

# SEA WATER DESALINATION PLANT PROFILE



**AVANT-GARDE SYSTEMS AND CONTROLS (P) LTD**



**(AN ISO 9001:2015 CERTIFIED ORGANISATION & ASME "S" STAMP HOLDER)**

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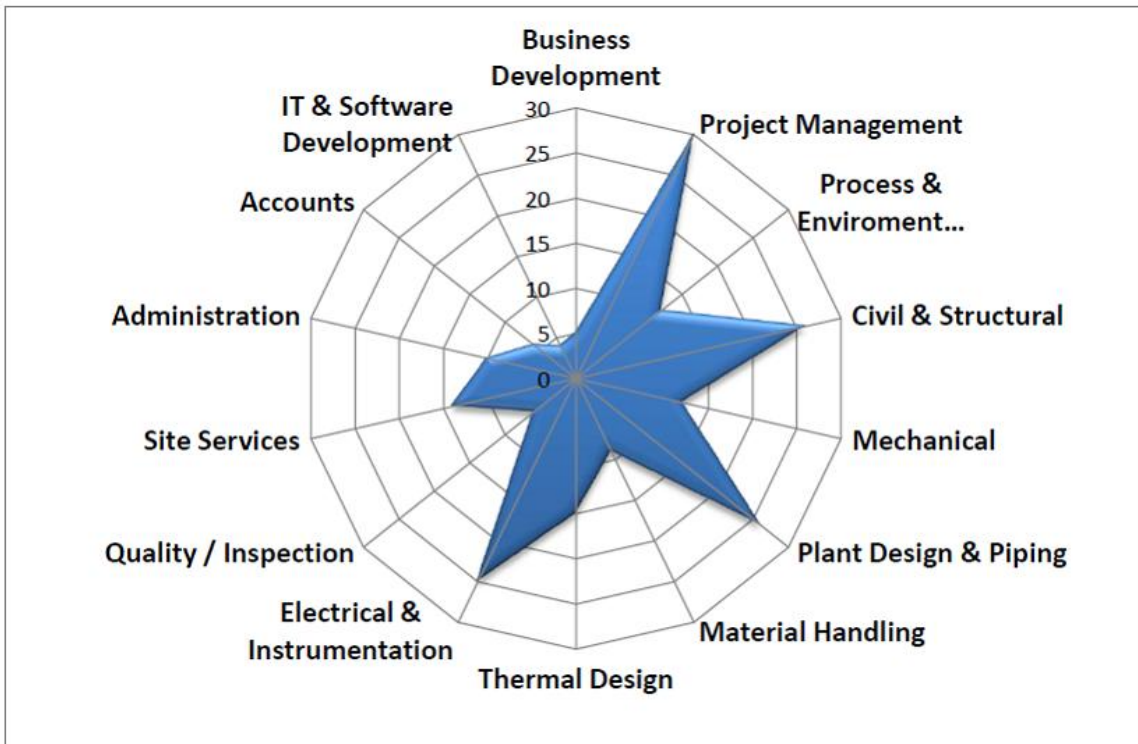
Website: <https://avantgarde-india.com>

## INCEPTION

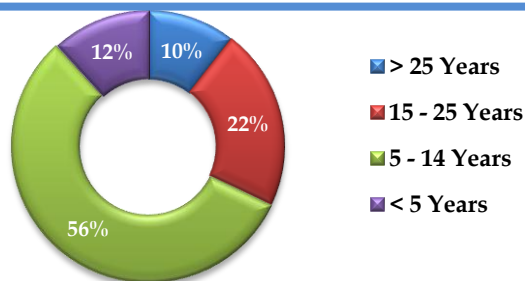
- ❖ ESTABLISHMENT – AVANT-GARDE ENGINEERS AND CONSULTANTS (P) LTD - 1990  
AVANT-GARDE SYSTEMS AND CONTROLS (P) LTD - 1995

## STAFFING

- ❖ MULTI DISCIPLINARY TEAM COMPRISE OF MORE THAN 200 WORKFORCE



## YEARS OF EXPERIENCE



## CONTACT PERSON

P.S. SANKARANARAYANAN, MANAGING DIRECTOR

**Introduction:**

An ISO 9001 Certified Organisation with ASME “S” STAMP HOLDER we provide highly professional and superior engineering and technical consultancy service in the field of Sea Water Desalination Plant, Water, Wastewater (includes Effluent Treatment Plants as well as Sewage Treatment Plant).

We have implemented more than 2000 projects from Concept to Commissioning for clients from varied Industrial segments for over 30 years. Avant Garde is a recognised leader in the water and wastewater treatment industry with cross-platform expertise in Electrical Solutions, Mechanical Solutions, Instrumentation Solutions, Civil and Structural Solutions integrated with the solutions of Consultancy Services.

These turnkey consultancies include treatment units that range from simple filtration system to complex treatment pathways to reach a specific outlet requirement. (Ex. Zero Liquid Discharge)

**Our Approach:**

We understand the challenges faced by our clients when it comes to Sea Water Desalination Plant, water & wastewater treatment (ETP and STP), outlet qualities, trouble shooting and engineering. In the course of the assignment, we choose the technology that is most aligned with and tailored for the specific site condition. We go extra mile to study technologies that is available in any part of the globe to see its suitability and applicability for the complexity of our customer’s case.

**Key Competencies:**

Whether it is establishing a Greenfield project or up gradation or rectification/retrofitting in plant that is running for a long time, we are ready to assist you with our innovative and specialised Engineering and Consultancy Solutions conceptualised with multidisciplinary approach for your Water and Wastewater Challenges. Our consultative and collaborative, partnership process includes:

**Evaluation:**

- Techno-Commercial Feasibility Studies for New and Existing plant
- Detailed Project Report (DPR) for New and Existing plant foreseeing expansion with additional facilities
- Plant Engineering and Operations evaluations of Existing Facilities
- Water and wastewater auditing of the facilities
- Residual Life Assessment

**Design:**

- Value Engineering
- Basic and Detailed Engineering Design (Design Basis Report, Plant Layout, Equipment Layout)

- Process Engineering (Final Designs and Specifications considering applicable latest Codes and Standards)
- Plant Engineering
- Mechanical Engineering
- Piping Engineering
- Electrical Engineering
- Instrumentation Engineering - DCS, PLC, Micro-Processor
- Plant Building Design
- Civil works, civil foundation design for plant, equipment etc
- Structural design and engineering.
- Existing Plant Modernization
- Specifications for Electrical , Mechanical , Instrumentation, Process and Civil Systems
- Preparation and Approval of Quality documents for a project
- Implementation

#### **Procurement Services:**

- EPC Bid document with detailed specification.
- Vendor rating
- Engineering specification for bought out items
- Evaluation of Vendors offers
- Draft Purchase Order / Contract agreement.
- Vendor Drawing Review.
- Expediting Services

#### **Due Diligence and Other Services**

- Third Party Inspection Services
- Performance Testing Services
- Project Management Services
- Supervision of Erection and Commissioning
- Hazard and Operability Studies (Hazop Studies)

#### **Technological Expertise**

We have always been among the first in the water and wastewater engineering and consultancy to introduce, adopt and implement next-generation technologies that bring down the “Actual Capital Cost (Civil, Mechanical, Automation)” and the entire Life Cycle Costs as well as providing Safety for the people working with it.

- First consultants in India to Evaluate and Implement
  - ❖ Reverse Osmosis System as for reduction of Ions and standardize the specifications for the same for Boiler Make up Water Quality
  - ❖ Ultra Filtration as a pre-treatment to RO and standardize the specifications for the same.
  - ❖ Submerged Ultra Filtration as pre-treatment in WTP in Sugar Segment
  - ❖ EDI system to meet the Boiler Make up Water Quality in Sugar Segment

- We have a proven track record on having reviewed several proprietary technologies / ambitious technologies from other side of the globe to meet a specific site condition in India. We have supported the customer by
  - » Evaluating the experience and capacities of the supplier for the local condition
  - » Applicability of the technology in terms of operability, guaranteed outlets and suitability for the local conditions
  - » Identification of critical spares
  - » Operational convenience and safety
  - » Identification of local supplies for critical spares
  - » Contract Preparation
  
- Water Treatment
  - **Sea Water Desalination Plant**
  - Low , Medium and High Pressure Boiler Make up Water Treatment
  - Cooling Tower Water Make up Water Treatment
  - Distillery Process Water Treatment
  - Sugar Process Water Treatment
  - Power Plant Water Treatment
  - Drinking Water Package
  - Oil Water Separators
  
- Wastewater Treatment
  - Condensate Polishing Unit (CPU)
  - Spent Wash Treatment
  - Zero Liquid Discharge
  - Cooling Tower Blow down Treatment
  - Sludge Management System
  - Sewage Treatment Plant
  - Power Plant ETP

### **Why Avant Garde?**

- a. Over 30years of unsurpassed experience in providing Concept to Commissioning services for New and Running Plants
- b. Unparalleled reputation for excellence
- c. Unique ability to rapidly adapt to advanced technological solutions
- d. Collaborative approach
- e. Solutions those are aligned with and tailored to the particular location.
- f. Benefits of a Multi disciplinary approach/Turnkey
- g. Viewing things as a whole – with a trained eye for detail

- h. Built on the experience and knowledge gathered while performing our core tasks in varied segments and industries
- i. Our solutions always carry an “operator’s edge”
- j. Experienced in selecting Most Reliable and Cost Effective Option
- k. Strong Ethics and Value System

**Avant-Garde have provided for the Sea Water Desalination Plants which have been already commissioned and are Working Plants.**

S. No	Project	Power Plant Capacity	Sea Water Desalination Plant Capacity	Water Treatment Plant Scheme
1	NIRMA LIMITED, Nirma House, Ashram Road, Ahmedabad	70 MW	<b>15 MLD</b>	Sea Water Desalination Plant and Post RO-DM plant :- Stilling Chamber → Flash Mixer → Flocculator → Tube Settler → Dual Media Filter → Ultra Filtration → SWRO with Pressure Exchanger and Booster Pumps → BWRO → Mixed bed Polishing System
2	SAURASHTRA CHEMICALS, (A Division of Nirma Ltd), Birla Sagar, Porbandar, Gjarat	12 MW (TG Addition)	<b>10 MLD</b>	Sea Water Desalination Plant :- Stilling Chamber → Flash Mixer → Flocculator → Tube Settler → Dual Media Filter → Ultra Filtration → SWRO with Pressure Exchanger and Booster Pumps

**Avant-Garde have provided Detailed Engineering Consultancy Services for the following Zero Liquid Discharge System in Sugar/Distillery Project /Combined and Independent Plants /Other Segment which are already completed and few are under Execution.**

S. No	Project	Segment	CPU / ERP capacity	CPU/ERP Scheme
1	Madhucon	Distillery 65 KLPD	42 m <sup>3</sup> /hr/ 1008 m <sup>3</sup> /day	Equalization Tank → Plate type heat exchanger → Buffer tank → Up flow Anaerobic Sludge Blanketing (UASB) Reactor → Extended Aeration Tank → Secondary Clarifier → Tertiary Clarifier (HRSCC type) → Multigrade Filter (MGF) →

S. No	Project	Segment	CPU / ERP capacity	CPU/ERP Scheme
				Activated Carbon Filter (ACF) → Ultra Violet system. RO Reject ->Evaporator
2	Mankapur	Distillery	58 m <sup>3</sup> /hr / 1398 m <sup>3</sup> /day	Influent → Equalization Tank → Plate type heat exchanger → Buffer tank → Up flow Anaerobic Sludge Blanketing (UASB) Reactor → Extended Aeration Tank → Secondary Clarifier → Tertiary Clarifier (HRSCC type) → Multigrade Filter (MGF) → Activated Carbon Filter (ACF) → Ultra Filtration system (UF) → Reverse Osmosis (RO) System RO Reject ->Evaporator
3	DSCL Sugar - Hariawan	Distillery 160 -KLPD	89 m <sup>3</sup> /hr/ 2131 m <sup>3</sup> /day	Influent → Equalization Tank → Plate type heat exchanger → Buffer tank → Up flow Anaerobic Sludge Blanketing (UASB) Reactor → Extended Aeration Tank → Secondary Clarifier → Tertiary Clarifier (HRSCC type) → Multigrade Filter (MGF) → Activated Carbon Filter (ACF) → Ultra Filtration (UF) system → Reverse Osmosis (RO) System. RO Reject ->Evaporator
4	Triveni Engineering & Industries Limited - Sabitgarh	Distillery 160 KLPD	Process Condensate 72 m <sup>3</sup> /hr / 1720 m <sup>3</sup> /day  Power Plant Effluent 48.50 m <sup>3</sup> /hr /1164 m <sup>3</sup> /day	Influent → Equalization Tank → Plate type heat exchanger → Buffer tank → Up flow Anaerobic Sludge Blanketing (UASB) Reactor → Extended Aeration Tank → Secondary Clarifier → Tertiary Clarifier (HRSCC type) → Multigrade Filter (MGF) → Activated Carbon Filter (ACF) → Ultra Filtration (UF) system → Reverse Osmosis (RO) System RO Reject ->Evaporator
5	Gobind Sugar	Distillery 100KLPD	Process Condensate, Spent Lees 67.4 m <sup>3</sup> /hr.	Influent → Equalization Tank → Plate type heat exchanger → Buffer tank → Up flow Anaerobic Sludge Blanketing (UASB) Reactor → Extended

S. No	Project	Segment	CPU / ERP capacity	CPU/ERP Scheme
			1618 m <sup>3</sup> /day.  Power Plant Effluent 16.53 m <sup>3</sup> /hr /396.82 m <sup>3</sup> /day	Aeration Tank → Secondary Clarifier → Tertiary Clarifier (HRSCC type) → Multigrade Filter (MGF) → Activated Carbon Filter (ACF) → Ultra Filtration (UF) system → Reverse Osmosis (RO) System. RO Reject ->Evaporator
6	DSCL Sugar - Ajbapur	Distillery 225 KLPD	Process Condensate 102 m <sup>3</sup> /hr. 2451 m <sup>3</sup> /day  Power Plant Effluent 33 m <sup>3</sup> /hr 778 m <sup>3</sup> /day	Influent → Equalization Tank → Plate type heat exchanger → Buffer tank → Up flow Anaerobic Sludge Blanketing (UASB) Reactor → Extended Aeration Tank → Secondary Clarifier → Tertiary Clarifier (HRSCC type) → Multigrade Filter (MGF) → Activated Carbon Filter (ACF) → Ultra Filtration (UF) system → Reverse Osmosis (RO) System. RO Reject ->Evaporator
7	Balrampur Chini Mills Limited – Unit Gularia	Distillery 160 KLPD	Process Condensate 55.75 m <sup>3</sup> /hr/1338 m <sup>3</sup> /day  Power Plant Effluent 14 m <sup>3</sup> /hr 336 m <sup>3</sup> /day.	Influent → Equalization Tank → Plate type heat exchanger → Buffer tank → Up flow Anaerobic Sludge Blanketing (UASB) Reactor → Extended Aeration Tank → Secondary Clarifier → Tertiary Clarifier (HRSCC type) → Multigrade Filter (MGF) → Activated Carbon Filter (ACF) → Ultra Filtration (UF) system → Reverse Osmosis (RO) System RO Reject ->Evaporator
8	Dalmia-Jawaharpur	Distillery 120 KLPD	Process Condensate 41.66 m <sup>3</sup> /hr/ 1000 m <sup>3</sup> /day  Power Plant Effluent 9.38 m <sup>3</sup> /hr/225 m <sup>3</sup> /day	Influent → Equalization Tank → Plate type heat exchanger → Buffer tank → Up flow Anaerobic Sludge Blanketing (UASB) Reactor → Extended Aeration Tank → Secondary Clarifier → Tertiary Clarifier (HRSCC type) → Multigrade Filter (MGF) → Activated Carbon Filter (ACF) → Ultra Filtration (UF) system → Reverse Osmosis (RO) System. RO Reject ->Evaporator



S. No	Project	Segment	CPU / ERP capacity	CPU/ERP Scheme
9	K.P.R. Sugar Mill Limited – Almel Karnataka	Distillery 90 KLPD	Process Condensate 58 m <sup>3</sup> /hr 1372 m <sup>3</sup> /day  Power Plant Effluent 21 m <sup>3</sup> /hr 496 m <sup>3</sup> /day	Influent → Equalization Tank → Buffer tank → ICX Reactor → Extended Aeration Tank → Secondary Clarifier → Tertiary Clarifier (HRSCC type) → Multigrade Filter (MGF) → Activated Carbon Filter (ACF) → Ultra Filtration (UF) system → Reverse Osmosis (RO) System RO Reject ->Evaporator
10	KM Sugar	Distillery 40 KLPD	Process Condensate, Spent Lees, Laboratory waste water & Cooling Tower Blowdown Treatment Stream 31.375 m <sup>3</sup> /hr 753 m <sup>3</sup> /day	Influent → Equalization Tank → Buffer tank → UASBR (Anaerobic reactor) → Extended Aeration Tank → Secondary Clarifier → Tertiary Clarifier → Clear Water Storage Tank → Multi grade Filter (MGF) → Activated Carbon Filter (ACF) → Ultra Filtration (UF) system → Reverse Osmosis (RO) System → RO Reject ->Evaporator
11	Triveni Engineering & Industries Limited - Muzaffarnagar	Distillery 160 KLPD	Process Condensate and Spent lees 59.21 m <sup>3</sup> /hr 1424 m <sup>3</sup> /day  Power Plant cooling tower effluent treatment stream : 31.8 m <sup>3</sup> /h 763 m <sup>3</sup> /day	<b>RETROFIT OF EXISTING EFFLUENT RECYCLING PLANT</b>  Influent → Equalization Tank → Plate type heat exchanger → Buffer tank → Up flow Anaerobic Sludge Blanketing (UASB) Reactor → Extended Aeration Tank → Secondary Clarifier → Tertiary Clarifier (HRSCC type) → Multigrade Filter (MGF) → Activated Carbon Filter (ACF) → Ultra Filtration (UF) system → Reverse Osmosis (RO) System RO Reject ->Evaporator
12	Khemani Distilleries Private Limited	Distilleries (Bio-Mass Based Co-Generation)	Power Plant cooling tower effluent 45 m <sup>3</sup> /h	Tertiary Clarifier (HRSCC type) with Lime Dolomite and Soda Ash Dosing System (Lime-Soda Softening System for Hardness

S. No	Project	Segment	CPU / ERP capacity	CPU/ERP Scheme
		Plant)	1080 m3/day	and Silica Reduction) –MGF-UF- Reverse Osmosis. All the wastewater from internally recycled. RO permeate for CT make up RO Reject recycled in power plant. Thus making the system ZLD.
13	TGV SRAAC	Chemical	4000 m3/day 200 m3/h	Influent → Equalization Tank → Tertiary Clarifier (HRSCC type) with Coagulant and Polymer dosing →Dual Media Filter → Ultra Filtration (UF) system → Reverse Osmosis (RO) System(RO-1)-Reject Reverse Osmosis RO System (RO-2)-Energy Recovery device-Final RO Reject Tank-Lime-Soda Softening System -Micron Cartridge Filter-Reject Reverse Osmosis (RO-3)- Final Reject ->Evaporator (Phase-II)

**Avant-Garde have provided Detailed Engineering Consultancy Services for the following Captive Power Plants / Cogeneration Power Plants / Independent Power Plants including Effluent Treatment Plants which already completed.**

S. No	Project	Power Plant Capacity	Effluent Treatment Plant Capacity	Effluent Treatment Plant Scheme
01	Hemarus Technologies Ltd., Maharashtra,	5000 TCD sugar plant	Stream – A - 21 m <sup>3</sup> /hr Stream – B - 23 m <sup>3</sup> /hr	Surge Tank → Oil Skimmer →Bar screen →Flash Mixer & Flocculator →Aeration tank
02	Sunil Hi-Tech Engineers Ltd, (Gangakhed Sugars), Maharashtra	6000 TCD	Stream – A - 30 m <sup>3</sup> /hr Stream – B - 23 m <sup>3</sup> /hr Stream – C 57.6 m <sup>3</sup> /hr	Surge Tank → Oil Skimmer → Bar screen →Flash Mixer & Flocculator →Aeration tank → Secondary clarifier → chlorination system
03	Dhanalakshmi Srinivasan Sugars Private Ltd., Tamil Nadu,	3500 TCD sugar plant expandable	Stream – A - 21m <sup>3</sup> /hr (500 m <sup>3</sup> /day) Stream – B -	Equalization Tank → Hear Exchanger → Buffer Tank → Anaerobic (UASBR) → Extended Aeration →

S. No	Project	Power Plant Capacity	Effluent Treatment Plant Capacity	Effluent Treatment Plant Scheme
		to 5000 TCD	72 m <sup>3</sup> /hr. (1728 m <sup>3</sup> /day) Stream - C - 30 m <sup>3</sup> /hr. (710 m <sup>3</sup> /day)	Secondary & Tertiary Clarifier → Multigrade and Activated Carbon Media Filter → UV system & Ultra Filtration → RO system
04	Madhucon Sugar and Power Industries Ltd.,	65 KLD	42 m <sup>3</sup> /hr	Equalization Tank → Hear Exchanger → Buffer Tank → Anaerobic (UASBR) → Extended Aeration → Secondary & Tertiary Clarifier → Multigrade and Activated Carbon Media Filter → UV system
05	Mankapur Chini Mills Ltd., (A unit of Balrampur Chini Mills Ltd.)	115 KLPD	58 m <sup>3</sup> /hr	Equalization Tank → Hear Exchanger → Buffer Tank → Anaerobic (UASBR) → Extended Aeration → Secondary & Tertiary Clarifier → Multigrade and Activated Carbon Media Filter → UV system & Ultra Filtration → RO system
06	Balrampur Chini Mills Ltd., Unit – Babhnan – Distillery and Slop fired cogeneration plant	100 KLD	58 m <sup>3</sup> /hr	Equalization Tank → Hear Exchanger → Buffer Tank → Anaerobic (UASBR) → Extended Aeration → Secondary & Tertiary Clarifier → Multigrade and Activated Carbon Media Filter → UV system & Ultra Filtration → RO system

**Avant-Garde have provided Detailed Engineering Consultancy Services for the following Sewage Treatment Plant which have been already commissioned and is Working Plant.**

S. No	Project	Sewage Treatment Plant Capacity	Sewage Treatment Plant Scheme
01	MANKAPUR CHINI MILLS - MANKAPUR, DISST. GONDA (U.P.)	220 KLD	Bar screen → Fine screen → Oil skimmer → Equalization Tank → Aerator (Two stage) → Multigrade filter → Activated Carbon Media Filter

**Avant-Garde have provided Detailed Engineering Consultancy Services for the following Captive Power Plants / Cogeneration Power Plants / Independent Power Plants including Water Treatment Plants which have been completed.**

<b>S. No</b>	<b>Project</b>	<b>Power Plant Capacity</b>	<b>Water Treatment Plant Capacity</b>	<b>Water Treatment Plant Scheme</b>
<b>CAPTIVE POWER PLANTS</b>				
1.	Grasim Industries Ltd, Tamil Nadu	12 MW	<b>20 m<sup>3</sup>/hr. (400 m<sup>3</sup>/day)</b>	Multigrade Filter → RO system → Degasser → Strong Acid Cation Exchanger → Strong Base Anion Exchanger → Mixed bed Polishing System
2.	Indu Projects Limited, Hyderabad	2 X 600 MW	<b>80 m<sup>3</sup>/hr. (1600 m<sup>3</sup>/day)</b>	DMF → PSF → RO - I Stage - I → RO - II Stage - II → MB
3.	Aarti Steels Ltd., Orissa Phase - I	40 MW (1 x 52 TPH 1 x 115 TPH)	<b>36 m<sup>3</sup>/hr. (720 m<sup>3</sup>/day)</b>	High rate solid contact clarifier → Ultrafiltration system → RO system → Mixed bed polishing system
4.	Madhucon Sugars Ltd., Andhra Pradesh	26.00 MW	<b>31 m<sup>3</sup>/hr. (620 m<sup>3</sup>/day)</b>	High rate solid contact clarifier → Multigrade Filter → Ultrafiltration system → RO system → Degasser → Strong Acid Cation Exchanger → Strong Base Anion Exchanger → Mixed bed Polishing System
5.	NCS Sugars Limited., Andhra Pradesh	20.00 MW	<b>30 m<sup>3</sup>/hr. (600 m<sup>3</sup>/day)</b>	High rate solid contact clarifier → Multigrade Filter → Ultrafiltration system → RO system → Degasser → Strong Acid Cation Exchanger → Strong Base Anion Exchanger → Mixed bed Polishing System
6.	Shri Chamundeswari Sugars Ltd., Unit - I, Karnataka	26.00 MW	<b>41 m<sup>3</sup>/hr. (820 m<sup>3</sup>/day)</b>	High rate solid contact clarifier → Multigrade Filter → Ultrafiltration system → RO system → Degasser → Strong Acid Cation Exchanger → Strong Base Anion Exchanger → Mixed bed Polishing System

7.	Vijayanagar Sugars (P) Limited., Karnataka	32.00 MW	<b>2 x 30 m<sup>3</sup>/hr (1200 m<sup>3</sup>/day)</b>	High rate solid contact clarifier → Continuous Membrane Filtration → RO system → Degasser → 2 x Strong Acid Cation Exchanger → 2 x Strong Base Anion Exchanger → 2 x Mixed bed Polishing System
8.	Balrampur Chini Mills Ltd., Mankapur, U.P	34.00 MW	<b>60 m<sup>3</sup>/hr. (1200 m<sup>3</sup>/day)</b>	Pressure Sand Filter → RO system → Degasser System → Strong Acid Cation Exchanger → Strong Base Anion Exchanger → Mixed bed Polishing System
9.	Gularia Chini Mills Ltd., BCML Unit, U.P	31.00 MW	<b>60 m<sup>3</sup>/hr. (1200 m<sup>3</sup>/day)</b>	Multigrade Filter → RO system → Degasser System → Strong Acid Cation Exchanger → Strong Base Anion Exchanger → Mixed bed Polishing System
10.	Mawana Sugars Ltd., Nanglammal., U.P	20.00 MW	<b>35 m<sup>3</sup>/hr. (700 m<sup>3</sup>/day)</b>	Pressure Sand filter → RO system → Degasser System → Strong Acid Cation Exchanger → Strong Base Anion Exchanger → Mixed bed Polishing System
11.	Mawana Sugars Ltd., Titawi., Uttar Pradesh	28.00 MW	<b>45 m<sup>3</sup>/hr. (900 m<sup>3</sup>/day)</b>	Pressure Sand filter → RO system → Degasser System → Strong Acid Cation Exchanger → Strong Base Anion Exchanger → Mixed bed Polishing System
12.	Upper Ganges Sugar Industries Ltd. U.P	25.00 MW	<b>63 m<sup>3</sup>/hr. (1260 m<sup>3</sup>/day)</b>	Multigrade Filter → Weak Acid Cation Exchanger → RO system → Degasser System → Strong Acid Cation Exchanger → Strong Base Anion Exchanger → Mixed bed Polishing System
13.	A.B.Sugars Limited., (Phase-II), Punjab	22.00 MW	<b>77 m<sup>3</sup>/hr. (1540 m<sup>3</sup>/day)</b>	Multigrade Filter → Ultra Filtration → RO system → Degasser System → Strong Acid

				Cation Exchanger → Strong Base Anion Exchanger → Mixed bed Polishing System
14.	Hemarus Technologies Ltd., Maharashtra	20.00 MW	<b>35 m<sup>3</sup>/hr. (700 m<sup>3</sup>/day)</b>	Actiflo type clarifier → Ultrafiltration system (XTREME) → RO system (MAESTRO) → Continuous Electro De-Ionisation (MPOWER – CEDI) and Standby Mixed Bed Exchanger unit (MB).
15.	Sunil Hi-Tech Engineers Ltd, (Gangakhed Sugars), Maharashtra	30.00 MW	<b>20 m<sup>3</sup>/hr. (400 m<sup>3</sup>/day)</b>	High rate solid contact clarifier → Multigrade Filter → Ultrafiltration system → RO system → Degasser → Strong Acid Cation Exchanger → Strong Base Anion Exchanger → Mixed bed Polishing System
16.	Mumias Sugar Co. Ltd., Kenya	34.00 MW	<b>2 X 30 m<sup>3</sup>/hr. (1200 m<sup>3</sup>/day)</b>	Cascade aerator → High rate solid contact clarifier → Pressure Sand Filter → Ultrafiltration system → RO system → Degasser → Mixed bed Polishing System

**Avant-Garde is presently providing Detailed Engineering Consultancy Services for the following Captive Power Plants / Cogeneration Power Plants including Water Treatment Plant at various stages of implementation.**

<b>S. No</b>	<b>Project</b>	<b>Capacity</b>	<b>Water Treatment Plant Capacity</b>	<b>Water Treatment Plant Scheme</b>
<b>CAPTIVE POWER PLANTS</b>				
1	The KCP Limited, Chennai	2 X 18 MW	<b>11 m<sup>3</sup>/hr. (220 m<sup>3</sup>/day)</b>	High rate solid contact clarifier → Automatic Online self cleaning filter → Ultrafiltration system → RO System → Degasser → Strong Acid Cation Exchanger → Strong Base Anion Exchanger → Mixed bed Polishing System

<b>S. No</b>	<b>Project</b>	<b>Capacity</b>	<b>Water Treatment Plant Capacity</b>	<b>Water Treatment Plant Scheme</b>
2	Chettinad Cement Corporation Limited, Karikkali (Unit - III)	30 MW	<b>17 m<sup>3</sup>/hr. (340 m<sup>3</sup>/day)</b>	Automatic online self cleaning filter → Ultrafiltration system → RO system → Degasser → Strong Acid Cation Exchanger → Strong Base Anion Exchanger → Mixed bed Polishing System
3	Ultratech Cement, Tadipatri	2 X 25 MW	<b>15 m<sup>3</sup>/hr. (300 m<sup>3</sup>/day)</b>	2 x Multigrade Filter → 2 x Ultrafiltration system → 2 x RO system → 1 x Degasser → 2 x Mixed bed Polishing System
4	Chettinad Cement Corporation Limited, Kallur, Karnataka	2 X 30 MW	<b>18 m<sup>3</sup>/hr. (360 m<sup>3</sup>/day)</b>	High rate solid contact clarifier → Multigrade Filter → Ultrafiltration system → RO system → Degasser → Strong Acid Cation Exchanger → Strong Base Anion Exchanger → Mixed bed Polishing System
5	Inland Power Limited, Ramgarh, Jharkhand	65 MW	<b>21 m<sup>3</sup>/hr. (420 m<sup>3</sup>/day)</b>	Multigrade Filter → RO system → Degasser → Strong Acid Cation Exchanger → Strong Base Anion Exchanger → Mixed bed Polishing System
6	Abhijeet Infrastructure Ltd, Jharkhand	2 X 30 MW	<b>20 m<sup>3</sup>/hr. (400 m<sup>3</sup>/day)</b>	High rate solid contact clarifier → Multigrade Filter → Ultrafiltration system → RO system → Degasser → Strong Acid Cation Exchanger → Strong Base Anion Exchanger → Mixed bed Polishing System
7	Rungta Mines Limited, Chaliyama, Jharkhand	2 X 20 MW	<b>13 m<sup>3</sup>/hr. (260 m<sup>3</sup>/day)</b>	High rate solid contact clarifier → Multigrade Filter → Ultrafiltration system → RO system → Degasser → Mixed bed Polishing System
8	Corporate Ispat alloys Limited, Saraikela, Jharkhand	2 X 30 MW	<b>2 x 20 m<sup>3</sup>/hr. (400 m<sup>3</sup>/day)</b>	High rate solid contact clarifier → 2 x Multigrade Filter (1W+1S) → 2 x Ultrafiltration system (1W+1S) → 2 x RO system (1W+1S) → Degasser → 2 x Strong Acid Cation Exchanger (1W+1S) → 2 x Strong Base Anion Exchanger (1W+1S) → 2 x Mixed bed Polishing System (1W+1S)
9	Concast Steel & Power Ltd., Jharsuguda, Orissa	30 MW, 40 MW	<b>27 m<sup>3</sup>/hr. (540 m<sup>3</sup>/day)</b>	High rate solid contact clarifier → Multigrade Filter → Ultrafiltration system → RO system → Degasser → Strong Acid Cation Exchanger → Strong

S. No	Project	Capacity	Water Treatment Plant Capacity	Water Treatment Plant Scheme
				Base Anion Exchanger → Mixed bed Polishing System
10	Jaiprakash Associates, Churk, Uttar Pradesh	4 X 60 MW	<b>2 x 20 m<sup>3</sup>/hr. (800 m<sup>3</sup>/day)</b>	High Rate Solid Contact Clarifier → 2 x Multigrade Filter → 2 x Ultrafiltration system → 2 x RO system → Degasser → 2 x Strong Acid Cation Exchanger → 2 x Strong base Anion Exchanger → 2 x Mixed bed Polishing System
11	Jaiprakash Associates, Sidhi - II, Madhya Pradesh	2 X 60 MW	<b>45 m<sup>3</sup>/hr. (900 m<sup>3</sup>/day)</b>	High Rate Solid Contact Clarifier → Multigrade Filter → Ultrafiltration system → RO system → Degasser → → Strong Acid Cation Exchanger → Strong Base Anion Exchanger → Mixed bed Polishing System
12	Sri Jyoti Renewable Energy Pvt. Ltd, Haryana	9.85 MW	<b>5 m<sup>3</sup>/hr. (100 m<sup>3</sup>/day)</b>	Multigrade Filter → Two Pass RO → Electro Deionisation (EDI) Standby Mixed bed Polishing System
<b>COGENERATION POWER PLANTS</b>				
13	Shree Basaveshwar Sugars Limited, Karnataka	26.00 MW	<b>30 m<sup>3</sup>/hr. (600 m<sup>3</sup>/day)</b>	Cascade aerator → High rate solid contact clarifier → Multigrade Filter → Ultrafiltration system → RO system → Degasser → Strong Acid Cation Exchanger → Strong Base Anion Exchanger → Mixed bed Polishing System
14	Shiraguppi Sugar Works Ltd, Karnataka	28.00 MW	<b>30 m<sup>3</sup>/hr. (600 m<sup>3</sup>/day)</b>	High rate solid contact clarifier → Multigrade Filter → Ultrafiltration system → RO system → Degasser → Strong Acid Cation Exchanger → Strong Base Anion Exchanger → Mixed bed Polishing System
15	Gammon India Ltd, Pravara Nagar, Maharashtra	30.00 MW	<b>56 m<sup>3</sup>/hr. (1120 m<sup>3</sup>/day)</b>	High rate solid contact clarifier → Automatic Online self cleaning filter → Ultrafiltration system → RO System → Degasser → Strong Acid Cation Exchanger → Strong Base Anion Exchanger → Mixed bed Polishing System
16	SMSMPSSK Ltd, Maharashtra	33.00 MW	<b>2 x 37 m<sup>3</sup>/hr. (1480 m<sup>3</sup>/day)</b>	High rate solid contact clarifier → 2 x Multigrade Filter → 2 x Ultra-filtration system → 2 x RO system → Degasser → 3 x



<b>S. No</b>	<b>Project</b>	<b>Capacity</b>	<b>Water Treatment Plant Capacity</b>	<b>Water Treatment Plant Scheme</b>
				Mixed bed Polishing System (2W + 1S)

**Avant-Garde have provided Detailed Engineering Consultancy Services for the following Captive Power Plants / Cogeneration Power Plants / Independent Power Plants including Water Management Conservation Study which already completed.**

<b>S. No</b>	<b>Project</b>	<b>Plant</b>	<b>Water Management Conservation study</b>
01	Mankapur Chini Mills (A Unit of Balrampur Chini Mills Ltd.),	Cogeneration Project, Sugar plant, Spent Wash based incineration power plant, Distillery plant	Water management Audit
02	Rauzagaon Chini Mills (A Unit of Balrampur Chini Mills Ltd.),	Cogeneration Project	Water management Audit
03	Sakthi Sugars Ltd., Modakurichi,	Cogeneration Project	Water management Audit
04	Sree Rayalaseema Alkalies and Allied Chemicals Limited, Kurnool	25 MW Thermal Power Plant	Water management Audit
05	Tropikwood Industries Limited, Fiji Islands	Cogeneration power plant	Water management Audit
06	Karnataka Power Corporation Limited	1720 MW Raichur Thermal Power Station,	Water management Audit
07	Ultratech Cement Limited, Awarpur Cement Works	71 MW (2 x 23 MW & 1 x 25 MW) Thermal Power Plant	Water management Audit
08	Ultratech Cement Limited, Aditya Cement Works	73 MW (1 X 23 MW & 2 X 25 MW) Thermal Power Plant	Water management Audit