



Solutions for Sustainable Tomorrow

An ISO 9001:2015 Certified, SBTi registered,  
NSE Listed Company

## MITCON Consultancy & Engineering Services Limited

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Best Energy Efficiency Practices in Sugar Industry

# WHO WE ARE



- Founder Member of World Alliance for Decentralized Energy (WADE), UK and Patron Member of Co-generation Association of India (Cogen India)
- Macro level assignments & promotional work with MNRE, IREDA, Winrock International India, USAID, UNDP, Financial Institutions & Banks
- International exposure in providing Consultancy & Engineering Services
- Participation in number of international events (UK, USA, Europe, Africa, UAE, Sri Lanka & Singapore)

# BUSINESS DIVISIONS





## Capabilities

### Pre Execution:

- Detail Engineering
- Substation / Evacuation
- Project Feasibility
- Policy & Regulatory work
- Detailed Project Report (DPR)
- Techno-Economic Viability Reports (TEV)
- Debt Syndication
- Project Design / Basic Design/ Energy Assessment
- RFP preparation & Management / Transaction Advisory / Bid Evaluation

### Project Execution:

- Detailed Design / Drawings
- Transmission line & Switchyard Design
- Project Monitoring Consultancy (PMC)
- Permissions & approvals from Authorities
- Rehabilitation

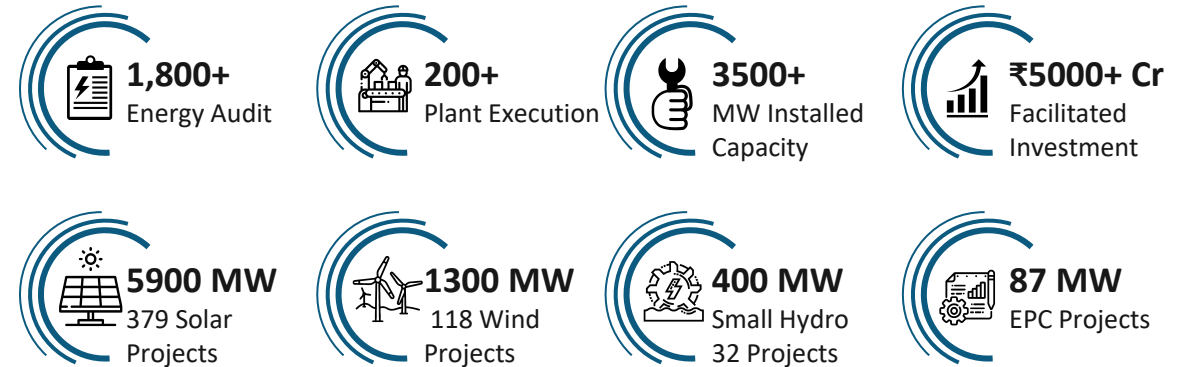
### Post Commissioning Services:

- O&M (service provisioning)
- Debt Refinancing
- Technical Due Diligence / Performance Enhancement
- Third Party audits / Financial valuation

## Key Sectors

- Solar
- Wind
- Hydro
- Hydrogen

## Delivered



## Clientele

- Ishan International
- Adora Energy Private Limited
- Gujarat Alkalies & Chemicals Limited
- Avaada Solar Energy Private Limited
- Hindustan Power Projects Limited
- Solar Energy Corporation of India Limited (SECI)
- Tidel Park Ltd
- Gamesa Renewable Energy Ltd
- Neyveli Lignite Corporation Ltd

# Power Pack

A hedge against electricity charges



## Ground Mounted

Solar Energy Corporation of India Ltd (SECI)	Pune	12 MWp
Jehangir Hospital	Pune	1.7 MWp
Ruby Hall Clinic, Pune	Pune	5.8 MWp
Bharat Wire Ropes Ltd	Pune	5.5 MWp
Kingsway Hospital	Nagpur	1.5 MWp
Shri Keshav Cement Ltd <b>EPC</b>	Belgam/ Kopal	25 + 12 MWp
TN Urja (SPV to Essel Infra) <b>EPC</b>	Uttar Pradesh	25 MWp (only electrical EPC)
Kingsway Hospital	Nagpur	1.5 MWp

## Roof Top

Wika Instruments Ltd <b>EPC</b>	Pune	490 kWp
Huntsman International	Pune	212 kWp
ARAI (automotive Research association of India) <b>EPC</b>	Pune	165 kWp
Bramha Exuberance	Pune	90 kWp
Sony Hospital	Bikaner	54 kWp
Raheja Vista	Pune	57 kWp
Youth Build Foundation	Pune	103 kWp
MITCON offices	Pune	75 kWp



## Delivered

**1,000+**  
**MW**  
Power Projects  
Documentation

**90**  
Independent &  
Co-generation  
Power Project

**60+**  
Bankable  
DPRs  
per year

**4,00,000+**  
**TDC**  
Consolidated  
Sugar Cane  
Crushing

**₹2,500+ Cr**  
Investments in Agro  
& Food Processing  
Projects  
Consultation

**₹500+ Cr**  
Agro & Food  
Processing projects  
grant-in-aid approval  
consultation

**20,000+**  
**KLDP**  
Distillery/Ethanol  
Plants

### Sugar projects:

- Pre-investment services for 400+ new/ expansion & modernization sugar plants/ refineries/ jaggery
- Engineering/project management services for 40+ new & expansion/ modernization projects

### Distillery/Ethanol projects:

- Pre-investment services for 300+ new/ expansion/ standalone plants/ RS/ ENA plants
- Engineering/ project management services for 20+ distillery/ ethanol plants.

## Key Sectors

- Biofuels : Bio Ethanol, Methanol, Bio-CNG, Bio Diesel
- Distillery - Potable Alcohol
- Micro-distillery & Micro-breweries
- Power Plant (Cogeneration / Captive / Independent Power Plants)
- Sugar Mill / Refineries / Integrated Sugar Plant Projects
- Coal / Bagasse / Biomass Based Cogeneration Power Projects
- Green Chemistry
- Agriculture/ Horticulture
- Hi-tech Farming With Poly-houses/ Greenhouses/ Hydroponics
- Commercial Dairy Farms, Goat Farm, Poultry, Fisheries, Livestock
- Agro Eco Tourism
- Food Processing & Allied Infrastructure Development
- Pharma, Chemicals & Specialty Chemicals
- Steel / Cement
- Oil & Gas
- Process Plants



## Key Sector

- Building & Construction
- Township & Area Development
- River Valley & Hydropower
- Distilleries
- Cogeneration Powerplants
- Sugar Industry
- ETP/STP/CPU/WTP/DM/RO Plants
- Thermal Power Plants
- Synthetic & Organic Chemicals
- Metallurgical Industry
- Waste To Energy
- Solar/Wind Power
- Oil & Gas
- Mineral Beneficiation
- Ports, Harbor Breakwater & Dredging
- Cement Industry
- Highways
- Petrochemical Complexes
- Pulp & Paper

## Accreditations



**Ministry of Environment,  
Forest & Climate Change  
Government of India**



**Department of Agriculture  
Government of Maharashtra**



**135+ Parameters**  
Accredited by NABL (ISO/IES 17025:2017)  
(OHSAS) 18001/ISO 45001:2018



**16 Sectors**  
Accreditation  
by QCI-NABET

## Accomplishments



**₹ 1.7 Cr+ MT**  
Waste Management Projects



**100+**  
ULBs Served



**14,000+**  
Soil Health Card awarded  
to farmers



**500+**  
Approvals Issued



**22**  
Empanelments



**689**  
EIA/EMP Studies  
Conducted

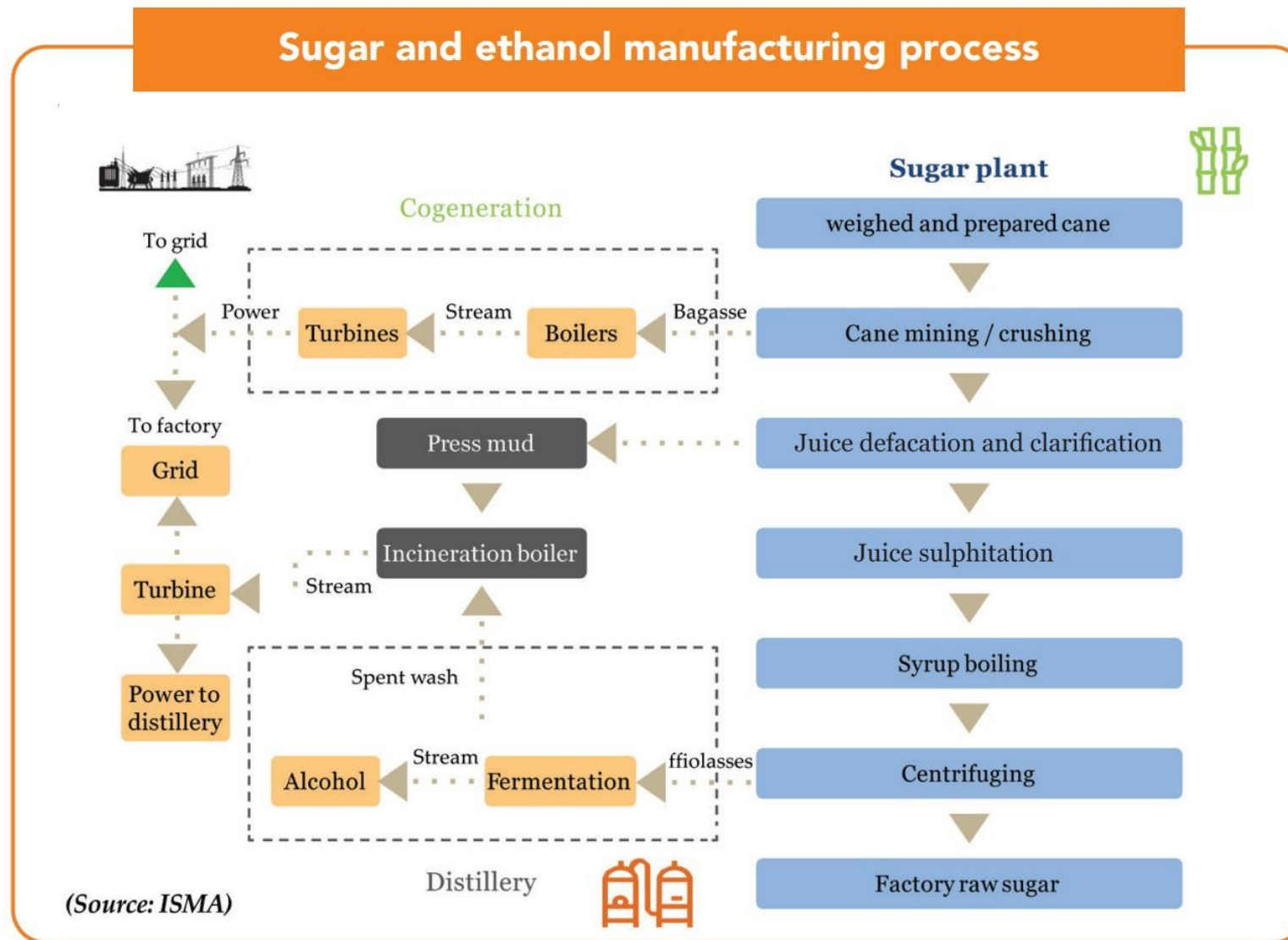


**1,200+**  
Assignments executed



**1,200+**  
Industry Audits

# Process Flow Diagram of Sugar Industries





# Best Practices in Energy Efficiency in Sugar Sector

## **Cogeneration Plant Side**

- Heat rate improvement by maintaining HPH& LPH Outlet FW Temperature at optimum level.
- Heat rate improvement by arresting APH Air ingress/Leakages.
- Maintaining Bagasse Moisture from Sugar Mill to Equal to or Less than 50%.
- Maintaining optimal air supply to boiler to reduce CO and excess air.
- Installing variable speed drive at BFP, ACW, & CEP Pumps.
- Improving thermal insulation at Boiler, APH, economizer and steam line to reduce the heat loss.
- Maintaining consistent size of bagasse to improve the combustion efficiency of Boilers.

# Best Practices in Energy Efficiency in Sugar Sector

## Process Side

- Optimizing process steam requirements by using falling film evaporator, DCH direct contact heater and flash heat recovery system.
  - Optimizing process steam requirements by maximize bleed vapors from 1<sup>st</sup> body to 2<sup>nd</sup> body evaporator to pan section.
  - Optimizing implementing juice flow and water imbibition control.
  - Replacing old mill turbines replaced with Motor driven.
  - Maintaining high primary Index of Fiberizer.
  - Maintaining low sugar loss at last mill by higher roll pressure.
  - Replacing conventional gear with energy efficient helical gear or planetary gear to reduces the energy transmission loss at following machines-
1. Feeder table
  2. Cane carrier
  3. Mill
  4. Crystallizers drives
  5. Molasses & Magma Pumps


# Sugar Industry & efforts in reducing Carbon Footprint

- Approximately 400-500 kg of CO<sub>2</sub> (gas) is emitted per 1 kL of ethanol produced during fermentation. This CO<sub>2</sub> can be purified, compressed and captured.
- Moreover, it can be processed into fuel methanol, with MITCON currently advancing a commercially viable technology towards successful implementation.
- Additionally, pure CO<sub>2</sub> can be sold for various industrial applications such as beverages, fire extinguishers, and dry ice.
- Implementing these measures will significantly reduce CO<sub>2</sub> emissions from the factory, while also generating potential value for carbon credit proposals.



# THANK YOU

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