SED

SUGAR INDUSTRY

INNOVATIVE TECHNOLOGICAL
SOLUTION FOR ENERGY EFFICIENCY

Sustainable sugar plant design for zero CO_2 emissions – utilizing 100% carbon from sugarcane crop without biomass burning.

SPRAY ENGINEERING DEVICES LIMITED

...Energy Efficient Engineering

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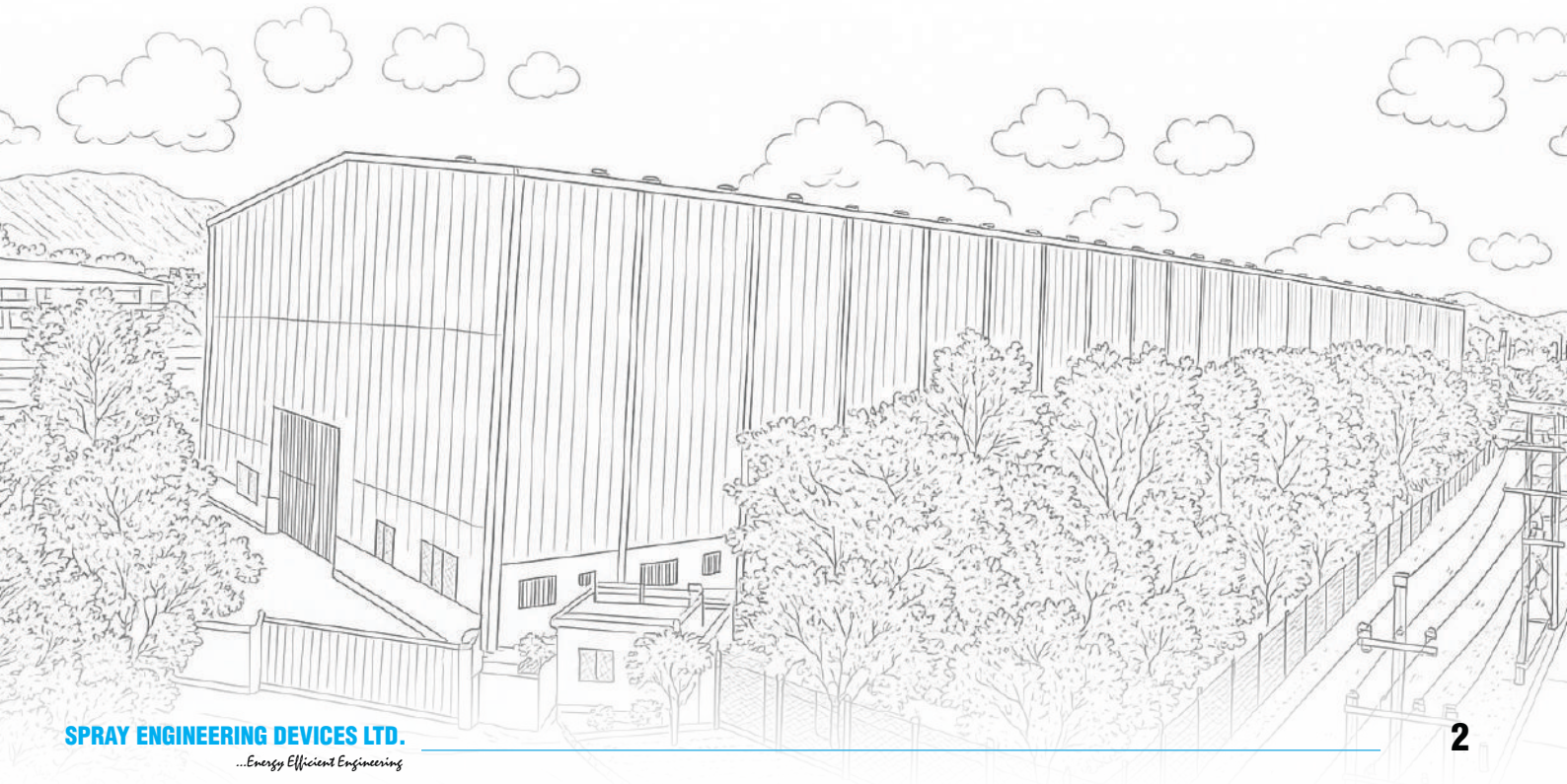


About SPRAY

Spray Engineering Devices Limited (SED) is "Innovative Technological Solutions" provider company for Water, Jaggery, Sugar, Sugar Refinery and Biofuel industries for last three decades. The company is pioneer in the fields of evaporation, condensation, vapourisation, crystallization, sugar refining and thermal heat recycling.

SED established in 1992, is running with its three modern manufacturing & automation units located at Baddi, Himachal Pradesh, India. Our technologies are successfully commissioned and performing efficiently in more than 650 sugar factories, 270 wastewater treatment plants and 5 jaggery units in more than 40 countries.

SED has identified several potential areas for energy conservation of sugar industries to achieve increased productivity at reduced costs with optimum utilization of resources. The steam consumption of sugar industry has been reduced to 25% on cane with maximum plant expansions. SED has revolutionized the water sector by providing the energy-efficient high-quality clean water recovery & recycling from wastewater using Low Temperature Evaporation Technology based on MVR system.

SED has also established a modern boiler-free jaggery production unit based on MVR system to increase jaggery production ensuring 100% bagasse saving and 100% water recovery with zero carbon emission. The saved bagasse/ biomass to be converted into 2G ethanol, green chemicals & other value added products.

OUR VISION

Dedicated for Sustainable Environment Development to unlock perpetual food and energy resources.

OUR MISSION

To become a global integrated player in energy and engineering industries through innovative technologies and energy efficient solutions.

OUR BUSINESS
VERTICALS

Spray Engineering Devices Ltd. (SED) is continuously developing innovative technological solutions for enhancing energy efficiency and eliminating biomass burning to achieve net zero emissions, ensuring sustainability in the sugar and process industries. SED is focused on designing modern sugar plants that operate without biomass burning, aiming for zero CO_2 emissions by fully utilizing the carbon content of the sugarcane crop.

The company is a pioneer in the fields of evaporation, condensation, vaporization, crystallization, sugar refining, and thermal heat recycling. SED has established a sugarcane processing plant that operates without a boiler, enabling 100% bagasse saving and 100% water recovery and recycling.

SUGAR

SED has reduced steam demand to 25% on cane by maximizing plant capacity utilization. We have developed advanced technologies to further reduce the steam consumption below 20% on cane using the innovative, energy-efficient equipment and cost-effective solutions implemented in the process house.

WASTE WATER

Spray Engineering Devices Ltd. (SED) has introduced a state-of-the-art low-temperature evaporator based on a mechanical vapor recompression unit, marking it as one of the most innovative and cost-effective solutions to achieve Zero Liquid DIscharge (ZLD) as well as Zero Liquid Intake (ZLI).

JAGGERY

SED has developed a low-temperature evaporator based on mechanical vapor re-compression system for high yield jaggery production, ensuring minimal power consumption, 100% bagasse saving, and complete clean water recovery. We have developed the highly efficient milling house, aimed at maximising juice extraction while ensuring minimal moisture content below 45% in bagasse using cold imbibition.

BIOFUELS

SED offers advanced 2G ethanol technology using lignocellulosic biomass like wood, sugarcane residues, & agro-waste. The system includes MVR-based LTE® drying, electric gasification, fermentation, and efficient distillation to produce ethanol and green chemicals—promoting sustainability by reducing GHG emissions and fossil fuel dependence.

MD's DESK

We are living in an era where Green Energy is not just a choice but a necessity. At Spray Engineering Devices Ltd. (SED), we strongly believe that energy plays a vital role in the development of society, and the search for sustainable, renewable alternatives is more important than ever. In line with this global priority, we actively pursue our vision: "Dedicated for Sustainable Environment Development to Unlock Perpetual Food and Energy Resources."

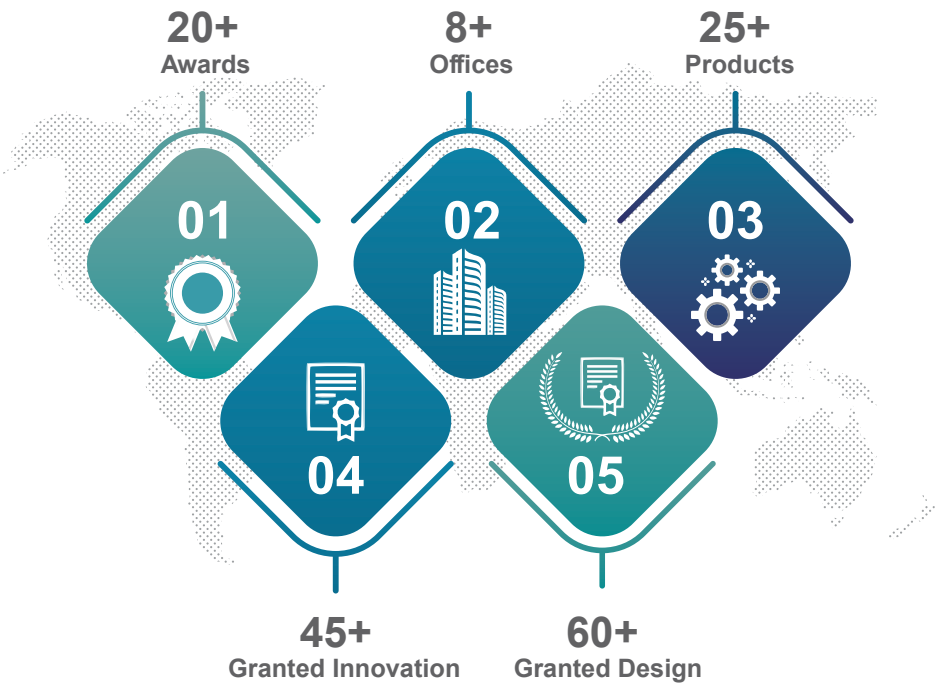
Our offerings include modern engineered equipment, project management consultancy for green and brownfield sugar projects, complete plant automation, EPC solutions, and turnkey projects—all designed to enhance sustainability and energy efficiency.

SED is deeply committed to sustainable business growth through the adoption of energy-efficient technologies and the optimal use of natural resources. We embrace our social and environmental responsibilities with integrity and action. From the beginning, our focus has been on delivering solutions aligned with sustainable development goals, embedding sustainability into the core of our strategy.

We constantly strive to improve operational efficiency, especially in reducing steam and power consumption across the process industry. Through in-depth analysis and a deep understanding of industry needs, we provide reliable, cost-effective, and timely solutions. Our team consistently upgrades technology and capacity to meet international standards. Recognizing the vast potential of bio-energy and circular resource use, we continue to innovate with a strong commitment to environmental stewardship.

Looking forward to a lasting relationship!

Vivek Verma
MANAGING DIRECTOR



JOURNEY OF
SPRAY ENGINEERING

1992

Mr. N.K. Varma and Mr. Vivek Verma founded 'Spray Engineering Devices' focused on manufacturing of energy efficient Spray Nozzles.

SPRAY NOZZEL

1995

First complete condenser supplied to S.V. Sugar Mills Ltd., Tamil Nadu.

CONDENSER

1996

Unit-I, the first manufacturing plant was established at Baddi, Himachal Pradesh.

UNIT - I

1999

Supplied complete cooling & condensing system to South India Sugars, Tamil Nadu.

SUGAR INDUSTRY

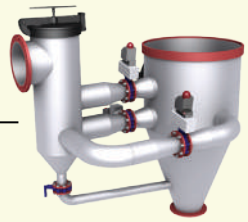
2000

Unit-II was established for Automation at Baddi, Himachal Pradesh.

UNIT - II

2002

Condensing system with automation supplied to Shri Datta S.S.K. Ltd., Maharashtra



2003

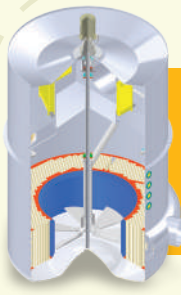
Introduced Flash Cigar®, Direct Contact Juice Heater, Molasses Conditioner, Sugar Melter to sugar industry globally.

DCH, MOLASSES CONDITIONER, FLASH CIGAR®

2004

Spray Engineering Devices, became a 'Limited' company

LIMITED COMPANY



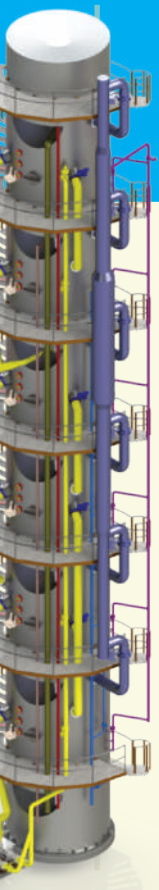
2006

Unit-III established for Heat Exchange Equipment at Baddi, Himachal Pradesh.

- Established IPR department for protection of Intellectual Assets of the company.

IPR

- Filed first innovation patent at Indian Patent Office, New Delhi for Spray Continuous Pan (SCP®).
- Awarded the contract for upgradation and modernization of PT DUS Sugar Refinery, Indonesia.



2008

CORPORATE OFFICE

- Corporate Office commenced operations at Mohali, Punjab.
- In-house R&D recognition from DSIR, Government of India.

2012

Innovation patent filed for Modular Heat Exchanger Assembly i.e. Low Temperature Evaporator Module (LTEM®).

LTE®

2014

Installed Plate type Falling Film Evaporator i.e. Low Temperature Evaporation Module (LTEM®)of total heating surface area 34,000m² at world's largest standalone sugar refinery - Al-Khaleej Sugar Co., Dubai.

2016

- Bagged first Turnkey EPC Sugar Complex (4500 TCD with 15 MW Cogen) order from Gokul Maul Sugar Ltd., Maharashtra.

Introduced Boiler Free MVR based Jaggery production unit at Bidar, Karnataka.

2020

First commercial order of Boiler Free Jaggery Unit at EcoTech Agro Mill, Guwahati, Assam.

2022

Awarded as Boiler Free 170 KLPD Grain based Distillery at Dalmia Bharat Sugar and Industries Ltd., Jawahirpur, Uttar Pradesh.

2023

New Innovation Patents filed for Gasification, Pyrolysis, MVR based Distillation System.

- Awarded MVR based Leachate Treatment Plant of capacity 2 MLD from Ramky Infrastructure Limited, Hyderabad.

2024

Standalone refinery upgraded from 1000 to 2400 TPD with steam <0.4 T/T sugar.

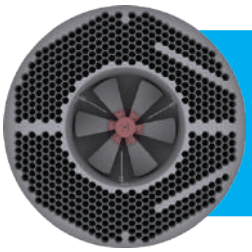
SUGAR CRYSTALLIZATION WITH LOW TEMPERATURE VAPOUR (65-75°C)

SPRAY CONTINUOUS PAN (SCP®)

SCP® is the amalgamation of uniform crystallization and has open the gateway to highest steam economy by minimizing the demand of pressure and ΔT. First SCP was installed in 2007-08.

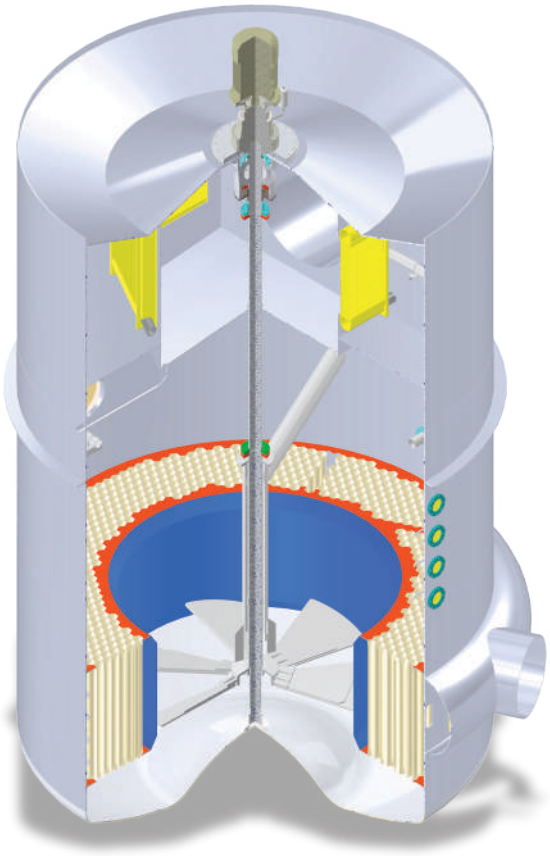
FEATURES

- Suitable for all types of massecuite (Refined, Raw/A, B & C)
- Lowest conglomeration and false grain formation
- Efficient forced circulation & Operates at very low ΔT
- Highest crystal growth even for "C" massecuite
- Minimal dry seed generation and its use for seeding
- Continuous operation with online cleaning arrangement
- High steam economy by use of high syrup brix and low temperature vapours
- Self supporting structure with minimum foot print area, resulting in least capital cost
- Fully automated state-of-the-art process monitoring and control
- High flow impeller negates the viscosity effect and helps in least colour inclusion
- Honeycomb calandria for improved circulation and elimination of dead areas
- Devised with variable speed circulation provides flexibility in process and optimizes power consumption



Honeycomb Calandria

MECHANICAL CIRCULATOR



Mechanical circulation/forced circulation is a prerequisite to bring energy efficiency in crystallization process.

FEATURES

- Enhanced circulation capacity due to more number of blades
- Reduced/Minimized boiling time
- Variable speed circulation compatible with crystallization rate trend
- Uniform circulation and better heat transfer rate
- Uniform and improved crystal size with sparking luster
- Reduced centrifugation time and wash water quantity
- Unique compact design mechanical circulator
- Lower hub size with higher sweeping volume
- Easy installation due to direct mounting without any structure or platform
- Highest efficiency with in-line planetary drives
- High quality mechanical seals & Low power consumption
- Effective to protect any air/fluid leakages
- Suitable for high temperature and pressure conditions with extended life and low maintenance
- Detachable impeller blades for additional flexibility
- Fully automated control system & patented Technology

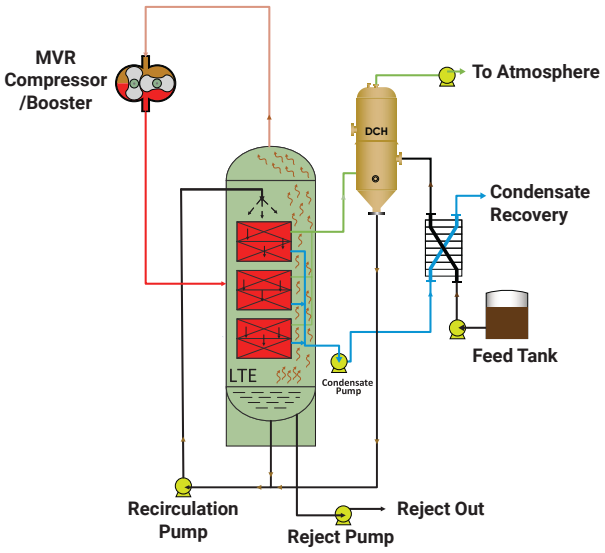
LOW TEMPERATURE EVAPORATOR (LTE®)

Low Temperature Evaporation Technology based on Mechanical Vapour Recompression (MVR) System.

Evaporation of water by the use of compressed vapours generated from solution itself with the help of falling film plate evaporator and mechanical vapour recompression (MVR), is a highly cost effective, energy efficient, substitute to multi-effect evaporation system.

FEATURES

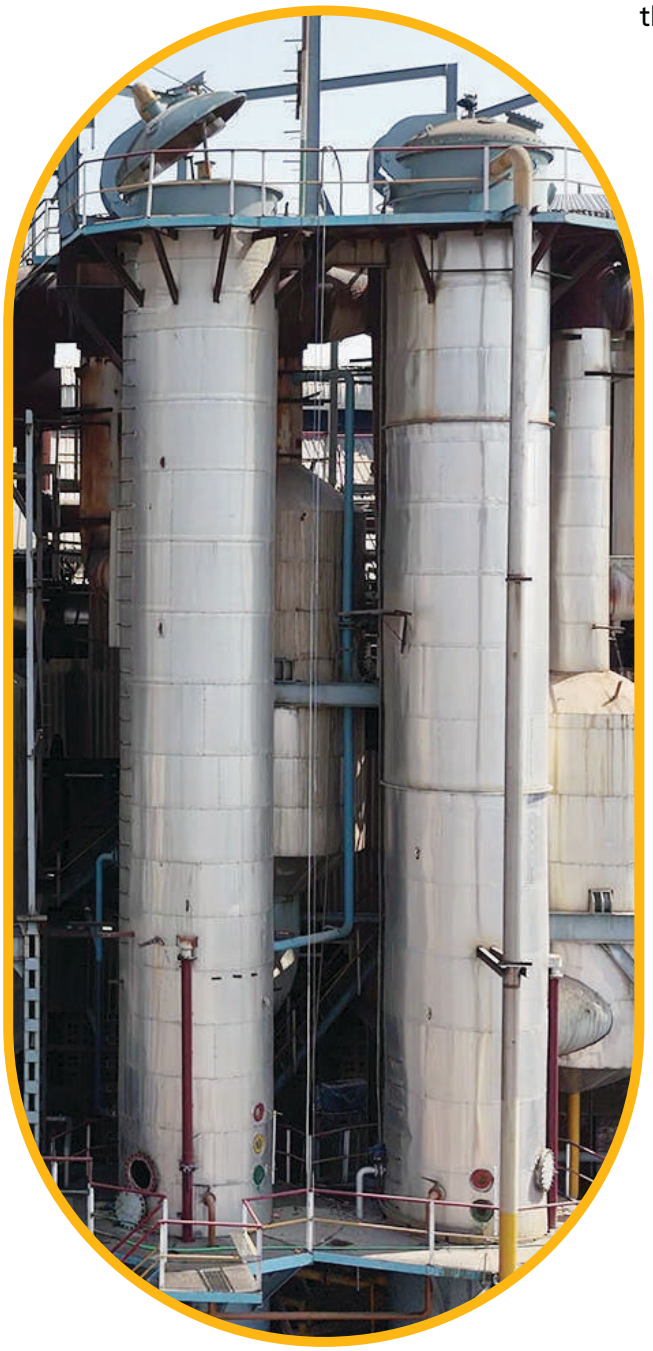
- No heat generation & rejection units
- No chemical treatment in process
- No use of membrane, reverse osmosis
- No membrane disposal issue resulting elimination of the plastic in large
- Complete process of evaporation is at "Low Temperature"
- Direct wastewater to clean water in single step
- Condensate is in purest form so no/less extraction of ground water
- Most effective water balance, water management solution
- High life cycle evaporator because of the stainless steel construction
- Compact and minimal footprint area
- Robust and fully automatic
- Lowest electricity demand



PROCESS FLOW DIAGRAM OF LTE® SYSTEM

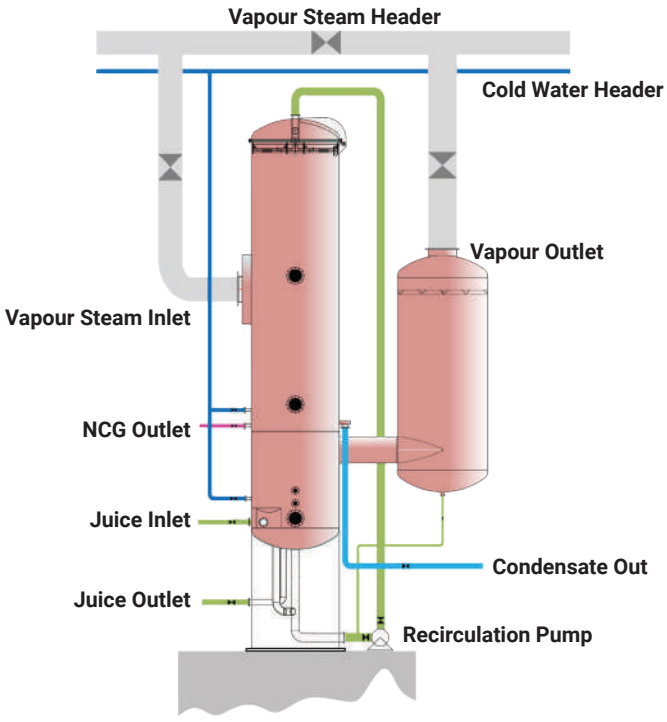
FALLING FILM TUBULAR EVAPORATOR

Thin films formed in the falling film tubular evaporator reduce the pressure losses to reduce operating ΔT. More than 5,00,000 m^2 heating surface area is installed with 8000 m^2 heating surface area in single unit.



FEATURES

- Easy to clean and maintain
- Patented and improved distribution system
- Top cover with hinge assembly for easy maintenance and distributor alignment
- Optimized design for high-heat transfer rate (up to 3500 W/m^2K)
- Total residence time no more than 15 seconds
- Superior entrainment separator (more than 90% removal of up to 5µm size particles)
- Self-supporting structure with less footprint area
- Intelligent process control with fully automatic system
- Ability of single unit with heating surface area up to 10,000 m^2
- Uniform liquid distribution ensures low wetting rate and consistent heat transfer without dry patches



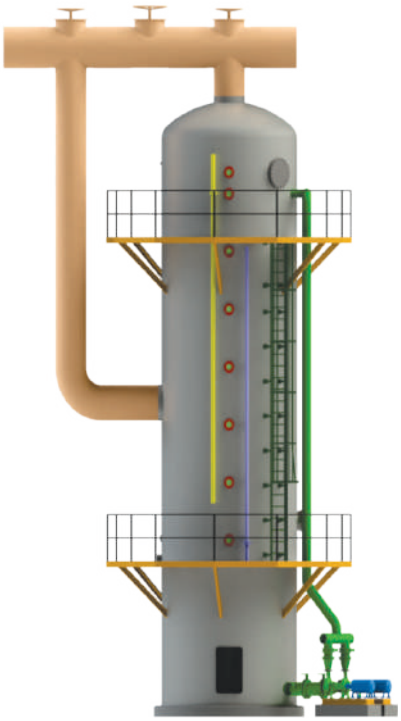
PROCESS FLOW DIAGRAM

FALLING FILM PLATE EVAPORATOR

Falling film plate evaporator has lowest pressure losses and higher turbulence on liquid side to achieve highest heat transfer coefficient.

FEATURES

- Patented technology
- Compact and modular design
- Offers highest energy efficiency
- Low thermal residence time
- Lower inversion and low Colour formation
- Low recirculation pumping requirement
- Highest heat transfer rate (up to 4500 W/m^2K)
- Single units available with heating surface areas up to 10,000 m^2
- Distributed HS that facilitates easy operation and maintenance
- Lowest pinch temperature difference for minimum utility consumption
- Superior entrainment separator (More than 90% removal of up to 5µm size particles)
- Allows accommodation of more number of effects in given ΔT and ΔP



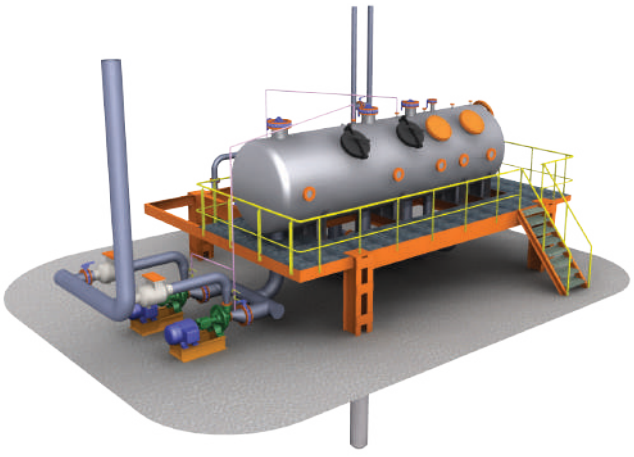
CONDENSATE FLASHING SYSTEM (FLASH CIGAR®)

Multi-chambered Energy Efficient Condensate Flash Vessel

Recovering heat from condensate streams with the aid of a horizontal multi chambered condensate flash vessel improves energy efficiency and simplifies the plant water pumping system by eliminating all condensate and other hot water pumps.

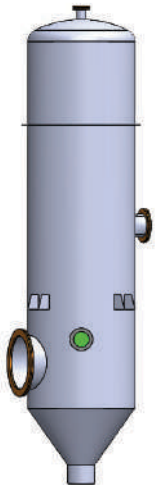
FEATURES

- Patented design
- Recovers all heat from condensate
- Horizontal multi-chambered flash vessel
- Sparged tube entry for pre-flashing of condensate
- Efficient separation of vapors from condensate
- Hinge type manholes for easy maintenance and inspection
- Single pump serves for withdrawal of condensate and plant water supply
- Pressure/Temperature monitoring along with re-circulated condensate flow control
- Maximum flash vapor generation reducing steam consumption
- Eliminates condensate pumps sealing tanks and piping promoting power economy



DIRECT CONTACT HEATER

Direct Contact Heater (DCH) is designed to heat the process steam to a temperature of very close approach. Minimum maintenance and no cleaning make the DCH the best heating solution.



FEATURES

- Power and steam economy
- 0-1°C temperature approach
- Utilizes heat content of NCG
- No cleaning or maintenance required
- Effective NCG removal due to compact size
- Minimum piping & valve requirements
- Alarms for critical parameters (level and body pressure)
- Optimized engineering with patented design
- Efficiently operates in fluctuating vapour conditions
- High turndown ratio (operate efficiently between 30% - 100% of designed flow)
- Designed for pressure as well as sub-atmospheric vapour conditions
- Precise level control ensures no back flow in case of sudden fluctuation
- Control, monitor, record and data log for process parameters
- Utilization of low grade vapours improves steam economy of the plant
- Light-weight structural layout as compared to tubular heaters with low-floor space requirement
- Corrugated shell and rib supported deflectors design with inbuilt entrainment separator
- Low head-pumps are required due to negligible pressure loss as compared to tubular / plate type heat exchanger (PHE) thereby reducing power consumption

VENKATESHKRUPA SUGAR MILLS, MAHARASHTRA

MOLASSES CONDITIONER

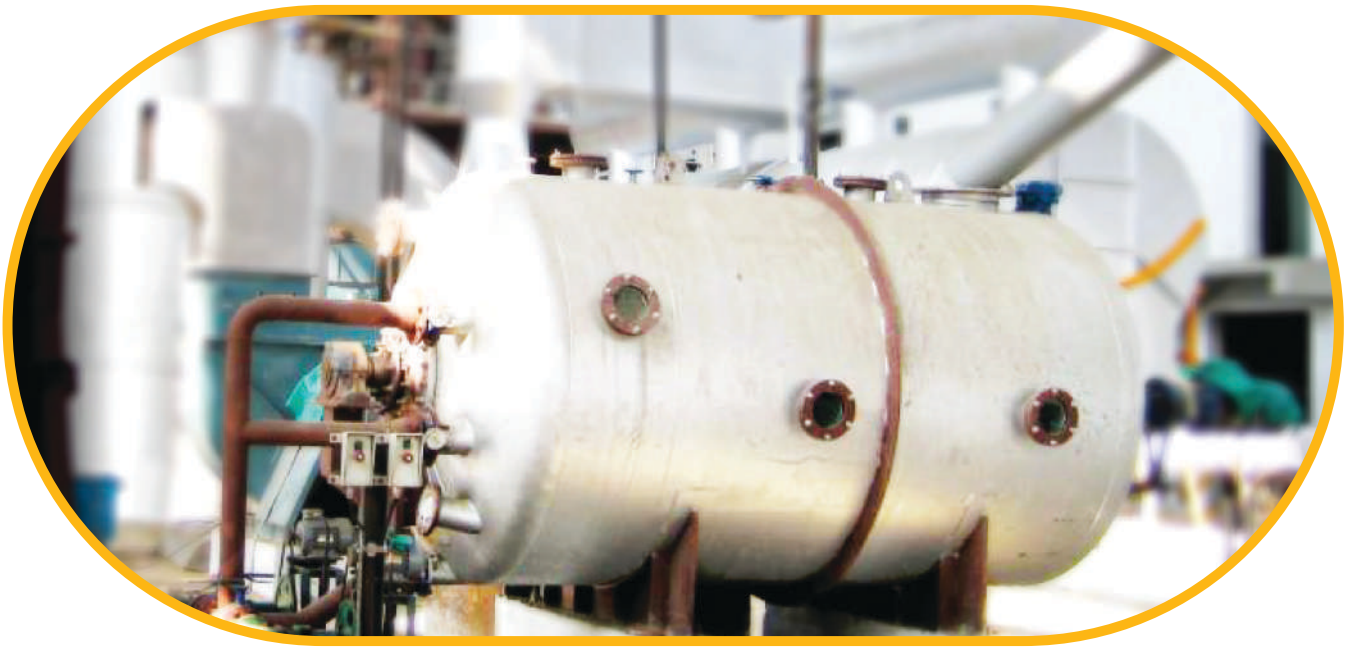
SED molasses conditioners are designed to ensure complete dissolution of sugar crystals without any addition of water.

FEATURES

- Compact inbuilt static mixing & Patented design
- Corrugated shell with strong structured deflectors design
- 0-1°C approach temperature
- Variable applications (vacuum or pressure)
- No stirrer required thus no troubles associated with using mechanical stirring system like motor alignment, tripping of motor, lubrication etc
- Consistent operation with fluctuating vapour pressures
- No water addition but only low pressure vapours required for conditioning
- Efficient direct contact with static mixing
- Monitoring of process parameters with full automation
- Default switch over to manual mode
- Utilizes heat content of NCG / low temperature vapours
- No or low pumping power requirements
- Flexible installation; for pan-floor or at centrifugal station
- No cleaning required

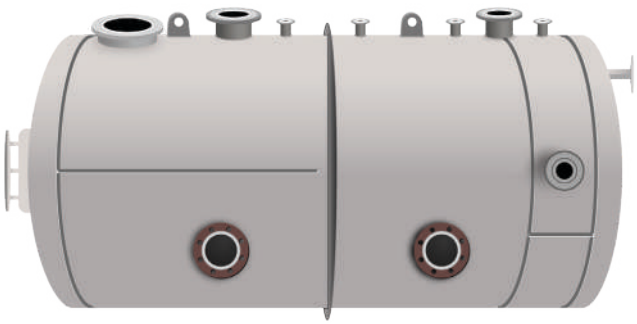
SUGAR MELTER

Vacuum Sugar Melter is energy efficient melting solution, replaces the high pressure heating vapour from low press 4th – 5th effect vapour with auto control of brix, temperature and level.



FEATURES

- Capability to handle melt up to 70–72 Brix
- Horizontal stirrer with paddles ensures no short-circuiting & crystals undissolved
- Optimized Paddle Angle for agitation leaving no dead pockets
- Compact and highly efficient shaft mounted planetary drive
- Sealing system to work under sub-atmospheric pressure
- Can operate under vacuum / low pressure
- Accurate brix and temperature controlling
- Melting by syrup/water &
- Variable retention time possible
- Patented Design & Brix sensors to ensure constant brix of melt
- Horizontal and cylindrical vessel
- Minimal power consumption & Auto-alarming indication for level fluctuation
- Efficient in-line planetary drive consuming less power
- Rugged design to meet sugar with syrup instead of water and thus reduced steam consumption
- The flow of melt, syrup and hot water can be put on automation to achieve controlled output brix & temperature (optional)



CANE MILL DRIVE MECHANISM

SED introduces the modern mill drive system with compact design, high efficiency shaft mounted planetary drives to lower power consumption. In SED mill drive system, top roller of the mill has a drive at either end, directly mounted on its shaft. Each of the other rollers have one drive directly mounted on its shaft. This system is equipped with variable frequency drives to control the mill speed very precisely to achieve highest mill extraction and lowest power consumption.

FEATURES

COMPACT & EFFICIENT DESIGN

- Lightweight and space-saving design
- In-line planetary gearbox (90%+ efficiency)
- Minimal civil structure – no mill foundation needed
- Direct drive on roller shafts

OPTIMIZED PERFORMANCE

- Precise speed control via VFDs
- Operates at 1–4 RPM for better results
- Low noise and space requirement
- High mill extraction efficiency

REDUCED MAINTENANCE & OPERATION COSTS

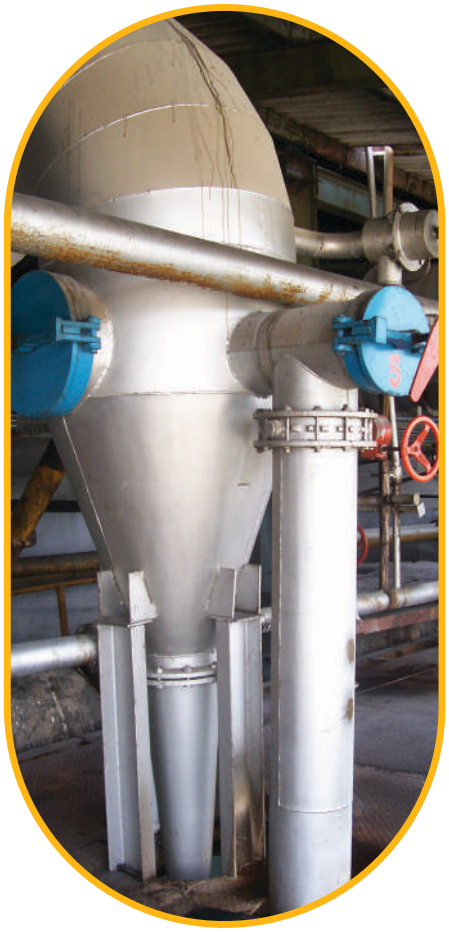
- No external lubrication system
- Mill alignment not required
- Fewer components and spares, lowering inventory and maintenance costs
- Low maintenance design with Less manpower requirements
- Easy to operate and maintain

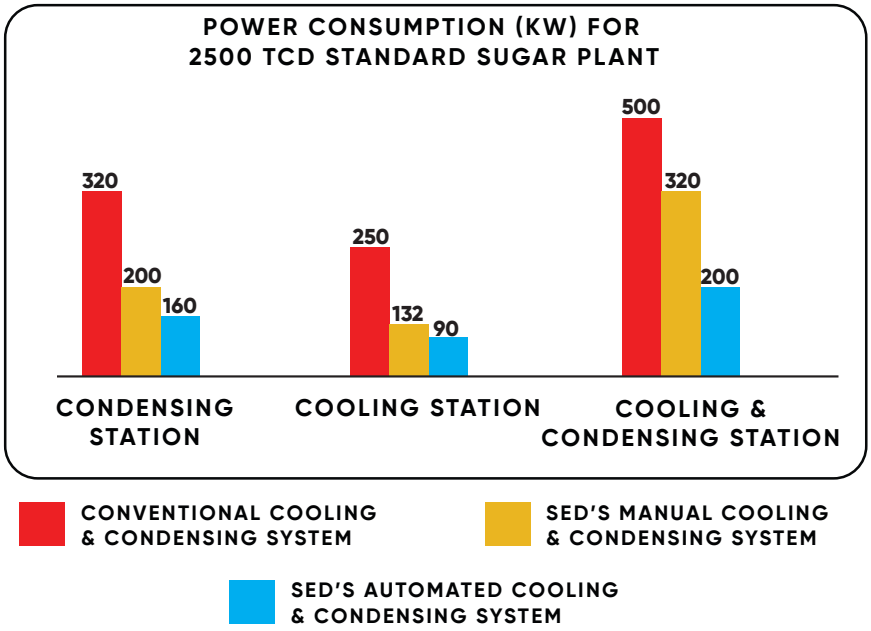
COST & ENERGY SAVINGS

- Very low power consumption
- Reduced operational overhead through efficient design
- Overall improved drive system efficiency

COOLING & CONDENSING SYSTEM

SED Multi-Jet Multi-Spray Condenser is designed to reduce energy and water consumption of the condensing / vacuum system to minimize electrical power expenditure. Spray Pond with "Zero Depth Design" is the most efficient design compared to conventional spray pond designs.

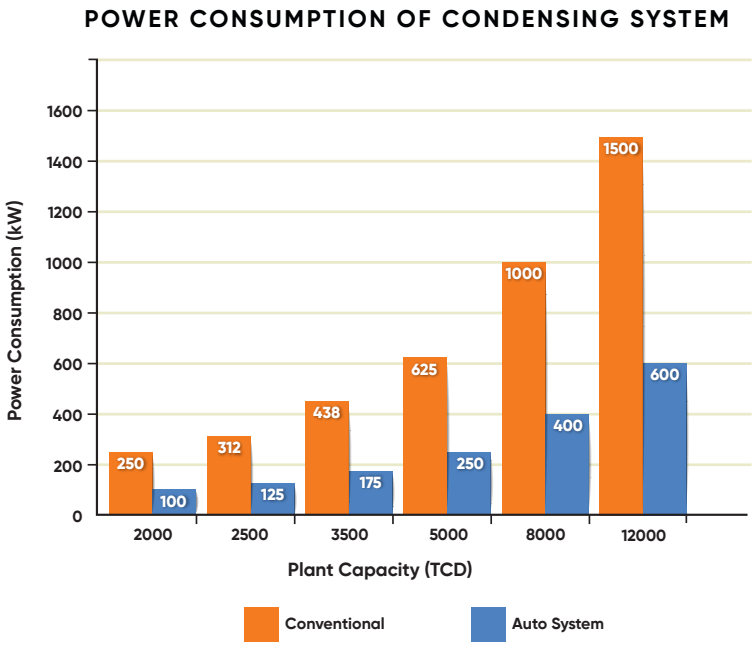




FEATURES

- Rapid initial vacuum generation
- Constant vacuum
- Lower water-vapour ratio
- Least power consumption
- Optimum water quantity
- Maximum inlet-outlet water temperature difference
- Best efficiency even at 25% of designed load
- Self-diagnostics in case of vacuum fluctuations
- Provision for variable set point during operation process
- Efficient air leak management
- ON/OFF switch to regulate water supply to condenser

With the introduction of fully Automated Condensing System, the average power consumption by the Sugar Industry has now been brought down to 1.3–1.84 kW-hr/Ton of cane from 6 kW/Ton of cane. Performance in terms of power saving has been achieved by SED's Automated Condensing System.



COOLING & CONDENSING SYSTEM:

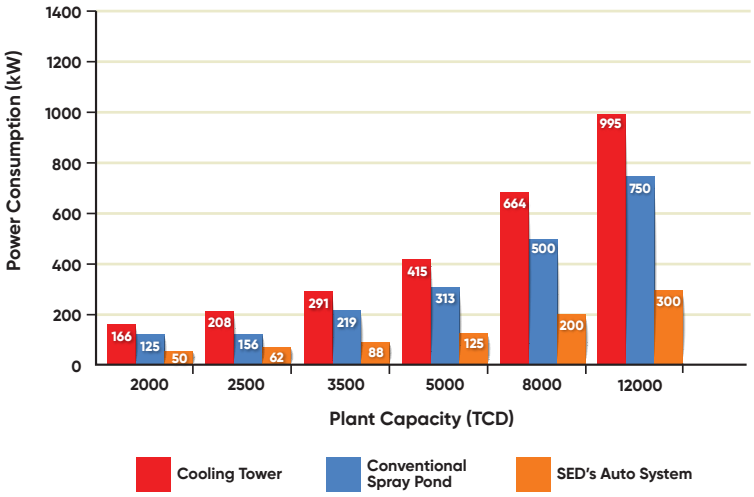
SPRAY POND

The increased efficiency of Spray Pond is achieved by improving and redesigning Spray Pond Nozzles working very efficiently with variable quantity of water and changing weather conditions. SED spraying system is most economical and efficient method of cooling injection water utilizing naturally available wind energy and draft created by water.

FEATURES

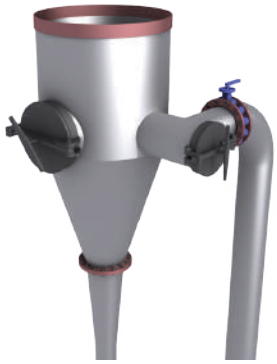
- Low civil cost
- High durability and long life
- Highest temperature drop
- Low head spraying system
- Variable spraying capacity
- Low drift losses
- Least choking
- Easy to maintain

POWER CONSUMPTION OF SPRAY POND



COOLING & CONDENSING SYSTEM:

MULTI-JET MULTI-SPRAY CONDENSER



Multi-jet Multi-spray Condensers are optimally designed as per the air/vapour load and velocity to avoid pressure losses and better condensation. They consist of multiple spray and jet nozzles divided in different stages. Spray nozzles disperse water mainly for condensation of vapours. Jet nozzles evacuate non-condensable gases and air by entraining it with water flowing at high velocity through the tail pipe to maintain vacuum.

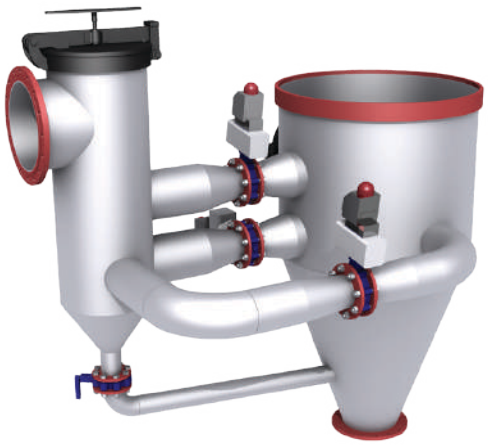
FEATURES

NOZZLE DESIGN & ARRANGEMENT:

- Hydro-dynamically designed jet & spray nozzles made of engineering thermoplastics.
- Nozzles are categorized into stages, where the number of operational stages depend upon the air/vapour load.

LESSER POWER AND WATER

- Perfect combination of spray and jet nozzles for high capacity vapours/air entrainment.
- Smooth operation in hot and humid conditions.
- Low pumping head requirement.



COOLING & CONDENSING SYSTEM:

JET EJECTOR

We design Multi-jet Water / Liquid Jet Ejectors with less initial vacuum generation time achieved by hydro-dynamically designed jet nozzles.

Our ejectors have high ejection capacity with low water consumption at only 0.2–0.3 kgf/cm^2 water inlet pressure.

FEATURES

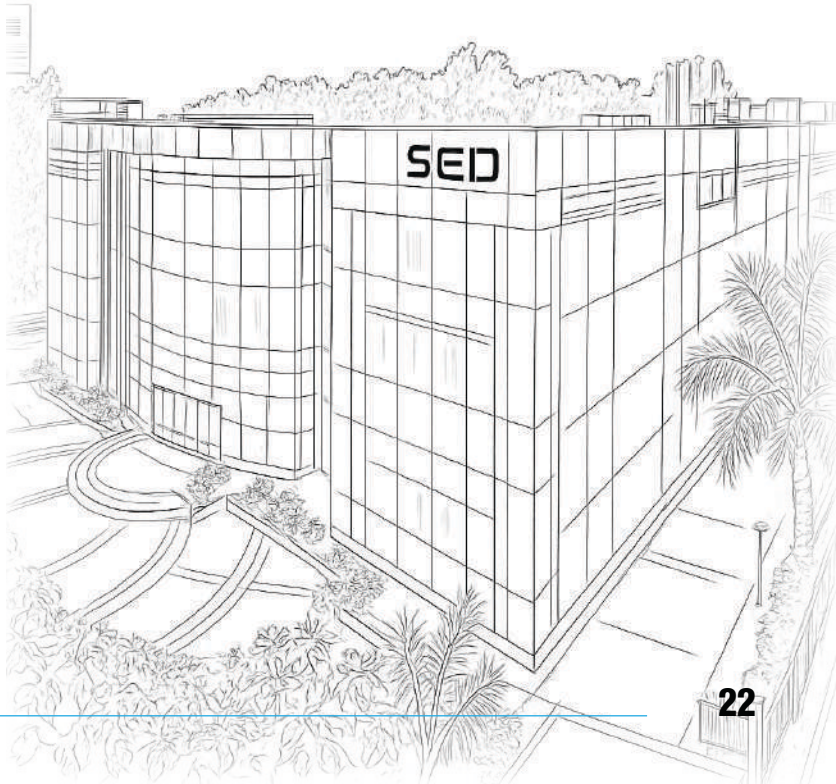
- Compact design with fast evacuation
- Hydro-dynamically designed Jet Nozzles with amplified suction effect
- Optimally designed size and tail pipe of jet ejector as per the air / NCG / vapour load
- Easy and quick maintenance
- Hinge type top cover
- A hand hole for cleaning and maintenance of the jet nozzles
- Corrosion-resistant stainless steel and engineering thermoplastics material of construction
- Reduced friction losses due to shining smooth nozzle surface
- Low water consumption

SERVICES

SED offers high quality turnkey projects & services. It provides comprehensive solutions to its valued customers with Project Management systems of international standards and know-how involving the plant data collection; monitoring & controlling of project using soft-ware applications like Primavera; Project Management & Scheduling; Resource Planning; Erection & Commissioning; Preparation of detailed start-up, commissioning, and validation schedule; Development of plant automation and controlling; Trouble shooting; Post Analysis of the project parameters after commissioning etc.

FEATURES

- Process Design and Engineering
- Equipment Design & Engineering
- Equipment Manufacturing
- Industrial / Plant Automation
- EPC Solutions
- Project Engineering & Management
- After Sales Services and Technical Support
- Customized Solutions



INFRASTRUCTURE

To offer the best products & services to the clients, SED has three hi-tech industrial manufacturing units spread over more than 22000 m² area and equipped with state-of-the-art facilities located at Baddi, Himachal Pradesh, India. The brand is on its way to expand its offices globally either independently or through joint ventures.

SED takes pride in saying that its production division by highly-skilled technologies, equipped with most sophisticated and modernized equipment fabricating CNC machines (CNC plasma cutting, bending, welding) and testing machines (Ultrasonic Testing Machine, Spectro Analyzer, Impact Testing Machine, Microscope with Image Analysis etc.); fabricating capacity to the utmost accuracy and quality that allow SED to provide flexible and cost-effective services to the customers. Strictly adhering to the international quality standards and eco-friendly norms, all our fabrication is done in-house in production facilities.

SED upgrades all its divisions with latest technology available in the market. Implementation of ERP has further resulted in optimizing the business operations, thus enhancing services & cutting short the delivery time. SED instrumentation & automation division has its own testing laboratory to ensure utmost precision and accuracy of its instruments.

MAJOR PROJECTS

INTERNATIONAL

SPRAY AROUND THE WORLD

SED has expertise in analysis and evaluation of sugar and process industry's problems. It offers the best possible solutions by providing advisory services, process design and engineering, equipment design & engineering, equipment manufacturing and procurement, industrial/plant automation and project engineering & management/execution. We undertake projects of upgrading or modifying the plant in terms of capacity and technology or reinstalling itself and turnkey/EPC based projects worldwide.

85+
EQUIPMENT INSTALLATIONS

KIBOS SUGAR & ALLIED INDUSTRIES LTD., KENYA
MVR based low temperature evaporation system for spentwash concentration

AL-KHALEEJ SUGAR CO. (LLC), DUBAI, UAE
Largest Plate FFE of heating surface area of 34,000 m^2 to the world's largest stand-alone sugar refinery

PFEIFER & LANGEN POLSKA, S.A., POLAND
Energy saving project and Spray Continuous Pan (SCP®) installation

NIGERIA: Golden Sugar Refinery, Lagos
(a) FFE
(b) Batch pan
(c) Flashing system
(d) Cooling & condensing system
(e) Mechanical circulator

DESHBANDHU SUGAR MILLS LTD., BANGLADESH
Plant capacity expansion: 450 TPD to 1500 TPD (Turnkey project for sugar refinery)

PT D.U.S. SUGAR REFINERY, CILACAP, INDONESIA
Complete energy saving project and Spray Continuous Pan (SCP®) installation

ETHIOPIA: Metahara Sugar Factory, Dire Dawa
(a) Falling film evaporator (FFE)
(b) Cooling & condensing system
(c) Direct contact heaters
(d) Sugar melters

FIJI: Sugar Mill, Labasa, Lautoka and Rarawai, Fiji. (Cooling & condensing system)

SUDAN: White Nile, Sudan. (FFE, cooling & condensing system, flashing system, sugar melter, molasses conditioner, direct contact juice heater)

JAPAN: Hitachi – Nippon Beet Sugar, Japan. (Cooling & condensing system)

USA: Louisiana Sugar Refinery, Louisiana. (Cooling & condensing system)

PHILIPPINES: San carlo Bio Energy Project, Philippines. (Cooling & condensing system)

THAILAND: Mitrphol Sugar Corporation, Thailand. (Cooling & condensing system)

SOUTH KOREA: CJ Corporation, South Korea. (Cooling & condensing system)

SRI LANKA: Gel-Oya Plantations, Sri Lanka. (Pan automation, cooling & condensing system)

KENYA: Nzoia Sugar Company Ltd., Kenya. (Cooling & condensing system)

INDONESIA: PT. PG. Gorontalo, Indonesia. (Cooling & condensing system)

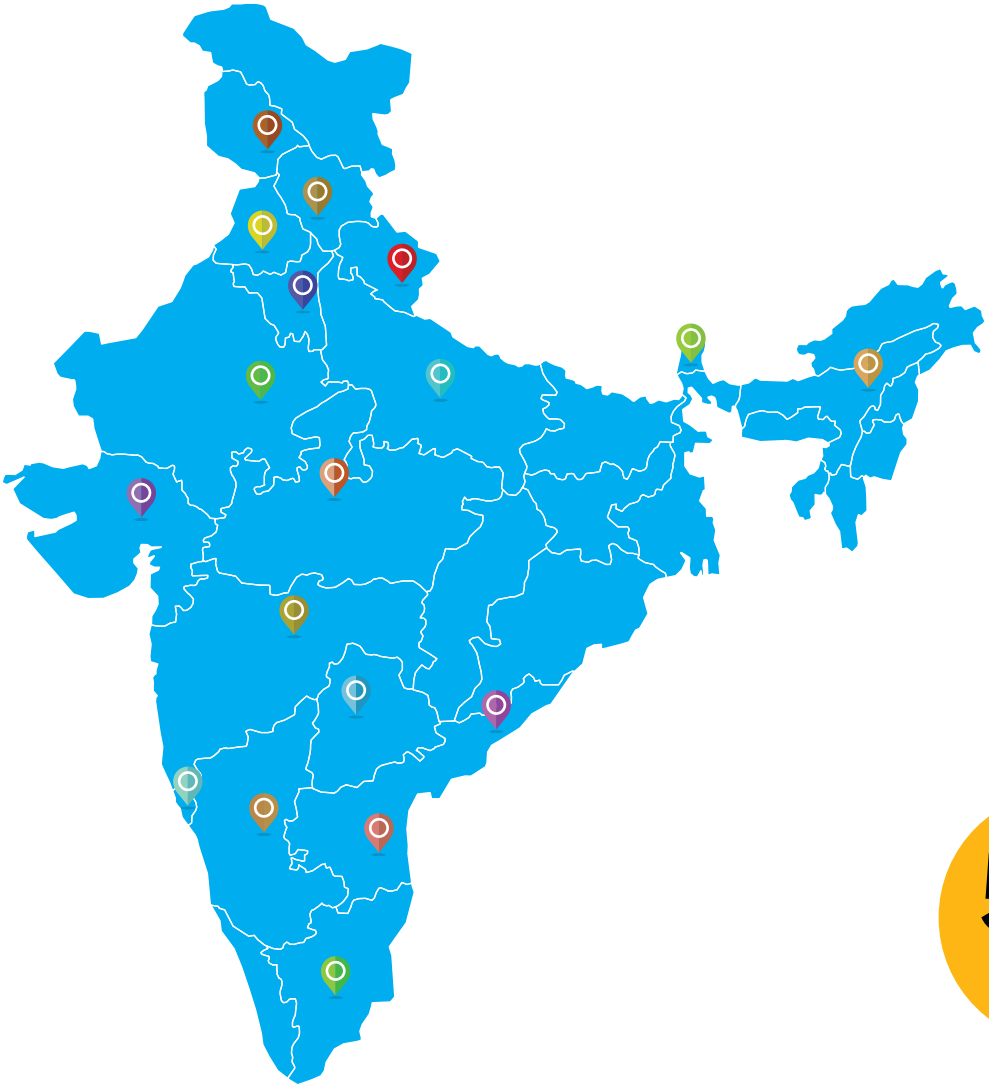
- PT. Sentra Usahatama Jaya, Indonesia. (Cooling & condensing system)

PAKISTAN:

- Madina Enterprises Ltd.
- RYK Mills Ltd.
- Ramzan Sugar Mills Ltd.
- Al Abbas Sugar Mills Ltd.
- Kashmir Sugar Mills Ltd.
- Colony Sugar Mills Ltd.
- Habib Sugar Mills Ltd.
- Ittefaq Sugar Mills Ltd., etc. (Energy saving equipment and cooling & condensing system)

MAJOR PROJECTS

NATIONAL



550+
EQUIPMENT INSTALLATIONS

GOKUL MAULI SUGARS LTD.
COMPLETE TURNKEY PROJECT
4500 TCD (14.85 MW Co-gen) | Steam: 30% on cane
Refined Sugar Production | Power export: 115 kWh/ton

VENKATESHKRUPA SUGAR MILLS LTD.
MAHARASHTRA
Steam: 25% on cane | 4000 TCD
Complete turnkey project

SHRI KAMLABHAWANI AGRO INDUSTRIES LTD.
VITTHAL SUGAR REFINERY
5500 TCD | Steam: 30% on cane

JAY MAHESH SUGAR INDUSTRIES LTD. (JMSIL)
5000 TCD
30 MW co-gen, 100 KLPD distillery

ENERGY EFFCIENT SUGAR PLANTS

KARNATAKA

VISHWARAJ SUGAR INDUSTRIES LTD.

Expansion from 7000 to 8000 TCD
Steam: Reduced to 27% from 42% on cane

SHIRAGUPPI SUGARS WORKS LTD.

7500 TCD
Steam: 30–32% on cane

NSL Sugar Ltd., Koppa

3500 TCD
SCP® & Falling Film Evaporator

UTTAR PRADESH

DEWAN SUGARS LTD., MORADABAD

Expansion: 3500 to 8000 TCD (IV phases)
Steam: Reduced to 27% from 47% on cane

INDIAN POTASH LTD. (IPL), ROHANA

Expansion: 1600 to 2500 TCD (Expandable up to 3500 TCD) | Steam: Reduced to 34%

DALMIA SUGAR LTD., RAMGARH

Expansion: 6500 to 7500 TCD
Steam: Reduced to 33% from 42.5% on cane
Refined sugar production

TAMIL NADU

DHANALAKSHMI SRINIVASAN SUGARS PVT. LTD. (DSSPL)

3500 TCD | Power export: 105–110 kWh/tons
Steam: 31–32% on cane | Sugar colour: < 35 IU

PUNJAB

AB SUGARS LTD.

Expansion: 6000 to 8500 TCD
Steam: Reduced to 35% from 48%

SED

INNOVATIVE TECHNOLOGIES FOCUSED ON SUSTAINABILITY

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