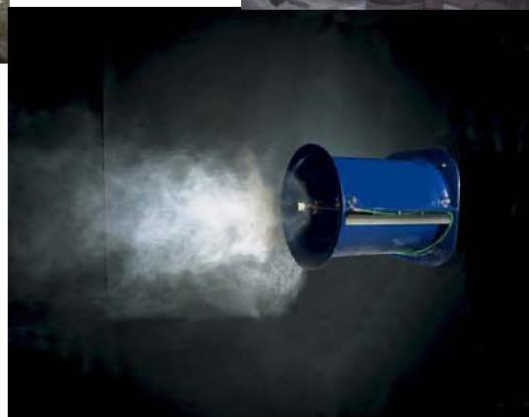


*WORKING FOR A SAFE AND CLEANER  
TOMORROW.....*

# COMPLETE ENGINEERING SOLUTIONS



## CASE GROUP OF INDUSTRIES

**C**ASE established itself in the year 1993 and since then it has been relentlessly working in the variable fields of Industrial Engineering. Activities include:

- Cooling Tower Solutions.
- Industrial Air Pollution Solutions.
- Water & Waste Water Solutions.
- Alternate Energy solutions.
- Coal/ Agro based Gas Station.

Case is an ISO 9001:2000 certified company, having its head office situated at New Delhi and manufacturing units at Bahadurgarh, Kolkata & Bangalore. Branch offices situated at all strategic positions across the country; enable us to understand the needs and wants of the customer in order to attain a higher Customer Satisfaction Level. We are backed up by a vibrant and dynamic Marketing Team capable to understand and deliver to the demands and requirements of our valuable clients. A relentless after sales team adds to the strength of the organization and accounts for the never ending relationship which we share with our users.



Our innovative Research & Development section repeatedly keeps adding up-to-the-minute features which facilitate our products for better performance and resilience. Products and services offered by us are fully approved by all leading Government/Non-Government organizations. We are members of CTI (Cooling Technology Institute, USA) which makes sure that we offer you international quality standards.

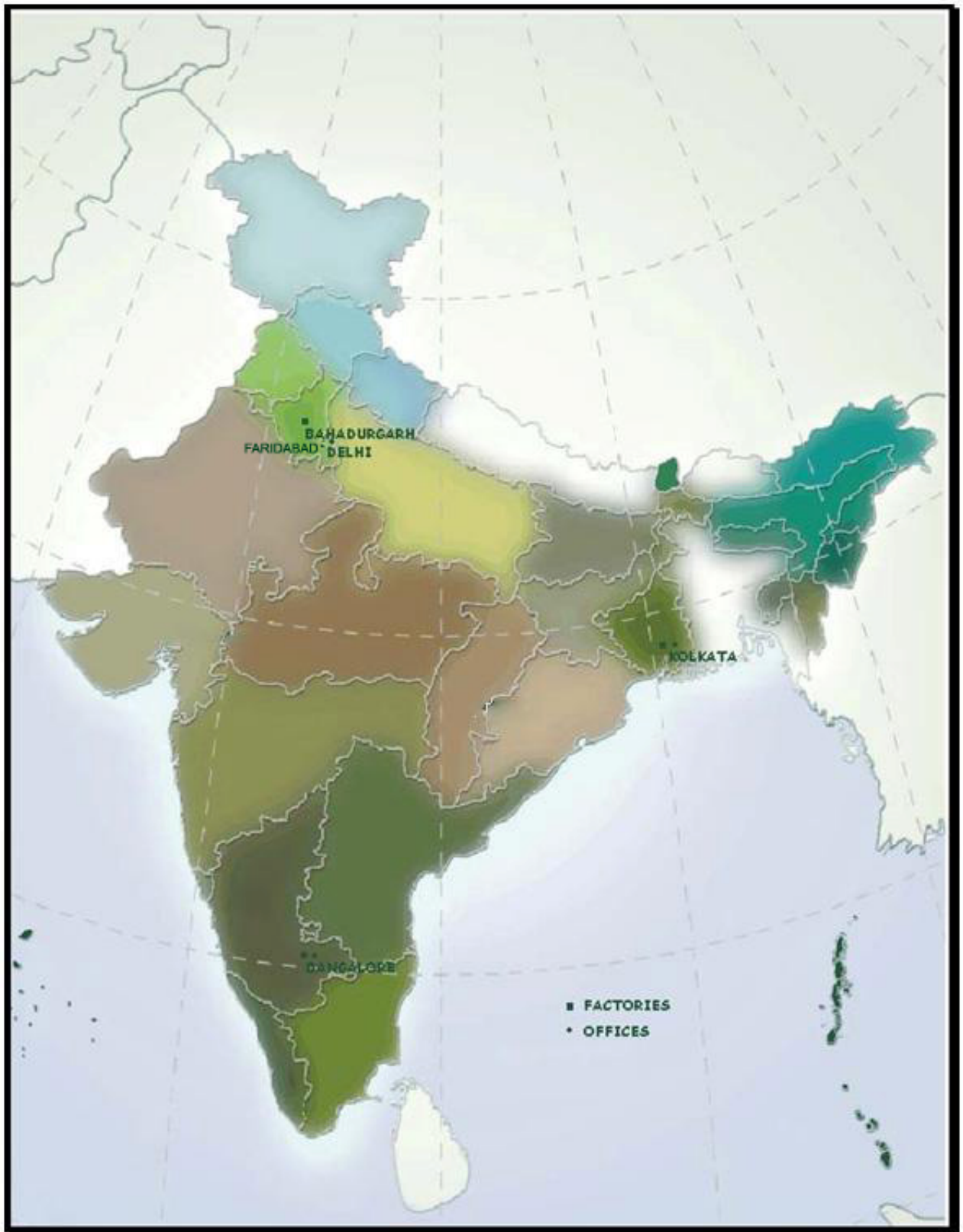
**M**ission is **"to deliver globally, the best of quality products at the most economical rates within minimum lead times."**

Our fields of competence include:

- Consultancy in related area of requirement.
- Complete Designing & Engineering.
- Supply.
- Erection, testing & commissioning of the system.
- After Sales.



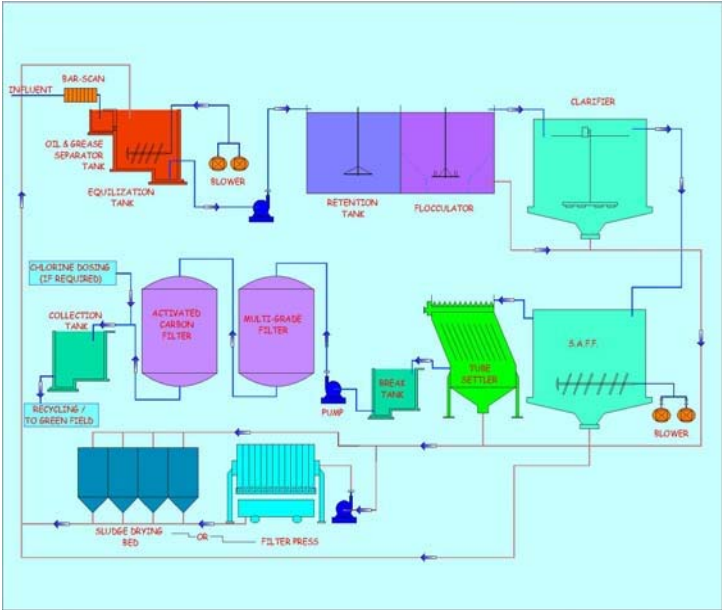
## CASE PRESENCE



# WATER TREATMENT

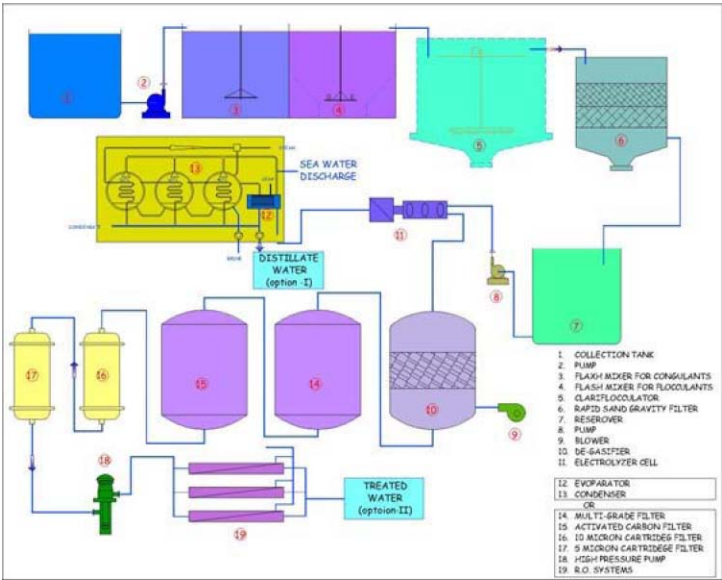
## A. WASTE WATER TREATMENT PLANTS

Our expertise involves full range of products and services for Waste Water Treatments from the concept of designing to operation & maintenance. By combining innovative plant design and high quality components we develop customized technological enhanced solution on economically interesting terms.



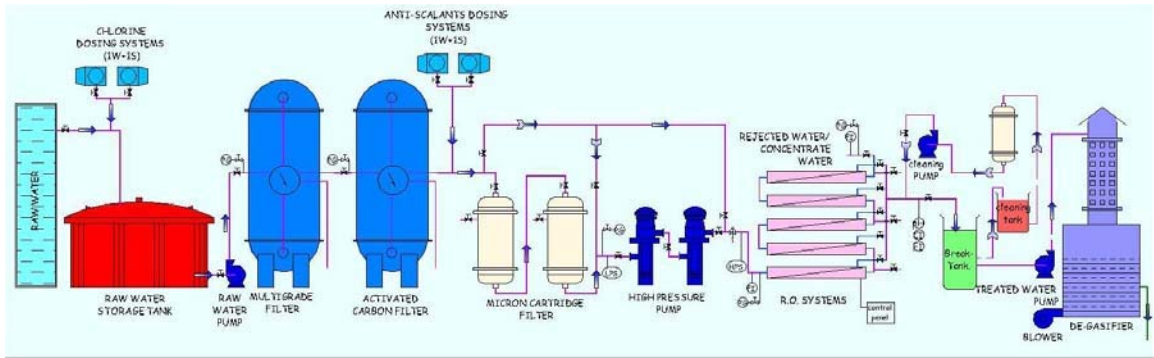
## B. DESALINATION

CASE provides all types of Desalination plants based on both distillation as well as membrane technologies as per client requirements. These plants are mainly installed where high qualities of waters are required from source of the sea, for industrial and domestic usage.



Desalination based on Distillation or Membrane Technology





## C. REVERSE OSMOSIS SYSTEM

State of the Art RO System

## D. WATER TREATMENT CHEMICALS

Cooling Water Chemicals Boiler Water Chemicals RO Chemicals Miscellaneous

Chemicals & Equipments



## E. NON-CHEMICAL ON LINE SCALE PREVENTOR (SCALE-BAN)

Principle: Scale Ban makes the use of flow and chemical characteristics of water and precipitates out hardness causing salts of very small size as the water flows through Scale Ban. These salts are suspended in water because of being light in weight and the turbulent flow. Thus, once Precipitation of hardness causing salts have taken place, further precipitation because of temperature variation is not possible.

Advantages of Using Scale Ban:

- Prevention of Scale.
- Removal of Existing Scale.
- Eliminates Recurring Costs.
- No Corrosion.
- Chemical Property of water remains same.
- No Energy Consumption.
- No Pollution.
- Effective for variable water qualities.

Common Applications AC Plants, Chilling Plants, Generators, Induction Furnace, Bottle Washers, Heat Exchangers, Compressors etc.

Scale Ban Equipment



Scale Ban Equipment

# COOLING TOWERS

A decade of understanding and workmanship has enabled us to create Cooling Towers that not only give optimum performance and efficiency but also assist the end user in saving tremendous power. Our consistent and sustained R&D enabled us to introduce brain of the Cooling Tower for the first time in India. The Cooling Tower reads the atmospheric conditions and manipulates the speed of the motor accordingly thus saving enormous power.

## A. CASE FRP SERIES

- Induced Draught, Counter Flow Design.
- Light weight enables them to be installed on roof tops.
- Compact design account for better space management.
- Aesthetic look adds to the site face lift.



CASE RT SERIES



CASE SQ SERIES

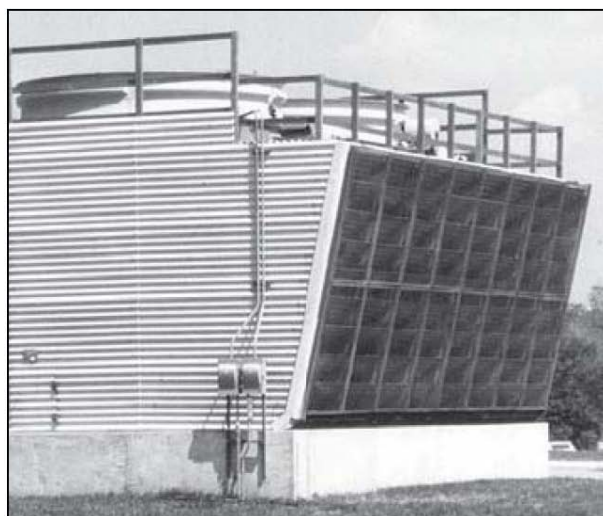
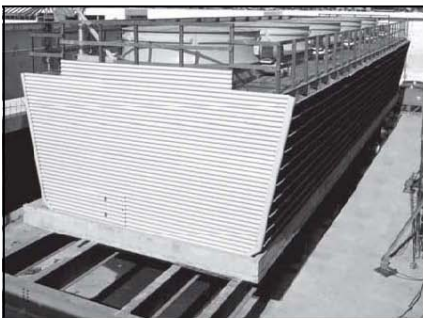


CASE RD SERIES

- All internals in stainless steel.

## B. CASE WOODEN/ TIMBER SERIES

These Cooling Towers are designed for high water flow-rates beginning from 1000 M<sup>3</sup>/Hr and above. They come in both Counter Flow and Cross Flow designs with options of wooden splash bars, PVC, V bars, C bars fill media complete designed as per client and application requirements. Their popularity lies in their long life and rugged design. Preferred applications include Power Plants, Fertilizer Plants, Sugar Plants, Ferro-Alloy plants, cement plants etc.

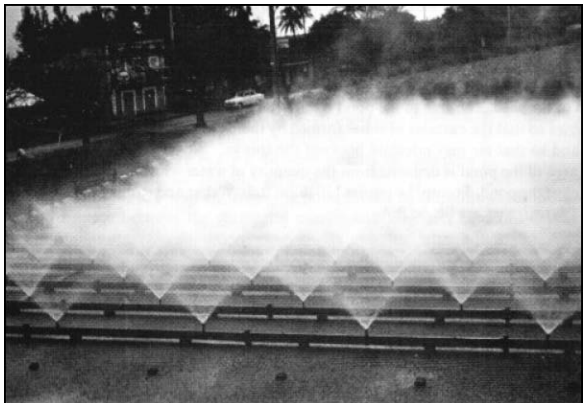


### C. CASE CONCRETE SERIES

As the name suggests, these Cooling Towers are constructed of RCC outer structure. These Cooling Towers are permanent structures in the industry and find a place where the water requirement is of very high capacities for e.g. in huge fertilizer plants, power plants etc. The internal fill pack material may be of PVC, Wooden Splash, HDPE etc. In addition these Cooling Towers come in various shapes. Our services range from complete designing to testing and commissioning of these Cooling Towers.



### D. EVAPORATIVE SPRAY



### SYSTEMS

These systems are applicable for larger water quantities, directly depending on the space area available. Water is atomized by high pressure pumps into multiple water lines which break the water, inturn lowering the outlet temperature. Are efficient where application requirement is with high Approach.

### E. COIL COOLERS

Also known as a 'remote radiator'. This system involves cooling of re-circulated water by the draft of induced air. Outlet water temperatures are around 10°C above area ambient temperature. Zero wastage of water accounts for its utilization in arid regions.





# **AIR POLLUTION CONTROL**

**A**ir pollution is the residual of mechanization. The unwanted byproduct ingredients when pumped into the atmosphere, contaminate the natural air, hence causing air pollution. These pollutants are harmful to the living and the non-living. Air pollution can cause serious health problems. Increased levels of concentration can result in severe injury and even death. Air pollution has thinned the protective ozone layer above the Earth resulting in susceptibility to the living kind against innumerable diseases and disorders.

We at CASE realize the unimaginable effects of this biggest nuisance faced by the Human Civilization today. We have dedicated our efforts to minimize or eliminate this problem by supplying the industry with various Air Pollution Control Equipments. Product range varies from the bare minimum to very large air quantities.

## **A. PULSE JET BAG HOUSES**

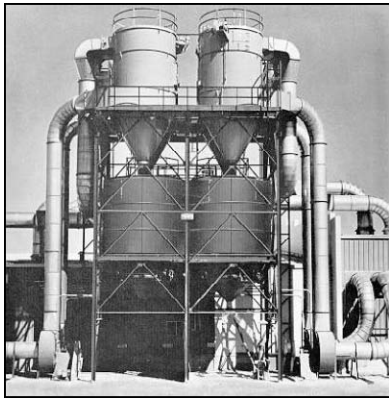
CASE supplies pulse-air and reverse air type baghouse filters for industrial and utility applications. Over the years CASE has provided number of successfully operating installations for a variety of applications, such as: coal, cement, steel, power, mining and chemical. Bag Filters are state of the art, high efficiency, modular filters designed to handle gas volumes from several hundred to several thousand cubic feet per minute. These Bag Filters are custom designed for optimum air-to-cloth ratios, longer bag life and higher particulate removal efficiencies.



## **B. ELECTROSTATIC PRECIPITATORS**



## C. CYCLONE SEPARATORS



### Features

- Low maintenance requirement
- Flow rates from 120 to 22,000 CFM
- Separator vessels up to 12 feet diameter and 33 feet height

### • Custom designs and special modifications Applications

- Landfill gas
- Food Processing
- Fly Ash.

## D. VENTURI SCRUBBERS

High-velocity spray venturi scrubbers are a traditional and well-known method for removing fine dust particles from industrial air streams. Venturi scrubbers, (including ejector venturis and eductor venturis), are often installed to remove fine particles from volatile, hazardous or corrosive gas streams, or gas streams containing solid materials that are difficult to handle. They have been widely used throughout the chemical industry for decades.

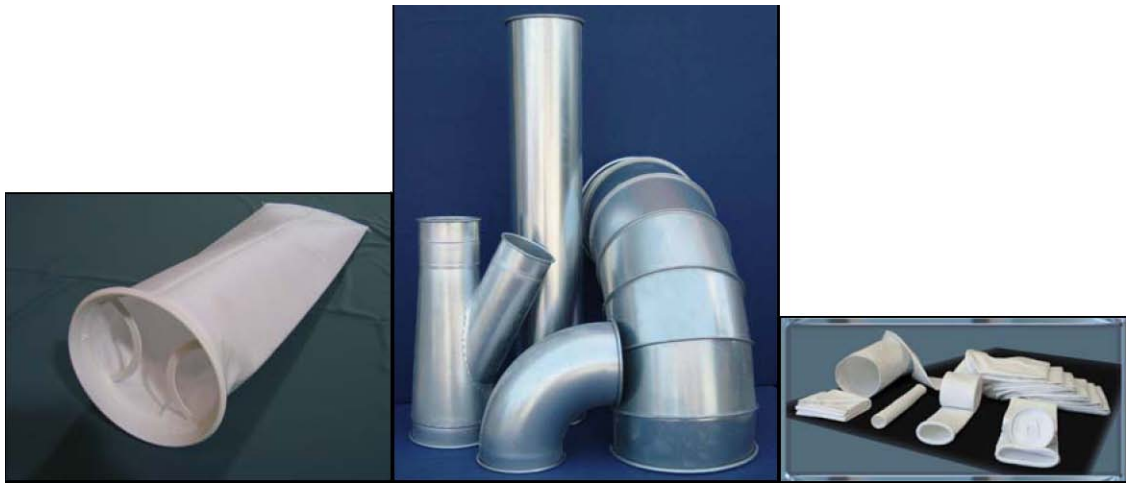


## E. MISCELLANEOUS OPTIONS

Suction Hoods.  
ID Fans.  
Ducting.  
Conveyors.

Swiveling Joint arrangement.  
FD Fans.  
Dampers.

Spark Arrestors.  
Chimneys.  
Heat Exchangers.



# GASIFICATION

## why use Gasification process

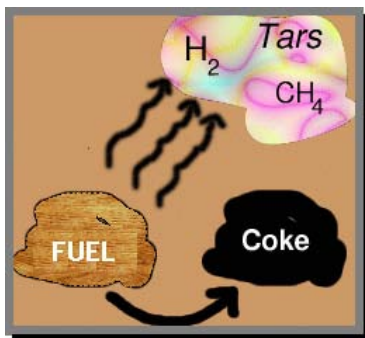
'.....the rising oil fuels have triggered the use solid fuel combustion systems'. Coal usage is becoming more widespread worldwide because coal reserves are much greater than oil and gas reserves combined. As oil and gas reserves become depleted, coal will become increasingly competitive. Coal-firing will remain the primary choice where security of supply is important or where coal supplies are relatively less expensive.

New technologies are being developed that enable coal to compete against other fuels more effectively. Many technologies are gasification based. Gasification technologies are more environmentally friendly and efficient for a number of applications.

## Gasification process

CASE Coal Gasifier carbonaceous material undergoes Four processes

**Drying & Charge Pre Heat:** The producer gas flowing upstream through the reactor dries up the newly injected coal, thus making the next stage (pyrolysis) easier and efficient.



**Pyrolysis:** Also called devolatilization occurs when the heated coal releases char and volatile resulting in upto 70% weight loss for coal. The volatiles being light in weight move upwards and the char moves downstream for the next process (Reduction).

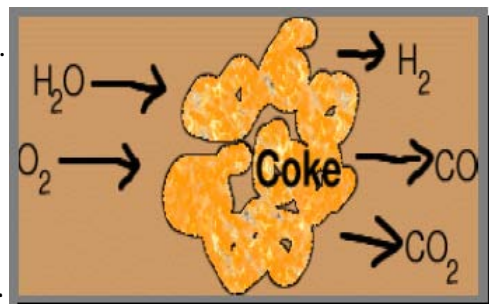
**Reduction:** In this process the char is acted upon by the Carbon dioxide and steam generated from the final process of gasification (Oxidation). Here the Carbon Dioxide and steam combines with char to give Carbon Monoxide and Hydrogen.

**Oxidation:** During this process the reduced Carbon (Char) is burnt by blowing controlled air into the reactor. Steam is injected simultaneously (Carbon is oxidized in the presence of steam to generate Carbon Dioxide and Hydrogen).

## Producer Gas composition

Producer gas has the following composition: CO: 15-20%;

$H_2$ :15-20%;  $CH_4$ : 2-6%;  $CO_2$ : 7-10%;  $N_2$ : 40-50%





Multi series gasifiers installed for re-heating furnace at Beijing, China



Multi Stage Wet Precipitators for clean gas application for Power Generation at Shangai, China



# SKBIT

## (STATIC KILN BRIQUETTED IRON TECHNOLOGY)

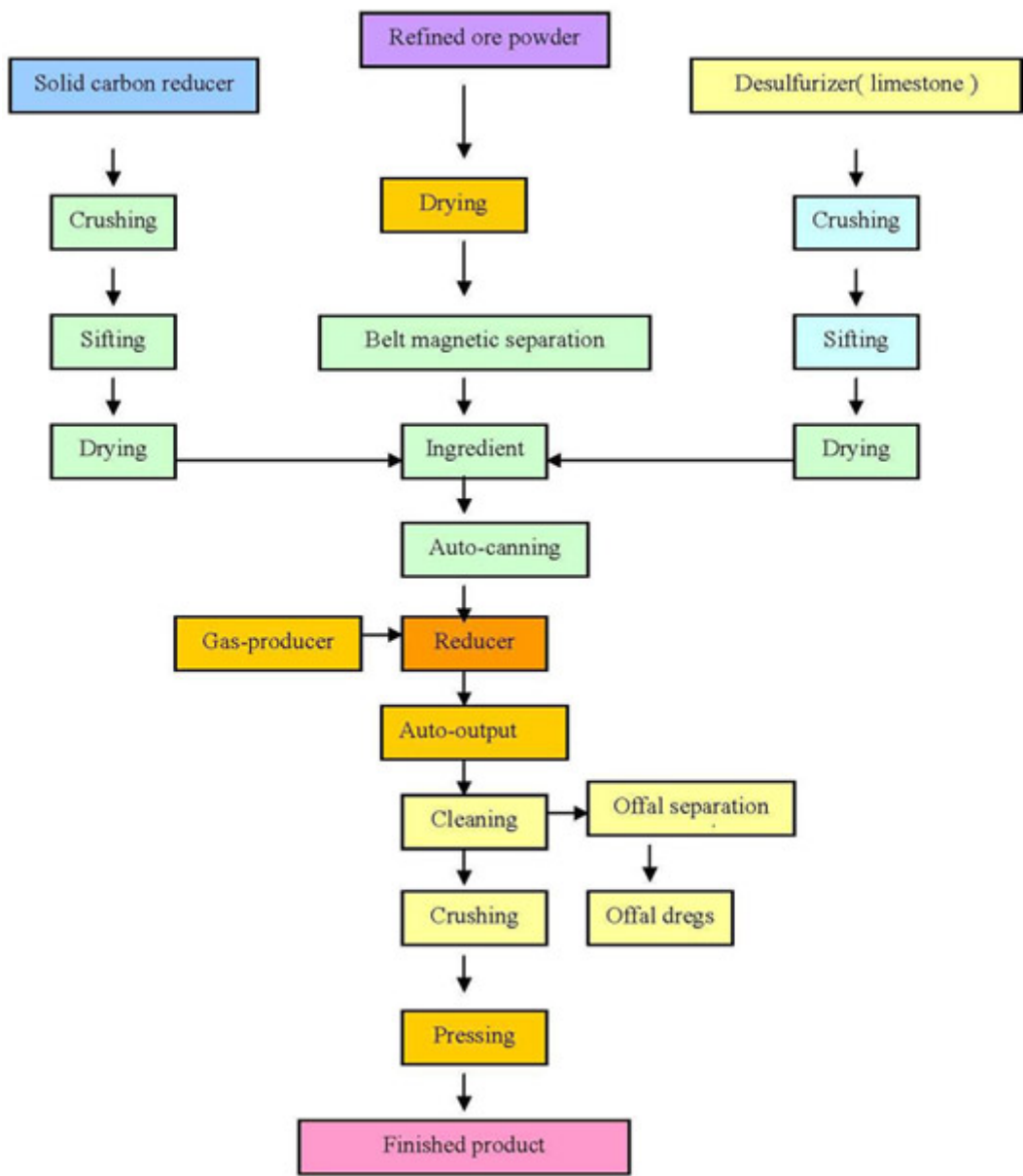
This is a major technological breakthrough in the field of Iron Ore Reduction. The ores which are rich in iron oxides are systematically loaded along with coal in Silicon Carbide (SiC) containers. These containers are passed through a heating zone enabling the oxides to reduce to metallic iron.

This major breakthrough ensures no pollution which is a major constrain in the steel making process of reduction of iron ore these days. Further it is a continuous process with no agglomeration threat. The carbon content in the final product is high making the properties close to scrap, thus facilitating easy melting in the Induction Furnace.

The main feature of the process is utilization of Iron ore fines and reducing them and further making a briquette with density over 4g/cc.



PROCESS FLOW CHART FOR SKBIT



## Product of DRI



**Reduced Iron Ore Product from the Tunnel Kiln**



**Final product after cold Press.**



# SOLAR ENERGY BASED POWER PLANTS

CASE group, India and Norasco Ltd, Cyprus announces the formation of a joint venture to provide end-to-end services in the Solar Photovoltaic (PV) sector and Solar Thermal Power generation in India.

The engineering and advisory Joint Venture has the capability to transfer latest expertise on PV to India and to become a one-stop shop for potential PV manufacturers. The Joint Venture brings unique cost optimization solutions to generate solar power sector.

The group covers the entire business line and conducts initial feasibility assessment, designs, implements and commissions turnkey Solar Photovoltaic systems of 1MW to 50MW.

The services include feasibility studies, techno economic studies, engineering and construction, commissioning and administrative support.

The group will also work on smaller effective projects for power generation in commercial, residential buildings and special economic zones. It also has access to international cleantech focused investor network to arrange adequate funding for the solar PV projects and also assist in carbon trading.

## PV images



# CASE

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