fumes, Submicron P_2O_5 aerosols, Glass furnace exhaust etc. This system is most efficient because of Low Energy/Pressure Drop compared to other systems.

Odour removal systems for removal of obnoxious odours from Gas streams include tailor made packed bed scrubbers with chemical oxidation and both alkaline and acidic absorption to accomplish odour reduction.

**HIGH EFFICIENCY AIR FILTER
(HEAF) for odour control**



AIR POLLUTION



Incinerator Scrubbing System for a liquid waste incinerator



View of a Venturi Scrubber followed by Packed Tower

CLEANABLE HIGH EFFICIENCY AIR FILTER (CHEAF) For Urea Prill Tower Emissions



FLUE GAS DESULPHURISATION

Paramount in technical collaboration with M/s. Andersen 2000 Inc. U.S.A offers the most proven & "state-of-the-art" F.G.D. (Flue Gas Desulphurisation) system based on "Double Alkali Process" for SO₂ emission sources like power plants, smelters, oil fired furnaces using high sulphur fuels, & many others. These F.G.D. Systems are most preferred especially due to their tremendous advantage of reducing the operating cost of costly chemicals (caustic) to almost 10% of stoichiometry, thereby offering a payback period of less than a year. This system also eliminates chocking of scrubbers including production & treatment of high T.D.S. bearing bleeds from scrubbers. Gypsum can also be produced as a final byproduct.



View of a large FGD Unit



View of a Quench for FGD Unit

FGD Unit based on Double Alkali Process



A view of SO₂ Scrubber at a Copper smelter



Packaged So2 Scrubbing System



HAZARDOUS WASTE INCINERATION

INCINERATORS

Our services include detailed investigations, analysis of waste with respect to Chemical Composition, toxicity, calorific values etc. Paramount has carried out such assignments for World Bank aided Projects in India. Paramount is proud to be associated with World Bank sponsored projects addressing complex problems in this field.

Incineration for Hazardous Solids/Semi-solids/Liquid and Gaseous Wastes :

The type of incinerators offered with Technical Know-how from M/s. Andersen 2000 Inc. U.S.A include :

- Fume incinerators for highly toxic gaseous pollutants.
- Static - horizontal/vertical incinerators for liquid wastes.

- Rotary kiln incinerators for virtually any type of wastes irrespective of their form
- Pyrolytic two chamber incinerator for solid wastes
- Fluidised bed incinerators.

Some of the incinerator systems are provided with heat recovery systems.

Incinerator installations are provided with gas cleaning system for removal of various Pollutants such as SO_x, HCl, HF, P₂O₅, fine aerosols, particulate matter etc., generated out of incineration of hazardous wastes.

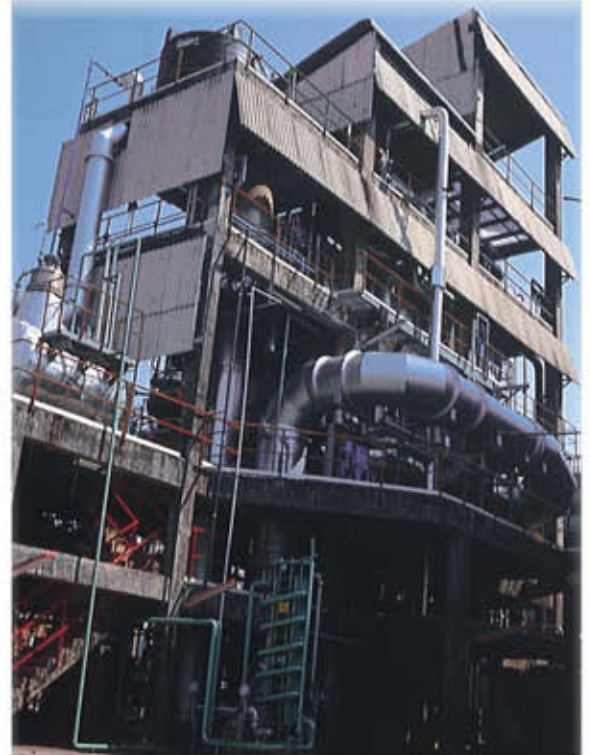
The system packages are provided with High degree of Automation, Safety Systems and with PLC/DCS based controls.

Hazardous waste incinerator at a large Petrochemical complex





Acid Gas Incinerator at a Refinery



Large Liquid Waste Incinerator for Tinopal Plant



Exhaust Stack

View of an active waste Incinerator at a Nuclear Power Plant



INCINERATORS



..... *Rotary Kiln Incinerator at an integrated Petrochemicals Complex*



..... *Insert of DCS Control System for Incinerator Plant*



..... *View of Waste Heat Recovery Boiler*

PROCESS EQUIPMENT



Aerators



Reaction Clarifier



Clarifier



Pressure Filters



Rotary Distributor



Dissolved Air Flotation



Clariflocculator



Tilted Plate Interceptor

CLIENTS

- Indian Oil Corporation Ltd.,
- Madras Refineries Ltd.,
- Cochin Refineries Ltd.,
- Essar Oil Ltd.,
- Mangalore Refineries & Petrochemicals Ltd.,
- Hindustan Petroleum Corporation Ltd.,
- Maharashtra Gas Cracker Project (IPCL),
- Indian Petrochemicals Corporation Ltd.,
- Reliance Petrochemicals Ltd.,
- Manali Petrochemicals Ltd.,
- Petrofils Co-operative Ltd.,
- Oil & Natural Gas Commission,
- Gas Authority of India Ltd.,
- Rashtriya Chemicals & Fertilizers Ltd.,
- National Fertilizers Ltd.,
- Gujarat State Fertilizers Co. Ltd.,
- Gujarat Narmada Valley Fertilizers Co. Ltd.,
- Madras Fertilizers Ltd.,
- Indian Farmers & Fertilizers Co-op.. Ltd.,
- Shriram Fertilizers & Chemicals Ltd.,
- National Aluminium Company Ltd.,
- Hindustan Copper Ltd.,
- Bharat Electronics Ltd.,
- Indian Rare Earths Ltd.,
- Gujarat Water Supply & Sewerage Board,
- Tamilnadu Water Supply & Drainage Board,
- Baroda Municipal Corporation,
- Rajkot Municipal Corporation,
- G.E. Plastics India Ltd.,
- CIDCO, Vashi, Maharashtra,
- Kota Thermal Power Station (RSEB), Kota,
- Gujarat Narmada Auto Ltd.,
- Rajasthan State Industrial Development & Investment Corporation Ltd.,
- Ciba-CKD Ltd.,
- The Department of Electronics (Govt. of India),
- Andhra Paper Mills Ltd.,
- Gujarat Leather Industries Ltd.,
- National Textile Corporation,
- National Dairy Development Board,
- Godrej Soaps Ltd.,
- Ahmedabad Electricity Company Ltd.,
- Tata Iron & Steel Co. Ltd.,
- Tamil Nadu Leather Development Corporation Ltd.,
- Associated Cement Companies Ltd.,
- Cibatul Ltd.,
- Orchid Chemicals & Pharmaceuticals Ltd.,
- Motor Industries Company Ltd.,
- Chemcontrol A/S (Denmark),
- South Nyanza Sugar Co. Ltd., (Nairobi, Kenya)
- The World Bank,
- Finolex Pipes Ltd.,
- SWIL India Ltd., Copper Smelter Project,
- National Environmental Engineering Research Institute,
- TNO - The Netherlands,
- Central Leather Research Institute,
- G.E. Apar Ltd.,
- Nuclear Power Corporation,
- Wockhardt Ltd.,
- Ballarpur Industries Ltd.,
- Aquatech International Corporation Ltd., (USA),
- GEPL Holdings Pvt. Ltd., Singapore,
- Pan-Century Ltd., Malaysia,
- Dept. of Space,
- Bhabha Atomic & Research Centre,
- Bridge & Roof Company (India) Ltd.,
- Rolls-Royce Industrial Power (India) Ltd.,
- Toyo Engineering Ltd.,



Improvement Policy

Making improvements in routine work, outside routine work, and inside the company is an integral part of our job. The improvements made outside the company, in our personal life, in the society and in general anywhere and everywhere outside the normal working hours is an equally important part of our job.

The company's policy is to make improvements at the seed stage to create a pro-active culture of problem prevention.

We solve only those problems which we fail to prevent in the first place. We practice the paradigm that prevention is better than cure.

A handwritten signature in black ink, appearing to read "D.B. Patel".

D.B. Patel
Jt. Managing Director

A handwritten signature in black ink, appearing to read "K.G. Tuli".

K.G. Tuli
Managing Director



PARAMOUNT LIMITED
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(An ISO 9001 Company)

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